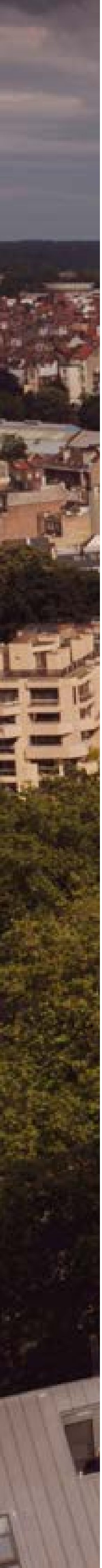
SOLVAY

Progress beyond

Annual Integrated Report 2021

REINVENTING



Contents

About this report

Solvay's 2021 Annual Integrated Report provides material information on Solvay for the year ending December 31, 2021. This report reflects our progress in our integrated management journey, as it is the first edition that integrates all content in one comprehensive document. It includes our management report, as required by article 12 of the Royal Decree of 14 November 2007 relating to the obligations of issuers of financial instruments admitted for trading on a regulated market. The information required by articles 3:6 and 3:32 of the Belgian Code of Companies and Associations can be found in the different chapters of the report. This includes our Renumeration report, Risk management report, Business performance review, Extra-financial statements and Financial statements. Solvay's 2021 Annual Integrated Report is based on the Value Reporting Foundation Integrated Reporting principles and elements of content, and aligned with the GRI Standards and the WBCSD's ESG Disclosure Handbook.

→ *To learn more about this picture, see the back cover of the report.*

SOLVAY **IN 2021**

In 2021, we delivered on our commitments and raised the bar in all areas. This, in a challenging environment marked by inflation and logistics issues, and increased requirements to reduce our environmental impact.

We improved our organic growth and continued to deliver a strong financial performance by:

- → Achieving strong growth in volume and price with continued cost discipline.
- → Delivering class-leading EBITDA margins of 23.3%.
- → Investing €736 million for future growth, while maintaining capital discipline and coherence with strategic imperatives.
- → Further improving our cash generation.
- → Further improving our credit strength, by reducing our debt and pension obligations by €884 million.
- → Simplifying our portfolio.

With our G.R.O.W. strategy and Solvay One Planet roadmap as a compass, we took bold actions in 2021 to strengthen leadership positions, reallocating resources to growth and sustainable businesses. This included:

- → Accelerating development of innovative solutions for now and the future, by further investing in our "growth platforms", dedicated to battery materials, thermoplastic composites (TPC) and green hydrogen.
- → Expanding our capacities, by establishing a new manufacturing facility for TPCs in the US and announcing an investment to increase our PVDF production in Europe, among other intiatives.
- → Reinforcing our bio-based seed care portfolio through an acquisition.
- → Developing new biosourced solutions for home and personal care.

We raised the bar on sustainability, taking actions to move toward becoming a low-carbon and more inclusive company:

- → Creating an ESG Committee in Solvay's Board of Directors, to help guide strategic priorities and ensure that we execute on our commitments.
- → Announcing a plan to achieve carbon-neutrality[1] before 2050, supported by a value-creating investment program of around €2 billion.
- → Accelerating the energy transition in our plants, with 36 projects underway across the globe.
- → Engaging with our suppliers, calling on 400 of them to sign up to the SBTi, to help reduce emissions along the value chain.
- → Partnering with customers and key players to create circular businesses, including developing sustainable tire technology with Bridgestone and Arlanxeo and working on recycling solutions for advanced materials with Mitsubishi.
- → Developing new non-fluorosurfactant technologies, which has enabled us to explore technological innovations that advance our sustainability ambitions while meeting customer needs.
- → Launching Solvay One Dignity, committing to nine objectives and related action plans to drive more diversity, equity and inclusion at Solvay.
- → Announcing the launch of Solvay's first employee stock ownership plan.

At Solvay, we are REINVENTING ourselves and the way we serve our stakeholders by ensuring we make our Purpose – *We bond people, ideas and elements to reinvent progress* – a reality. In doing so, we are creating more sustainable value for all, as the information in this Annual Integrated Report shows. —

1. Scope 1 and 2 emissions

2021 BROUGHT US EVEN **CLOSER TO THE SOCIETY WE SERVE**

by **Nicolas Boël,**
Chairman of the Board of Directors

Solvay makes bold decisions, thanks to the audacity and drive of the Group's management, which is marching on with a comprehensive roadmap capable of aligning sound industrial investment with the categorical imperatives of sustainability. The appointment of Ilham Kadri as CEO has led to an acceleration on all fronts and a change in direction, as Solvay is now implementing structural measures to raise the bar in all domains – strategy, mindset and operations – and amplifying our ability to create value in the long term.

Equally striking was the manner in which these fundamental decisions were made. The Management and Board of Directors have reinvented their modus operandi, not only as a consequence of the pandemic but also, much more profoundly, as the result of a concerted effort to sustain trust through transparency. The Board

"I would like to reiterate my full support, as well as the Board of Directors', for the project to create two market leaders in Essentials and in Specialties."

and its different Committees held a total of 32 meetings in 2021. Through these close and frequent contacts, we have implemented a structured and objective approach that has allowed our Group to progress on its transformation journey both promptly and smoothly.

I truly felt a step change in the Board of Directors' activity. Many major decisions were made, on substantial investments to curb Solvay's carbon footprint; our Solvay One Planet sustainability ambition; the Solvay Solidarity Fund to alleviate the hardship endured by those in need; and our One Dignity program to ensure a more diverse, equitable and inclusive Solvay, among others. At the same time, 2021 saw concrete structural initiatives, which are bringing us even closer to the society we serve, with the creation of an Environmental, Social and Governance (ESG) Committee and the launch of a process aimed at more diversity, as well as better representation of our different shareholders and stakeholders. Right from the beginning, the newly appointed ESG Committee set the bar very high, as its first decision was to support the Management's plans to reach carbon neutrality before 2040 in all businesses, and before 2050 in soda ash.

You will certainly agree with me: the world that we see emerging today is more complex than ever. Its contradictions appear to have grown even more acute, as we are navigating a society that seeks to restore pre-pandemic comfort, while at the same time demanding solutions to ensure a sustainable future. That is why I would like to pay homage to the Solvay teams, which have kept delivering these solutions in spite of highly volatile conditions, generating exceptional results in 2021 and rallying behind an ambitious leadership team.

Lastly, I would like to reiterate my full support, as well as the Board of Directors', for the project to create two market leaders in Essentials and in Specialties, which I see as an elegant illustration of our Group's ability to anticipate and make bold decisions in our own right. We are going beyond our G.R.O.W. strategy, which set specific mandates for our different business segments. Today, we are planning to constitute two great companies, empowered to take their futures into their own hands and exercise the freedom to mobilize the resources they need to maximize sustainable, shared value for all.

Nicolas Boël

Nicolas Boël
Chairman of the Board of Directors

ESSENTIAL AND SPECIAL: YESTERDAY, TODAY AND TOMORROW

Ilham Kadri,
President of the Executive Leadership Team and CEO

How did you react to the invasion of Ukraine?

Ilham Kadri — We felt absolute shock and horror, seeing the gruesome violence unleashed against innocent people. We immediately made sure our team in Ukraine were safe; we mobilized the Solvay Solidarity Fund to donate €1 million in relief aid; and we channeled our employees' own generosity and matched all individual donations with an equal contribution. As an organization, we unequivocally condemned the invasion and decided to suspend all trade with Russia and Belarus, as well as dividend payments from our 50:50 joint venture Rusvinyl, until peace returns. And we considered alternative solutions for the raw materials we sourced in Russia.

Can you guide us through the highlights of Solvay's performance in 2021?

I.K. — The Russian attack took place only the day after we announced spectacular financial results, setting three new records in EBITDA, net profit and returns. I would like us to pause and consider the results from a longer-term perspective, as they represent the successful outcome of our G.R.O.W. strategy, launched in the fall of 2019.

In 2021, our EBITDA shot up by 27% compared to 2020 – and we are rebounding higher, as it increased by 8% compared with 2019 pre-pandemic levels, lifting our EBITDA margin to a record 23.3%. We have built the muscle we need to power our Growth, with accelerated innovation focused on three platforms: Batteries, Thermoplastic Composites and Green Hydrogen. We are also expanding to serve markets growing at high speed, with new PVDF capacities for electric vehicle batteries in Europe and China, for instance, or investing to reinforce our leading position in sulfone polymers in the United States of America. We have clearly demonstrated our Resilience as a Group, as we improved our cash generation through the pandemic and subsequent recession, totaling €2.4 billion in 2020-2021, and culminating in an FCF conversion ratio of 37.6% in 2021. We are now facing the future with increased confidence, as we strengthened Solvay's balance sheet with a total reduction in debt and pensions of €2.7 billion. Our endeavor to Optimize our operations has borne fruit, as we have simplified our portfolio by divesting non-core activities and simplifying our industrial footprint. We achieved our Return on Capital Employed target three years earlier than anticipated, as we lifted our ROCE to 11.4% in 2021. We achieved all of this because we have learned to Win together and be more effective in all we do, with accelerated structural cost reductions totaling €390 million in 2020-2021. Looking back at these past three years, we got fit, and now we are ready to change the game.

Can you elaborate on Solvay's progress with regard to sustainability?

I.K. — It's at the heart of our strategy, and our vision is to create sustainable shared value for all. I am particularly proud that we have surpassed the Paris Agreement targets for carbon emission cuts, as we achieved more than a 3.5% annual reduction since 2018, which is better than the Science Based Target Initiative goal of minus 2.5% per annum. We are resolutely committed to our ambitious Solvay One Planet goals, which we have stepped up to include carbon neutrality by 2050 at the latest for soda ash, our most energy-intensive activity, and before 2040 for all other businesses. We are walking the talk to deliver on these bold commitments, with the decision to phase out coal at three major sites: Rheinberg (Germany) in 2020, Dombasle (France) in 2021 and partly at Devnya (Bulgaria) in 2022.

I would also like to highlight another concrete achievement, which further improves the sustainability profile of our industrial activities. Last year we developed and implemented an innovative polymerization technology which removes the need for fluorosurfactants in the production of fluorinated materials. And we are expanding our impact beyond our boundaries, as customer intimacy has made us a partner of choice for leading manufacturers and Fast Moving Consumer Goods companies, whom we help to meet their own sustainability goals with natural or bio-based ingredients, for instance, or through joint development programs, such as our partnership with Renault and Veolia for battery recycling. In 2021, we also launched a comprehensive sustainability partnership with our suppliers to have an even bigger impact, address indirect Scope 3 emissions and curb the CO_2 emissions that are generated by our supply chain.

Has Solvay's company culture changed over the past three years?

I.K. — We have a strong heritage and deeply rooted values, which were those of our founder, Ernest Solvay: faith in scientific progress; the desire to serve humankind; and the ability to make bold decisions. Our Purpose built on these strong roots and transformed us into a truly daring AND caring organization, that is both performance and people-minded. Throughout the crisis, our Pulse surveys indicated how employee engagement at Solvay resisted and emerged stronger as well. In that respect, I was particularly pleased that 80% of respondents in our latest survey feel they can be themselves at work, confirming that we are an inclusive, welcoming company and encouraging us to press ahead with Solvay One Dignity, the diversity, equity and inclusion ambition that we unveiled last year. I am also proud to announce that you will find in this report our first wage equity benchmark, as well as our

commitment for the future. Our ambition is to keep transforming for the better, while remaining true to who we are.

Looking back at 2021, what are you most proud of and what do you regret?

I.K. — I am most proud of our people, without a shadow of a doubt. Their unwavering engagement and the stamina of our frontline crew, which has spearheaded our topline growth and resistance to inflationary pressures. We are definitely building up a strong, robust company where meritocracy rules – and we will reinforce the bonds with our teams even further, as we decided last year to launch a global employee share program, open to all colleagues at Solvay. Still on the financial front, the continued deleveraging of our balance sheet in 2021 was a major source of pride.

We have also developed stronger bonds with our investors, proactively addressing our Environmental, Social and Governance (ESG) ambition in dedicated events and reaching out directly to shareholder representatives and proxy voters more frequently, in addition to our intense investor relations activity.

My biggest regret for 2021 is that we seem to have steered away from our spectacular improvement trajectory for occupational safety. We halved the number of reportable injuries and illnesses (RII) at Solvay between 2015 and 2020 but saw a slight increase last year. Even though we are still in line with the benchmark of industry peers, we will do what it takes to continue improving and aim for zero accidents.

What does the future look like for Solvay?

I.K. — It is more exciting than ever, as we are presenting the General Assembly with a bold plan to create two fabulous new companies, building on what Solvay has always been throughout history: Essential AND Special. We are essential simply because the world cannot work without us. And we are special, because the future will not work without us. Going forward, if our project becomes a reality, we will build on that duality to create two independent, pure-play, public companies – one active in essential chemicals and the other in specialities, one focusing more on resilience and cost effectiveness and the other on customer intimacy and innovation. We would be creating two strong industry leaders that would benefit from the strategic and financial flexibility to concentrate on their distinctive business models, market and stakeholder priorities, with the freedom to reach their fullest potential. The special bonds with our shareholders would remain unchanged, as they would be offered the opportunity to keep their equity position in both companies, which would present distinctive investment profiles. The creation of two market leaders would in fact be an unprecedented opportunity to increase the total value of their shareholding in Solvay. This is the beginning of two exciting stories… and I invite all of our stakeholders to write them with us.

Ilham Kadri
President of the Executive Leadership Team and CEO

Essential Company and Specialty Company

Building on the success of our G.R.O.W. strategy

Over the past three years, we have accelerated the reinvention of the Group and amplified the impact we have in the world. We have reinforced our foundations, with a keen focus on Purpose, Strategy and Culture and we have delivered. In spite of the highly volatile environment in which we have been operating, we achieved our mid-term financial targets three years earlier than planned, while also advancing on our Solvay One Planet sustainability commitments. We are now ready to change the game and show the world how we continue to Reinvent Progress.

Creating two strong industry leaders

The delivery of our G.R.O.W. strategy and business optimizations have led to the emergence of two distinct groups of businesses: Essential and Specialty chemicals. Both have incredible potential and are bold in their ambitions, but they have different – sometimes competing – needs, different operating requirements and different investment demands. In March 2022, we therefore announced that we were reviewing plans to separate the Company along these lines, into two independent, publicly traded companies:

- **EssentialCo** would comprise the leading mono-technology businesses in Solvay's Chemicals segment, including Soda Ash, Peroxides, Silica and Coatis, and the Special Chem business.
- **SpecialtyCo** would comprise Solvay's Materials segment, including our Specialty Polymers and Composites businesses, our four Growth Platforms and the majority of Solvay's Solutions segment, including Novecare, Technology Solutions, Aroma Performance, and Oil and Gas.

Upon completion, the separation would establish two strong industry leaders that would benefit from the strategic and financial flexibility to focus on their distinctive business models, market and stakeholder priorities and achieve their full potential. Following the separation, each standalone company would be positioned to:

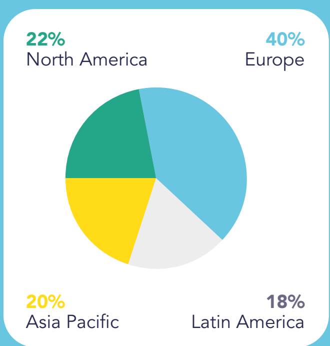
- intensify focus on its strategy and growth opportunities;
- prioritize resources to meet its unique business needs;
- apply differentiated operating models to better serve its customers;
- pursue distinct capital structures and capital allocation priorities;
- drive sustainability initiatives, including reaching carbon neutrality before 2040 for SpecialtyCo, and before 2050 for EssentialCo;
- attract and retain the talent best suited for distinct businesses;
- provide a clear investment thesis and visibility to attract a long-term investor base suited to each company.

EssentialCo –

An Essential Chemicals leader with resilient cash generation

€4.1bn

2021 net sales



MARKET POSITION

Soda Ash & Derivatives	#1 Soda Ash (global)
	#1 Bicarbonate (global)
Peroxides	#1 Hydrogen Peroxide (global)
Silica	#1 Silica for tires (global)
Others (Coatis, Special Chem)	#1 Coatis (Latin America) #1 Rare earths for automotive catalysts (global)

EssentialCo would provide technologies that have proven essential across a number of attractive and resilient end markets, including building, consumer goods and automotive, and it will benefit from a foundation of strong, global leadership positions. As an independent company, EssentialCo would be positioned to further reinforce its leadership through expansion and consolidation opportunities, including accelerating growth in natural soda ash and sodium bicarbonate, pursuing growth in the Asia-Pacific region and further extending its leadership in a consolidating peroxide market. It would also play a key role in accelerating the energy transition that began in its soda ash business, in order to achieve carbon neutrality before 2050. Following the separation, EssentialCo would strengthen its operating model by enhancing its cost leadership and maximizing cash generation.

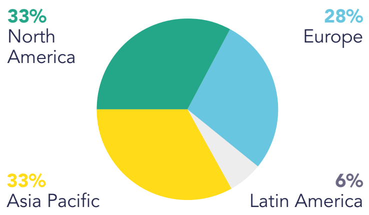
For almost 160 years, Solvay has continually changed, transformed and reinvented, while always remaining true to our heritage of social responsibility and innovation excellence. As part of our efforts to unleash our full potential, we announced a bold new step in this ongoing journey: exploring a separation into two independent, publicly listed companies.

SpecialtyCo –

A pure-play Specialty leader with accelerated growth potential

€6bn

2021 net sales



MARKET POSITION

Two business segments		
Materials	Speciality Polymers	#1 High-performance polymers; leading position in thermoplastic composites Three growth platforms: → Thermoplastic Composites → Batteries → Hydrogen
	Composites	#2 Composites for civil aerospace #1 Composites for defense
Consumer and Resources	Novecare	#2 Speciality surfacants and polymers
	Aroma	#1 Flavors & Fragrances; Natural Vanillin
	Technology Solutions Oil & Gas	#1 Mining reagents

SpecialtyCo would provide innovative, value-added solutions that support a more sustainable world, driving above-market growth and strong returns. It would comprise two business segments:

- **Materials:** an industry leader in advanced materials, focused on bringing new solutions to customers that address critical performance and environmental challenges. These businesses have a strong track record of above-market growth, supported by underlying megatrends including electrification, lightweighting, sustainable mobility and digitalization. With a focus on innovation, a robust commercial engine and a unique understanding of its customer base, this segment would be positioned to drive continued penetration of its sustainable solutions to help customers disrupt there industries such as transportation, electronics and healthcare. It would benefit from increased investments in capacity, innovation and commercial capabilities to support above-market organic growth at superior returns and industry-leading margins.
- **Consumer and Resources:** The Consumer & Resources segment primarily consists of businesses within Solvay's current Solutions segment and would be a market leader in providing specialty ingredients focused on more natural and sustainable solutions by anticipating rapidly evolving customer needs. With a proven, asset-light business model that is supported by underlying megatrends including eco-friendly ingredients and resource efficiency, the segment is well positioned to drive the consumer industry toward biobased, natural and circular solutions, leveraging its portfolio of innovative solutions and application expertise. The segment would be positioned to drive above market growth at strong returns.

The separation will also enable SpecialtyCo to extend its leading position in sustainability, with a clear path to achieving carbon neutrality before 2040.

Unleashing our full potential to unlock value

By strenthening the link between each company's unique needs and strategic path forward, we believe we can unleash our full potential and unlock value for all stakeholders moving forward. Each company would have a tailored capital structure that best supports its value creation objectives: SpecialtyCo would be committed to a strong investment-grade rating and would have full financial flexibility at the time of separation to fund its growth plan, while EssentialCo would maintain a prudent financial policy to support cash generation.

Under the separation plan, Solvay's shareholders would retain their current shares of Solvay stock. The separation would be effected by means of a partial demerger of Solvay whereby the specialty businesses will be spun off to SpecialtyCo. At the time of the separation, Solvay shareholders would also receive shares in SpecialtyCo pro rata to their shareholding in Solvay SA. We expect the shares of each company to be listed on Euronext Brussels and Euronext Paris and plan to structure the separation in a manner that would be tax efficient for a significant majority of shareholders in key jurisdictions.

The transaction is subject to general market conditions and customary closing conditions, including final approval by Solvay's Board of Directors, consent of certain financing providers and shareholder approval at an Extraordinary General Meeting. We expect to complete it in the second half of 2023. The Board of Directors of Solvac, Solvay's long-standing reference shareholder, has confirmed its full support for this transaction.

2021 Key figures

We are a science company whose technologies bring benefits to many aspects of daily life. With more than 21,000 employees in 63 countries, *we bond people, ideas and elements to reinvent progress*. We seek to create sustainable shared value for all, notably through our Solvay One Planet plan crafted around three pillars: protecting the climate, preserving resources and fostering better life. Our innovative solutions contribute to safer, cleaner, and more sustainable products found in homes, food and consumer goods, planes, cars, batteries, smart devices, health care applications, water and air purification systems. Founded in 1863, Solvay today ranks among the world's top three companies for the vast majority of its activities.

Solvay around the world

63 countries

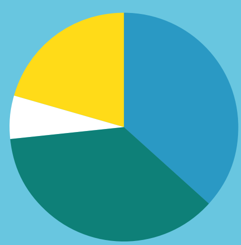
€10.1bn
Net sales

- **27%** Europe
- **26%** North America
- **13%** Latin America
- **34%** Asia & Rest of the World

+21,000
Employees

- **47%** Europe
- **24%** North America
- **10%** Latin America
- **19%** Asia & Rest of the World

98
Industrial sites



- **36** Europe
- **36** North America
- **6** Latin America
- **20** Asia & Rest of the World

12
Major research & innovation centers

- **5** Europe
- **3** North America
- **1** Latin America
- **3** Asia & Rest of the World

Research and Innovation

1,950
Employees

€298M
R&I effort

14%
New sales ratio*

78%
of expected R&I revenue from sustainable solutions**

*% of products/applications < 5 years

**according to our SPM methodology

Financial indicators

2021 versus 2020

€2,356M

Underlying EBITDA
+27% organic basis[1]

€843M

Free cash flow[2]
to Solvay shareholders from continuing operations

11.4%

ROCE[3]
+4.4pp

€3.85[4]

Dividend
per share

1. Organic growth excludes forex conversion and scope effects.
2. Free cash flow to Solvay shareholders is the free cash flow after payment of net interests, coupons of perpetual hybrid bonds and dividends to non-controlling interests. This represents the cash flow available to Solvay shareholders, to pay their dividend and/or to reduce the net financial debt.
3. Return on Capital employed.
4. Recommended to the Shareholders meeting on May 10, 2022.

Social and environmental indicators

2021 versus 2018

Climate Resources Better Life

11Mt.CO_2eq.

Greenhouse gas emissions[5]
-14% (-11% structural)

53%

Sustainable solutions (SPM)
% of Group sales
+3pp

27pj

Solid fuels
–18%

315Mm³

Freshwater withdrawal
–5%

-13%

Pressure on biodiversity[6]
-24%

0.43

Reportable Injuries and Illnesses Rate[8] **(RIIR)**
-16%

5%

Circular economy[7]
% of Group sales based on circular raw materials or energy
+1pp

25%

Inclusion & Diversity
Women in mid & senior management
+1.3pp

58kt

Industrial waste not treated in a sustainable way
-34%

16 weeks

for all co-parents since January 2021

Gender equality
Extend maternity leave

5. Total greenhouse gas emissions, scopes 1 and 2. 6. In number of animal or plant species potentially impacted in one year. ReCiPe method for biodiversity impact assessment. 7. Circular economy indicators are still in the development phase, in the frame of the Circulytics® approach, co-developed with the Ellen MacArthur Foundation. 8. Number of work-related injuries and illnesses (employees and contractors) resulting from an accident with severity above first aid, according to US OSHA 29 CFR 1904, per 200,000 work hours.

10 Highlights of 2021

01.

Set out our plan to achieve carbon neutrality[1] before 2050

In October 2021, Solvay announced our plans to reach carbon neutrality on scope 1 and 2 emissions before 2040 for all businesses, except soda ash, and before 2050 in soda ash. Consequently, the 2030 target for greenhouse gas emissions was upgraded to reduce by -30% from -26%, as compared to the 2018 baseline. The scope 3 target shall at least meet the 2°C criteria of the Science Based Targets initiative. A strategic initiative was launched in 2021 to spur transformative progress with our suppliers.

1. Scope 1 and 2 emissions

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02.

Accelerated projects to phase out coal from our energy mix by 2030

Our soda ash site in Dombasle, France, received approval for a project to produce energy from waste instead of coal, starting in 2024. Meanwhile, our soda ash plant in Rheinberg, Germany, is set to phase out the use of thermal coal by 2025, through the installation of a second biomass boiler. These projects combined will cut Group emissions by around 6%.

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03.

Launched a share purchase plan for employees

Our first employee stock ownership plan offers all Solvay personnel globally the opportunity to buy company shares at a discount of 10%. The initiative aims to better align employees with the Group's performance and encourage them to develop an ownership mindset that embraces opportunities to drive progress and create more sustainable value for all.

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04.

Expanded our thermoplastic composite capacity in the US

The completion of our TPC manufacturing facility in Greenville, South Carolina is a milestone in our efforts to industrialize Solvay's capacity in this field. It is part of a series of strategic investments that will allow us to expand alongside our customers as demand for TPC – a solution for lightweighting and emissions-reduction used across several industries – continues to grow.

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05.

Created an ESG Committee at Board level

The main decisions made by Solvay's Board of Directors integrate ESG dimensions. In recognition of this, we created a stand-alone ESG Committee at Board level, charged with further accelerating our sustainability efforts by providing meaningful contributions to the Board's deliberations. Our new carbon neutrality ambition was the first recommendation the new Committee made to the Board.

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06.

New financial records

In 2021, we achieved three records – EBITDA, Net Profit and Returns. We reported a record EBITDA of €2.4 billion, up 27% organically versus 2020, achieving a 23.3% EBITDA margin, despite the higher inflationary environment and unfavorable energy headwinds. Our underlying net profit reached €1 billion, and we increased our Returns (ROCE) to 11.4%. Finally, we continued to deliver strong cash performance that enables us to invest in our many growth opportunities.

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07.

Launched Solvay One Dignity (Diversity, Equity and Inclusion)

Part of our sustainability roadmap, Solvay One Dignity reinforces our commitment to eliminate any form of discrimination and cultivate an inclusive and diverse environment that ensures equal opportunities for all employees worldwide. It sets out nine objectives to be achieved by 2025.

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08.

Launched TECHSYN, a new technology for more sustainable tires

We teamed up with our long-term innovation partners Bridgestone and Arlanxeo to develop TECHSYN, a technology that brings a circular, sustainable business solution to the tire industry. It enables tires to achieve up to 30% better wear efficiency and up to 6% less rolling resistance, thereby reducing fuel and raw material consumption, and cutting CO_2 emissions.

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09.

Created a new joint venture to serve booming semiconductor demand in South-East Asia

Our joint venture with Shinkong Synthetic Fibers Corporation is set to be operational in early 2023. It will develop, produce and market the best quality electronic grade hydrogen peroxide, a chemical agent needed for the production of integrated electronic circuits.

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10.

Announced a €300 million investment to expand PVDF production capacity in Europe

To meet growing demand for Solef® PVDF, which is used in electric and hybrid vehicle batteries, we are creating the largest PVDF production site in Europe. Alongside our existing PVDF operations in the US and China, the new facility at our Tavaux site, in France, will help reinforce Solvay's global leadership in this field.

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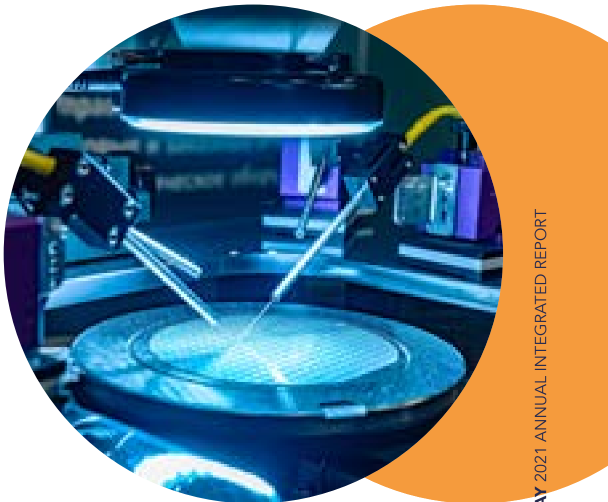


A radical transformation in just three years

Over the past three years, we have accelerated our journey to transform and simplify Solvay. We ascertained our culture through our Purpose, instilling a performance mindset throughout our Group. We set up ambitious sustainability objectives through our Solvay One Planet roadmap, raising the bar every year to meet our customers' needs and contribute to building a better world. We got fit, we built efficiencies and we executed on our G.R.O.W. strategy, which set clear mandates for our businesses, focusing on higher growth and higher margin activities. Coupled with our solid and improving portfolio, this has produced strong results and cash generation, allowing us to deleverage our balance sheet and invest for future growth. We are now ready to change the game and to unleash our full potential.

GETTING FIT AND CHANGING THE GAME

2021

2020

2019

2019

- **G.R.O.W. Strategy**
- **Battery Materials strategic Growth platform**
- **Thermoplastic Composites strategic Growth platform**

2020

- **Purpose, Values, Vision**
- **Culture and "At our best" Behaviors**
- **Solvay One Planet**
- **Solvay Solidarity Fund** (€15 million collected)

2021

- **Green Hydrogen strategic Growth platform**
- **Solvay One Dignity** (Diversity, Equity and Inclusion)
- **Carbon neutrality roadmap**
- **Employee share purchase plan**

- Record structural cost reduction of **€390** million
- **11** consecutive quarters of positive cash flow
- Net debt reduced by **€1.6** billion
- Pensions deleveraged by **€1.1** billion
- Continued portfolio simplification with **~11** transactions
- **Reinvesting €736** million in growth businesses

STRATEGY

G.R.O.W. strategy in action

2021 marks another great year of progress in our transformation journey.
We emerged stronger on all fronts, from pricing power to profitability, from cash generation to returns. This year we faced new challenges and overcame rising raw material and energy costs, as well as supply chain disruptions, while continuing to build on our strong foundations.
The dedication of our people, the progress we are making in serving our customers, and the new investments we're making position us for superior growth in the years ahead.

G.R.O.W. strategic roadmap

Our Purpose

We bond people, ideas and elements to reinvent progress

Our Vision

At Solvay, we create shared sustainable value for all

MATERIALS

G Accelerate Growth

Prioritize investments in high margin MATERIALS businesses with high growth potential, which are also our most sustainable solutions.

Key asset
Unique high-performance polymers and composite technologies.

Businesses
Specialty Polymers, Composite Materials

Extend position as #1 pure-play advanced materials business

- Realign organization around growth opportunities
- Accelerate innovation with highest-growth customers
- Reallocate resources to battery materials, thermoplastic composites and green hydrogen platforms to accelerate customer wins
- Improve operational efficiencies through simplification, order-to-cash optimization and digitalization.

Markets
Automotive and Aerospace, Healthcare, Electronics

Global business trends

- Lightweighting
- Electrification
- Expanding Healthcare
- IoT/Digitalization
- Resource efficiency

CHEMICALS

R Deliver Resilient cash

Maximize cash flow generation from our resilient CHEMICALS businesses where we have a competitive advantage.

Key asset
World-leaders in chemicals that are essential to daily life.

Businesses
Soda Ash & Derivatives, Peroxides, Silica, Coatis

Become #1 cash conversion chemical player

- Adapt organization to focus on cash and returns
- Drive focused productivity and rationalization programs
- Prioritize Capex to maintenance and invest selectively for compelling cash returns, e.g. natural soda ash
- Focus R&I on process innovation

Markets
Industrial applications, Building, Consumer goods, Food, Automotive

Global business trends

- Expanding Healthcare
- Resource efficiency

SOLUTIONS

O Optimize returns

Optimize our SOLUTIONS and businesses to unlock value and increase returns.

Key asset
Unique formulation and application expertise.

Businesses
Novecare, Technology Solutions, Special Chem, Aroma Performance, Oil and Gas

Unlock value and optimize returns

- Innovate selectively in specialty niche markets, e.g. consumer goods
- Fix shale oil and gas and other low-return businesses
- Drive efficiency and address fragmented industrial footprint

Markets
Industrial applications, Consumer Goods, Food, Healthcare, Mining

Global business trends

- IoT/Digitalization
- Resource efficiency
- Eco-friendly based solutions

W Solvay ONE to WIN

Create a winning team and operating model to support a performance-driven culture and WIN with our customers

Implementation of a new operating model, Solvay ONE, to reduce complexity and centrally manage resources and deployment of capital expenditures to the highest value opportunities.

- Customer and Supplier Engagement Programs
- Efficiency for growth initiatives (e.g. Excellence, End-to End value chain)
- Industrial footprint optimization
- Organization reshaping
- Performance-driven culture

Delivering on our commitments

Solvay is more resilient today than before the onset of the global pandemic. Our unwavering focus on cost reduction, disciplined cash management and strategic investments in high-growth sustainable solutions, consistent with our G.R.O.W. strategy, enabled us to successfully pass the pandemic stress-test and to emerge stronger, ready to deliver superior and sustainable growth.

We faced significant inflationary costs of €465 million for the full year 2021. About 70% of the increase was directly related to raw materials and energy and the remainder to logistics and packaging. To address this, we took actions across our businesses to accelerate price increases. As a result, we overcame a significant number of those costs while keeping our assets running safely with very high utilization rates, ensuring supply to our customers, and protecting our margins.

€390 million cost savings over two years, well on track to achieve our 2024 target

We continued to make good progress on our structural cost programs, totaling €213 million for the year. We focused our actions in three key areas:

→ restructuring, with around €75 million saved from reductions in labor costs;
→ indirect costs reduction of €85 million;
→ productivity efficiencies at our industrial sites totaling €53 million.

In just two years, we have already achieved 80% of our target of reaching €500 million by the end of 2024.

Strong cash generation of €843 million

For the eleventh quarter in a row, we have generated positive free cash flow (FCF), delivering a free cash flow to shareholders from continuing operations of €843 million in 2021. This strong performance reflects our continued careful and disciplined management of working capital, effective Capex management, cost reductions, adapted investments and lower pension cash, cost and taxes.

As a result of these efforts, we were able to increase our investments by 20% to €736 million in 2021, in line with our guidance, focusing on our growth businesses. This resulted in an FCF conversion ratio of over 37% for the last twelve months – higher than our initial ambition of 30%. The strong free cash flow also allowed us to further deleverage the balance sheet, bringing the leverage ratio to 1.7x, which is the lowest since 2015.

Read more » **Performance chapter** page 65

"Solvay's teams have raised the bar, setting three new records - EBITDA, Net Profit and Returns – as we accelerated our price actions to overcome cost headwinds in 2021. We also increased our investment by 20% and still exceeded all expectations on cash generation. As we look forward, we intend to ramp up our investments even more, as we are now entering a growth cycle to prepare for opportunities in the coming years."

Karim Hajjar
Chief Financial Officer, Member of the Executive Leadership Team

Taking actions to enhance growth

Our G.R.O.W. strategy is aligned with powerful global business trends and our Solvay One Planet sustainability roadmap, and guides every action we take. In 2021, we continued to simplify our portfolio, reallocating resources to growth and sustainable businesses. In parallel, we continued the profound transformation of our operating model, to make the Group leaner and more efficient, with a new culture focused on customers and performance.

Simplifying the portfolio

In line with G.R.O.W., we have taken significant action to refocus our portfolio on our highest growth, highest margin opportunities – which are also our most sustainable solutions.

In 2021, following the optimization of several businesses, we have divested six commodity business lines, mainly in the Chemicals and Solutions segments.

Over the past three years, we have simplified our portfolio and footprint: we divested seven product lines and 28 sites, totaling ~€2 billion in sales.

Moving forward, Solvay will continue to pursue opportunities to further simplify our portfolio.

Investing in growth businesses

Through our cost-saving and rationalization programs we have saved resources and invested for future growth. This has involved strict Capex management and investment in activities aligned with G.R.O.W. and our sustainability objectives.

Strengthening our portfolio in strategic markets

- → **Agro:** In 2021, we acquired Bayer's global seed coatings business, making us one of the three leading companies in seed coating technology and strengthening our seed care portfolio in bio-based, seed-applied solutions. Seed coatings are particularly important for field crop seeds, protecting them against insects and diseases and facilitating a better crop yield.
- → **Electronics:** We launched a new joint venture with Shinkong Synthetic Fibers Corporation in August 2021, to serve booming semiconductor demand in South-East Asia. Shinsol Advanced Chemicals is scheduled to begin operations in early 2023 and will develop, produce and market electronic grade hydrogen peroxide, an indispensable chemical agent for the production of integrated electronic circuits.
- → **Healthcare:** In May 2021, we invested in Invizius, a biotechnology start-up in the UK that is developing an anti-inflammatory solution for hemodialysis. With the need for dialysis treatment rising, the global market for this solution is estimated to be worth more than £1.5 billion.
- → **Biotechnology:** In December 2021, we invested in US-based company DMC Biotechnologies. Their core technology addresses a key challenge for biotech companies. It delivers robust and predictably scalable biocatalysts using microbial fermentation, resulting in cost-competitive bio-based chemicals for use in animal feed, human nutrition, sustainable cleaning and pharmaceutical applications.

Expanding capacities

We have prioritized investments that serve our growth markets. This includes expanding our thermoplastic composites (TPC) capacity by opening a new manufacturing facility in the US and investing €300 million over the next two years in creating the largest PVDF production site in Europe at our facility in Tavaux, in France, to meet the growing demand for batteries. In addition, we are investing in a research pilot line in La Rochelle (France), the most advanced one in Europe, to develop essential materials for solid-state electrolytes to be used in next-generation electric vehicle (EV) batteries. And in response to growing demand from mining operations for our copper solvent extraction products, we also announced plans to expand capacity at our Mount Pleasant Tennessee facility, in the US, by 20%. Lastly, in early 2022, we announced our intent to increase our capacity in the US sulfone polymers market where we are leaders. These polymers address growth in various markets, including health care, water filtration and food.

Leveraging our potential as ONE Group to better serve customers

We are reinventing the way we operate to become a simpler and leaner company. This involves putting in place a new operating model, which leverages our potential as ONE Group to more effectively serve our customers.

Focusing on customer needs

We have implemented a number of initiatives across the Group to ensure that each of our customers receives the appropriate level of service, thus enabling us to create more shared value. Through the Group Strategic Key Account Program, we are strengthening our relationships with the customers who drive our growth. This is vital, as it will allow us to better understand their needs and challenges and ensure they have access to our full portfolio of technologies and skills, so that we can co-create tailored and innovative solutions with and for them.

In addition to this, in early 2021, we launched our Sales Academy, aimed at our frontline employees. This program targets each role in the commercial organization and focuses on upgrading skills. We invested around €2 million in the program over just one year, focused on training and replacing staff. So far we have delivered 11,500 hours of training to frontline teams.

Optimizing organization and plant efficiency

Reinventing how we operate has also meant simplifying the organization. This has involved reshaping it to better fit our new business profile, making it leaner, more agile and more focused on customers' needs. This has also enabled us to implement new common ways of working that facilitate better collaboration across our businesses and Functions.

We began this transformation by completely rethinking our organization as if we were starting from a clean slate, implementing a "zero-based approach." Our aim was to connect our strategic priorities with our organizational design, by identifying and prioritizing the activities that best support our businesses and customers. Each of Solvay's Group Functions was challenged to rethink their organization and ways of workingpoint après working. As a result, 17 distinct functions were grouped into seven.

Creating the sustainable factories of the future

In 2021 we launched a ten-year program to prepare our factories for the future. Our STAR Factory program has environmental, social and corporate governance (ESG) at its heart and focuses on putting One Solvay and One Planet into practice at site level. We are in the process of defining clear KPIs and milestones for our plants, to help them define their distinct site roadmaps.

To improve our performance and reduce costs, the STAR Factory program involves investing in new tools and processes to leverage digital and data science. We will also look for ways to more positively impact our people and the communities we serve, paying particular attention to diversity. Our ambition is to deliver innovative products with a neutral or very light environmental footprint. The program was launched in two of our most critical sites for our materials business: Tavaux, in France, and Spinetta, in Italy. By 2030, we want all Solvay plants to be STAR Factory certified.

Reinventing progress: how we bond with our people together by leading with purpose, heart and mind

3 QUESTIONS FOR HERVÉ TIBERGHIEN,
Chief People Officer and Member of the Executive Leadership Team

HOW IS SOLVAY EVOLVING ITS CULTURE TO SUPPORT ITS G.R.O.W. STRATEGY?

H.T. — Our Purpose – *We bond people, ideas and elements to reinvent progress* – is the foundation of our G.R.O.W. strategy and drives all of our entities and activities. To make it happen, we are developing a human-centric culture that engages our people and in which we value unity not uniformity to break down silos and challenge the status quo. As a strongly bonded community, sharing the same ambitions, we aim to achieve our passion for performance by caring and collaborating.

WHAT IS THE "CARE AND DARE" CULTURE ALL ABOUT?

H.T. — Its strength comes from the power of the "and," of breaking down silos and building the ability to deal with ambiguity within our network. The cultural shift here is more about giving our employees' well-being the same weight as our expectations in terms of performance or zero-based mindset. It is about making everyone feel they can bring their whole selves to work while encouraging them to explore the unknown. As we are facing unprecedented times, we believe that empowering our people and embracing their differences will be key to fostering innovative ideas to fulfill our customer obsession. It is okay to try and fail; your leaders will encourage you to get back on your feet. This is a culture that allows you to learn, unlearn and relearn to answer the challenges of an ever-changing world.

HOW ARE YOU ENGAGING EMPLOYEES?

H.T. — Employee engagement is firstly about listening to our employees: their concerns, needs and what they are satisfied with. That is what our Pulse survey enables us to do. Then it is about showing them that everyone deserves and will have the same chance to evolve in our organization, which, in practice, is translated into action by our One Dignity strategy. To go beyond, we try to improve their quality of life through Solvay Cares: through giving the same parental leave to everyone or through introducing the Employee Assistance Program to try and ease their work life integration. Within our employees' careers at Solvay, we also focus on the importance of giving them a unique experience through the moments that matter while letting them work from where they are at their best. The goal here is to put them in an owner's mindset, being actors in their own development, to help them reach their full potential.

Our Leaders Engagement Journey

Care and Dare starts with our leaders. To achieve our ambition, we need to train our leaders to be the best in the industry.

This is why we have redesigned our leadership model and made it a point of reference based on four principles: prepare for the future, achieve results, lead people and develop capability. This human-centric leadership is also articulated around the Care and Dare approach:

- Care: leading by example with humility and integrity, having the courage to change and ignite change or diving deeper when "the story" does not align with "the facts."
- Dare: to value human skills as much as technical skills, to be more DEI driven, to coach and be ready to be coached, and – especially – to make it safe to try and safe to fail.

We are supporting leaders to be in the driver's seat to inspire their teams and deal with uncertainty. At the end of 2021, we began rolling out the Performance Accelerator program. This program will be delivered by a pool of 80 diverse Ambassadors, who provide Solvay managers with the skills to passionately coach their teams, help them give better and more constructive feedback and to be comfortable with having courageous conversations. In 2022, we will launch new programs focusing on Care and Dare leadership, aimed at developing self-awareness and personal growth to future-proof our organizational capabilities. Renewed academies for Manufacturing and R&I are also on the agenda for 2022.

A share purchase plan for employees

In December 2021, we announced the launch of our first employee stock ownership plan, offering Solvay personnel the opportunity to buy company shares at a discount of 10%. The initiative, which will be available to all Group employees globally, aims to promote an ownership mindset and better align employees with the Group's performance, encouraging them to embrace all opportunities to drive the Group's transformation and create sustainable value for all.

Innovating in Growth platforms: Battery Materials, Thermosplastic Composites, Green Hydrogen

Using our Purpose and G.R.O.W. strategy as a compass, we have strengthened our innovation portfolio, focusing most of our resources on what we call our growth businesses. Sustainability and circularity are integrated into our innovation projects from the very beginning, with each project assessed using our Sustainability Portfolio Management (SPM) methodology[1]. We are also using digital tools to transform how we do research. This includes using artificial intelligence, machine learning and computer simulations to enable faster and cheaper innovation and accelerate time to market.

"Our long-term investment orientation is a real differentiating factor for our customers. It's crucial to the development of our growth platforms, helping us to establish strong partnerships that will bring to market the innovative solutions that customers need."

Nicolas Cudre-Mauroux
Chief Technology Officer and
Materials Research and Innovation Director

Increasing the speed of research in the agro market

Solvay's 45 years of expertise in agrochemical formulation gives us a rather unique position in this market. However, we were not organized in a way that allowed us to efficiently store or save all of this R&I data. DataGrow is a new and comprehensive digital formulation database comprising more than 14,000 agrochemical formulations, 2,600 ingredients and 64,000 tests. It allows us to share information internally and accelerate our delivery to customers, as well as to identify and reallocate our resources to growth areas like crop protection and bio-control. Our next step is to combine the benefits of the database with the use of artificial intelligence to make delivery times even quicker.

1. Our SPM tool ensures that our products will bring benefits to society and the environment while demonstrating a lower environmental impact in the production phase.

Read more » Solvay One Planet/Better life page 35

Three innovation platforms to prepare for the future

We have developed three strategic Growth platforms that drive innovation to enable the energy transition in three different fields: battery materials, thermoplastic composites and green hydrogen. The platforms meet market needs driven by business trends like electrification and lightweighting, which have become a priority due to stricter regulations on CO_2 emissions and the move toward zero-emission mobility.

Run by small, agile teams with a start-up mindset, the platforms offer customers what they need: one-stop-shop access to our broad portfolio of products and technologies. They also foster cross-innovation throughout the Group, enabling us to develop tailor-made solutions that meet our customers' specific application and performance requirements. Our diverse portfolio includes technologies at different stages of development, reflecting current and future market needs.

01

A unique Battery Materials platform providing wide-ranging solutions

An entire economy exists beyond the battery itself, including battery cases, packs and recycling. Our Battery Materials platform is unique in providing solutions in all of these areas. With the transition to e-mobility solutions accelerating, there are plenty of opportunities for future growth in the short- and long-term.

€2bn

estimated sales by 2030

A four-pillar strategy to capture significant growth opportunities

Our battery roadmap follows the development of the battery market, which is growing quickly. It focuses our resources on areas in which we are already, or have the potential to be, market leaders or market makers. This includes expanding our capacity to produce our market-leading Solef® PPVDF. This thermoplastic fluoropolymer is used as both a binder and a separator coating in lithium-ion batteries and is essential for creating safer and longer-range performance.

At our site in Tavaux, in France, we are investing €300 million in creating the largest PVDF production site in Europe. The new facility will be completed in December 2023. Combined with capacity increases at our site in Changshu, in China, and our existing operations in the US, the investment will reinforce Solvay's global leadership in the field and ensure that we are well-positioned to meet growing demand for PVDF in hybrid and electric vehicle applications.

A FOUR-PILLAR STRATEGY TO CAPTURE SIGNIFICANT GROWTH OPPORTUNITIES

01	02	03	04
BUILD ON OUR STRENGTHS	**ACCELERATE DEVELOPMENT**	**INVEST FOR THE FUTURE**	**EXTEND THE SCOPE**
Maintain or reinforce our technology leadership and take advantage of very strong market growth expected over the next 10 years.	Develop existing products, mainly related to liquid electrolytes, that present a clear and substantiated value proposition for battery makers and can deliver revenue in five years or less.	Invest in the development of a new class of materials required for the batteries of the future, which will make them lighter, safer and more sustainable, and increase drive range.	Go beyond the battery cell to provide solutions along the entire battery value chain.
↓	↓	↓	↓
Our Solef® PVDF specialty polymers for binders are the most advanced in the world, allowing us to create more energy-dense batteries that enable increased drive range.	Our LiFSI conductive salt and Energain® solvents can be used to develop next-generation batteries with increased drive range.	Our inorganic materials are key enablers for solid-state batteries. We develop the materials and are also partnering with battery manufacturers.	Our unique technologies enable us to recover 95% of high-purity metals from used batteries, enabling a circular business in the battery value chain.
SALES RAMP-UP		TECHNOLOGY DEVELOPMENT	

Leading advances on next-gen solid-state EV batteries

Solvay is leading the development of advanced inorganic materials for solid electrolytes, which are needed for solid-state batteries, and accelerating the scale-up of these materials. The French state is supporting our efforts, as part of plans to build a European value chain for EV batteries and boost battery innovation in Europe. Investment began with the opening of a dry room laboratory at our research center, near Paris, in 2021, and was followed by a new research and development pilot line in La Rochelle. We are also a significant player in the European Battery Alliance, and are committed to working with this network to build an ecosystem across the entire value chain, by delivering advanced materials and partnering for innovation.

Innovating with customers

We are currently engaging with customers on a number of strategic projects that are expected to be on the market in the short or medium term. ACC (Automotive Cells Company) is among the largest initiatives to manufacture lithium-ion batteries for electrical vehicles in Europe. Over the past few years, it has established a close collaboration with Solvay to develop a new generation of batteries, in the framework of the European Battery Alliance (Battery IPCEI#1).

02

Accelerating innovation in Thermoplastic Composites (TPCs)

TPC is a strong, chemically-resistant, lightweight and recyclable material, with the high build rates necessary for mass production. This makes it perfect for use in a number of demanding applications and environments, across several industries, including aerospace, Advanced Air Mobility, automotive and energy transition.

€500M

Addressable market for Solvay (Aerospace and Oil & Gas) by 2030

A TPC roadmap for long-term innovation and growth

Solvay is the only company in the world with a diversified portfolio of specialty polymers and composite processing technologies capable of meeting all application needs. Our TPC growth platform brings end-to-end innovation – from molecules to composites – under one roof. Our state-of-the-art application and product development centers in Brussels, Belgium, and Alpharetta, Georgia in the US, allow us to collaborate with customers from concept to commercial application, providing support in early-stage design, prototyping and testing of parts. This drastically reduces the time-to-market of our materials.

Our forward-looking timeline identifies opportunities for TPC applications that allow us to take advantage of momentum across multiple industries. In the medium term, this includes projects for use in cars and trains, and the development of flexible pipes, which can be used in a number of applications to support energy transition. In the long term, we are collaborating with partners to develop commercial drones and air taxis, as well as hydrogen tanks and storage solutions for the green hydrogen economy.

In 2021, we signed a "Joint Lab" agreement with Leonardo. The goal is to develop composite materials and production processes critical for the future of the aerospace industry, strengthening our leadership position in this industry and others. We have also partnered with 9T Labs, to help bring additively manufactured carbon fiber-reinforced plastic (CFRP) parts to mass production. These can replace metal as structural parts in the aerospace, medical, luxury and leisure, automation, and oil and gas industries. Combining 9T Labs' innovative additive manufacturing technology and Solvay's high-performance thermoplastic polymers and expertise in the production of thermoplastic composite prepreg tape, the partnership significantly expands the portfolio of sustainable, accessible and cost-competitive CFRP parts that 9T Labs can offer to customers.

Expanding our TPC capacities in the US

In 2021, we opened a new manufacturing facility in the US, located in Greenville, South Carolina. This represents a major milestone in our efforts to industrialize Solvay's TPC capacity. It allows us to expand alongside our customers as TPC technology gains momentum in a growing number of applications and in energy transition. Specifically, we now have the ability to manufacture unidirectional composite tape from a range of high-performance polymers including PVDF, PPS and PEEK, helping customers in the energy, aerospace and automotive markets to reduce weight and emissions. The new facility also marks the first step in our plans to facilitate circularity for TPC, allowing us to recycle scraps from our manufacturing plants. The Greenville project is part of a series of strategic investments in TPC, including the addition of capacity in Anaheim, California.

03

Well positioned to become a global leader in materials for green hydrogen

Green hydrogen is a key lever for the decarbonization of hard-to-abate sectors, such as long-haul and heavy-duty transportation and industries like steel and fertilizer, helping in the global fight against climate change. Growth in the green hydrogen economy is currently small, but is expected to grow exponentially within the next ten years and is an area driven by significant government and industry investment.

~€5bn

Addressable market for Solvay by 2030

Solvay products at every step of the green hydrogen value chain

With relevant products and solutions all along the green hydrogen value chain, our ambition is to be a leading material solutions provider for the green hydrogen economy. Our current focus is therefore on positioning ourselves within the market, and developing partnerships and materials, so as to ensure that we are able to make the most of future growth.

Our hydrogen platform brings together all the innovative material and chemical solutions we have to offer to advance the emerging green hydrogen economy, concentrating our resources and efforts in one place. At the heart of the platform are products such as our Aquivion® ionomer, Udel® polysulfone (PPS) and Cerium Gadolinium Oxide (CGO). These are used in the core of hydrogen systems, where the key reaction happens, to enable hydrogen production and conversion in fuel cells. We also intend to expand our offering for hydrogen applications, with products and solutions for auxiliary components in fuel cells and electrolyzers, for example.

As part of our commitment to this growth industry, Solvay has joined the Hydrogen Council, a global CEO-led initiative that brings together leading companies with a united vision and long-term ambition to make green hydrogen a catalyst for the clean energy transition.

Read more
» **Electrification** page 41
» **Lightweigthing** page 42
» **Clean mobility story** page 47

Solvay One Planet 2030 goals

10 ambitious objectives to reduce our global impact

(baseline 2018)

Climate

- Align greenhouse gas emissions with Paris Agreement & SBTi[1]
  Reduce by 30% (Scope 1 & 2)

  Reach carbon neutrality before 2040
  (excl. soda ash) before 2050 incl. soda ash

- Phase out coal for energy production
  (wherever renewable alternatives exist)
  Achieve 100%

- Reduce pressure on biodiversity[2]
  Reduce by 30%

Resources

- Increase sustainable solutions
  % of Group sales
  Achieve 65% (versus 50%)

- Increase circular economy[3]
  % of Group sales based on circular raw materials or energy
  More than double

- Reduce non-recoverable industrial waste
  Reduce by 30%

- Reduce intake of freshwater
  Reduce by 25%

Better life

- Safety (RIIR[4] indicator)
  Aim for zero

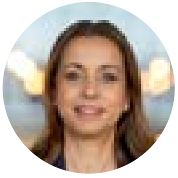
- Inclusion and Diversity
  Women in mid & senior management
  Achieve 50%

- Gender equality
  Extend maternity leave
  16 weeks for all co-parents

  ACHIEVED IN JANUARY 2021

Raising the bar on sustainability

Climate and environmental concerns now sit at the top of government agendas, alongside increasing recognition of the importance of human dignity, with new regulations, standards and mandatory disclosures forcing businesses to take action. Solvay has anticipated this by accelerating our sustainability roadmap and raising the bar. This includes targeting carbon neutrality before 2050, bonding along the value chain to align with the Science Based Targets initiative (SBTi), initiating partnerships to make our businesses more circular and introducing our Solvay One Dignity program to foster equity and inclusion across the company.



"Solvay One Planet, our 2030 sustainability program, is inspired by the UN Sustainable Development Goals and we are committed to supporting the UN Global compact principles."

Ilham Kadri
Solvay CEO

1. SBTi: Science Based Targets initiative.
2. ReCiPe method for biodiversity impact assessment (under development).
3. Circular economy indicators have been adapted to align with the Circulytics® approach developed by the Ellen MacArthur Foundation.
4. Reportable Injury and Illness Rate (RIIR): number of work-related injuries and illnesses (employees and contractors) resulting from an accident with severity above first aid, according to US OSHA 29 CFR 1904, per 200,000 work hours

CLIMATE

Fighting against climate change

€1.7bn

sales from solutions that reduce our customers' overall climate impact

2030 goals

(baseline 2018)

- Align greenhouse gas emissions with Paris Agreement and SBTi[1]
  Reduce by 30% (Scope 1 & 2)
  2021: 11Mt CO_2 eq.
  -14% (-11% structural) vs 2018

  Reach carbon neutrality before 2040
  (excl. soda ash) before 2050 incl. soda ash

- Phase out coal for energy production
  (wherever renewable alternatives exist)
  Achieve 100%
  2021: 27pj (-18% vs 2018)
  Solid fuels consumption

- Reduce pressure on biodiversity[2]
  Reduce by 30%
  2021: -13% (-24% vs 2018)

7 AFFORDABLE AND CLEAN ENERGY | 13 CLIMATE ACTION | 14 LIFE BELOW WATER | 15 LIFE ON LAND

←

Solvay operators at our Linne Herten peroxides plant in the Netherlands, which is powered by an on-site solar farm.

1. SBTi: Science Based Targets initiative.

2. ReCiPe method for biodiversity impact assessment (under development).

Story. Targeting carbon neutrality before 2050

In 2021, we took a major step in our ongoing sustainability journey, unveiling our plan to reach carbon neutrality (Scope 1 and 2 emissions) before 2050. This includes targeting carbon neutrality for six of our seven global business units by 2040, and before 2050 for our hard-to-abate soda ash activity. To support us in this, alongside the target we set in 2020 to phase out coal usage in energy production where renewable alternatives exist by 2030, we strengthened our greenhouse gas reduction target for 2030 from -26% to -30%.

Investing in a carbon-neutral future

To achieve our carbon neutrality objectives, we need to invest in innovation. Our efforts will focus on maximizing electrification and clean energy use, such as solar power and sustainable biomass, across our plants, as well as facilitating process innovations. We plan to invest up to €1 billion to reach carbon neutrality by 2040 in all our businesses other than soda ash. Additional investments of approximately €1 billion have been identified for soda ash, in order to pave the way for full carbon neutrality for the Group before 2050. We expect our investments, which represent an average of up to 10% of our Capex spend, will be value accretive, generating returns well in excess of our cost of capital, and as these investments will be partially supported by non-recourse financing, we will be able to continue to invest in our growth platforms at the same time.

OUR ROADMAP TOWARD CARBON NEUTRALITY

A three-phase approach spanning three decades, focused on switching energy sources to cut emissions and on improving the Group's carbon footprint across all our businesses and operational activities.

2020-2030

ENERGY TRANSITION PROJECTS AT OUR PLANTS WORLDWIDE

→ Kickstarting a strong portfolio of emissions reduction projects focused on switching to biomass, biogas or waste for heat production and to green power for electricity.
36 projects underway at the end of 2021, **2,500,000** tons of CO_2 saved annually

→ Embedding electrification and carbon neutrality into upgrade and expansion plans at our plants, reinventing technologies and processes.
11% structural reductions achieved at the end of 2021

2030-2040

CARBON NEUTRALITY IN ALL BUSINESSES OUTSIDE SODA ASH

Solvay will continue to execute new energy transition projects, targeting carbon neutrality in all businesses outside soda ash.

→ Continuing to deploy and accelerate electrification for low to medium energy-intensive businesses.

→ Driving process innovations and new energy technologies for high-emissions businesses and sites.

2040-2050

CARBON NEUTRALITY IN ALL SODA ASH PLANTS

→ Focusing on the hard-to-abate soda ash plants, through the development of new technologies and energy sources.

→ Using offsets for a volume up to 10% of the 2018 baseline, primarily through nature-based offsetting programs adhering to high-quality sustainability standards and in partnership with NGOs.

2020
Announcing our objective to align our emissions reduction target with the Paris Agreement and to join the SBTi

2021
Unveiling our roadmap to reach carbon neutrality before 2050 and upgrading our Scope 1 and 2 target to -30% by 2030

2022
Scope 3 targets to be defined and receive SBTi validation

What did we achieve in 2021?

We accelerated projects to phase out coal from our energy mix by 2030

Soda ash processing requires energy in the form of heat, which is often produced from coal. This represents a significant share of our greenhouse gas emissions. New, sustainable alternatives to coal-based energy are currently being developed at two of our plants and will cut the Group's total emissions by 6%.

→ Our Rheinberg plant, in Germany, is set to become the world's first soda ash plant powered primarily by renewable energy. The first of two sustainable biomass boilers, fueled by discarded wood chips supplied by local companies, went into operation at the site in May 2021. With the second boiler in the pipeline, the site is on course to meet its target to phase out the use of thermal coal by 2025.

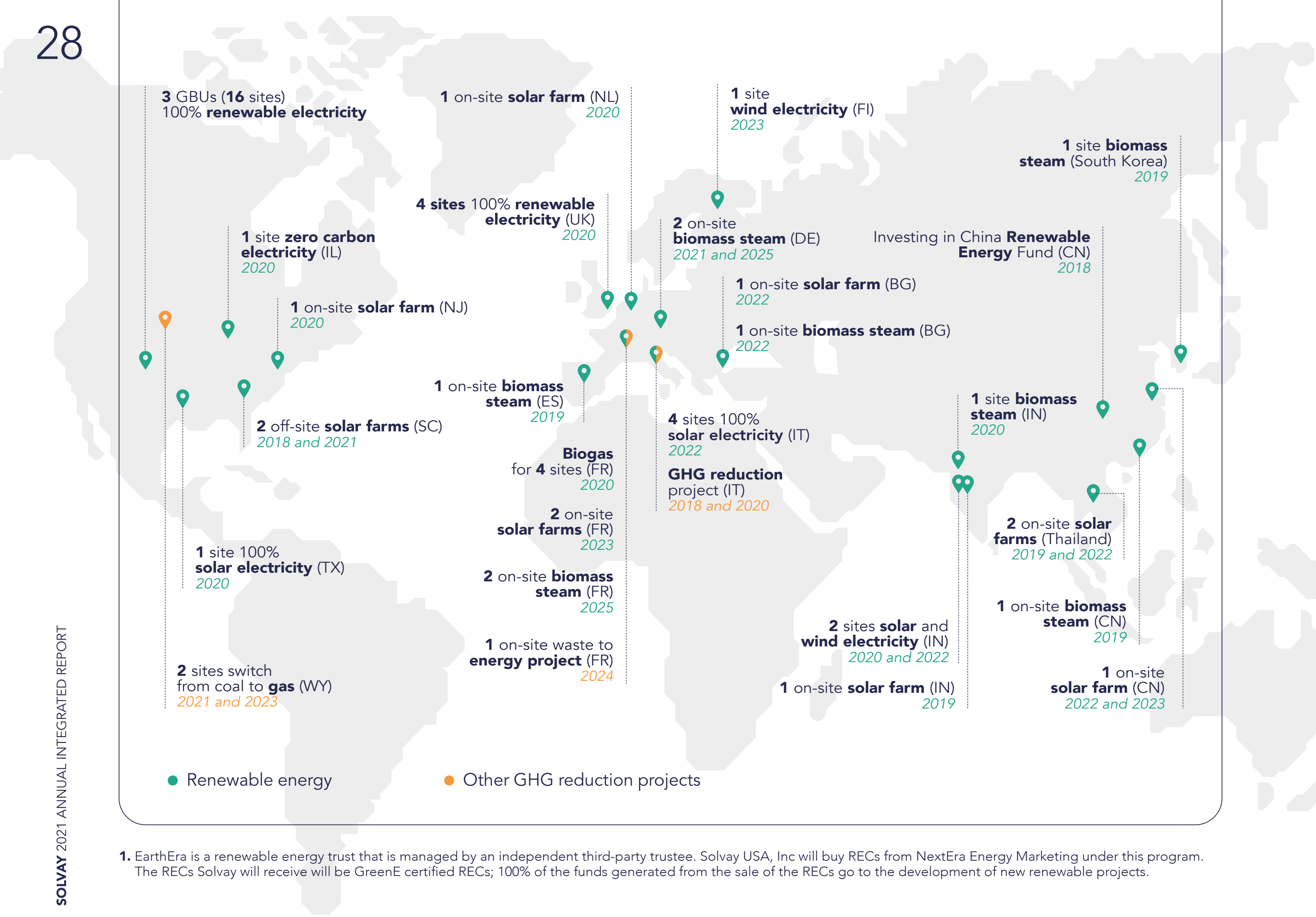
→ At our soda ash site in Dombasle, France, Solvay's Board of Directors has approved a project to produce energy with industrial, commercial and household wastes, instead of coal, from 2024 onward. Developed with Veolia, this initiative will cut the CO_2 emissions from the plant's energy production by 50%, while improving its competitiveness.

We continued to develop green electricity sources for our sites

Building on the momentum of previous years, we have launched or committed to several new renewable electricity projects in all regions of the world. Once fully operational, more than 30% of the electricity purchased and used by all our plants will come from renewable sources.

→ Since January 2021, our Aroma Performance, Specialty Polymers and Novecare Global Business Units (GBUs) in the US, which comprise 16 sites, have been 100% reliant on renewable energy sources for their electricity. This is achieved through the Solvay Solar Energy farm in Jasper County, South Carolina, direct purchases of renewable energy and Renewable Energy Certificates (RECs) from the EarthEra Program[1]. Solvay is also a proud member of Apple's Supplier Clean Energy Program, and we continue to power our Apple-related operations with 100% green electricity.

36 PROJECTS TO ACHIEVE ENERGY TRANSITION, REDUCING CO_2 EMISSIONS BY 2,500,000 TONS PER YEAR



1. EarthEra is a renewable energy trust that is managed by an independent third-party trustee. Solvay USA, Inc will buy RECs from NextEra Energy Marketing under this program. The RECs Solvay will receive will be GreenE certified RECs; 100% of the funds generated from the sale of the RECs go to the development of new renewable projects.

- At the end of 2021, we signed a 15-year contract for a new solar farm project in the US. Renewable electricity will be used to power our Materials and Technology Solutions plants from late 2023 onwards.
- In Europe, more than 10% of our electricity needs are now supplied by renewable energy sources. In May 2021, we signed our first European Corporate Power Purchase Agreement (PPA) in Italy, committing to purchase electricity from a solar farm in Puglia for ten years. This will supply enough energy to cover 100% of the electricity needs for four of our five sites in Italy, helping to reduce our CO_2 footprint by 15,000 tons every year.
- Operating under strict national regulations in Asia, we have developed a number of on-site solar projects that meet between 5-15% of the current electricity needs of each site. Where possible, we are also sourcing solar energy from external sources. For example, in August 2021 we signed a contract to purchase electricity from a solar farm in Maharashtra, in India. This will cover around 60% of electricity needs at our Roha site from early 2022.

We bonded with customers and suppliers to reduce Scope 3 emissions in the value chain

Scope 3 emissions comprising 26Mt of CO_2 are essentially embedded in the goods and services purchased from our suppliers (19%) or occur during the use of our products by our clients and consumers, as well as at their end-of-life (65%).

- Our Scope 3 target shall at least meet the 2°C criteria of the Science Based Targets initiative.
- We called on our 400 strategic suppliers to join us in our climate journey. Climate commitments will become a criteria of choice for future strategic supplier relationships.
- We raised our climate agenda with key customers, in order to establish ways of reducing emissions along the value chain and meeting customers' demands for zero- or low-carbon products.

Supplier Engagement Program: building a greener, more agile and resilient supply chain

In April 2021, we launched our first Supplier Engagement Program, aimed at encouraging our suppliers and buyers to adopt a sustainability mindset. As part of our first Supplier Days, we set up a collaborative platform to share experiences, explore common challenges and propose collaborative ideas. A call for collaborative projects to help us reach our sustainability objectives was launched in July, with the next stage of the initiative due to take place in early 2022.

250+
executives from 130+ companies in Solvay's first Supplier Days

300
people participating in five ESG workshops

69
projects collected addressing CO_2 emissions, waste reduction, circularity and social impact

"We've worked hand in hand with Solvay to accompany their evolving needs for low-carbon hydrogen. As a pioneer in hydrogen for more than 50 years, we know that the success of a hydrogen project is collective! The Solvay Supplier Days showed a clear will from Solvay to decarbonize their existing processes and we are pleased to be their key partner on this journey!"

Slim Naanaa
Global Market Director, Energy & Chemicals Markets, Air Liquide

Story.

Acting to protect biodiversity

The World Economic Forum has calculated that 50% of the global economy is reliant on nature. Preserving the world's ecosystems to protect human, animal and plant health is of critical importance to Solvay. That's why we've set a target to reduce our pressure on biodiversity by 30% before 2030. Since 2018, we have already reduced our biodiversity impact by 24%.

Providing sustainable solutions for our customers

We are working closely with customers and suppliers to help reduce the pressure on biodiversity across our value chain.

"We were extremely excited that Solvay joined our member network in 2021. Solvay not only has a deep understanding of the role that nature plays in the world, but also the role Solvay can play to support nature. Solvay is unique in integrating biodiversity in business relationships with customers as well as at an early stage in development of focused projects. Solvay recognizes that we can start actions at home, but it's also an imperative to implement actions across the value chain. It's an understanding that others in all industry sectors should share"

Margaret O'Gorman
President at the Wildlife Habitat Council

For example, Solvay has been a supplier and partner for Freeport-McMoRan, one of the world's leading producers of copper and gold, for more than 20 years. Our products are essential to their business, enabling them to achieve a better yield while helping them reduce the impact of their activities on the environment.

"Solvay's ACORGA® extractants and AERO® promoters are core to improving the efficiency of our mills and leaching (extraction) operations," says William Cobb, Vice President and Chief Sustainability Officer at Freeport-McMoRan.

"Improving our effectiveness is important, but improving our efficiency provides even greater benefits, including positive contributions to climate and water, both of which play a critical role in preserving biodiversity. As it is imperative to enable sustainable sourcing solutions, Solvay and Freeport's ambition is to accelerate impact through collaboration, supporting biodiversity impacts."

William Cobb
VIce President and Chief Sustainability Officer, at Freeport-McMoran

Local initiatives inspiring Group success

In February 2021, we joined the Wildlife Habitat Council (WHC), an international NGO that works with businesses to promote biodiversity conservation. This partnership helps us to focus our efforts and identify areas for improvement, both at our sites and in collaboration with our customers.

"Adopting a recognition standard such as WHC Conservation Certification® offers us a great opportunity to launch local action plans, but also to propose concrete collaborations to our clients to reduce the pressure on biodiversity, protect habitats and species, and work on the restoration and improvement of certain areas," explains Pascal Chalvon Demersay, Solvay's Chief Sustainability and Government Affairs Officer.

A good example of one of our local projects is a landscape recovery initiative at a former limestone quarry near our Torrelavega site, in Cuchia, Spain, for which we received the Cefic "Ecosystem Preservation" award in October 2021. This vast project turned the former quarry into a thriving wildlife reserve, with 169 species of birds and 289 varieties of plants.

The first chemical company in Brazil to be awarded the WHC Gold Certification

Two rivers cross our 16 million square meter site in the Atlantic Forest, which is home to a vast range of wildlife species. Through activities such as reforestation, riverbank recovery, education and the installation of a fish ladder to enable fish to migrate for breeding, the site has established itself as a wildlife haven. Close to 83 species of birds, mammals, fish, amphibians and reptiles, and more than 90 plants, call the site home, and it even serves as a refuge for the endangered maned wolf and pumas. In 2021, the World Habitat Council awarded the site its Gold Certification, making Solvay the first chemical company in Brazil to achieve such a rating.

"Winning the WHC certificate shows that progress and the environment can walk together, combining sustainability and good practices, always with respect for the fauna and flora that surround the company's site in Paulínia. Congratulations, Solvay Group! Congratulations to its collaborators and partners who engaged for this certification to take place. May this achievement inspire other companies"

Du Cazellato
Mayor of Paulínia

2021 CITIZEN DAY IN NUMBERS

15,000
employees participating

>5,700
participants from NGOs and local communities

121
sites worldwide

€20,000
raised for a selection of associations acting for biodiversity

Engaging employees globally through our annual Citizen Day

Our pioneering approach to assessing and reporting on our biodiversity impact was recognized by Act4Nature International in 2020, an initiative that encourages corporate action on biodiversity. Yet to be successful in reaching our biodiversity target, our employees must play an active role.

To increase employee engagement and raise awareness of the importance of biodiversity across the Group, we focused the 2021 edition of our annual Citizen Day on biodiversity. We also promised that the more people who took part, the more money we would donate to biodiversity associations.

Our employees across the world came together to take part in more than 500 biodiversity actions. At our Tavaux site, in France, for example, employees were set a challenge to reduce their digital carbon footprint, with one tree planted at the site for every 100,000 emails they deleted. In Thailand, around 300 volunteers came together to clean up ten local beaches, helping to save sea creatures and protect the environment, while in Guatemala, employees created an on-site ecosystem for endangered native bees,at their plant in Amatitlan.

Citizen Day at our plant in Long Beach, California (United States).

Planting herbs, installation of birdhouses and a talk by a beekeeper in the green area at our Bollate site, in Italy.

"To witness initiatives such as these being carried out in our area by a company like Solvay is a source of great pride and is further proof of the effective and substantial collaboration between the company and the public authorities, with a shared commitment to sustainability. "

Ida DeFlaviis
Councillor for Environmental and Educational Affairs at Bollate City Council

Visit to a wetland nature reserve at the mouth of the Yangtze River, in China.

"This year's citizen day is a very inspiring experience. Living in the cities, we hardly have any opportunity to get this close to the wild. Sometimes the development of human society leads to conflicts with nature, but we have to learn to share the Earth with all the creatures, because if the environment deteriorates, the living conditions for mankind would deteriorate too."

Shen Wenting
Technology Team Leader, Novecare GBU, China

RESOURCES

Protecting natural resources

€3.7bn

sales from solutions that reduce global resources consumption

2030 goals
(baseline 2018)

- Increase sustainable solutions
  % of Group sales
  Achieve 65% (versus 50%)
  2021: 53%
- Increase circular economy[1]
  % of Group sales based on circular raw materials or energy
  More than double
  2021: 5%
- Reduce non-recoverable industrial waste
  Reduce by 30%
  2021: 58kt (-34% vs 2018)
- Reduce intake of freshwater
  Reduce by 25%
  2021: 315Mm³ (-5% vs 2018)

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

←

Employees at our Amatitlan site in Guatemala build a vertical garden to promote biodiversity for Solvay Citizen Day 2021.

1. Circular economy indicators have been adapted to align with the Circulytics® approach developed by the Ellen MacArthur Foundation.

New partnerships to enable a circular economy

Chemistry is a key enabler of a circular economy. All our businesses are engaged in developing a product portfolio based on renewable feedstocks and energy. In parallel, we continue to develop partnerships to advance this new economy and preserve resources across our value chains. This includes partnering with Veolia and Renault to develop solutions for the recycling and reuse of electric car batteries and working with organizations such as the Ellen MacArthur Foundation to accelerate the global transition toward a circular economy. In 2021, we extended and deepened our partnership with the Foundation, committing to more than double our revenues from renewables and recycled-sourced products by 2030.

TECHSYN, a new technology for increased sustainability in the tire industry

In 2021, Bridgestone, Arlanxeo and Solvay launched TECHSYN, a new technology that gives tires unrivaled strength and environmental performance. It enables tires to achieve up to 30% better wear efficiency and up to 6% less rolling resistance, without compromising performance, helping to reduce fuel consumption and CO_2 emissions, and to cut raw material consumption. TECHSYN went from concept to reality in just 24 months, thanks to the expertise and close collaboration between the partners. This includes Solvay's unique advanced silica developments; Arlanxeo's expertise in developing, manufacturing and delivering novel tire polymers and Bridgestone's innovative compound technology.

"At Bridgestone, we fundamentally believe that ground-breaking innovation and the future of mobility can't be achieved without collaboration. The partnership in which TECHSYN is rooted has evolved to become one of the most unique we have ever been part of."

Laurent Dartoux
President and CEO, Bridgestone EMIA

"By bringing together in partnership the combined know-how, skill and creativity of three world-class companies that are championing different parts of the tire supply chain, we have been able to develop a new technology platform that offers new ways to address challenges specific to the tire industry."

Donald Chen
CEO, Arlanxeo

Partnering with Mitsubishi Chemical Advanced Materials to further sustainability

Mitsubishi Chemicals Advanced Materials has significant experience in the mechanical recycling of advanced materials. Combined with Solvay's chemistry expertise, we have the ideal partnership to confront the challenges involved in recycling demanding applications, such as long-term implantable medical devices. After successfully reclaiming and recycling advanced materials such as Polyetheretherketone (PEEK), both companies are now actively engaged in exploring and testing new materials in Solvay's portfolio, such as Udel® polysulfone (PSU), with the aim of eliminating polymer waste and supporting the circular economy in healthcare applications.

"One of our guiding principles is to realize KAITEKI, the vision of Mitsubishi Chemical Holdings Corporation: The sustainable well-being of people, society and our planet Earth. Solvay has been an essential partner in recycling medical equipment, and we look forward to continuing a partnership based on our strong synergies to help our common customers tackle the challenges to eliminate plastic waste."

Michael Koch
Chief Executive Officer, Mitsubishi Chemical Advanced Materials

Enhancing sustainability in Rosignano, Italy

Soda ash is made from three natural materials – limestone, salt brine and water – and is mainly used to make glass. Solvay has been producing it at our plant in Rosignano for more than 100 years. Over the past 20 years, we have invested more than €400 million, helping to decrease freshwater consumption, lower energy usage, reduce greenhouse gas emissions and increase recycling at the plant.

At the end of the soda ash production process, we dispose of the remaining inert, natural materials in the sea. These consist of powdery limestone mixed with gypsum, sand and clay - none of which are toxic or dangerous. However, as this contributes to the white color of the beach, we regularly face questions from stakeholders and the public concerning the potential impact on the environment.

Following discussions with local, regional and national authorities, and supported by independent scientific bodies, a release to the sea through an open channel was confirmed to be the best and preferred solution for Rosignano. This is because underwater currents ensure that the limestone does not accumulate, but instead spreads evenly on the seabed, while the limestone that flows back onto the shore and the beach plays an important role in stabilizing the coastline against erosion.

The process is undertaken in full compliance with EU and Italian regulations, as well as our own high standards for health, safety and environmental protection. Every step of the process is monitored by Solvay, regulators and independent academic institutions and all of this research demonstrates that the water near our operations is safe, and consistent with the rest of the Tuscan coast.

Solvay also works hand in hand with the community to help protect local biodiversity. For example, Solvay participated in the creation of Italy's first bird reserve around the nearby Santa Luce lake, which is located on a migratory route and boasts over 3,000 different species. On land near the industrial site, the Group also manages our own certified organic farm, which was set up in 2017.

Solvay has been cooperating with the towns of Cecina and Rosignano through the Aretusa Consortium project since 2006, whose facilities treat municipal wastewater that is reused in the Rosignano plant for industrial purposes, reducing freshwater withdrawals by 30%. Similarly, the Rosignano facility is also committed to reducing its pressure on biodiversity by reducing CO_2 emissions. This has been achieved by implementing a cogeneration plant and a high efficiency gas turbine on the site, and by capturing part of the site's emissions and reusing the captured residue in the manufacturing process. Some further actions have been carried out and are still underway to reduce the amount of non-recoverable industrial waste and the quantities of natural resources extracted from the environment, especially water, rock salt and limestone.

Improving quality of life for employees and society

€3.2bn

sales from solutions that improve society's quality of life

2030 goals
(baseline 2018)

- Reportable Injuries and Illnesses Rate (RIIR[1])
  Aim for zero
  0.43 (-16% vs 2018)

- Inclusion and Diversity
  Women in mid & senior management
  Achieve 50%
  2021: 25%

- Gender equality
  Extend maternity leave
  16 weeks for all co-parents regardless of gender
  Achieved in January 2021

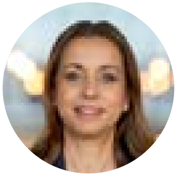
3 GOOD HEALTH AND WELL-BEING
6 CLEAN WATER AND SANITATION
8 DECENT WORK AND ECONOMIC GROWTH
17 PARTNERSHIPS FOR THE GOALS

Employees in Shanghai and their families learn about migratory birds at a nature reserve on the Yangtze River for Solvay Citizen Day 2021.

1. Reportable Injuries and Illnesses Rate (RIIR) employees and contractors: number of work-related injuries and illnesses resulting from an accident with severity above first aid, according to US OSHA 29 CFR 1904, per 200,000 work hours

Advancing Diversity, Equity and Inclusion

In 2021, we launched the Solvay One Dignity program. Structured around three pillars – diversity, equity and inclusion (DEI) – and setting out objectives with their action plans to be achieved by 2025, it is part of the cultural change we are driving through our company.



"I truly believe that companies that put human dignity first are the ones that will thrive, prosper and last. All industries have been failing when only targeting diversity figures"

Ilham Kadri
Solvay CEO

80%

employees feel they can be "themselves" at work*

*source: Solvay Pulse, September 2021

3 QUESTIONS FOR
NATHALIE VAN YPERSELE,
Chief Diversity, Equity and Inclusion Officer

WHAT MAKES THE SOLVAY ONE DIGNITY PROGRAM UNIQUE?

N.v.Y.— We see equity and inclusion as the building blocks for diversity. Our focus is on building equity first and creating the kind of inclusive environment that will attract and retain diverse talent. If each of us – regardless of our background or identity – feels respected, heard and valued, we will be more engaged, more innovative and, as a consequence, will perform at our best. Our broad program includes nine objectives and encourages a bottom-up approach.

TELL US ABOUT THE PROGRESS MADE SO FAR IN ACHIEVING THE ONE DIGNITY OBJECTIVES?

N.v.Y.— DEI is not a question of statistics, but of culture and engaging people, so our focus right now is on developing a new mindset within the company and among employees. In just six months, we've made progress on several fronts. We're working to expand the talent pool from which we will select future leaders, for example, and we launched our very first company-wide inclusion survey at the end of 2021, which will help us to set priorities and measure our progress.

WHAT CHALLENGES DO YOU EXPECT TO FACE MOVING FORWARD?

N.v.Y.— We are not yet where we want to be, but we now have momentum. In 2022, we will define specific KPIs, cascade DEI training down through the organization and conduct pilot initiatives, to see what works and can be scaled. For example, we're currently in discussion with a specialized partner in the US to help us increase our outreach efforts toward talents with disabilities.

Progressing our action plans in 2021

To advance gender EQUITY, we:

- Conducted **gender pay gap assessments:** We are collecting data to help us identify any unjustified or unexplained gaps and we are defining a roadmap to address them.
- Put in place **mentoring programs:** Almost 25% of our female junior managers responded to a call for volunteers to take part in The A Effect Ambition Challenge, an international program designed to help women boost their careers. A total of 150 women have already taken part and 300 others will participate in 2022.

To create a more INCLUSIVE culture, we:

- Kicked off our **inclusive leadership journey** at the very top: Our Senior Leadership Team has already received specific training on inclusion and we are now embedding it into our leadership training programs.
- Supported the launch of **three new Employee Resource Groups** (ERGs): These voluntary groups – we have seven at Solvay – are run by and for employees. They offer colleagues confronted with similar challenges an opportunity to discuss, share experiences and exchange ideas to support one another's development.
- Made **disability a priority:** Working with Disability:IN, we have initiated a comprehensive benchmarking project to identify areas for improvement and develop a roadmap to improve accessibility at Solvay.

9 DIVERSITY, EQUITY AND INCLUSION OBJECTIVES TO BE ACHIEVED BY 2025

	Objectives	Action plans
Diversity	Accelerate gender parity at all mid and senior levels by 2030	Attract and promote diverse talents to increase our diverse talent pool
	Make our workplace optimal for people with disabilities	Set up a Solvay Disability Equality Index and improve our results
	Develop resource groups to encourage employees to bring their "whole self" to work	Set up diverse Employee Resource Groups worldwide
Equity	Assess if there are undesired pay gaps and close them if there are any	Potential structural pay gaps and gender pay gaps are being constantly measured and a plan of action to close them is developed and implemented if needed
	Ensure fair recruitment	All mid and senior-level (S19 and up) job openings have a shortlist comprising 50% of underrepresented groups (including women)
	Ensure equitable access to career opportunities and development	Set up mentor/mentee programs starting with underrepresented groups
Inclusion	Build an inclusive employee experience	Set up an Inclusion Index and improve our score
	Assessment and development program for Solvay leaders to grow and nurture an inclusive mindset	The GBU presidents and Heads of Function have a DEI score for their GBUs or Functions and develop a plan to improve their score
	Build a culture in which individuals feel empowered to speak out or speak up when they experience or witness non-inclusive behaviors[1]	Set up a Speak up network where people can discuss non-inclusive behaviors

1. In line with our Code of Business Integrity

Fostering better life at work

Employee well-being is key to our success. During the pandemic, we put in place dedicated tools to protect the health of employees and their families. They help the Group, and managers worldwide, to quickly adapt and put in place appropriate action plans. They include:

- **Global monthly monitoring** of all employees who have tested positive for Covid-19 or are in quarantine, which is used by site managers to adapt safety measures locally.
- A **Pulse survey,** carried out worldwide every quarter, which measures employee motivation and mindset and helps identify areas for improvement. In September 2021, specific questions were included to measure employee engagement and enable us to monitor this key indicator over time.
- The **Solvay Solidarity Fund** continues to support employees significantly impacted by the pandemic and natural disasters. Over 850 individual applications for support have been processed since April 2020 and we have supported local communities through 30 distinct projects, including initiatives relating to urgent healthcare needs, mental health support for caregivers and assistance for schools affected by flooding. In early 2022, we donated €1 million to relief efforts in Ukraine and promised to double future employee donations.
- Our **Employee Assistance Program,** launched globally in November 2021, which offers confidential psychological support and other assistance, such as life coaching and legal and financial orientation, to all employees and members of their households. In collaboration with Jaume I University of Valencia, in Spain, we also launched a pilot initiative to create an employee well-being observatory. Through a holistic well-being diagnosis led in three Solvay sites, we will measure the effectiveness of our efforts and design the course of action needed.

The following initiatives are also part of our well-being at work policy:

- Starting on January 1, 2021, we increased our **global maternity leave policy to 16 weeks and extended it to all co-parents** employed by the company. This is part of our Solvay Cares benefit program, which provides a minimum level of company social benefits to all employees worldwide.
- In 2021, **more than 7,500 of our people moved into a hybrid mode of working** across Solvay's 35 administrative sites globally. This is part of our mobile working framework, launched in 2020.

Driving change through the Sustainable Guar Initiative

Solvay is a world leader in guar-based business and has been acting as a change agent in this field through the Sustainable Guar Initiative (SGI). The initiative was launched in 2015, in collaboration with the NGO Technoserve and our customer L'Oreal, with another customer, Henkel, joining shortly after. It aims to help make guar cultivation more sustainable in Rajasthan, India, while empowering women farmers through training in hygiene, health, and nutrition.

In 2021, we took the initiative a step further, partnering with Technoserve and BanQu to further enhance our social impact. Using blockchain, we have built a digital platform that allows farmers to trace their guar from farm to shampoo, ensuring full transparency on prices and volumes sold and enabling them to benefit from direct payment. So far, 2,000 farmers have started using the platform, which also provides training on sustainable farming practices and school attendance for children, and includes programs dedicated to the empowerment of women farmers. Perhaps most importantly, it enables women to access a financial identity, giving them the opportunity to open their own bank accounts and offering them opportunities to continue to do business during pandemic restrictions.

Innovating to raise the bar with new non-fluorosurfactant technologies

Solvay's goal, wherever possible, is to use non-fluorosurfactant technologies in our operations. It is an ongoing journey, which has enabled us to explore new technological innovations that advance our sustainability ambitions.

The launch of our new non-fluorosurfactant technologies, Hylar® 5000S and Tecnoflon® LX, in May 2021 is a great example of how Solvay is leveraging our innovation engine to drive new sustainable solutions for customers. These technologies use a new polymerization process that does not require the use of fluorosurfactant process aids from the polyfluoroalkyl substances (PFAS) family of compounds, while keeping important properties required by customers and applications.

At our West Deptford facility, in New Jersey, our new non-fluorosurfactant technologies have been in full production since July 2021. As a result, Solvay has been able to completely eliminate the use of PFAS-based process aids in the US.

The phasing out of PFAS-based process aids is not yet feasible in all applications. Research is ongoing to transform our products and provide more specialized products that our customers can qualify for use in a variety of applications that support a more sustainable society and green mobility. This includes solutions used in renewable energy installations, lithium-ion batteries and components for compact engines in hybrid vehicles.

Today, we use a very limited number of fluorosurfactant process aids at our Spinetta plant, in Italy, where we apply state-of-the-art techniques that eliminate nearly 100% of fluorosurfactant emissions from our manufacturing. This is a concrete example of how we are using science to focus on a more sustainable future.

Read more: » https://www.solvay.com/en/innovation/science-solutions/pfas

BUSINESS ENVIRONMENT

Global business trends driving our markets

Chemistry is a core component of everyday products and solutions. In a growing world, in which we are consuming resources at an unsustainable rate, chemistry is also the key to recycling what we use, saving natural resources, fighting climate change and improving quality of life. Solvay's wide and diversified product portfolio offers innovations that provide solutions to these global challenges and reflect the powerful business trends driving growth in our end markets.

A period of transition for our industry

In 2021, our industry, like others, was broadly impacted by inflation, labor shortages and transport bottlenecks, which demonstrated the importance of having resilient supply chains based on circular economy principles. At the same time, the challenge our industry faces – to serve the needs of society while reducing the impact on our planet – has never been greater.

Solvay is up to that challenge. We are relying on our G.R.O.W. strategy, which is aligned with global business trends, and on our Solvay One Planet sustainability roadmap to drive circularity across our business, helping us to remain resilient and grow.

In 2021, we witnessed an acceleration in some key business trends for which our portfolio solutions can help our customers to become more sustainable. They include:

- → An increasing customer interest in eco-friendly based chemical solutions and investment by chemical companies in the circular economy.
- → The opportunity for a green recovery, reflecting the strong focus in the European recovery plan on zero-emission mobility and the hydrogen economy, and Chinese legislation to stimulate electric vehicles and cleaner mobility.
- → The acceleration of the digital transformation, adjustments in work patterns and an increased role for Robotic Process Automation (RPA) and artificial intelligence (AI) in numerous sectors, including the chemical industry.

Our businesses are aligned with six global business trends

ELECTRIFI-CATION

Achieving climate neutrality has become an even greater priority. Several countries have introduced green stimulus packages to revive their economies, many of which focus on the automotive industry's transition to electric and hybrid vehicles. This has helped spur further demand for batteries, complemented by a strong push for a green hydrogen (H^2) economy and underpinned by a buoyant consumer electronics market. Chemistry is the key to creating the circular batteries of the future, and Solvay is at the heart of the most innovative circular economy solutions.

Challenges for customers

- Security of supply: The availability of raw materials such as lithium and rare earths as the need for electric vehicle (EV) battery materials grows dramatically.
- Infrastructure: The need for increased electrical grid capacity and for vehicles to be able to inject into and receive power from the system.
- Recyclability: Conventional recycling processes come with high costs and a high CO_2 footprint, while critical metals are not always recovered from EV batteries at their maximum value and lower-grade metal mixes are not always suitable for production of new batteries.
- Innovation for the next generation of batteries: The need for cost-effective solutions for creating fast-charging and safe batteries with increased drive range.

Opportunities for Solvay

Our highly unique, twofold contribution to the EV battery value chain:

- We are present in the EV and hybrid battery value chain, providing high performance materials and technologies for lithium-ion batteries and developing key materials for solid-state batteries.
- We are the only company with a chemical refining process that optimizes the extraction and purification of critical metals, such as cobalt, nickel, and lithium, and transforms them into high-purity raw materials for new batteries.

We are developing green hydrogen solutions, which offer an alternative option for electrification. These include:

- Our ion-conducting polymer membrane technology, Aquivion®, which is a key enabler for hydrogen conversion, electricity storage, and process reaction in fuel cells, and is crucial for increasing their performance and durability.
- An electrolyte for Solid Oxide fuel cells, used in stationary power generation.
- Electrolyzers for the production of electricity.

€25bn
Total addressable market

~50%
Amount of electric or hybrid vehicles in global production by 2030[1]

>20%
Compound Annual Growth Rate (CAGR) in batteries between 2018 and 2030[2]

Sources:
1. Roland Berger
2. World Material Forum, Global Battery Alliance.

LIGHT-WEIGHTING

The global drive to reduce CO_2 emissions and use natural resources efficiently makes lightweighting critical. Reducing the weight of a vehicle by 10% can result in 6-8% better fuel economy. Alternatives to heavier, conventional materials include composites with enhanced durability and lower maintenance costs, or specialty adhesives that join materials that have different chemical compositions. A wide variety of customized and modular products also exist, made possible by novel machining capabilities such as additive manufacturing, while the rise of electric vehicles presents new opportunities for the use of adapted materials.

Challenges for customers

In addition to being lightweight, materials also need to:

- be sustainable and recyclable;
- perform well in crash simulations and demonstrate mechanical resistance;
- be competitively priced;
- have a faster production cycle.

Opportunities for Solvay

Many Original Equipment Manufacturers (OEMs) are looking for solutions to help them adapt to the electric vehicle market and respond to demand for lightweight parts in a variety of other markets. Solvay's innovations put us in a strong position to provide them with the lightweighting solutions they need. They include:

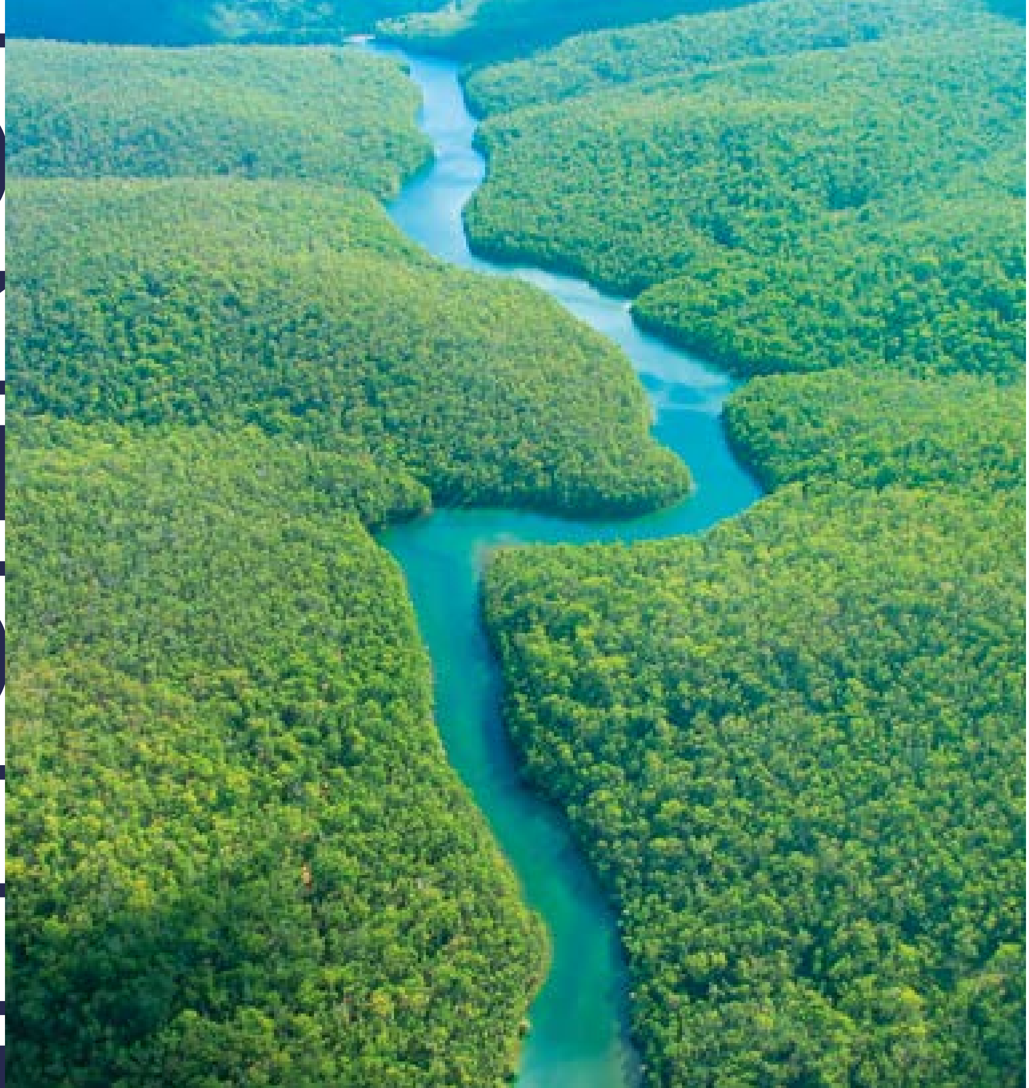
- Our high-performance polymers, which are used to improve automotive and aerospace engine efficiency and downsizing.
- Our world-leading solutions for the aerospace industry, including thermoset composites that offer unique benefits in aerodynamics, design, part integration and corrosion resistance.
- Our thermoplastic composites give us a unique position in the market. They combine our broad specialty polymers portfolio with our in-depth expertise in composite material technologies, providing solutions for the aerospace and automotive industries, as well as in markets such as energy transition and Advanced Air Mobility.
- Our silica for sustainable tires, included in the new TECHSYN platform created with Bridgestone and Arlanxeo, which produces tires with unrivaled strength and environmental performance.

>€10bn
Total addressable market

+30%
CAGR in composites in the automotive industry in next 10 years[1]

Sources:
1. Roland Berger

RESOURCE EFFICIENCY



Air, soil and water pollution, the growing pressure on biodiversity and the ever-increasing importance of reducing CO_2 emissions are driving the urgent search for new resource-efficient solutions. This has inspired increased industrial innovation, which has enabled more efficient use of resources through modular design and manufacturing methods that incorporate the principles of recycling and the circular economy.

RESOURCE EFFICIENCY

>€50bn
Total addressable market

x 6
Increase of lithium supply by 2030[1]

~4Mt
Increase in copper per year[2]

+4%
Growth in water treatment over the next 5 years[4]

50%
Consumers ready to pay more for a product designed to be reused or recycled[3]

Sources:
1-2. World Material Forum, Global Battery Alliance
3. Accenture 2019
4. Solvay internal research

Challenges for customers

- Pressure to do more with less
- The need to work toward creating a circular economy.

This includes lightweighting to ensure energy savings and reducing dependence on raw materials.

Opportunities for Solvay

Solvay offers leading technologies to many of the markets where resource efficiency is a key driver.

- We ensure our customers are able to optimize their mining operations through facilitating digitization in the industry. Our widely used Mining Chemicals Handbook (MCH) is now available through an easily-accessible, interactive and customer-centric digital platform. And our unique mining methodology and broad range of solvent extractants makes it easier for customers to recover valuable minerals, and increase and purify metals.
- Our soda ash is used to develop eco-efficient glass for triple-glazed windows.
- Our formulations for eco-friendly production processes are used in water and soil management.
- Our polymers are used to manufacture food packaging that can be safely reused and recycled, and are used in filter bags and membranes to treat gases emitted by multiple industries.

EXPANDING HEALTHCARE

Healthcare and wellness are a priority for consumers and companies. Market drivers include a growing global population, advances in treatments and healthcare technologies, increased sterilization capabilities and wider healthcare coverage in developing markets. The Covid-19 pandemic has also put the importance of health and hygiene in the spotlight.

Challenges for customers

- Patients are increasingly well informed about and involved in their healthcare.
- There is a growing need for more biocompatible materials and high-performance materials that can withstand the aggressive disinfectants and chemicals used to prevent hospital-acquired infections.
- There is a need for high-performing cleaning disinfectants that not only kill microbes upon application, but also provide all-day protection, without negatively impacting the cleaning experience.

Opportunities for Solvay

Solvay is the market leader for high-performance polymer technologies. Our products can be used in a range of applications:

- Our biomaterials are suitable for prolonged or permanent exposure to bodily fluids and tissues, enhancing the functional performance of implantable devices.
- Our medical-grade thermoplastics are used in implantable and other medical devices designed for use in limited exposure applications, such as surgical instruments, sterilization cases and single-use instruments.
- Our revolutionary, high-performance and biocompatible polymers are used for hemodialysis membranes.
- Our innovative Actizone™ technology provides reliable, long-lasting disinfection along with other desirable cleaning properties.

>€10bn
Total addressable market

+7%
CAGR in medical implants in short-term[1]

>6%
Growth of medical plastics in short-term[2]

Sources:

1 . Medical Implants Market: Global Industry Trends, Share, Size and Forecast, Report by 2023, Kenneth Research, August 1, 2019.

2 . BCC Research – 2018 report

IoT AND DIGITALIZATION

IoT AND DIGITALIZATION

Digital technologies are generating disruptive new business models. The growing demand for hyper-connectivity, the rapid development of 5G and the exponential growth of data are key market drivers. This is resulting in miniaturization, the development of the Internet of Things (IoT) and a need for components that consume less energy. New opportunities are created by 5G, which relies on new high-performance polymers with specific magnetic and electrical requirements.

Challenges for customers

As technology and 5G networks continue their rapid expansion, there is a need for:

- semiconductor minimization;
- faster connectivity speeds;
- higher frequencies and low-loss signals;
- coatings for sensing and monitoring systems.

Opportunities for Solvay

- Our advanced materials for applications meet the growing demand for hyper-connectivity, including miniaturization technologies.
- Our semiconductor industry consumables offer solutions based on high-purity chemicals and can be used in high temperatures and with chemical-resistant materials.
- Our high-performance polymers are used in new-generation OLED and flexible displays.

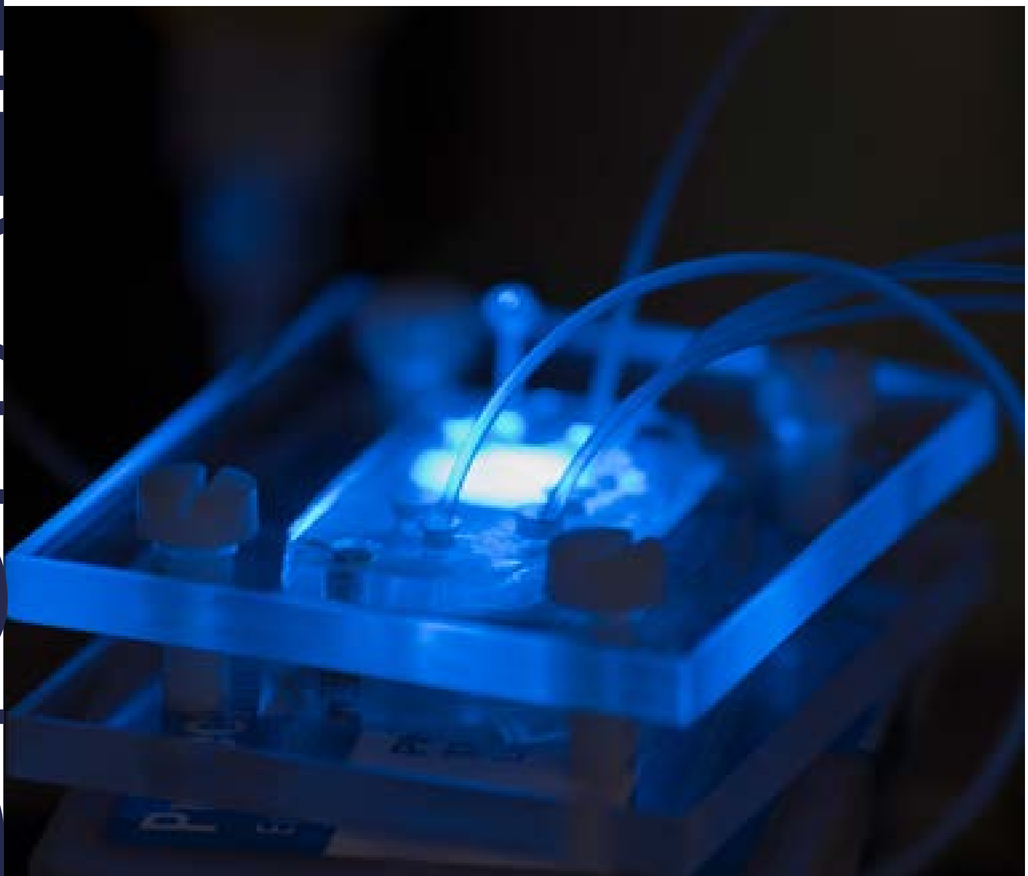
>€50bn
Addressable market

+25%
CAGR in smartphone shipment by 2025[1]

+9%
CAGR in semiconductors by 2023[2]

>12%
CAGR in IoT devices from 2020 to 2030[1]

Sources:
1. OMDIA, October 2021
2. VLSI Forecast November 2021



ECO-FRIENDLY BASED SOLUTIONS

Consumer behaviors are shifting toward a concern for wellness. This includes a desire for a better quality of life, a healthier work-life balance, reduced stress and higher quality food. These new priorities drive consumer behavior, with many people now demonstrating a preference for organic and natural products. This trend will only strengthen as consumers become more health-conscious and aware of the impact products may have on the environment.

Our waterborne coatings solutions address the challenges of adhesion to difficult substrates and overall durability while complying with ever-stricter regulations.

Our polyphthalamide (PPA), which is used for demanding electrical and electronic applications in e-mobility, is made from non-food competing sources, reducing environmental impact without compromising on material performance.

Challenges for customers

- Increased pressure on businesses to produce more eco-friendly products.
- Higher costs as compared to using fossil-based technologies.

Opportunities for Solvay

We are a market leader in some bio-based ingredients:

- We are a top producer of natural vanillin, bio-sourced from rice bran.
- We are the world leader in the chemical modification of guar, which is used in the agro and nutrition and home and personal care markets.
- We produce bio-sourced solvents, such as Augeo®, based on glycerin and developed for cleaning products and fragrances.

>€10bn
Total addressable market

>10%
CAGR in natural vanillin by 2024[1]

+6%
CAGR in waterborne coatings by 2025[1]

+3%
CAGR in organic shampoos through 2025[1]

Sources:
1. Solvay internal research

ECO-FRIENDLY BASED SOLUTIONS

Story.

Enabling more sustainable mobility

Increasingly stringent regulations, attractive incentives, massive investment in capacity and infrastructure, and increased demand for electric vehicle batteries have all initiated a shift in the market. Original Equipment Manufacturers are now looking for more sustainable products and solutions that will drastically reduce environmental impact during the current transition period, while also helping to prepare for the future. With our extensive and proprietary range of high-performance polymers, our composite materials technologies and a forward-looking innovation roadmap, Solvay is well-placed to support them in this.

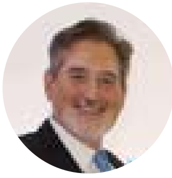
~€400bn

invested by OEMs in electrification over the next ten years

Read more » Innovation/ Growth platform page 21

3 QUESTIONS FOR MIKE FINELLI,

President of Solvay Growth Initiatives



HOW IS SOLVAY SUPPORTING OEMS IN DEVELOPING CLEAN MOBILITY SOLUTIONS?

M.F.— For more than ten years, we have enabled OEMs in their transition to electrification and lightweighting, providing some of the most innovative solutions for clean mobility. Our contribution to the electric and hybrid vehicle value chain is unique because of our unmatched portfolio of materials technologies and our long-term perspective: we provide solutions that make vehicles lighter and more efficient; we produce high-performance materials for lithium-ion batteries and the technologies to recycle them; and we are contributing to building the green hydrogen economy, which is essential to reaching the net-zero emission target.

HOW IS SOLVAY CREATING VALUE FOR ITS CUSTOMERS?

M.F.— We created three platforms focused on growth businesses that are aligned with our G.R.O.W. strategy and our sustainability roadmap. They drive innovation in three different fields: battery materials, thermoplastic composites and green hydrogen. All of these are key enablers in developing the sustainable mobility solutions of the future. These platforms offer our customers a single entry point into our Group portfolio and foster cross-innovation within the Group and in our state-of-the-art application centers. For example, we are co-developing battery projects with customers, tailored to meet their needs, and as the green hydrogen economy begins to take off, we are partnering with customers in the electrolyzer and fuel cell space to make it happen.

WHAT ADDED VALUE DOES SOLVAY BRING TO THE BATTERY INDUSTRY IN PARTICULAR?

M.F.— Our solutions help solve one of the biggest problems in the EV industry: range anxiety. We're building a portfolio of battery materials that follows the different generations of batteries as they develop, which makes us really unique and attractive for our customers because we can align with their roadmaps. We're also enabling battery circularity by using our unique expertise in extracting and recycling valued metals from batteries. As a market leader, we can create partnerships that lead to further developments, such as processes to make cheaper, safer and more energy-dense batteries.

Leading the way in developing the batteries of the future

The main challenges in the development of electric car batteries are energy density (drive range), fast charging, safety and cost. Solvay either already provides solutions for these challenges, or is developing solutions that will address them in the future.

Our high-performance materials, which include salts and additives used in the electrolyte and specialty polymers used in the binders and separators, make lithium-ion batteries safer and more energy-efficient. Our binders are the most advanced in the world, enabling us to improve drive range by putting more active ingredients in the battery. And our polymers and composite materials can also increase energy density and drive range, while making the battery pack safer, lighter and more resistant.

In addition to this, our position as a leader in battery technology makes us a key player in the development of the materials required for the solid-state batteries of the future. With their ability to further improve safety, increase performance and lower total cost of ownership, solid-state batteries are expected to replace lithium-ion batteries in the coming years and Solvay is well-placed to support our customers in this transition.

"As a technology leader in battery materials, Solvay plays an active role in ESG management and the development of clean mobility. For LG Energy Solution, Solvay is a key strategic partner with whom we can work to grow the battery business, and sustainable business in general. In the future, we look forward to receiving competitive new products through Solvay's innovative technology development."

Lee, Jung-ah
Professional, Cell Procurement 3 Team, LG Energy Solution

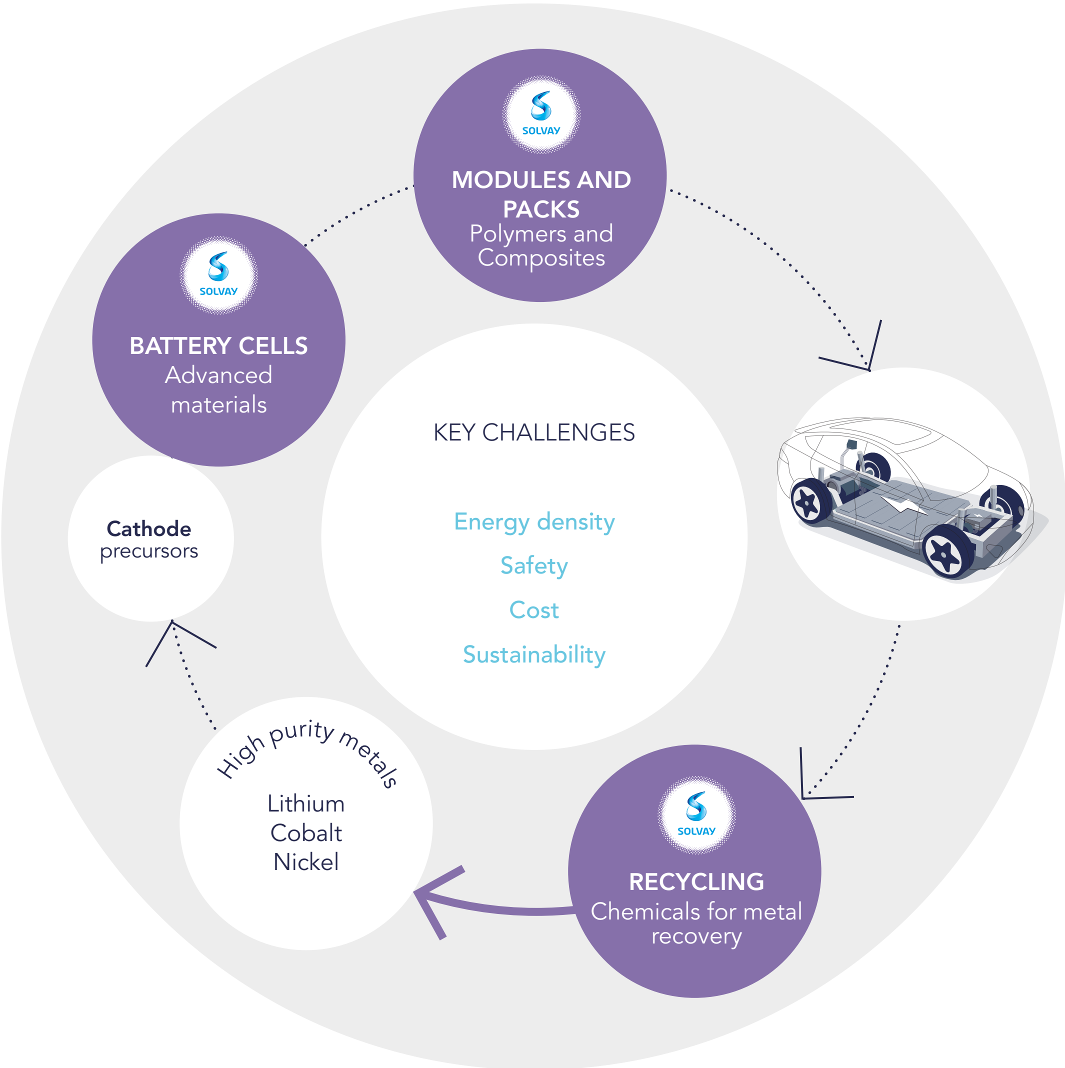
Integrating batteries into the circular economy

Our expertise goes beyond the battery cell itself. With the number of electric vehicles expected to increase to nearly 120 million by 2030, we need to find a way of recycling the whole battery and integrating EV batteries into the circular economy. Moving to a circular economy solution for batteries will ensure access to critical raw materials and decrease recycling costs. It will also lower the CO_2 footprint of the battery-making process, as the carbon footprint associated with battery metal recycling is far lower than that of primary metal extraction or mining. Solvay's partnership with Veolia and Renault puts us in a great position to provide solutions in this area.

A new step in creating a circular battery system with Veolia and Groupe Renault

In 2020, we partnered with Veolia and Renault to optimize the reuse of critical metals in spent EV batteries. Solvay's contribution to this partnership is our unique technology that allows for the extraction and purification of up to 95% of critical metals in batteries, such as lithium, cobalt, nickel and copper, that can be transformed into high-purity raw materials for use in new batteries. In 2021, we reached the next step in our alliance with Veolia: the demonstration plant phase. This is the longest and most critical phase of the project. It involves validating and optimizing the extraction and purification process for recycled battery metals by running a scaled-down production unit.

OUR PORTFOLIO ADDRESSES THE KEY CHALLENGES OF THE BATTERY INDUSTRY



Providing lightweight materials that improve EV performance

Solvay's advanced materials also have an essential role to play in reducing emissions, providing a lightweight alternative to metal that doesn't compromise on safety or performance. We are the only company in the world able to combine the broadest portfolio of specialty polymers on the market with strong competencies in composite technologies.

Our thermoplastic composite (TPC) solutions are 30-50% lighter than metals, but incredibly strong. Not only can they be used today in structural components and adhesives for vehicles, but they also have future applications, including in fourth generation EV battery packs, which are currently under development, and in fuel cells in hydrogen tanks.

Toward a future of green hydrogen mobility solutions

To power clean mobility and reach carbon neutrality by 2050 we will need more than just batteries. Over the next 10-15 years, the green hydrogen industry is expected to grow exponentially, providing competitive low-carbon solutions to power heavy industry, trucks and trains.

Our chemistry and components are present in the electrolyzers that help create green hydrogen and in the fuel cell systems that generate electricity, playing a key role in improving their efficiency and durability. In addition, we provide materials for hydrogen storage tanks and for the exchange membranes used to turn hydrogen into electricity.

10 solutions for more sustainable mobility

Our components help to increase the sustainability of cars by reducing their climate impact and raw material consumption.

Alve-One® Foaming Solutions

Innovative chemical blowing agents, made from 100% safe ingredients that reduce fogging and eliminate odors in interior car parts while decreasing their carbon footprint.

→ **10x less CO_2** emissions in product life cycle vs. ADCA alternatives

→ **Safer** for human health and compliant with stringent regulations

Solef® PVDF

A high-performance material for Li-ion battery components enabling faster charging and increased safety, drive range and heat resistance.

→ Can save up to **1.67mt CO_2** emissions over a vehicle's useful life

Cyanex® 936P

A unique, environmentally-friendly extractant that reduces lithium production time for batteries and facilitates battery recycling.

→ **>90%** lithium recovery rate

→ requires **0.17km²** of land vs. **170km²** for traditional evaporation process

Amni® Virus-Bac OFF

A new polyamide fiber that "deactivates" 99% of viruses and bacteria on a textile surface, using a permanent anti-bacterial additive.

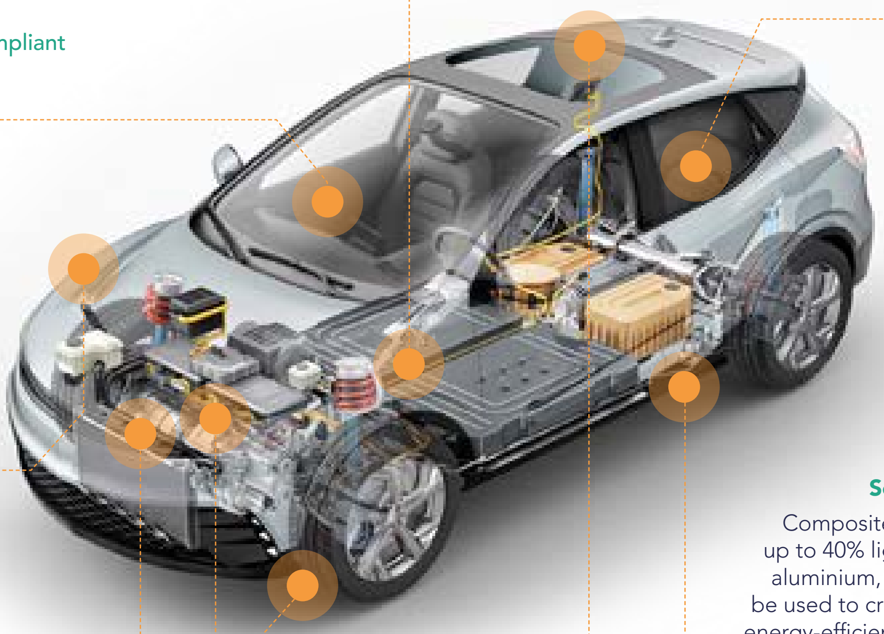
→ Disables **99%** of viruses and bacteria within **2 hours**

Augeo® SL191

Bio-based solvents made from glycerin – a renewable source – for use as a safer alternative to petroleum-based solvents in paints and coatings.

→ **49% CO_2** savings vs. petroleum-based solvents

→ **50%** bio-based materials



Solvalite™

Composites that are up to 40% lighter than aluminium, which can be used to create more energy-efficient vehicles and enable much faster production.

→ Can save up to **2,000kg of CO_2** over a vehicle's lifetime vs. mainstream alternative

Ketaspire® PEEK

An advanced material that can replace metal in insulation systems, providing for more efficient, smaller and lighter-weight eMotors.

→ **Eliminates VOC* emissions** associated with use of solvent-based alternatives

Silica HDS Premium SW

A technology for tire treads that reduces rolling resistance by 25%, helping to increase the longevity of tires and lower fuel consumption by ~7%.

→ **330kt of CO_2** saved each year**

→ **87kt** natural rubber savings over a vehicle's lifetime

Addibond™

An innovative, chromium-free additive for safer anti-corrosion surface treatment, with best-in-class adhesive performance and durability.

→ 4g of Addibond™ saves **300kg CO_2** emissions per car annually

→ **58%** bath temperature reduction leading to water savings

Amodel® Bios PPA

High-performance, bio-based polymer for use in e-mobility, made with renewable electricity and from a non-food competing crop.

→ **100kg CO_2** emissions saved per 100kg Amodel® Bios PPA manufactured

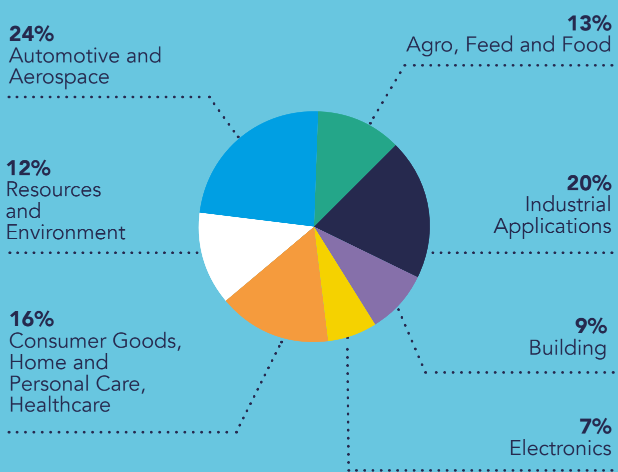
*volatile organic compounds
**corresponding to 7% of energy savings

Our sustainable solutions serving fast-growing markets

Solvay's businesses are closely aligned with the six global trends driving growth in our end markets. Through our G.R.O.W. strategy, we have refocused our resources on key growth markets encompassed by these trends, including transportation, home and personal care, healthcare and electronics. Our broad portfolio of technologies and products, our expertise and our close relationships with customers have allowed us to build robust leadership positions in seven fast-growing markets in particular, where we hold a top two position and our innovative and competitive solutions bring value.

More than 50% of the Group's portfolio is positioned as Sustainable Solutions, with sales generated in markets relating to strong sustainability trends llike electrification and lightweighting for clean mobility, digitalization and connectivity, resource efficiency and eco-friendly based solutions. In 2021, 5% of Groups sales were generated by products based on circular raw materials or energy and this is expected to more than double by 2030. This enables us to meet growing customer demand for healthier and more sustainable solutions.

In 2021, the Solar Impulse Foundation's World Alliance for Efficient Solutions awarded its Efficient Solutions label to another Solvay product, bringing the number of Solvay solutions recognized for their role in protecting people and the environment in a profitable way to 13.



% of Group sales

Consumers

Growing consumer demand for natural and bio-based solutions, enhanced performance and convenience, and personalized and premium products is driving the consumer goods market. Solvay's innovative, sustainable and competitive polymers and surfactants are used in segments ranging from smart textiles to personal and home care, while our components give household products their expected properties, whether that's surface tension, foaming or viscosity.

Home care

Sustainability, high-performance cleaning and competitiveness are important drivers for home care markets. For fragrance markets, the priority is finding bio-renewable, sustainable and safer alternatives to petrochemical solvents that also provide good solubilization features, stability, adequate volatility and improve how long a fragrance lasts. Solvay's home care solutions cater to these needs.

Actizone™: long-lasting disinfection technology

Solvay's Actizone™ is a unique disinfectant solution[1] that instantly destroys over 99.9% of microorganisms[2], including coronaviruses, for up to 24 hours. This long-lasting protection differentiates it from other disinfectants currently on the market, helping to dramatically reduce chemical use. The United States Environmental Protection Agency has approved Actizone™ F5 and, in October 2021, Actizone™ was awarded first place in the innovation award category by the SEPAWA® CONGRESS, the most important European congress for this industry.

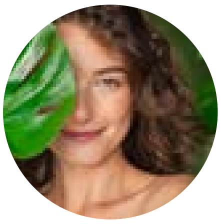
On November 12, 2021, the United States Environmental Protection Agency (EPA) approved the registration of Actizone™ F5. Solvay is now working to obtain U.S. state registrations for Actizone™ F5 required to market in specific states. Claims allowed by the EPA registration include that Actizone™ F5: 1. provides initial disinfection on hard non-porous surfaces after 5 minutes of contact time against a wide range of viruses and bacteria, including SARS-CoV-2; and 2. eliminates bacteria when applied to hard, non-porous surfaces for up to 24 hours. Solvay is currently conducting studies to obtain EPA approval in the future for claims that certain Actizone™ products are effective at eliminating viruses, including SARS-CoV-2, for up to 24-hours after application.

Augeo®: innovative bio-based solvents

Our Augeo® line of bio-based solvents are used in air and surface care, offering a safer, more sustainable and high-performing alternative to petrochemical solvents. These low-odor eco-solvents are developed from glycerin, which is a renewable source, and are composed of versatile and highly soluble molecules. They comply with the strictest global legislation, including EPA-Inert and Safer Choice, have a low carbon footprint and are not toxic to humans or the environment. Augeo® is also a Vegan Society registered product, catering to increasing consumer demand for innovative vegan products.

Mackadet® OPR 2: a new generation, naturally-derived opacifier

Mackadet® OPR 2 is a readily biodegradable solution that acts as a pearling and opacifying agent, giving cleansing products their creamy white appearance. It is made from almost 100% bio-sourced ingredients, providing a sustainable alternative to synthetic ingredients, such as acrylate-based opacifiers. Sulfate, paraben and formaldehyde-free, and with no need for heat in the opacifying process, Mackadet® OPR 2 also helps to reduce carbon emissions in the value chain.



Personal care

Facing increasingly stringent global regulations and changing consumer preferences, formulators are under pressure to develop high-performing products with advanced aesthetics, fewer synthetic chemicals and more eco-friendly and natural materials. Solvay is a leader in this area with a personal care portfolio focused on "clean beauty" and plant-based products. Over 80% of our hair and skin care portfolio is derived from natural origin, according to ISO 16128:1. This includes our Jaguar® line, a range of bio-based ingredients – 98% of which are plant-based and made from guar gum partially sourced through our Sustainable Guar Initiative (SGI) program – that provide conditioning and texturizing features for hair and skin care. In 2021, we introduced two new biodegradable Jaguar® grades.

Dermalcare® LIA MB: a sustainable alternative to non-volatile silicones for hair care

Dermalcare® LIA MB is a readily biodegradable, 100% bio-sourced and plant-based hair moisturizing emollient that can be used as a sustainable alternative to non-volatile silicones in hair care applications, including shampoo, conditioner and treatments, and in body and skin care applications. COSMOS1 certified , it enables hair care formulators to design silicone-free solutions that protect the integrity of the hair and scalp and guarantee top quality results, while respecting the planet.

Healthcare

A growing population, advances in treatments and health technologies, increasing sterilization capabilities and wider healthcare coverage in developing markets all serve as market drivers in healthcare. Solvay's extensive range of high-performance polymers are used in orthopedics, medical devices and equipment, surgical instruments and implantable devices. This includes our Radel® PPSU, a remarkably strong polymer that can be steam sterilized over more than a thousand cycles without any significant loss of properties. It replaces metals in various applications, including sterilization cases and trays, and surgical instrument handles. We are also a world leader in high-barrier polymers, used for pharmaceutical packaging.

Veradel® PESU and Udel® PSU: solutions for hemodialysis

The need for hemodialysis is rising globally, due to aging populations, increasing kidney failure factors, such as obesity, and better access to healthcare, particularly in Asia, where the number of untreated patients is estimated to be high. Solvay is a world leader in thermoplastics used to manufacture dialysis membranes. Our high-purity, high-performance polymers for hemodialysis, Udel® polysulfone (PSU) and Veradel® polyethersulfone (PESU), were developed in collaboration with hemodialysis equipment manufacturers and have excellent biocompatibility, meaning that patients' blood can come into contact with them and return to their arteries without any risk.

Interox® H2O2: high-purity hydrogen peroxide for sterilization

Patient safety and well-being requires the decontamination and sterilization of medical devices, isolators and rooms. Our Interox® range of high-purity hydrogen peroxide (H_2O_2) can be used in vaporized form by the pharmaceutical aseptic filling industry or as a disinfectant for medical devices. Available in a vast range of standard and specialty grades, for use across a number of different industries, Interox® offers the highest possible quality for sterilization on the market.

Food

Strict regulations are in place to ensure global food security for a growing global population. At the same time, consumers are demanding healthier, more natural food, and bio-based solutions, while the use of renewable raw materials from dedicated crops and scraps is increasing. Solvay provides the food and beverage industry with flavors, aromas and ingredients for healthier and more convenient food, as well as the materials needed for safe, reliable and convenient food packaging.

Rhovanil® Natural CW: the market reference for natural vanillin solutions

Vanillin is the most popular food flavoring in the world. However, with strict regulations in place to ensure global food security, sourcing this flavor from the vanilla bean is difficult and has become very expensive. Solvay's Rhovanil® Natural CW is a 100% vegetable-based, non-GMO alternative to vanillin sourced from vanilla beans. Obtained through the bioconversion of ferulic acid, found in rice bran oil, it meets consumer demand for more natural solutions and better quality food. It also serves as a global reference, being the only natural vanillin to comply with the strictest EU and US natural regulations.

Trends

ECO-FRIENDLY BASED SOLUTIONS

EXPANDING HEALTHCARE

RESOURCE EFFICIENCY

Agro

An increasing number of agricultural areas worldwide are now affected by extreme weather. At the same time, there is pressure to ensure greater yields and better resource management to feed a growing global population. The agricultural industry also faces increasingly strict regulations, as well as changing consumer preferences for bio-based solutions and better quality food. This is all driving a shift in agricultural practices, with increased use of renewable raw materials and a growing interest in biostimulant formulation solutions for biological pest control. Solvay's products and solutions enable all segments of the agricultural industry to improve yield with more sustainable agricultural practices. We also offer pioneering automation and digital technology, as well as on-target drift control adjuvants for agricultural spray drones.

Boosting seeds rather than treating plants: a path to more sustainable agriculture

Incorporating biostimulants in seed coatings can help them to germinate faster and stronger. This reduces the need for chemical protection against diseases and pests during the plant's growth and produces healthier crops, increasing efficiency and sustainability. Our acquisition of Bayer's seed coating product line in 2021 will allow us to develop 2-in-1 products combining the acquired coatings with our biostimulants. To make this an even more sustainable option, we are also working on transitioning the range to biodegradable coatings.

AgRHO® S-Boost™: our bio-based stimulant to encourage seed growth

Our AgRHO®S-Boost™ biostimulant is made from guar beans, a 100% natural and renewable raw material. It is unique in being able to shape soil properties around the seed to favor water and nutrient uptake, enhance germination and strengthen root development, helping crops to cope with increasingly dry conditions and increasing yield by 3% compared to using conventional amounts of fertilizer. This also reduces fertilizer use by 13% and helps to optimize water usage.

Designing ingredients and formulation solutions for biological pest control

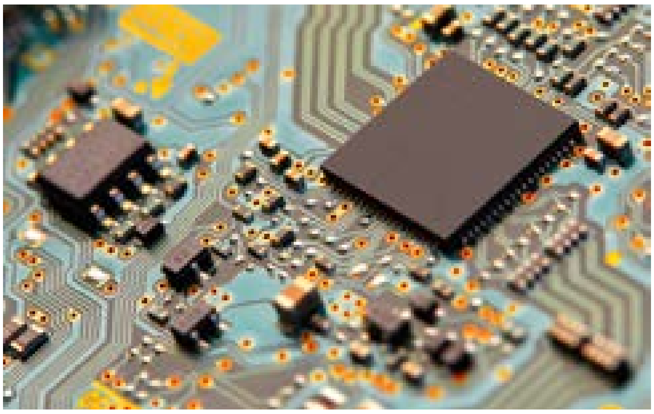
Building on more than 40 years as the industry leader in the development of co-formulants for plant protection formulations, we are now using our expertise to develop innovative ingredients and formulations for biological pest control. Biological crop protection products prevent or reduce damage from pests, weeds and pathogens through the use of living microorganisms, natural substances or semiochemicals and are emerging as one of the most promising tools for sustainable agriculture. Our biocontrol formulation solutions are Organic Materials Review Institute (OMRI) listed, meaning they can be used in certified organic production and processing in the US.

Trends

ECO-FRIENDLY BASED SOLUTIONS

RESOURCE EFFICIENCY

Electronics



Consumers and industries want multifunctional electronic products that are compact, stylish, energy efficient and safe. Growing demand for hyperconnectivity, the development of 5G and the exponential growth of data are also driving the market, resulting in miniaturization, the development of the Internet of Things and a need for components that consume less energy. To facilitate these developments, there is an increasing need for materials that operate effectively and safely at high temperatures.

Solutions for semiconductors

Solvay's specialty polymers support semiconductor processes, providing excellent chemical stability and high heat tolerance, as well as the ultra purity required by customers. Our Galden® PFPE fluids, for example, act as heat-transfer liquids in high-temperature conditions, ensuring the long-term reliability and efficiency of advanced semiconductor applications. We also provide high-purity chemical solutions needed for advanced cleaning, which is becoming increasingly important as electronic devices become smaller. Examples include our Interox® Pico Plus hydrogen peroxide, which is the market reference in this area.

Solvaclean® : an environmentally-friendly cleaning gas for semiconductor tools

Semiconductor chip manufacturers use a variety of gases to pattern silicon wafers. After a number of wafers are processed, the process chambers must be cleaned. Made from environmentally-friendly fluorinated gas mixtures that do not remain in the atmosphere, Solvaclean® can be used by the semiconductor industry as an alternative to usual cleaning options. Not only does it help to reduce the industry's climate impact by reducing emissions, but as less gas is required for the cleaning process, it is also more efficient, helping to save energy and water. Solvaclean® was awarded the Solar Impulse Foundation's Efficient Solution Label in January 2021.

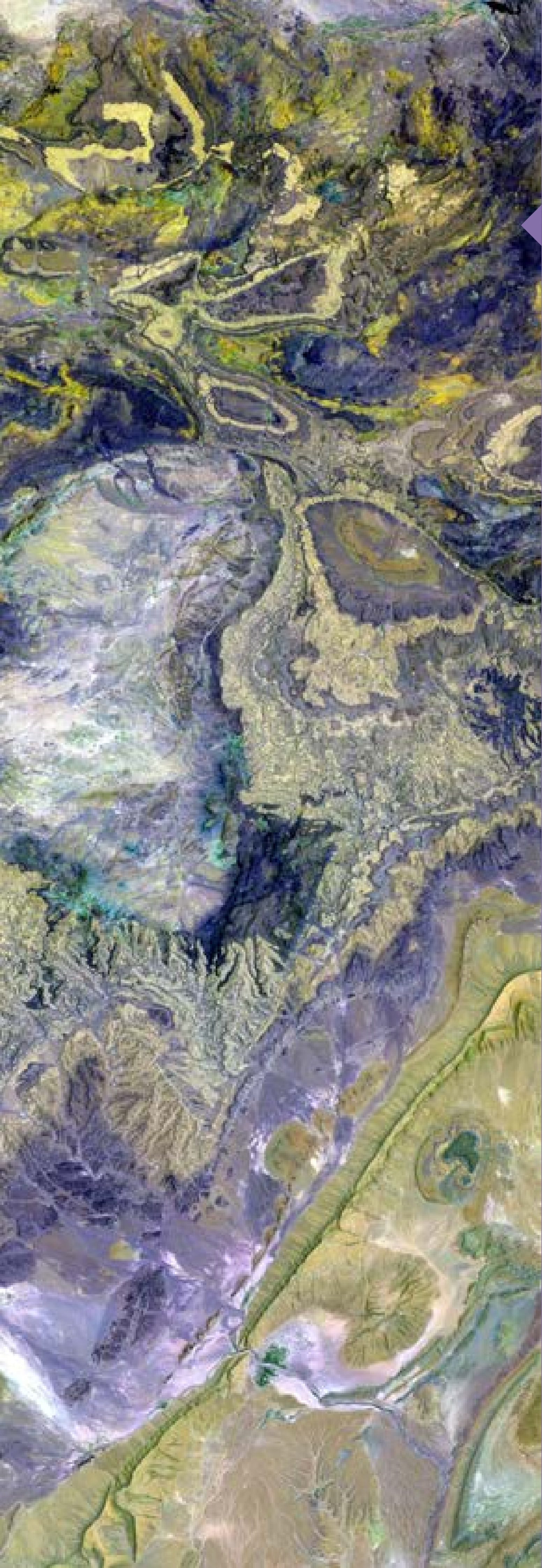
Structural components for smart devices

Smart sensing is driving market growth in smart devices and components. This includes smartphones with advanced functionalities, such as infinity display, artificial intelligence or 5G. Solvay's Kalix® high-performance polyamide (HPPA) can be used instead of metal in products where strength, rigidity, aesthetics and unparalleled design flexibility are important, such as mobile phones, tablets and laptops. We have also developed a sustainable, bio-sourced version of this product that is highly resistant to impact. Kalix® 2000 is made from non-food competing and GMO-free castor oil, and produced with 100% renewable electricity.

Trends

ELECTRIFICATION

IoT AND DIGITALIZATION



SUSTAINABLE VALUE CREATION

Sustainable value creation model

At Solvay we are committed to optimizing the use of our resources to reduce our impact on the planet. Our G.R.O.W. business strategy and our Solvay One Planet sustainability program are aligned with the powerful trends driving growth in our end markets. And our Solvay ONE operating model helps us work more efficiently and effectively together to achieve our Purpose and create the greatest shared value for society, our employees, our customers and our shareholders.

RESOURCES WE USE

Human

Representing more than 100 nationalities, 47% of our employees are located in Europe, 24% in North America, 10% in Latin America and 19% in Asia and the Rest of the World. Another 9% work in Research & Innovation.

+21,000
Employees

23%
Women

Financial

We have selectively invested €736 million of Capex from continuing operations in our growth businesses and €298 million to develop innovative sustainable solutions.

€7bn
Equity attributable to Solvay share[1]

€4bn
Underlying net debt

Natural

Our net energy costs represented about €789 million. The Group's overall raw materials expenses amounted to circa €3.2 billion.

4,920kt
Raw materials

105pj
Energy consumption

315Mm³
Freshwater withdrawal

1. Excluding hydrid bonds;
2. Excluding the contribution from corporate and business services;
3. Recommended to the Shareholders meeting on May 10, 2022;
4. (Scope 1 & 2) at constant perimeter;
5. In number of animal or plant species potentially impacted in one year. ReCiPe method for biodiversity impact assessment;
6. % of Group sales based on circular raw materials or energy; circular economy indicators are still in the development phase, in the frame of the Circulytics approach, co-developed with the Ellen MacArthur Foundation;
7. Number of work-related injuries and illnesses (employees and contractors) resulting from an accident with severity above first aid, according to US OSHA 29 CFR 1904, per 200,000 work hours;
8. All employees worldwide S14 grade or below.

HOW WE CREATE VALUE

Our G.R.O.W. strategy is aligned with global business trends that drive growth in our end markets.

G Materials

Unique high-performance polymers and composite technologies
Innovative solutions for cleaner mobility (lightweighting, batteries, CO_2 and energy efficiency), Electronics and Healthcare.

34% of Group EBITDA[2]

R Chemicals

World leaders in essential chemicals for daily life
Chemical intermediates used in a broad range of applications in end markets like Building, Industry, Healthcare, Personal and Home Care, Feed and Food.

39% of Group EBITDA[2]

O Solutions

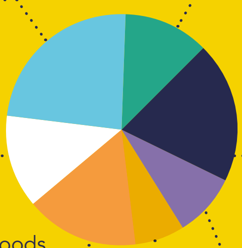
Unique formulation and application expertise
Customized specialty formulations for surface chemistry and liquid behavior, maximizing yield and efficiency and minimizing environmental impact. Used in diverse markets like Agro, Food, Electronics, Consumer Goods.

27% of Group EBITDA[2]

W Solvay ONE

New operating model and culture
Customers are at the heart of our new, more agile organization and performance-driven culture.

WHERE WE CREATE VALUE



% of Group sales

VALUE WE CREATE

Economical

€2.4bn
Underlying EBITDA

€843M
FCF to Solvay shareholders from continuing operations

€3.85 per share
Recommended 2021 dividend[3]

€287M
Income taxes

448
Core suppliers

Environmental

11 Mt CO_2eq.
Greenhouse gas emissions[4]

Air emissions

5.9kt
Nitrogen oxides

3.5kt
Sulfur oxides

27pj
Solid fuels

-13%
Pressure on biodiversity[5]

58kt
Industrial waste not treated in a sustainable way

315Mm³
Intake of freshwater

53%
Group net sales with sustainable solutions

5%
Group net sales from circular economy[6]

Social

0.43
Reportable Injury and Illness Rate[7] (RIIR)

25%
Women in mid and senior management

16 weeks
Maternity leave time open to all co-parents

€3.7M
Group donations

€9.8M
Global Performance Sharing Plan[8]

11.2%
Employee turnover

Operating segments and Global Business Units

Materials

MATERIALS offers a unique portfolio of high-performance polymers and composite technologies that are used primarily in sustainable mobility applications. These solutions enable weight reduction and enhance performance, while improving CO_2 and energy efficiency. Major markets served include next-generation mobility in automotive and aerospace, healthcare and electronics.

Specialty Polymers

With over 1,500 products, Specialty Polymers offers the widest range of high-performance polymers in the world. This allows us to create tailor-made solutions, including pushing the limits of metal replacement in the electronics, automotive, aircraft and healthcare industries. Specialty Polymers has unparalleled expertise in three technologies: aromatic polymers, high-barrier polymers and fluoropolymers.

Composite Materials

Composite Materials is a top-tier supplier to the aerospace engineered materials market, known for its expertise in design materials and process engineering. We deliver optimal material solutions that address the most challenging demands of our customers, who need new, high-performance materials that reduce weight, improve aerodynamics and ultimately lower their total part costs.

Chemicals

CHEMICALS hosts chemical intermediate businesses focused on mature and resilient markets. Solvay is a world leader in soda ash and peroxides, with the major markets we serve including building and construction, consumer goods, and food. Our Silica, Coatis and RusVinyl businesses are also high-quality assets, holding strong positions in their markets.

Soda Ash and Derivatives

Soda Ash and Derivatives is a world leader in the production of soda ash and sodium bicarbonate, which we sell primarily to the flat and container glass industries, but is also used in detergents and the pharmaceutical, feed and food industries. SA&D production sites are located both in the US (trona base) and in Europe ("Solvay" process) to serve all continents..

Peroxides

Solvay is a market leader in hydrogen peroxide, both in market share and technology. Hydrogen peroxide (H_2O_2) is used mainly by the paper industry to bleach pulp and as an intermediate for the production of chemicals, such as propylene oxide and caprolactam. Its properties are also of interest in a number of other applications, such as electronics, food, mining and the environment. Solvay Peroxides' advanced production process includes three HPPO[1] mega plants, based on Solvay technology and operated with Joint Venture partners.

Silica

Silica focuses on highly dispersible silica, used primarily in fuel-efficient and performance tires. The primary focus of the business is to develop innovative solutions for global tire manufacturers.

Coatis

Coatis provides high-performance solvent solutions, specialty phenols, polyamide derivatives and smart, functional and sustainable yarns and polymers, predominantly for the Latin American market. We enjoy an undisputed market leadership position in Brazil for phenol and derivatives, which are used in the production of synthetic resins employed in foundries, construction and abrasives.

Solutions

SOLUTIONS offers unique formulation and application expertise through customized specialty formulations for surface chemistry and liquid behavior. These maximize the yield and efficiency of the processes they are used in, while minimizing the eco-impact. Novecare, Technology Solutions, Aroma Performance, Special Chem and Oil & Gas focus on specific areas. These include: resources, improving the extraction yield of metals, minerals and oil; industrial applications, such as coatings; and consumer goods and healthcare, including vanillin and guar for home and personal care.

Novecare

Novecare is a worldwide leader in specialty chemicals, offering a portfolio of customized and sustainable solutions. Our diverse teams combine Novecare's core technologies – surfactants, natural and synthetic polymers, and green solvents – with formulation know-how and application knowledge to deliver high-performing, differentiated solutions across the agro, home and personal care, coatings, and industrial markets. Novecare's manufacturing and research capabilities are global in reach, with dedicated teams in each region to meet local needs and requirements.

Technology Solutions

Technology Solutions is a global leader in specialty mining reagents, phosphine-based chemistry and solutions for the stabilization of polymers. Our portfolio includes world-class, leading-edge technologies and unrivaled technical service and application expertise that supports our customers in developing tailor-made solutions. This is particularly true for mining, where Solvay's products allow customers to extract metal concentrates from increasingly complex and depleted ores.

Special Chem

Special Chem produces fluorine and rare-earth formulations for automotive, electronics, agrochemical and construction applications. With our industrial know-how, global presence and proximity to R&I, we position ourselves as a strategic partner for the automotive sector, as a producer of materials used in emission-control catalysis and aluminum brazing, and as a producer of cleaning and polishing materials for semiconductors.

Aroma Performance

Aroma Performance is the world's largest integrated producer of vanillin for the flavors and fragrances industries and also produces synthetic intermediates used in pharmaceuticals, agrochemicals and electronics.

Oil and Gas

Oil & Gas offers a wide product portfolio in the upstream oilfield chemicals sector that includes friction reducers, gelling agents, emulsion breakers, surfactants, inhibitors, cementing additives and biocides. Outside of the oilfield, the business also produces sodium hypophosphite for metal plating and other applications, as well as PROBAN®, a technological process that gives durable flame retardant properties to cotton-based textiles.

Corporate and Business Services

Corporate and Business Services includes corporate and other business services such as Group research and innovation, or energy services, which works to optimize energy consumption and reduce CO_2 emissions across the Group.

1. Hydrogen Peroxide to Propylene Oxide

Value Chain

End-to-End value creation

As a chemical manufacturer, our core activity is the production of synthetic or natural ingredients, which we are committed to produce using processes that have a reduced environmental impact.

Depending on our different business models, we are involved upstream in the value chain, producing some of the raw materials we use, or downstream, through processing chemicals or producing formulations. In some cases, we blend or transform products so that they offer more innovative features, with greater added value. Examples include our surfactant and solvent formulations, as well as copolymer blends or compounds in pellet form, and composite materials.

Solvay collaborates with brand owners and their suppliers to develop tailor-made solutions based on our products.

Main inputs

Raw materials
- Minerals
- Fossil-based
- Renewable/recycled

Primary energy
- Fossil (gas, solid, liquid)
- Renewable/recycled

Secondary energy
- Electricity
- Heat
- Cooling

Businesses	Raw materials	Production of ingredients	Processing/ formulation
MATERIALS			
Specialty Polymers	Partially involved	Core activity of the business	Partially involved
Composite Materials	Partially involved	Core activity of the business	Partially involved
CHEMICALS			
Soda Ash and Derivatives	Fully involved	Core activity of the business	Partially involved
Peroxides	Partially involved	Core activity of the business	Fully involved
Silica	Partially involved	Core activity of the business	Partially involved
Coatis	Partially involved	Core activity of the business	Fully involved
SOLUTIONS			
Novecare	Not involved	Core activity of the business	Fully involved
Technology Solutions	Not involved	Core activity of the business	Fully involved
Special Chem	Not involved	Core activity of the business	Partially involved
Aroma Performance	Not involved	Core activity of the business	Fully involved
Oil & Gas	Not involved	Core activity of the business	Fully involved

End markets
- Automotive and Aerospace
- Consumer Goods, Home and Personal Care, Healthcare
- Resources and Environment
- Agro, Feed and Food
- Electronics
- Building
- Industrial Applications

Involvement of businesses in production steps

Fully involved | Partially involved | Not involved | Core activity of the business

From the extraction of raw materials to production, processing, formulation and assembly, our solutions go through many different modifications before they become part of our everyday lives.
At Solvay, we focus our expertise on the links in the value chain where we can make the biggest contribution. This means working closely with suppliers, partners, customers and brand owners to share knowledge and unlock shared value for all. Our new End-to-End Value Chain initiative takes customer service a step further, making the most of our internal resources and expertise.

Reinventing our end-to-end value chain to unlock more value

Despite a challenging supply chain environment in 2021, we continued our journey in transforming our value chain performance. This included stepping-up a Logistics Crisis Team to help us to navigate the logistical disruptions we faced.

Solvay's objective is to provide the best customer experience in line with our G.R.O.W. strategy, by finding the right balance between cost, cash and service, and doing this in a sustainable way. We approach this transformation by looking to optimize the outcome of the entire end-to-end value chain, rather than the outcome of each individual step.

To achieve our goals, we are leveraging the full potential of digital, breaking silos through cross-functional collaboration, sharing best practices to aid simplification and standardize our ways of working, and providing transparency through rigorous performance management.

For example, on the planning side we work cross-functionally, involving supply chain, commercial and manufacturing to define the right lead times and stockholding strategies, so that we are able to offer the desired service level for our customers. We are implementing this approach in a plant-by-plant roll out. We also rely on digital to support our initiatives to improve forecasting, advanced scheduling and planning maturity. These programs have already delivered €202[1] million in value since 2019.

"To face the unprecedented logistical challenges, we quickly assembled a team of cross-functional experts who helped Solvay navigate the complex supply chain situation supporting the various people involved in operations around the world. This team leveraged our expertise and relationships to support better delivery to our customers, helping to resolve well over 1,000 complex cases over a period of six months."

Scott Hain
Head of Value Chain Transformation

1. versus baseline and pro-forma sales 2019

Progressing with our stakeholders

Customers

How we bonded in 2021

- Engagement of major customers on common high materiality aspects
- Direct contacts with GBU teams (management, R&I, sales, supply chain)
- Rating questionnaires (CDP, EcoVadis)
- Sustainable Portfolio Management (SPM) profiles
- Net Promoter score (digital surveys every two years)

High materiality aspects

- Product design and lifecycle management
- Customer welfare
- Hazardous materials

Stakeholders' expectations

- Continued increase in number of customers assessing Solvay's performance via EcoVadis, CDP, or specific questionnaires confirms focus on risks and opportunities in supply chain
- Increasing number of customers express need for innovative solutions in line with circular economy principles

Our responses

- About **150** customers representing about **20%** of our sales require Solvay's EcoVadis evaluation
- Solvay in the **top 1%** of companies assessed by EcoVadis in the chemical industry

Our challenges

- EcoVadis 360 screening identified controversies, fines or penalties relating to environmental/social issues in the last five years
- Reducing Scope 3 greenhouse gas emissions linked to processing, use and end of life of sold products

Employees

How we bonded in 2021

- Solvay Solidarity Fund to enhance solidarity among employees
- Pulse surveys every six weeks to improve our people's well-being
- Communication between CEO and employees using digital tools (Q&A sessions, virtual visits on sites)
- Regular dialogue between Group managers and employees through Performance and Development annual appraisal
- Labor relations dialogue with employee representative bodies at four levels: site, country, Europe and Group

High materiality aspects

- Employee health and safety
- Inclusion and diversity
- Employee engagement and well-being

Stakeholders' expectations

- Engagement on sustainability principles by employees from top management to shop floor
- Covid-19 crisis management

Our responses

- Solvay One Dignity to accelerate Diversity, Equity and Inclusion, with **9** objectives and action plans.
- Global employee share purchase plan
- Solvay Solidarity Fund: **€2.4M** to support employees and their families since April 2020
- Extended **16** week maternity leave to all co-parents worldwide
- Solvay Sales Academy: **~€2M** invested over one year; **11,500** hours of training
- Employee Assistance Program to provide mental health support and other assistance
- **7,500+** employees moved into a hybrid working mode (**35** administrative sites globally).
- Global Performance Sharing Plan
- **100%** employees covered by collective agreement

Our challenges

- Implementation of our plan to better align the organization with G.R.O.W. strategy
- Involve employees in Solvay One Planet initiatives, e.g. Stop Office Waste project

Investors

How we bonded in 2021

- **60** events with institutional investors (**15** digital roadshows, **6** of which were ESG roadshows, and **39** conferences)
- Responding to rating agency questionnaires, credit rating agencies, proxy voting agencies
- Participation in diverse shareholder events using digital tools
- One Solvay ESG webinar

High materiality aspects

- All high materiality aspects

Stakeholders' expectations

- Solid financial performance and consistent shareholder reward
- Sustainability and focus on long-term value creation
- Strong focus on innovation, governance, ethics and transparency
- Rapid evolution of sustainability reporting frameworks, particularly the new International Sustainability Standards Board in the US and the future European sustainability standards in the framework of the Corporate Sustainability Reporting Directive (CSRD)

Our responses

- Solvay One Dignity
- Announced carbon neutrality plans
- Announced employee share purchase plan
- Dividend increase (**+2.7%** vs 2020)
- Capex of **€736 million** targeting growth businesses

Our challenges

- Climate action confirmed as priority topic
- Facing challenging environment in key markets
- Impact of Covid–19 crisis
- Impact on reputation related to controversies

In 2021, the priorities in our Solvay One Planet sustainability roadmap were accelerated once again. We continued to strengthen our bonds with our stakeholders, which include customers, employees, investors, suppliers, local communities and the planet (governments and NGOs). We listened to their needs and built on their feedback, raising the bar to address our collective impact on climate change, natural resources and quality of life. This included working with customers and suppliers to reduce the environmental footprint of our products and committing to foster diversity, equity and inclusion throughout the Group.

Suppliers

How we bonded in 2021

- Supplier Key Account Management
- Supplier commitment to Supplier Code of Business Integrity
- Corporate Social Responsibility questionnaire
- Third-party assessments through EcoVadis and TfS
- Solvay's Supplier Days, a series of exclusive events to engage suppliers

High materiality aspects

- Supply chain and procurement
- Materials sourcing and efficiency

Stakeholders' expectations

- More collaboration on goal setting, strategic thinking and sustainability

Our responses

- 2040 suppliers assessed via EcoVadis TfS Audit Program
- Launched Supplier Engagement Program: **250+** executives from **130+** companies participated in Solvay's first Supplier Day, **69** collaborative projects collected

Our challenges

- Mitigate CSR risks in our supply chain through due diligence and traceability
- Reduce Scope 3 greenhouse gas emissions linked to raw material extraction and processing

Local Communities

How we bonded in 2021

- Engagement at site level within STAR factory project and several dimensions of Solvay One Planet actionable at this level (biodiversity, Stop Office Waste program): developing and steering relationships with local stakeholders
- Annual Citizen Day at Group level

High materiality aspects

- Air quality
- Water and wastewater
- Waste
- Corporate Citizenship
- Critical incident risk management
- Hazardous materials

Stakeholders' expectations

- Contribution to local material aspects
- Sensitivity to local environmental and social issues

Our responses

- **15,000** employees worldwide on **121** sites participated in Solvay's 2021 Citizen Day on Biodiversity, together with more than **5,700** participants from NGOs and local communities; **523** actions achieved.
- **30** projects (**€3.9** million) for communities, related to urgent needs (e.g. health care, flooding), organized through the Solvay Solidarity Fun since April 2020.

Our challenges

- **Take action on biodiversity:** monitor and reduce pressure on biodiversity beyond climate change; develop local restoration projects in partnership with associations and local stakeholders
- **Sensitive handling of social media,** which can make a local issue global
- Controversies related to effluents or emissions

Planet

(NGOs & Government)

How we bonded in 2021

- Constructive dialogue with public authorities on issues of legitimate interest to Solvay
- Participation in global and regional trade associations (WBCSD, ICCA, BusinessEurope, Cefic) and scientific organizations (IUCN, SETAC)
- Partnership with the Ellen MacArthur Foundation
- Partnership with the Solar Impulse Foundation

High materiality aspects

- Greenhouse gas emissions
- Energy
- Biodiversity
- Management of the Legal, Ethics and Regulatory framework

Stakeholders' expectations

- Acceleration of actions to reduce Greenhouse gas emissions and address climate change
- Confirmation of UN SDGs as reference for sustainability priorities at planetary scale
- Introduction of metrics to describe sustainable value creation as per WEF's International Business Council (IBC) work on "Toward Common Metrics and Consistent Reporting of Sustainable Value Creation"

Our responses

- Confirmation of SDGs where Solvay can have most impact across the value chain:
  - **Climate: 7, 13, 14 & 15**
  - **Resources: 12**
  - **Better Life: 3, 6, 8 & 17**
- **10** ambitious goals defined through our Solvay One Planet sustainablility roadmap
- Announced plans for carbon neutrality by 2050

Our challenges

- Solvay One Planet targets
- Carbon neutrality before 2050 (greenhouse emissions in Scope 1 and 2)
- Our Scope 3 target shall at least meet the 2°C criteria of the SBTi.
- Reporting of corporate metrics in line with the UN SDGs (WEF initiative)

Ratings

Solvay is committed to achieving strong ratings in both financial and sustainability indexes. Positive ratings help us to create a long-term relationship with our stakeholders that is based on trust. Agency feedback also has a real impact on our priorities, as it helps us to better understand our stakeholders' key concerns.

In previous years we have focused our action plans on addressing the common strengths and weaknesses identified by the ratings agencies. This allowed us to achieve results in the top quartile, and sometimes even the top ten. However, questionnaires are evolving and agencies are now sometimes assessing the same dimension differently. This means, for example, that while some ratings agencies identify "green sales" as a strength for Solvay, based on the use of our Sustainable Portfolio Management methodology, others identify it as a weakness, because of our limited use of biosourced raw materials.

Despite these challenges, we continue to take comments from ratings agencies very seriously. This includes addressing operational eco-efficiency and the need to reduce emissions faster through our Solvay One Planet commitments, which focus on reducing emissions and effluents that could impact biodiversity.

Solvay received the following awards for sustainability reporting in 2021:

- → Our integrated report was listed in the top ten of the ninth edition of Reporting Matters, the **World Business Council for Sustainable Development's (WBCSD)** annual review of its member companies' sustainability and integrated reports.
- → **Chemical Week's Best ESG Reporting Program Sustainability Award,** in recognition of our efforts to build a more sustainable future.
- → The **Annual Award competition for Best Financial Communication,** a quality review for and by experts of the international financial community, under the auspices of the Belgian ABAF/BVFA.

1. Last updates in December 2021.

2. MSCI ESG Research provides MSCI ESG Ratings on global public and a few private companies on a scale of AAA (leader) to CCC (laggard), according to exposure to industry-specific ESG risks and the ability to manage these risks relative to peers.

3. An international organization, CDP analyzes how companies integrate climate change into their strategies.

4. FTSE International Limited and Frank Russell Company.

Our main indexes[1]

MSCI[2] World Index
In 2021, Solvay received a rating of AA (on a scale of AAA-CCC) in the MSCI ESG Ratings assessment.

EcoVadis supplier sustainability ratings
Solvay is in the top 1% of chemical companies rated by EcoVadis.

ISS-ESG
Solvay is rated as a Prime Company with a score of B- by the ISS-ESG, ranking among the leaders in chemicals.

CDP[3]
Solvay is rated A- by the CDP in the 2021 Climate Change questionnaire.

Moody's ESG Solutions
Solvay ranks #6 in the chemical industry, with a score of 61/100.

SUSTAINALYTICS
Solvay is rated "Medium ESG Risk" by Sustainalytics.

Ethibel Sustainability Index (ESI)
Solvay has been confirmed as a constituent of the Ethibel Sustainability Index (ESI) Excellence in 2021.

FTSE 4 Good[4]
Solvay is in the FTSE4Good Index.

Performance

PERFORMANCE

Performance

1. OVERVIEW OF THE CONSOLIDATED RESULTS

1.1. Financial figures

1.1.1. Key financial figures

		IFRS			Underlying		
In € million	Notes	FY 2021	FY 2020	% yoy	FY 2021	FY 2020	% yoy
Net sales	B1	**10,105**	**8,965**	**+12.7%**	**10,105**	**8,965**	**+12.7%**
Net operating costs, excluding depreciation & amortization	B2	-8,066	-7,214	-11.8%	-7,748	-7,020	-10.4%
EBITDA	B3	**2,038**	**1,751**	**+16.4%**	**2,356**	**1,945**	**+21.1%**
EBITDA margin		-	-	-	23.3%	21.7%	+1.6pp
Depreciation, amortization & impairments	B4	-848	-2,416	+64.9%	-756	-835	+9.4%
EBIT		**1,190**	**-665**	**n.m.**	**1,600**	**1,110**	**+44.1%**
Net financial charges	B5	-96	-179	+46.3%	-235	-284	+17.4%
Income tax expenses	B6	110	-248	+55.8%	-287	-195	-47.3%
Tax rate	B6	-	-	-	23.5%	25.6%	-2.1pp
Profit from discontinued operations	B7	5	163	n.m.	2	19	-88.2%
Profit/(loss) for the period		**989**	**-929**	**n.m.**	**1,081**	**650**	**+66.2%**
(Profit)/loss attributable to non-controlling interests		-41	-33	+26.8%	-41	-33	+25.1%
Profit/(loss) attributable to Solvay shareholders		**948**	**-962**	**n.m.**	**1,040**	**618**	**+68.3%**
Basic earnings per share (in €)	B19	**9.15**	**-9.32**	**n.m.**	**10.05**	**5.99**	**+67.7%**
of which from continuing operations	B19	9.11	-10.90	n.m.	10.02	5.81	+72.6%
Dividend(1)	B20	**3.85**	**3.75**	**+2.7%**	**3.85**	**3.75**	**+2.7%**
Capex in continuing operations	B8		-		**736**	**611**	**+20.5%**
Cash conversion	B8		-		68.8%	68.6%	+0.2pp
FCF to Solvay shareholders from continuing operations	B9		-		**843**	**963**	**-12.5%**
FCF to Solvay shareholders	B9		-		830	951	-12.7%
FCF conversion ratio			-		37.6%	51.1%	-13.6pp
Net working capital	B10	1,373	1,108	+23.9%	1,373	1,108	+23.9%
Net working capital/sales(2)	B10				12.7%	14.7%	-2.0pp
Net financial debt(3)	B11	**2,149**	**2,398**	**-10.4%**	**3,949**	**4,198**	**-5.9%**
Underlying leverage ratio	B11				1.7	2.2	-22.3%
CFROI	B12				**6.9%**	**5.5%**	**+1.5pp**
ROCE	B13				**11.4%**	**6.9%**	**+4.4pp**
Research & innovation	B14				298	291	+2.3%
Research & innovation intensity	B14				**2.9%**	**3.2%**	**-0.3pp**

(1) Recommended dividend for 2021

(2) Net working capital/sales ratio is the average of the quarterly net working capital/sales ratios

(3) Underlying net debt includes the perpetual hybrids bonds, accounted for as equity under IFRS

1.1.2. Historical key financial data

In € million		As published 2017	2018	2019	2020	2021
Income statement data						
Sales	a	10,891	11,299	11,227	9,714	11,434
Net sales	b	10,125	10,257	10,244	8,965	10,105
Underlying EBITDA	c	2,230	2,230	2,322	1,945	2,356
Underlying EBITDA margin	d	22.0%	21.7%	22.7%	21.7%	23.3%
IFRS EBIT	e	976	986	316	-665	1,190
Underlying profit for the period	f	992	1,131	1,113	650	1,081
IFRS profit for the period	g	1,116	897	157	-929	989
Underlying profit attributable to Solvay share	h	939	1,092	1,075	618	1,040
IFRS profit attributable to Solvay share	i	1,061	858	118	-962	948
Cash flow data						
Capex	j	822	833	967	643	736
of which from continuing operations	k	716	711	826	611	736
Cash conversion	l = (c+k)/c	67.9%	68.1%	64.4%	68.6%	68.8%
FCF	m	871	989	1,072	1,206	1,043
FCF to Solvay shareholders	n	466	725	801	951	830
Balance sheet data						
Net working capital	o	1,414	1,550	1,560	1,108	1,373
Net working capital/sales	p = μ(o/a)(1)	13.8%	15.3%	16.0%	14.7%	12.7%
Underlying net debt(2)	q = r+s	5,346	5,105	5,386	4,198	3,949
Perpetual hybrid bonds	r	2,200	2,500	1,800	1,800	1,800
IFRS net debt	s	3,146	2,605	3,586	2,398	2,149
IFRS equity	t	9,752	10,624	9,625	7,304	8,851
Equity attributable to non-controlling interests	v	113	117	110	106	112
Perpetual hybrid bonds in equity	u	2,188	2,486	1,789	1,787	1,787
Equity attributable to Solvay share	w = t-u-v	7,451	8,021	7,725	5,411	6,953
Underlying leverage ratio(3)	x = -q/c	2.17	2.01	2.00	2.16	1.68
Other key data						
CFROI	z	6.9%	6.9%	6.5%	5.5%	6.9%
Research & innovation	A	325	352	336	291	298
Research & innovation intensity	B = -A/b	3.2%	3.4%	3.3%	3.2%	2.9%

(1)Average of the quarters

(2)Underlying net debt includes the perpetual hybrid bonds, accounted for as equity under IFRS

(3) For the years 2017-2019, as net debt at the end of the period did not yet reflect the net proceeds to be received on the divestment of discontinued operations, whereas the underlying EBITDA excluded the contribution of discontinued operations, the underlying EBITDA was adjusted to calculate the leverage ratio. Polyamide's underlying EBITDA was added.

The table above presents the historical figures of the Group as published at the reference date. These data have not been affected by possible subsequent restatements due to perimeter changes, IFRS/IAS standards evolution, changes in definition of APM, etc.

Over the reference periods, the following main changes have occurred:

2017:

- Vinythai transaction completed end of February;
- Acetow transaction completed end of May;
- Divestment of Polyamide business classified as discontinued operations and assets and liabilities held for sale at the end of September 2017.

2018:

- Divestment of Polyamide business still classified as discontinued operations and assets and liabilities held for sale since September 2017.

2019:

- Implementation of IFRS 16;
- Divestment of Polyamide business still classified as discontinued operations and assets and liabilities held for sale since September 2017.

2020:

- Disposal of the Polyamide business completed on January 31, 2020.
- At the end of December 2020, the assets and liabilities related to some businesses have been reclassified as "held for sale" (assets for a total amount of € 229 million and liabilities for a total amount of € 110 million):
  - the Peroxides sodium chlorate business line and related assets in Povoa (Portugal);
  - the various fluorine chemicals assets in Onsan, South Korea, part of Special Chem;
  - the commodity amphoterics surfactants activities in Novecare;
  - the Peroxides sodium percarbonate business line and related assets in Bad Hönningen (Germany);
  - the Barium Strontium business and the joint venture with Chemical Products Corporation (CPC); and
  - the Process Materials business (part of Composites).

2021:

During 2021, the assets and liabilities related to the following businesses previously classified as "held for sale" were divested:

- the Peroxides sodium chlorate business line and related assets in Povoa (Portugal),
- the various fluorine chemicals assets in Onsan, South Korea, part of Special Chem,
- the Peroxides sodium percarbonate business line and related assets in Bad Hönningen (Germany),
- the Barium Strontium business and the joint venture with Chemical Products Corporation (CPC),
- the Process Materials business (part of Composite Materials),
- the Novecare amphoterics surfactants activities, and
- the Novecare surfactants and anti-oxidants business in Rasal (India).

These divestments lead to a decrease in sales of €220 million in 2021 compared to 2020. There was no material capital gain/loss on these divestments.

On July 1, Solvay announced the closing of the acquisition, from Bayer, of a seed coating business, with facilities in Méréville, France, and tolling operations in the U.S. and Brazil. This is a natural extension to Solvay's own AgRHO® family of sustainable seed boosting solutions (part of Novecare) and supports the drive toward more bio-based, sustainable technologies.

1.2. Extra-financial figures

Since 2019, Solvay has embarked on a sustainability journey that is captured in the Solvay One Planet roadmap, which is an integral element of its G.R.O.W. strategy and company Purpose. Structured around the three major categories of climate, resources and better life, Solvay One Planet is a roadmap towards a sustainable future that provides shared value for all. Solvay made further advances on this journey in 2021, accelerating efforts to meet stakeholders' growing expectations, including protecting the most vulnerable during the pandemic; setting more ambitious environmental targets and building partnerships to enable the circular economy. The table below provides an update on Solvay's progress.

	2018	2019	2020	2021	Comments	Progress vs 2018
Climate						
Align greenhouse gas emissions with Paris Agreement and SBTi (Mt)	12.7	12.1	10.2	11.0	Higher production levels in 2021 vs 2020 Achieved 11% in aggregate versus 6.6% Paris Agreement	-14% (-11% structural)
Phase out coal wherever renewable alternatives exist (PJ)	33	32	27 (1 plant exiting coal)	27 (1 plant exiting coal)	Volume growth and exceptional energy market conditions in 2021; Exit announced at Rheinberg in 2020 and at Dombasle in 2021	-18%
Reduce negative pressure on Biodiversity (yoy)	-	-5%	-7%	-13%	Volume growth more than offset by improved eco-profile accuracy	-24%
Resources						
Increase sustainable solutions % of Group sales	50%	53%	52%	53% (a)	Improved eco-profile and increased number of sustainable solutions	+3pp
Increase circular economy % of Group sales	-	4%	5%	5%	Long term projects with expected results as from 2023	+1pp
Reduce non-recoverable industrial waste (Kt)	89	76	64	58	Projects initiated in 2020 starting to deliver	-34%
Reduce intake of freshwater (Mm^3)	330	330	314	315	Volume growth compensated by greater efficiency	-5%
Better life						
Safety with a zero accident policy (RIIR)	0.51	0.40	0.38	0.43	Reversal consistent with industry trends, action plan on globalizing near misses	-16%
Accelerate inclusion & diversity parity in mid & senior management	23.7%	24.3%	24.6%	25.0%	Launched Solvay One Dignity 9 goals	+1.3pp
Gender equality extend maternity leave					16 weeks policy open to all co-parents since January 2021	☑

Note: When necessary, historical numbers have been restated to be comparable with 2021 (scope and methodology).
(a) Effective 2022, the CO_2 price was increased from €75 to €100 per metric ton CO_2 eq. As a consequence, the level for 2021 will be restated to 50%.

Climate

In October 2021, Solvay announced its plans to reach carbon neutrality on scope 1 and 2 emissions before 2040 for all businesses except soda ash and before 2050 in soda ash. Consequently, the 2030 target for greenhouse gas emissions was upgraded to reduce by -30% from -26%, as compared to the 2018 baseline. The scope 3 target shall at least meet the 2°C criteria of the Science Based Targets initiative. A strategic initiative was also launched in 2021 to spur transformative progress with its suppliers in 2021. The Group will continue its effort in that direction beyond 2030 within its neutrality vision.

Previously, GHG emissions had been reduced by -14% at constant scope between 2018 and 2021, of which -11% relates to structural improvements and -3% to lower levels of production. As part of its transition to cleaner energy sources, Solvay has 36 emission reduction projects identified, of which 21 are already underway. These represent 2.5 megatons of CO_2 annually, which is the equivalent of taking 1.4 million cars off the road.

The use of coal for energy production is already being phased out of two soda ash plants in Europe. In 2020, Rheinberg in Germany began switching from coal to biomass, reducing the Group's total emissions by -4% by 2025. More recently, the Dombasle site in France began exiting coal by transitioning to primarily refuse-derived fuel, cutting another -2% of the Group's total emissions by 2024. And now in 2022, Solvay takes the first step to reduce coal usage in its largest European soda ash operation in Devnya, Bulgaria by converting a boiler to biomass. All projects generate returns above 15% and further de-risk our operations.

Solvay has also decreased its pressure on biodiversity by -24% versus 2018 according to the ReCiPe methodology (reducing pressure on terrestrial acidification, climate, water eutrophication, marine ecotoxicity). The overall trend is fully aligned with 2030 targets, with part of this progress related to methodology improvements. In 2021, the Paulinia site in Brazil was awarded the Wildlife Habitat Council's (WHC) Gold Certificate and our efforts to restore the Cuchia Quarry in Spain also received recognition.

Solvay's climate progress was recently recognized by CDP (formerly the "Carbon Disclosure Project") who upgraded Solvay's rating from B to A-, which is in the leadership band, and higher than the chemical sector average of B.

Resources

In 2021, the proportion of sales from sustainable solutions improved by +1 percentage point, largely reflecting the reduction of environmental impact in production within Specialty Polymers and Peroxides, the acquisition of new agriculture activities, and the requalification of some solutions for coatings.

Regarding circularity, Solvay's tripartite partnership between Veolia and Renault to establish a sustainable supply source for strategic battery raw materials is on track. The hydrometallurgical process to extract and purify cobalt, lithium and nickel from Veolia's battery cells at end of life has proven successful. The project is now moving into an engineering phase for construction of a pilot plant.

Innovation to develop more sustainable solutions is a continuous process for Solvay teams collaborating with partners and customers to anticipate future needs and identify higher performance requirements for new technologies. As an example, solutions for the next generation of battery technologies are underway with a clear roadmap (Gen 3 and the solid state battery Gen 4). Solvay is the front-runner in Europe for this new technology, and we are investing in the most advanced pilot plant in Europe. Also in the automotive market, Solvay partnered with Bridgestone and Arlanxeo to launch TECHSYN, a new tire technology platform reducing overall fuel consumption and CO_2 emissions while enhancing tread mileage. In the consumer space, customers are recognizing Solvay for its Actizone™ innovation— a unique long-lasting antimicrobial disinfection technology— which is now commercialized.

In 2021, Solvay's freshwater withdrawal remained essentially constant compared to 2020 (+1 Mm3), despite an organic sales growth of 17.0%.

In 2021, Solvay also successfully reached its target to reduce non-recoverable industrial waste by -30%, well in advance of its 2030 timeline. Much of this was accomplished from waste valorization, which is the process of reusing, recycling, or composting waste and converting them to more useful products. Some examples include repurposing waste for cement, transforming wastewater sludges into bricks for construction, and better monitoring of the waste management data.

Better Life

Investing in human capital remains a high priority, as this underpins the foundation that propels Solvay forward.

Our safety results deteriorated in 2021 following the impact of the Covid-19 situation on behaviors and its impact on operations (volume growth, supply chain disruptions) created by the very strong recovery. The results in 2021 versus 2018 show good progress.

In 2021, we launched the Solvay One Dignity program with the objective to accelerate diversity, equity and inclusion within our organization.

On Diversity, Solvay is accelerating gender equity at all mid and senior levels by 2030. The first step was to update a DEI dashboard with associated metrics. In addition, a Gender Impact Assessment (GIA) is planned to identify where current policies may be negatively impacting the advancement of female employees within the organization.

Solvay is also encouraging employees to bring their "whole self" to work and is supporting that ambition by helping colleagues create employee resource groups (ERGs) worldwide. Two new ERGs were launched in 2021 for African American employees.

On gender equity, Solvay is also working to ensure fair recruitment and has set a target for 50% participation of under-represented groups, including women, in the shortlist of all mid and senior level jobs. On pay equity, we are collecting data to help us identify if there are unjustified pay inequities across Group profiles. While there is more progress to be made, the current ratio of basic salaries of women to men by management category is encouraging. Solvay intends to publish these results for the most significant countries in its 2021 annual report, in an effort to promote transparency.

Another highlight includes the launch of a new mentoring program: Almost 25% of our female junior managers responded to a call for volunteers to take part in "The A Effect Ambition Challenge", an international program designed to help women boost their careers. In 2021, 150 women participated in the program and another 300 women are scheduled to participate in 2022.

In our effort to build a more inclusive workplace, Solvay launched a global survey to assess the inclusive culture. The results have been added to the DEI Dashboard and used as a baseline to track our progress. Eighty percent of employees feel they can be "themselves" at work. While this is a great insight, it also highlighted certain areas where Solvay needs to focus its efforts in 2022, such as the importance of speaking up when experiencing non inclusive behaviors.

In December 2021, Solvay launched a Global Share Ownership Program, which is historic for the company and its employees— the first of its kind since the company went public in 1967. With this initiative, we seek to better align employees with the Group's performance by offering them a 10% discount on Solvay shares. The aim is to promote an ownership mindset by broadening the employee perspective thereby promoting deeper engagement and participation in driving superior value.

Solvay Solidarity Fund raised €15 million in 2020 thanks to the support of shareholders, directors, CEO and Executive managers, and employees. Originally set up to help employees cope with hardship due to the Covid-19 pandemic, the fund this year also addresses other kinds of hardship such as the aftermath of the floods in Belgium, Germany and China. To date €2.4 million has been provided to individuals and €4 million to collective support: 30 projects in 13 countries.

More information in the extra-financial report.

2. PREPARATION BACKGROUND

2.1. Comparability of results & reconciliation of underlying Income Statement indicators

Besides IFRS accounts, Solvay also presents alternative performance indicators to provide a more consistent and comparable indication of the Group's underlying financial performance and financial position, as well as cash flows. These indicators provide a balanced view of the Group's operations and are considered useful to investors, analysts and credit rating agencies as these measures provide relevant information on the Group's past or future performance, position or cash flows. These indicators are generally used in the sector it operates in and therefore serve as a useful aid for investors to compare the Group's performance with its peers. The underlying performance indicators adjust IFRS figures for the non-cash Purchase Price Allocation (PPA) accounting impacts related to acquisitions, for the coupons of perpetual hybrid bonds, classified as equity under IFRS but treated as debt in the underlying statements, for impairments and for other elements that would distort the analysis of the Group's underlying performance.

2.2. Alternative performance metric (APM)

Solvay measures its financial performance using alternative performance metrics, which can be found below. Solvay believes that these measurements are useful for analyzing and explaining changes and trends in its historical results of operations, as they allow performance to be compared on a consistent basis. Definitions of the different metrics presented here are included in the glossary at the end of this financial report.

2.3. Description of the operational segments

Solvay is organized in the following operating segments:

- Materials offer a unique portfolio of high-performance polymers and composite technologies used primarily in sustainable mobility applications. Its solutions enable weight reduction and enhance performance while improving CO_2 and energy efficiency. Major markets served include next-generation mobility in automotive and aerospace, healthcare and electronics.
- Chemicals host chemical intermediate businesses focused on mature and resilient markets. Solvay is a world leader in soda ash and peroxides and major markets served include building and construction, consumer goods and food. Its Silica, Coatis and RusVinyl businesses are also high quality assets with strong positions in their markets. This segment provides resilient cash flows and the company selectively invests in these businesses to become the #1 cash conversion chemical player.
- Solutions offer a unique formulation & application expertise through customized specialty formulations for surface chemistry & liquid behavior, maximizing yield and efficiency of the processes they are used in while minimizing the eco-impact. Novecare, Technology Solutions, Aroma, Special Chem and Oil & Gas focus on specific areas such as resources (improving the extraction yield of metals, minerals and oil), industrial applications (such as coatings) or consumer goods and healthcare (including vanillin and guar for home and personal care).
- Corporate & Business Services includes corporate and other business services, such as Group research & innovation or energy services, whose mission is to optimize energy consumption and reduce CO_2 emissions.

3. UNDERLYING GROUP FIGURES

Note B1: Net sales

Net sales of €10,105 million in 2021 were up +12.7% (+17.0% organically) versus 2020 driven largely by volumes, and further supported with positive pricing. Sales in 2021 were up +4% organically versus 2019.

Net sales - in € million	
FY 2020	**8,965**
Scope	-202
Forex conversion	-124
Volume & Mix	+1,022
Price	+443
FY 2021	**10,105**

SALES BY END-MARKET

2021 sales by end-markets (in %)	Materials	Chemicals	Solutions	Solvay
Aeronautics and Automotive	**50%**	**16%**	**10%**	**24%**
Electrical and Electronics	**15%**	**0%**	**6%**	**7%**
Resources and Environment	**4%**	**9%**	**19%**	**12%**
Agro, feed and food	**3%**	**17%**	**17%**	**13%**
Consumer goods and healthcare	**12%**	**23%**	**14%**	**16%**
Building and Construction	**4%**	**11%**	**10%**	**9%**
Industrial applications	**11%**	**23%**	**24%**	**20%**

Note B2: Underlying raw materials & energy

The overall raw materials expense of the Group amounted to circa €3.2 billion in 2021 (vs. €2.2 billion in 2020). The raw materials expense can be split into several categories: crude oil derivatives for 36%, minerals derivatives for 20% (e.g. glass fiber, sodium silica, calcium silicate, phosphorus, sodium hydroxide…), natural gas derivatives circa 8%, biochemicals for 10% (e.g. glycerol, guar, fatty alcohol, ethyl alcohol…) and others for 25.5% (composites...).

Net energy costs represented about €789 million (vs.€497 million in 2020). The distribution per region is the following: in Europe (63%) followed by the Americas (21%), and Asia and the rest of the world (16%). The main energy sources expense are natural gas for 35% (25% in 2020, and 29% in 2019), coke, anthracite, petcoke and coal for 21% (27% in 2020 and 29% in 2019), electricity for 31% (33% in 2020 and 31% in 2019), steam, hydrogen and biomas for 12% (14% in 2020 and 11% in 2019), and fuel oil for 1% (stable vs 2020 and 2019). These percentages have been reviewed for previous years following a change of methodology that now better reflects the energy sources as used by Solvay in its operations.

More information on the energy efficiency in the Extra-financial section of this Annual Report 4.2. Energy.

Note B3: Underlying EBITDA

Underlying EBITDA evolution

Underlying EBITDA- in € million	
FY 2020	1,945
Scope	-65
Forex conversion	-25
Materials	+180
Chemicals	+224
Solutions	+160
CBS	-63
FY 2021	2,356

Underlying EBITDA- in € million	
FY 2020	1,945
Scope	-65
Forex conversion	-25
Volume & mix	+504
Net pricing	-24
Fixed costs	-74
Other	+95
FY 2021	2,356

Structural cost savings reached €213 million for the full year 2021, with €40 million realized in the fourth quarter. Approximately 40% of the savings are from indirect spend, 35% are related to restructuring initiatives, and 25% are from productivity and efficiency improvements.

Underlying EBITDA of €2,356 million was up +21.1% (+27.0% organically) in 2021 versus 2020, and up +8% versus 2019 as a result of significantly higher sales volumes. The EBITDA margin for full year 2021 was 23.3% thanks to higher volumes, increased pricing and delivery of cost measures. Underlying EBITDA in the fourth quarter of €572 million increased +23.4% (24.0% organically) versus the fourth quarter 2020 and 16% organically versus 2019 due mainly to price actions implemented to offset inflationary cost increases.

Note B4: Underlying depreciation & amortization

Amortization and depreciation & impairment charges were €756 million in 2021, compared to €835 million in 2020.

Note B5: Underlying net financial charges

In € million		FY 2021	FY 2020
Net cost of borrowings		-107	-114
Interest on loans & short term deposits		9	8
Other gains & losses on net indebtedness		2	-8
Net cost of borrowings	a	**-96**	**-113**
Coupons on perpetual hybrid bonds	b	-82	-91
Interests and realized foreign exchange gains (losses) on the RusVinyl joint venture	c	-16	-19
Cost of discounting provisions	d	-47	-64
Result from equity instruments measured at fair value	e	6	3
Net financial charges	f = a+b+c+d+e	**-235**	**-284**

The net cost of borrowings variance is mainly explained by the decrease:

- in the cost of borrowings attributable to the continuing efforts of repayment of debt, including the early repayment of €373 million on the € 750 million senior bond in December 2021;
- in other gains and losses on net indebtedness from € million for 2020 to € 2 million for 2021, largely attributable to currency swaps (interest element);
- in the coupons on perpetual hybrid bonds, mainly thanks to the refinancing in September 2020 of the perpetual hybrid NC5.5 @5.118% by a new perpetual hybrid bond of € 500 million (NC5.5@2.5%).

Discounting costs decreased as a result of the applicable discount rates for post-employment provisions.

Note B6: Underlying income taxes

In € million		FY 2021	FY 2020
Profit/(loss) for the period before taxes	a	1,366	827
Earnings from associates & joint ventures	b	159	83
Interests and realized foreign exchange gains (losses) on the RusVinyl joint venture	c	-16	-19
Income taxes	d	-287	-195
Tax rate	e = -d/(a-b-c)	23.5%	25.6%

The 2.1 percentage point decrease is mainly due to a more favorable mix of taxable profit by country.

Note B7: Underlying profit from discontinued operations

The disposal of the Performance Polyamides activities to BASF and Domo Chemicals has been completed on January 31, 2020. As a result, the contribution of discontinued operations to the profit of Solvay in 2020 was limited to €19 million. Free cash flow from discontinued operations in 2020 amounted to €-11 million.

In 2021, discontinued operations recorded an underlying net profit of €2 million. Free cash flow from discontinued operations in 2021 amounted to €-12 million.

Note B8: Capex

(in € million)		FY 2021	FY 2020
Acquisition (-) of tangible assets	a	-561	-454
Acquisition (-) of intangible assets	b	-75	-81
Payment of lease liabilities	c	-99	-108
Capex	d = a+b+c	**-736**	**-643**
Capex in discontinued operations	e		-33
Capex in continuing operations	f = d-e	**-736**	**-611**
Materials		-251	-193
Chemicals		-212	-184
Solutions		-172	-144
Corporate & Business Services		-101	-90
Underlying EBITDA	g	**2,356**	**1,945**
Materials		879	712
Chemicals		1,009	816
Solutions		701	566
Corporate & Business Services		-232	-149
Cash conversion	h = (f+g)/g	**68.8%**	**68.6%**
Materials		71.4%	72.9%
Chemicals		79%	77.4%
Solutions		75.5%	74.6%

Capex in continuing operations was €736 million in 2021, an increase of 20.5% compared to €611 million in 2020.

Note B9: Free Cash Flow

(in € million)		FY 2021	FY 2020
Cash flow from operating activities	a	1,499	1,242
of which voluntary pension contributions	b	-236	-552
of which cash flow related to portfolio management	c	-7	0
Cash flow from investing activities	d	-470	711
of which capital expenditures required by share sale agreement	e	-	-14
Acquisition (-) of subsidiaries	f	-22	-12
Acquisition (-) of investments - Other	g	-22	-46
Loans to associates and non-consolidated companies	h	4	-6
Sale (+) of subsidiaries and investments	i	169	1,297
Recognition of factored receivables	j	-	-22
Increase/decrease of borrowings related to environmental remediation	k	-	6
Payment of lease liabilities	L	-99	-108
FCF	m = a-b-c+d-e-f-g-h-i-j+k+l	**1,043**	**1,206**
FCF from discontinued operations	n	-12	-11
FCF from continuing operations	o	**1,056**	**1,217**
Net interests paid	p	-95	-103
Coupons paid on perpetual hybrid bonds	q	-75	-119
Dividends paid to non-controlling interests	R	-43	-32
FCF to Solvay shareholders	s = m+p+q+r	**830**	**951**
FCF to Solvay shareholders from discontinued operations	t	-12	-11
FCF to Solvay shareholders from continuing operations	u = s-t	**843**	**963**
FCF to Solvay shareholders from continuing operations (LTM)	v	**843**	**963**
Dividends paid to non-controlling interests from continuing operations (LTM)	w	-43	-32
Underlying EBITDA (LTM)	x	2,356	1,945
FCF conversion ratio	y = (v-w)/x	**37.6%**	**51.1%**

Free cash flow to shareholders from continuing operations reached €843 million. Results reflect significant structural improvement in working capital management, and reduced pension and interest cash costs of €89 million.

Note B10: Net working capital

(in € million)		December 31, 2021	December 31, 2020
Inventories	a	1,745	1,241
Trade receivables	b	1,805	1,264
Other current receivables	c	2,005	519
Trade payables	d	-2,131	-1,197
Other current liabilities	e	-2,051	-720
Net working capital	f= a+b+c+d+e	**1,373**	**1,107**
Sales	g	3,277	2,418
Annualized quarterly total sales	h = 4*g	13,108	9,673
Net working capital/sales	I=f/h	**10.5%**	**11.4%**
Year-to-date average	j= μ(q1,q2,q3,q4)	12.7%	14.7%

Net working capital over sales improved to 12.7% in 2021, due to the strong focus on working capital management and higher sales.

Note B11: Underlying net debt

(in € million)		December 31, 2021	December 31, 2020
Non-current financial debt	a	-2,576	-3,233
Current financial debt	b	-773	-287
IFRS gross debt	c=a+b	-3,349	-3,519
Underlying gross debt	d=c+h	-5,149	-5,319
Other financial instruments (current + non-current)	e	259	119
Cash & cash equivalents	f	941	1,002
Total cash and cash equivalents	g=e+f	1,199	1,121
IFRS net debt	I=c+g	**-2,149**	**-2,398**
Perpetual hybrid bonds	h	-1,800	-1,800
Underlying net debt	j=i+h	**-3,949**	**-4,198**
Underlying EBITDA (LTM)	k	2,356	1,945
Adjustment for discontinued operations	l	-	-
Adjusted underlying EBITDA for leverage calculation	m=k+l	2,356	1,945
Underlying leverage ratio	n=-j/m	**1.7**	**2.2**

Underlying net financial debt decreased by €249 million in 2021 to 3.95 billion, driven by the higher free cash flow generation in 2021.

Note B12: Provisions

Provisions are down €487 million to €2.6 billion thanks primarily to remeasurements related to employee benefits and the voluntary pension contributions in Belgium and the UK totaling €236 million.

Provisions at the end of 2020	**-3,087**
Payments	*303*
Net new liabilities	*-464*
Unwinding of provisions	*-100*
Asset return	*207*
Additional voluntary pensions contributions	*236*
Remeasurements	*416*
Changes in scope and other	*-111*
Provisions at the end of 2021	**-2,600**

Note B13: CFROI

(in € million)		FY 2021 As published	FY 2021 Adjustment	FY 2021 As calculated	FY 2020 As pulished	FY 2020 Adjustment	FY 2020 As calculated
Underlying EBIT	a	1,600		1,600	1,110		1,110
Underlying EBITDA	b	2,356		2,356	1,945		1,945
Underlying earnings from associates & joint ventures	c	159		159	83		83
Dividends received from associates & joint ventures [1]	d	129	-	129	25	-	25
Recurring capex [2]	e = -2.3%*m			-411			-408
Recurring income taxes [3]	f = -27%*(a-c)			-389			-288
Recurring "CFROI" cash flow data	g = b-c+d+e+f			**1,526**			**1,191**
Materials				570			456
Chemicals				683			497
Solutions				454			353
Corporate & Business Services				-181			-115
Property, plant and equipment	h	4,943			4,717		
Intangible assets	i	2,103			2,141		
Right-of-use assets	j	466			405		
Goodwill	k	3,379			3,265		
Replacement value of goodwill & fixed assets [4]	l = h+i+j+k	10,891	9,131	20,022	10,528	9,369	19,897
of which fixed assets	m	7,046	10,829	17,875	6,858	10,870	17,728
Investments in associates & joint ventures [5]	n	637	-71	565	495	4	499
Net working capital [5]	o	1,373	49	1,422	1,107	347	1,454
"CFROI" invested capital	p = l+n+o			**22,009**			**21,850**
Materials				6,363			6,260
Chemicals				6,527			6,492
Solutions				6,289			6,376
Corporate & Business Services				2,997			2,964
CFROI	q = g/p			**6.9%**			**5.5%**
Materials				9.0%			7.3%
Chemicals				10.5%			7.7%
Solutions				7.2%			5.5%

[1] Excluding discontinued operations

[2] Currently estimated at 2.3% of replacement value of fixed assets

[3] Currently estimated at 27% of underlying EBIT (28% in 2020)

[4] The adjustment reflects the difference between the estimated replacement value of goodwill and fixed assets, and the accounting value. The changes over time come from foreign exchange variations, new investments and portfolio moves. It also reflects the quarterly average over the year.

[5] The adjustment reflects the quarterly average over the year.

Note B14: ROCE

(in € million)		2021 As calcu-lated	2020 As calcu-lated
EBIT	a	1,600	1,110
Non-cash accounting impact from amortization & depreciation of purchase price allocation (PPA) from acquisitions	b	-150	-181
Numerator	c = a+b	**1,450**	**929**
WC industrial	d	1,585	1,674
WC Other	e	-138	-242
Property, plant and equipment	f	4,800	4,997
Intangible assets	g	2,115	2,361
Right-of-use assets	h	435	422
Investments in associates & joint ventures	i	565	499
Other investments	j	42	46
Goodwill	k	3,341	3,621
Denominator	l = d+e+f+g+h+i+j+k	**12,745**	**13,378**
ROCE	m = c/l	**11.4%**	**6.9%**

ROCE has been defined as one of the key performance metrics to evaluate the success of the G.R.O.W. strategy. ROCE for 2021 reached a record level at 11.4% versus 6.9% in 2020 and 8.1% in 2019.

Note B15: Research & Innovation

(in € million)		FY 2021	FY2020
IFRS research & development costs	a	-325	-300
Grants netted in research & development costs	b	26	27
Depreciation, amortization & impairments included in research & development costs	c	-100	-89
Capex in research & innovation	d	-46	-54
Research & innovation	e = a-b-c+d	**-298**	**-291**
Materials		-138	-126
Chemicals		-28	-32
Solutions		-103	-103
Corporate & Business Services		-30	-30
Net sales	f	**10,105**	**8,965**
Materials		2,903	2,695
Chemicals		3,357	2,948
Solutions		3,838	3,316
Corporate & Business Services		7	6
Research & innovation intensity	g = -e/f	**2.9%**	**3.2%**
Materials		4.7%	4.7%
Chemicals		0.8%	1.1%
Solutions		2.7%	3.1%

R&I effort further increased slightly during 2021, compared to 2020. Corporate R&I efforts were strongly redirected towards the material activities in preparation of the new G.R.O.W strategy.

4. UNDERLYING FIGURES PER SEGMENT

Segment overview

(in € million)	FY 2021	FY 2020	% yoy	% organic
Net sales	**10,105**	**8,965**	**+12.7%**	**+17.0%**
Materials	2,903	2,695	+7.7%	+11.5%
Specialty Polymers	2,173	1,820	+19.4%	+20.4%
Composite Materials	730	875	-16.6%	-8.6%
Chemicals	3,357	2,948	+13.9%	+18.2%
Soda Ash & Derivatives	1,509	1,450	+4.1%	+5.1%
Peroxides	636	642	-0.9%	+9.5%
Coatis	745	470	+58.6%	+68.7%
Silica	467	386	+20.7%	+22.2%
Solutions	3,838	3,316	+15.8%	+20.3%
Novecare [1]	1,546	1,330	+16.2%	+20.4%
Special Chem	840	761	+10.4%	+17.5%
Technology Solutions [1]	560	490	+14.3%	+18.4%
Aroma Performance	473	435	+8.9%	+9.4%
Oil & Gas [1]	418	299	+39.8%	+72.7%
Corporate & Business Services	7	6	+15.8%	+25.2%
EBITDA	**2,356**	**1,945**	**+21.1%**	**+27.0%**
Materials	879	712	+23.4%	+25.8%
Chemicals	1,009	816	+23.7%	+28.6%
Solutions	701	566	+23.7%	+29.5%
Corporate & Business Services	-232	-149	-55.5%	-
EBITDA margin	**23.3%**	**21.7%**	**+1.6pp**	**-**
Materials	30.3%	26.4%	+3.9pp	-
Chemicals	30.1%	27.7%	+2.4pp	-
Solutions	18.3%	17.1%	+1.2pp	-
EBIT	**1,600**	**1,110**	**+44.1%**	**-**
Materials	637	460	+38.6%	-
Chemicals	782	552	+41.6%	-
Solutions	511	350	+46.3%	-
Corporate & Business Services	-331	-252	-31.6%	-
Capex in continuing operations	**736**	**611**	**+20.5%**	**-**
Materials	251	193	+30.1%	
Chemicals	212	184	+15.1%	
Solutions	172	144	+19.6%	
Corporate & Business Services	101	90	+12.4%	
Cash conversion	**68.8%**	**68.6%**	**+0.2pp**	**-**
Materials	71.4%	72.9%	-1.5pp	
Chemicals	79.0%	77.4%	+1.6pp	
Solutions	75.5%	74.6%	+0.8pp	

CFROI	6.9%	5.5%	+1.5pp
Materials	9.0%	7.3%	+1.7pp
Chemicals	10.5%	7.7%	+2.8pp
Solutions	7.2%	5.5%	+1.7pp
Research & innovation	298	291	+2.3%
Materials	138	126	+9.0%
Chemicals	28	32	-13.0%
Solutions	103	103	-0.7%
Corporate & Business Services	30	30	+0.8%
Research & innovation intensity	2.9%	3.2%	-0.3pp
Materials	4.7%	4.7%	+0.1pp
Chemicals	0.8%	1.1%	-0.3pp
Solutions	2.7%	3.1%	-0.4pp

(1) Sales of Novecare and Technology Solutions in prior periods have been restated to reflect the creation of an Oil & Gas GBU as from July 1, 2021.

Note B16: Materials segment

(in € million)	FY 2021	FY 2020	% yoy	% organic
Net sales	2,903	2,695	+7/7%	+11.5%
Specialty Polymers	2,173	1,820	+19.4%	-
Composite Materials	730	875	-16.6%	-
EBITDA	879	712	+23.4%	+25.8%
EBITDA margin	30.3%	26.4%	+3.9pp	-
EBIT	637	460	+38.6%	-
Capex in continuing operations	251	193	+30.1%	-
Cash conversion	71.4%	72.9%	-1.5pp	-
CFROI	9.0%	7.3%	+1.7pp	-
Research & Innovation	138	126	+9.0%	-
Research & Innovation intensity	4.7%	4.7%	+0.1pp	-

NET SALES BRIDGE

Underlying - in € million	
FY 2020	2,695
Scope	-60
Forex conversion	-33
Volume & Mix	261
Price	39
FY 2021	2,903

Sales in the full year 2021 were up +7.7% (+11.5% organically) to €2,903 million as a result of record sales levels in Specialty Polymers driven primarily by automotive, EV battery and electronic markets. These gains were partially offset by scope and foreign exchange. Full year EBITDA was up +23.4% (+25.8% organically), thanks to the increased volumes and pricing which drove 390 basis point margin expansion to 30.3% for the year.

Note B17: Chemicals

(in € million)	FY 2021	FY 2020	% yoy	% organic
Net sales	3,357	2,948	+13.9%	+18.2%
Soda Ash & Derivatives	1,509	1,450	+4.1%	-
Peroxides	636	642	-0.9%	-
Coatis	745	470	+58.6%	-
Silica	467	386	+20.7%	-
EBITDA	**1,009**	**816**	**+23.7%**	**+28.6%**
EBITDA margin	30.1%	27.7%	+2.4pp	-
EBIT	**782**	**552**	**+41.6%**	-
Capex in continuing operations	**212**	**184**	**+15.1%**	-
Cash conversion	79.0%	77.4%	+1.6pp	-
CFROI	**10.5%**	**7.7%**	**+2.8pp**	**-**
Research & Innovation	28	32	-13.0%	-
Research & Innovation intensity	**0.8%**	**1.1%**	**-0.3pp**	**-**

NET SALES BRIDGE

Net sales FY - in € million	
FY 2020	**2,948**
Scope	-49
Forex conversion	-59
Volume & Mix	301
Price	216
FY 2021	**3,357**

Full year 2021 sales in the segment were up +13.9% (+18.2% organically) to €3,357 million due to higher volumes and pricing. EBITDA in 2021 was up +23.7% (+28.6% organically), thanks primarily to exceptional performance in Coatis and Rusvinyl which helped boost segment EBITDA margin to 30.1%, up 240 basis points.

Note B18: Solutions

(in € million)	FY 2021	FY 2020	% yoy	% organic
Net sales	**3,838**	**3,316**	**+15.8%**	**+20.3%**
Novecare (1)	1,546	1,330	+16.2%	-
Special Chem	840	761	+10.4%	-
Technology Solutions (1)	560	490	+14.3%	-
Aroma Performance	473	435	+8.9%	-
Oil & Gas (1)	418	299	+39.8%	-
EBITDA	**701**	**566**	**+23.7%**	**+29.5%**
EBITDA margin	18.3%	17.1%	+1.2pp	-
EBIT	**511**	**350**	**+46.3pp**	-
Capex in continuing operations	**172**	**144**	**+19.6%**	-
Cash conversion	75.5%	74.6%	+0.8pp	-
CFROI	**7.2%**	**5.5%**	**+1.7pp**	-
Research & Innovation	103	103	-0.7%	-
Research & Innovation intensity	**2.7%**	**3.1%**	**-0.4pp**	**-**

(1) Sales of Novecare and Technology Solutions in prior periods have been restated to reflect the creation of an Oil & Gas GBU as from July 1, 2021.

The Oil & Gas GBU was created on July 1, 2021, regrouping activities that were previously included in Novecare and Technology Solutions. The following table presents restated figures for these GBUs since the beginning of 2020.

Net sales (in € million)	Q1 2020	Q2 2020	Q3 2020	Q4 2020	Q1 2021	Q2 2021	Q3 2021	Q4 2021
Novecare (excl. Oil & Gas)	331	353	320	326	354	375	384	433
Special Chemicals	206	174	174	207	211	210	209	210
Technology Solutions (excl. Oil & Gas)	124	127	116	124	133	139	145	143
Aroma Performance	116	119	101	99	110	110	119	135
Oil & Gas	106	61	60	73	83	91	107	137
Solutions	**883**	**834**	**770**	**829**	**891**	**925**	**964**	**1,058**

NET SALES BRIDGE

Net sales FY – in € million	
FY 2020	**3,316**
Scope	-93
Forex conversion	-31
Volume & Mix	459
Price	188
FY 2021	**3,838**

Full year 2021 sales were up +15.8% (+20.3% organically) to €3,838 million due mainly to volume recovery across businesses. Full year EBITDA was up +23.7% (+29.5% organically), leading to 18.3% EBITDA margin for the year, up 120 basis points from 2020.

Note B19: Corporate & Business services

(in € million)	FY 2021	FY 2020	% yoy	% organic
Net sales	7	6	+15.8%	25.2%
EBITDA	-232	-149	-55.5%	-
EBIT	-331	-252	-31.6%	-
Capex in continuing operations	101	90	+12.4%	-
Research & Innovation	30	30	+0.8%	-

BRIDGE

in € million	
FY 2020	6
Scope	-
Forex conversion	-
Volume & Mix	1
Price	-
FY 2021	7

In the fourth quarter of 2021, a loss of €34 million was recorded in relation to the energy supply business of Solvay to third parties. The loss was caused by an unprecedented rise in energy prices and increased market volatility in the European market.

5. RECONCILIATION OF UNDERLYING AND IFRS MEASURES

In addition to IFRS accounts, Solvay also presents underlying Income Statement performance indicators to provide a more consistent and comparable indication of Solvay's economic performance. These figures adjust IFRS figures for the non-cash Purchase Price Allocation (PPA) accounting impacts related to acquisitions, for the coupons of perpetual hybrid bonds classified as equity under IFRS but treated as debt in the underlying statements, and for other elements to generate a measure that avoids distortion and facilitates the appreciation of performance and comparability of results over time.

EBITDA on an IFRS basis totaled €2,038 million versus €2,356 million on an underlying basis. The difference of €318 million is explained by the following adjustments to IFRS results, which are done to improve the comparability of underlying results:

- €3 million to adjust for the "Cost of goods sold" resulting from the step up of the inventories of Novecare seeds coatings acquisition
- €1 million in "*Earnings from associates & joint ventures*" for Solvay's share in the financial charges of the Rusvinyl joint venture. These elements are reclassified in "*Net financial charges*".
- €192 million to adjust for the "*Result from portfolio management and major restructuring*", excluding depreciation, amortization and impairment elements. This result comprises €181 million restructuring charges mainly related to the new simplification program of the support functions and net expenses for €11 million related to disposals of subsidiaries.
- €123 million to adjust for the "*Result from legacy remediation and major litigations*", primarily related to the remediation costs.

EBIT on an IFRS basis totaled €1,190 million versus €1,600 million on an underlying basis. The difference of €410 million is explained by the above-mentioned €318 million adjustments at the EBITDA level and €92 million of "*Depreciation, amortization & impairments*". The latter consists of:

- €150 million to adjust for the non-cash impact of purchase price allocation (PPA), consisting of amortization charges on intangible assets, which are adjusted in "Cost of goods sold" for €3 million, in "*Administrative costs*" for €1 million, in "*Research & development costs*" for €3 million, and in "*Other operating gains & losses*" for €147 million.
- €-58 million to adjust for the net impact of impairments and impairment reversals reported in "*Result from portfolio management and major restructuring*" as a result of the impairment tests undertaken during 2021 and mainly related to RusVinyl impairment reversal (€67 million).

Net financial charges on an IFRS basis were €-96 million versus €-235 million on an underlying basis. The €-139 million adjustment made to IFRS net financial charges consists of:

- €7 million for the costs related to the early repayment of €373 million on the €750 million senior bond tendered in December 2021.
- €-82 million reclassification of coupons on perpetual hybrid bonds, which are treated as dividends under IFRS, and as financial charges in underlying results.
- €-16 million reclassification of financial charges and realized foreign exchange result on the €-denominated debt of RusVinyl as net financial charges.
- €-48 million for the net impact of increasing discount rates on the valuation of environmental liabilities in the period.

Income taxes on an IFRS basis were €-110 million versus €-287 million on an underlying basis. The €-178 million adjustment includes mainly the tax effect of the adjustments of profit before taxes and reversal of valuation allowances on deferred tax assets on losses and other temporary differences.

Discontinued operations generated a profit of €5 million on an IFRS basis and €2 million on an underlying basis. The €-2 million adjustment to the IFRS profit relates mainly to the Pharma business.

Profit / (loss) attributable to Solvay shareholders was €948 million on an IFRS basis and €1,040 million on an underlying basis. The delta of €92 million reflects the above-mentioned adjustments to EBIT, net financial charges, income taxes and discontinued operations. There was a €1 million impact on non-controlling interests.

6. NOTES TO THE FIGURES PER SHARE

Historical key share data

		2016	2017	2018	2019	2020	2021
Number of shares (in 1000 shares)							
Issued shares at end of year	a	105,876	105,876	105,876	105,876	105,876	105,876
Treasury shares at end of year	b	2,652	2,358	2,723	2,466	2,718	2,237
Shares held by Solvac	c	32,511	32,511	32,511	32,511	32,511	32,511
Outstanding shares at the end of the year	d = a-b	103,225	103,519	103,154	103,411	103,158	103,640
Average outstanding shares (basic calculation)	e	103,294	103,352	103,277	103,177	103,140	103,527
Average outstanding shares (diluted calculation)	f	103,609	104,084	103,735	103,403	103,170	103,788
Data per share (in €)							
Equity attributable to Solvay share	g = .../d [2]	72.83	71.98	77.76	74.70	52.45	67.09
Underlying profit for the period (basic)	h = .../e [2]	8.19	9.08	10.57	10.41	5.99	10.05
IFRS profit for the period (basic)	i = .../e [2]	6.01	10.27	8.31	1.15	-9.32	9.15
IFRS profit for the period (diluted)	j = .../f [2]	5.99	10.19	8.27	1.15	-9.32	9.13
Gross dividend [3]	k	3.45	3.60	3.75	3.75	3.75	3.85
Net dividend [3]	l = k*(1-...%) [4]	2.42	2.52	2.62	2.62	2.62	2.70
Share price data (in €) [5]							
Highest	m	112.30	132.00	120.65	111.45	105.25	118.65
Lowest	n	70.52	106.30	85.44	82.26	52.82	90.78
Average	o = v/u	89.32	118.69	110.07	95.53	78.95	105.30
At the end of the year	p	111.35	115.90	87.32	103.30	96.88	102.20
Underlying price/earnings	q = p/h	13.6	12.8	8.3	9.9	16.2	10.2
IFRS price/earnings	r = p/i	18.5	11.3	10.5	90.0	-10.4	11.2
Gross dividend yield	s = k/p	3.1%	3.1%	4.3%	3.6%	3.9%	3.8%
Net dividend yield	t = l/p	2.2%	2.2%	3.0%	2.5%	2.7%	2.6%
Stock market data [5]							
Annual volume (in 1000 shares)	u	86,280	62,642	70,715	65,292	71,670	42,811
Annual volume (in € million)	v	7,707	7,435	7,784	6,238	5,659	4,508
Market capitalisation, end of year (in € million)	w = p*d	11,494.1	11,997.8	9,007.4	10,682.3	9,994.0	10,592
Velocity	x = u/a	81.5%	59.2%	66.8%	61.7%	67.7%	40.4%
Velocity adjusted for free float	y = u/(a-b-c)	122.0%	88.2%	100.1%	92.1%	101.4%	60.2%

(1) These data are not presented on pro forma basis, i.e: excluding impacts of IFRS16 Leases for 2018.
(2) The numerator can be found under the same label in the historic key financial data table in section 1 of the Business review.
(3) Recommended 2021 dividend, pending General Shareholders meeting on May 10, 2022.
(4) Belgian withholding tax applicable in year of dividend payment, i.e. the following year: 27% in 2016, 30% from 2017 onward.
(5) The stock market data are based on all trades registered by Euronext.

Note B20: Earnings per share

		FY2021	FY 2020
Profit attributable to Solvay share (in € m)			
Underlying profit for the period	a	1,040	618
Underlying profit from continuing operations	b	1,038	599
IFRS profit for the period	c	948	-962
IFRS profit/(loss) from continuing operations	d	943	-1,124
Number of shares (in 1000 shares)			
Issued shares at end of year	e	105,876	105,876
Treasury shares at end of year	f	2,236	2,718
Outstanding shares at the end of the year	g = e-f	103,640	103,158
Average outstanding shares (basic calculation)	h	103,527	103,140
Average outstanding shares (diluted calculation)	i	103,788	103,170
Data per share (in €)			
Underlying profit for the period (basic)	j = a/h	10.05	5.99
Underlying profit from continuing operations (basic)	k = b/h	10.02	5.81
IFRS profit for the period (basic)	l = c/h	9.15	-9.32
IFRS profit from continuing operations (basic)	m = d/h	9.11	-10.90
IFRS profit/loss for the period (diluted)	p = c/i	9.13	-9.32
IFRS profit from continuing operations (diluted)	q = d/i	9.09	-10.90

Note B21: Dividend

The Board of Directors decided to recommend to the General Shareholders' Meeting of May 10, 2022 the payment of a total gross dividend of €3.85 per share. The dividend for the fiscal year 2021 is in line with the Group's dividend policy of maintaining a stable to increasing dividend whenever possible and, as far as possible, never reducing it.

Given the interim dividend of €1.50 gross per share, with 30% withholding tax, paid on January 17, 2022, the balance of the dividend in respect of 2021, equals €2.35 gross per share, which will be paid on May 19, 2022, provided prior agreement by General Shareholders Meeting.

7. OUTLOOK

Against an unprecedented inflationary cost environment, pricing actions in 2022 are expected to accelerate, and full year EBITDA is estimated to grow organically by mid-single digits. With the current cycle of growth investments underway, Free Cash Flow is estimated to exceed €650 million.

CORPORATE GOVERNANCE STATEMENT

Corporate Governance Statement

Highlights of 2021

Solvay's governance bodies are responsible for maintaining the Group's long-term thinking, pursuing the vision of Solvay's founder and implementing the Group's strategy.
They guide us in creating sustainable value for all our stakeholders, in line with our Purpose.
Through our engagement with investors and analysts, we are continuously striving to improve our governance and executive remuneration practices, as our actions in 2021 demonstrate.

SOLVAY BOARD OF DIRECTORS AT YEAR END 2021

14 directors

13 non executive Board Members

10 meetings

93% attendance rate

Board of Directors

In 2021, Solvay's Board of Directors provided the CEO with strong, collective support in managing the Group through the rebound, challenging and overseeing executives and ensuring that we continue to raise the bar in many areas. They met with the Executive Leadership Team (ELT) eleven times. In particular, the Board has strengthened its focus on Environmental Social and Governance (ESG) factors. Business performance reviews at Board level take into account progress on our One Planet sustainability roadmap and every key decision made integrates essential ESG dimensions. As part of their Continuous Training Program, the Board also visited our Tavaux site, in France.

AN INCREASINGLY DIVERSE AND INDEPENDENT BOARD

	2010	2015	2021
Nationalities	7	7	7
Women	13%	33%	43%
Independance	50%	67%	64%

Main decisions in 2021:

→ **Creation of a stand-alone ESG Committee** - This new Committee oversees the Group's ESG policies, progress and effectiveness, helping Solvay to seize ESG opportunities that create long-term value. The Chair of the ESG Committee, Matti Lievonen, has significant experience in this area, having led other companies' sustainability transformations. In 2021, the Committee provided a meaningful contribution to the Board's deliberations, helping to further accelerate our sustainability efforts. Solvay's new carbon neutrality ambition was the first recommendation it made to the Board.

→ **Launch of a global share ownership program** - The Board supported the launch of our first employee share purchase plan, offering Solvay personnel the opportunity to buy company shares at a discount of 10%. The initiative aims to promote an ownership mindset among Solvay employees.

→ **Evolution of the Board** - The appointment of two new independent members, Pierre Gurdjian and Laurence Debroux, will be proposed and voted on at the Shareholders Meeting on May 10, 2022.

→ **Evolution of Remuneration report and policy** - We have enhanced our disclosure of remuneration following the feedback shared by our stakeholders. This involved improving our disclosure of ELT members' remuneration by providing a clear explanation of how the qualitative metrics (financial and extra-financial) are assessed.

In addition, we have taken the opportunity to reflect on and integrate stakeholder feedback into our executive remuneration policy. A revised remuneration policy, taking into account feedback received from key stakeholders, will be voted on at the 2022 General Shareholders Meeting. The key policy changes we have made improve alignment with shareholder value creation, strengthen the pay-for-performance model and increase emphasis on the Solvay One Planet criteria. We also ensure that long term incentives prioritize the delivery of strategic commitments related to growth and greenhouse gas targets, while accentuating the focus on returns.

Executive Leadership Team (ELT)

To accelerate our G.R.O.W. transformation, in 2021 the ELT decided to create an Operational Leadership Team composed of business heads. This involved combining certain Solvay businesses and simplifying our organization, with 17 distinct Functions being grouped into seven. These changes reinforce the accountability of the senior leadership team and will simplify and speed up decision making.

In 2021, the ELT focused on the transformation of the Group. It also prioritized engagement with a wide range of stakeholders on ESG topics, with the full support of the Board.

THE EXECUTIVE LEADERSHIP TEAM AT YEAR END 2021

6 members	**5** nationalities
1 woman	**11** meetings
100% attendance rate	

More detailed information can be found in the respective sections of the Corporate Governance statement, which includes the Remuneration report.

Corporate Governance Statement

1. INTRODUCTION

Solvay SA – headquartered in Belgium – is committed to the highest level of Belgian governance principles. We seek to consistently strengthen our corporate governance practices and disclosures, emphasizing transparency and promoting a culture of sustainable long-term value creation.

Solvay's governance bodies are responsible for maintaining the Group's long-term thinking, pursuing the vision of Solvay's founder, and implementing the Group's strategy. The Board of Directors is entrusted with challenging and supporting the Executive Leadership Team (ELT) in implementing Solvay's strategy.

This Corporate Governance Statement adheres to the recommendations of the 2020 Belgian Corporate Governance Code (the "Belgian Governance Code"), which companies can apply on a "comply or explain" basis. The Corporate Governance Statement includes additional factual information with respect to Solvay's corporate governance practices and relevant modifications thereto, together with details on directors' and executive remuneration and of relevant events that took place during the preceding year.

Except for the principles set out in provisions 7.6 and 7.9 of the Belgian Governance Code (see Remuneration Report), Solvay SA complies fully with all the recommendations of the Belgian Governance Code.

The Corporate Governance Charter (the "Charter") adopted by the Board of Directors of Solvay on December 11, 2019 is available on solvay.com and describes the main aspects of the Solvay's approach to corporate governance, including its governance structure and the internal rules of the Board of Directors, the ELT and committees set up by the Board of Directors.

2. CAPITAL, SHARES AND SHAREHOLDERS

2.1. Capital

Solvay's capital amounts to €1,588,146,240 and comprises 105,876,416 issued shares. No changes were made to Solvay's capital in 2021.

2.2. Solvay shares

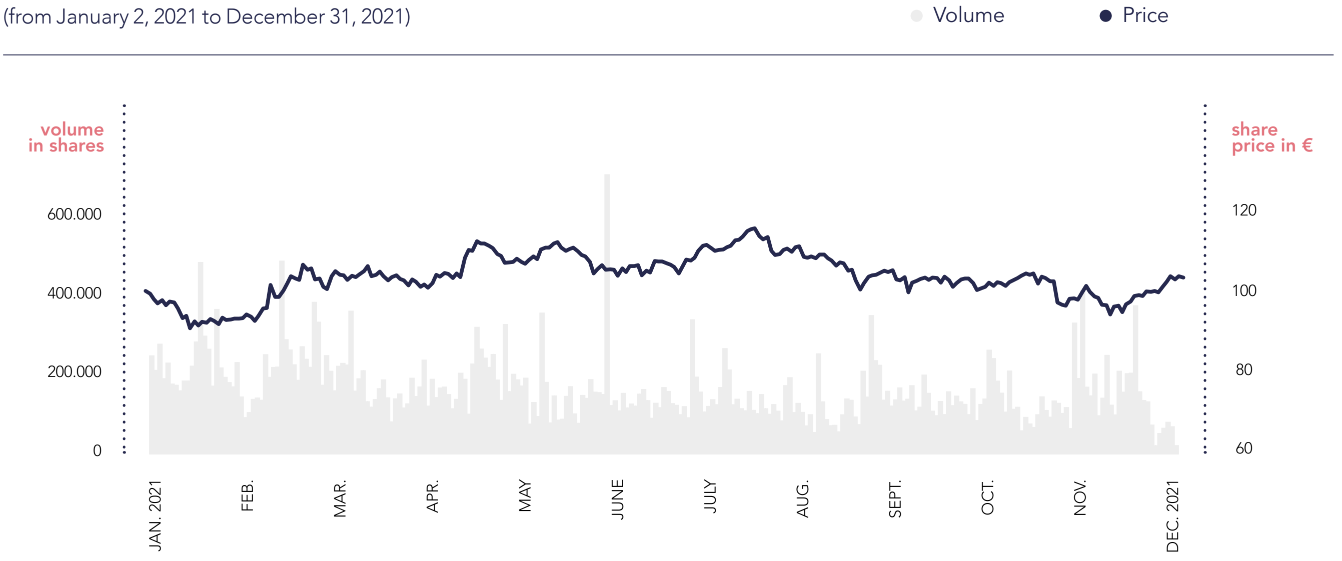
Solvay (SOLB.BE) is listed on Euronext Brussels, which is our primary listing. Solvay has a secondary listing on Euronext Paris. Since September 9, 2021, Solvay shares have also been traded over the counter (OTC) as an unsponsored American Depository Receipt (ADR).

Solvay is a constituent of the BEL20, the main Belgian index. On September 14, 2018 Solvay became part of the Next20 index and is considered to be the largest (specialty) chemicals company on the Paris stock exchange. Solvay shares are part of other major indexes including the BEL Chemicals, STOXX family (DJ STOXX and DJ Euro STOXX), MSCI index, Euronext 100, Dow Jones Sustainability TM World Index and FTSE4Good Index.

During 2021, the average share price at end of day close was €106.02 while the 52-week range was €93.42 – €118 per share. Average daily trading volume as reported by Euronext was 165,376 shares in 2021, compared to 278,870 shares in 2020. Solvay's closing share price on December 31, 2021 was €102.2, which represents an increase of 5.5% compared to the end of 2020.

Solvay share prices and trading volumes from January 4, 2021 to December 31, 2021.

SOLVAY SHARE PRICES AND TRADING VOLUMES
(from January 2, 2021 to December 31, 2021)



2.3. Shareholders

2.3.1. Shareholder structure

As of December 31, 2021, Solvay's capital was represented by 105,876,416 ordinary shares. All Solvay shares are entitled to the same rights. There are no different classes of shares and the "one share, one vote, one dividend" principle is upheld.

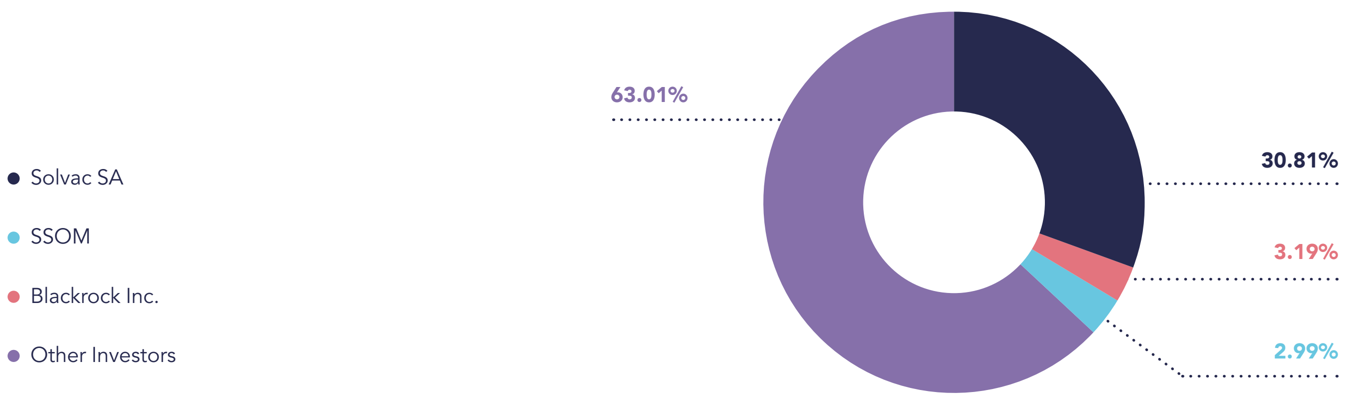
Solvay ordinary shares can be held as:

- Registered shares: shares represented by an entry within Solvay's share registry, managed by the Solvay Shareholders Service. This type of holding enables shareholders to benefit from free custody and administration fees, an invitation to the Shareholders' General Meeting, dividend and tax reporting paid, among other things. Solvac SA holds its shares in registered form.
- Dematerialized shares: shares represented by a book entry in the name of the shareholder with a recognized account keeper or a clearing institution.

The chart below represents Solvay's shareholder structure, including the notifications made by shareholders as of December 31, 2021. The transparency notifications are required by Belgian law and/or pursuant to Solvay's bylaws, when the shareholding crosses the thresholds of 3%, 5%, 7.5% or any multiple of 5%.

Shareholder structure

SHAREHOLDER STRUCTURE



- Solvac SA gave notice that it held 30.81% of Solvay's capital on March 19, 2021.
- Solvay Stock Option Management SRL notified Solvay, through Solvac SA, that its shareholding amounted to 2.99% (voting rights) on March 19, 2021.
- Blackrock Inc., an institutional investor, gave notice on May 19, 2021, that it holds a 3.19% interest.

The remaining shares, comprising approximately 63%, are held by institutional and retail shareholders.

Solvac

Solvay's largest shareholder is Solvac SA ("Solvac"), which holds 32,621,583 shares. This represents 30.81% of Solvay's issued share capital.

Solvac SA is a public limited liability company established under Belgian law, founded in 1983. Its annual reports indicate that its primary asset consists of shares in Solvay.

Solvac's shares are traded on Euronext Brussels and have approximately 14,000 shareholders. Among them, approximately 2,300 individuals are related to the founding families of Solvay, which, combined, are reported to hold approximately 77% of Solvac shares.

Solvac's Board has expressed its strategic investment objective in Solvay in its 2020 Corporate Governance Statement:

"Solvac supports the development of Solvay's strategy focused on its transformation towards world leadership in advanced materials and specialty chemicals. Solvac supports the Solvay One Planet initiative and its ambitious commitments. Solvac underlines the importance for it to see Solvay maintain its policy stable and, if possible, increasing dividends, as well as prudent financial discipline leading to an investment grade qualification of its short and long term debt."

Considering Solvac's stated investment objective, and its engagement track-record with Solvay since its initial investment in 1983, a relationship agreement with Solvac has not been considered necessary. As such, there is no requirement to have Solvac representation on Solvay's Board.

Solvay Stock Option Management

Solvay Stock Option Management SRL, is an indirect subsidiary of Solvay, and holds 2.99% of Solvay's capital through shares and purchase options. These are held as part of the Group's strategy to hedge the risk linked to stock options granted by Solvay to senior executives of the Group.

2.4. Relations with investors and analysts

Solvay establishes an open and constructive dialogue with the entire investment community. Solvay provides accurate information to promote the understanding of its business and strategy, which leads to a fair assessment by the market. Detailed information on our business activities, strategy and financial performance is available through various regulatory and other publications, such as the integrated annual report, financial reports and press releases, as well as additional information, such as webcasts, which are available on the company's website (www.solvay.com).

The investor relations team maintains a close relationship with investors throughout the year. The CEO and CFO also prioritize interactions with the various members of the investment community. The teams have been agile and flexible in maintaining a wide range of interactions through digital technologies.

It is important to note that all interactions are based on public information.

This year, as last year, Solvay reinforced our communication on our ESG strategy and performance. On December 2, 2021, we held our second ESG webinar to present an update on our progress with the Solvay One Planet plan. The webinar, which was hosted by the CEO and members of management, was attended by current shareholders, potential investors, market analysts, employees and other stakeholders. A recording of the event is available on the solvay.com.

Finally, Solvay also adheres to the guidelines issued by the FSMA (Belgian Financial Services and Markets Authority) and fully complies with the disclosure obligations defined by Belgian law and contained in the Market Abuse Regulation (EU) 596/2014 (MAR).

2.4.1. Interactions with shareholders, Solvac and Solvay founding families

Every shareholder has access to clear, comprehensive, transparent information, tailored to his or her individual needs, through a dedicated section on the Solvay website. Solvay also engages with private banks, regularly interacting with their analysts and participating in events dedicated to private investors.

Solvay also has regular meetings with its major reference shareholder, Solvac. The CEO and CFO gave three digital presentations to Solvac's Board of Directors following the announcement of the Solvay Group's half- and full-year results and general overview of the chemical environment.

In 2021, Solvay's management participated in three digital events organized by Solvay's founding families to update them on strategy and results.

2.4.2. Interactions with sell-side analysts

Solvay is covered by 21 sell-side analysts who regularly publish research on the Company. In 2021, one broker dropped coverage due to M&A and one broker initiated coverage on Solvay. The up-to-date list of covering analysts can be found on Solvay's website.

Apart from regular individual meetings, emails and phone conversations, Solvay organizes quarterly conference calls between the Executive Leadership team and the sell-side analysts, following the publication of Group's results. Although specifically geared to analysts, these conference calls are accessible live to all investors and remain available in the form of a video and transcript on the Solvay website.

2.4.3. Interactions with institutional investors

Solvay mainly interacts with institutional investors following the announcement of our quarterly, half- and full-year results. As a result of Covid-19, all one-on-one meetings and investor conferences have been attended by Solvay digitally from 2020 onwards.

In 2021, Solvay participated in 59 events, 28 of which involved senior management: 15 digital roadshows, 6 of which were dedicated to ESG and 39 conferences in countries across Europe, North America and Asia.

In many of the meetings with the financial community, Solvay's CEO and the CFO are present. They discuss different topics, including quarterly earnings results, market conditions, the prospects for the current year and the medium-term strategy. Particular attention was given in 2021 on improving our cash conversion, generating cash, divesting businesses, deleveraging our net debt, maintaining a strong credit rating and sustaining a strong dividend.

2.4.4. Interactions with stewardship teams at shareholders and ESG research providers, including proxy advisors

At least once a year, Solvay's practice has been for the Head of Investor Relations and the Group Corporate Secretary to reach out directly to stewardship teams of certain institutional investors and to ESG Research providers, including proxy advisors. The purpose of this engagement exercise is to better understand the changes to their methodologies and policies as well as to actively solicit their feedback as to how Solvay can further improve upon its ESG practices and disclosures.

During 2021, Solvay organized an ESG Roadshow to meet with the stewardship teams of its top shareholders. These meetings, attended by various members of the Executive Leadership Team, including Solvay's CEO, provided an update on Solvay's key ESG targets as well as its performance.

3. BOARD OF DIRECTORS AND BOARD COMMITTEES

The Charter defines the role and mission, functioning, size, composition, training, and evaluation of the Board of Directors. The internal rules of the Board of Directors are attached to the Charter.

3.1. The Board of Directors

3.1.1. Structure and composition

As of December 31, 2021 the Board was composed of 14 Directors and had the following attributes:

- The role of Chair and CEO are separated.
- Thirteen of the 14 Directors on the Board are non-executive, representing diverse competencies, as highlighted in the table below.
- Nine of the 14 Directors are considered to be independent non-executive directors according to the criteria defined by the Belgian Governance Code, who have also been recognized as independent by the respective Ordinary Shareholders' Meetings where such non-executive director was elected.
- The Board's 14 members have a four-year mandate
- Directors represent seven different nationalities.
- Six of the 14 Directors are women.
- The overall meeting attendance by Directors stood at 93.52%

Ms. Evelyn du Monceau and Ms. Amparo Moraleda left the Board of Directors at the Ordinary Shareholders' Meeting of May 11, 2021, and were replaced by Mr. Edouard Janssen and Mr. Wolfgang Colberg, respectively. Their mandates will expire at the end of the Ordinary Shareholder's Meeting to be held in May 2025.

Mr. Bernard de Laguiche resigned from his position on Solvay's Board of Directors for personal reasons, effective September 24, 2021.

At the end of the Ordinary Shareholders' Meeting of Tuesday, May 10, 2022:

- The mandate of Ms. Rosemary Thorne will expire (due to reaching the age limit of 70). Her mandate will be proposed for renewal for a limited period of one year to ensure a smooth transition of her duties on the Board of Directors.
- The mandates of Mr. Gilles Michel, Mr. Philippe Tournay and Mr. Matti Livoenen will expire. Mr. Philippe Tournay has decided not to request the renewal of his mandate. The mandate of Mr. Gilles Michel and Mr. Matti Lievonen will be proposed for renewal for another four-year term, until the end of the Ordinary Shareholders' Meeting to be held in May 2026.
- The appointment as new directors of Mr. Pierre Gurdjian and Ms. Laurence Debroux will be proposed for a four-year team, until the end of the Ordinary Shareholders' Meeting to be held in May 2026.

✪ Year of first appointment ☑ Presence at Board meetings in 2021

NICOLAS BOËL

Belgian / **Born in:** 1962
Non independent Director
✪ 1998 ☑ 10/10

Solvay SA mandates

Chairman of the Board of Directors, Chairman of the Finance Committee, Chairman of the Remuneration Committee, Member of the Nomination Committee

Directorship expiry date: 2025

Diplomas:

MA in Economics (Université catholique de Louvain, Belgium). Master of Business Administration (College of William and Mary, Virginia, US)

Others directorships:

Publicly-listed companies: Board Member of Sofina SA.

ILHAM KADRI

French-Moroccan / **Born in:** 1969
Non independent Director
✪ 2019 ☑ 10/10

Solvay SA mandates:

Chairwoman of the Executive Committee, Director, Member of the Finance Committee and Member of the ESG Committee

Directorship expiry date: 2025

Diplomas:

Degree in chemical engineering from l'Ecole des Hauts Polymères in Strasbourg, PhD in macromolecular physico-chemistry from Strasbourg's Louis Pasteur University

Others directorships:

Publicly-listed companies:

Board Member of A.O. Smith Corporation and L'Oreal SA.

BERNARD DE LAGUICHE

French-Brazilian / **Born in:** 1959
Non independent Director
✪ 2006 ☑ 7/7

Solvay SA mandates:

Member of the Executive Committee since September 30, 2013, Director, Member of the Finance Committee & Member of the Audit Committee since May 13, 2014

Directorship expiry date: 2025 resignation September 2021

Diplomas:

MA in Economics and Business Administration, HSG (Universität St. Gallen, Switzerland). MBA in Agribusiness, University of Sao Paulo (USPESALQ)

CHARLES CASIMIR-LAMBERT

Belgian / **Born in:** 1967
Non independent Director
✪ 2007 ☑ 10/10

Solvay SA mandates:

Director. Member of the Finance Committee

Directorship expiry date: 2023

Diplomas:

MBA Columbia Business School (New York, USA)/London Business School (London, UK). Master's degree (lic.oec.HSG) in Economics, Management and Finance (Universität St. Gallen, Switzerland)

Others directorships:

None

EVELYN DU MONCEAU

Belgian / **Born in:** 1950
Independent Director
✪ 2010 ☑ 0/5

Solvay SA mandates:
Independent Director, Member of the Remuneration and Nomination Committees
Directorship expiry date: 2021

Diplomas:
MA in Applied Economics from the Université Catholique de Louvain (Belgium)

Others directorships:
Publicly-listed companies: Chair of the Board and Chair of the Governance, Remuneration and Nomination Committee of UCB SA; Board Member of La Financière de Tubize SA.
Other roles: Member of the Corporate Governance Committee (Belgium).

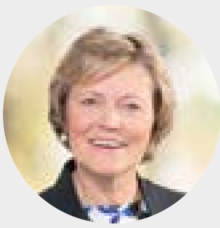
HERVÉ COPPENS D'EECKENBRUGGE

Belgian / **Born in:** 1957
Non-independent Director
✪ 2009 ☑ 10/10

Solvay SA mandates:
Member of the Finance and Audit Committees
Directorship expiry date: 2024

Diplomas:
MA in Law from the Université Catholique de Louvain (Belgium). Diploma in Economics and Business, ICHEC (Belgium)

Others directorships:
Publicly-listed companies: None



FRANÇOISE DE VIRON

Belgian / **Born in:** 1955
Independent Director
✪ 2013 ☑ 9/10

Solvay SA mandates:
Independent Director, Member of the Remuneration and Nomination Committees,
Directorship expiry date: 2025

Diplomas:
Doctorate of Science (Université catholique de Louvain, Belgium). Master in Sociology (Université catholique de Louvain, Belgium)

Others directorships:
Publicly-listed companies: None.
Other roles: Professor emeritus at the Faculty of Psychology and Education Sciences and Louvain School of Management (Université catholique de Louvain, Belgium). Past President of AISBL EUCEN – the European Universities Continuing Education Network.

AMPARO MORALEDA MARTINEZ

Spanish / **Born in:** 1964
Independent Director
✪ 2013 ☑ 5/5

Solvay SA mandates:
Independent Director, Member of the Remuneration and Nomination Committees
Directorship expiry date: 2021

Diplomas:
Degree in Industrial Engineering, ICAI (Universidad Pontifica Comillas, Spain) PDG. IESE Business School (Universidad de Navarra, Spain)

Others directorships:
Publicly-listed companies: Board Member and Chair of the Remuneration, Nomination and Governance Committee of Airbus SE; Board Member and Chair of the Remuneration Committee of CaixaBank SA; Board Member of Vodafone plc
Other roles: Member of the Supervisory Board of CSIC (Consejo Superior de Investigaciones Cient ficas); Member of the Advisory Board of SAP Spain; Member of the Advisory Board of SAP Spain; Member of the Board of Directors of Airbus Foundation

GILLES MICHEL

French / **Born in:** 1956
Independent Director
✪ 2014 ☑ 10/10

Solvay SA mandates:
Independent Director, Member of the Finance Committee, Member of the Remuneration and Nomination Committees since March 2018

Directorship expiry date: 2022

Diplomas:
École Polytechnique (France). École Nationale de la Statistique et de l'Administration économique (ENSAE) (France). Institut d'Études Politiques (IEP)

Others directorships:
Publicly-listed companies: Board Member and Chair of Governance Committee of IBL Ltd. and Board member and Chair of Governance and Remuneration Committees of Valeo SA (FR)Valeo SA

ROSEMARY THORNE

British / **Born in:** 1952
Independent Director
✪ 2014 ☑ 10/10

Solvay SA mandates:
Independent Director, Chair of the Audit Committee (Chairwoman since May 2018)

Directorship expiry date: 2022

Diplomas:
Honours Degree in Mathematics and Economics from the University of Warwick (UK). Fellow of the Chartered Institute of Management Accountants FCMA and CGMA. Fellow of the Association of Corporate Treasurers FCT

Others directorships:
Publicly-listed companies: None
Other roles: Board Member and Chair of Audit Committee of Merrill Lynch International (UK)

MARJAN OUDEMAN

Dutch / **Born in:** 1958
Independent Director
✪ 2015 ☑ 10/10

Solvay SA mandates:
Independent Director, Member of the Audit Committee since May 12, 2015

Directorship expiry date: 2023

Diplomas:
Law degree, Rijksuniversiteit Groningen (the Netherlands). Masters Degree in Business Administration, Simon E. Business School, University of Rochester (New York, USA), and Erasmus Universiteit Rotterdam (the Netherlands)

Others directorships:
Publicly-listed companies: Board and audit committee member UPM-Kymmene Oyi and Board member and chair Auditcommittee Novolipetsk Steel.
Other roles: Board member SHV Holdings and KLM NV

AGNÈS LEMARCHAND

French / **Born in:** 1954
Independent Director
✪ 2017 ☑ 5/10

Solvay SA mandates:
Independent Director, Member of the Remuneration and Nomination Committees

Directorship expiry date: 2025

Diplomas:
Ecole Nationale Supérieure de Chimie de Paris (France). Chemical engineering degree from MIT (Boston, US). MBA degree from INSEAD

Others directorships:
Publicly-listed companies: Board Member and Chair of the Corporate Social Responsibility Committee of Compagnie de Saint-Gobain SA; Board Member of bioMerieux SA

PHILIPPE TOURNAY

Belgian / **Born in:** 1959
Independent Director
2018 10/10

Solvay SA mandates:
Independent Director. Member of the Audit Committee
Directorship expiry date: 2022

Diplomas:
MA in economics LSM-UCL (Université Catholique de Louvain, Belgium). INSEAD, International Director Programme (IPD) 2020

Others directorships:
Publicly-listed companies: None
Other roles: Vice Chairman of Fondation Tournay Solvay

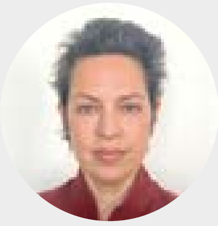
MATTI LIEVONEN

Finnish / **Born in:** 1958
Independent Director
2018 10/10

Solvay SA mandates:
Independent Director. Chairman of the ESG Committee. Member of the Audit Committee
Directorship expiry date: 2022

Diplomas:
BSc (Eng.), Savonia University of Applied Science. EMBA, Aalto University. DSc (Tec.) h.c Aalto University

Others directorships:
Publicly-listed companies: Board Chair and Chair of the Nomination and Remuneration Committee of Fortum Oyj
Other roles: CEO of Oiltanking GmbH; Member of the Shareholder Committee of Wintershall DEA



AUDE THIBAUT DE MAISIÈRES

Belgian / **Born in:** 1975
Independent Director
2010 10/10

Solvay SA mandates:
Independent Director, Member of the Remuneration and Nomination Committees, Member of the ESG Committee
Directorship expiry date: 2024

Diplomas:
MBA Columbia Business School (New York, USA), MSc London School of Economics (London, UK), MA University of La Sorbonne (Paris, France)

Others directorships:
Publicly-listed companies: None
Other roles: Member of the Investment Committee of The Innovation Fund; Co Founder, Sonic Womb Productions (London, UK)

EDOUARD JANSSEN

Belgian / **Born in:** 1978
Non independent Director
2021 5/5

Solvay SA mandates:
Member of the Board
Directorship expiry date: 2025

Diplomas:
Solvay Brussels School: Master of Science in Finance & Management (Magna cum laude and Prix de Barsy)
Insead MBA (July 2009, France & Singapour)

Others directorships:
Listed: Financière de Tubize
Other: Insead Hoffmann Institute for Business & Society (advisory board member)

WOLFGANG COLBERG

German / **Born in:** 1959
Independent Director
✪ 2021 ☑ 5/5

Solvay SA mandates:
Member of the Board, Member of the Audit and Finance Committees

Directorship expiry date: 2025

Diplomas:
PhD in Political Science (Business Administration and Business Informatics), University of Kiel

Others directorships:
Publicly-listed companies: Independent Director:Thyssenkrupp AG (Germany), Non-Executive Director Pernod Ricard SA (France), Independent Diretor Burelle SA (France)

Others: Chairman AMSik GmbH (DE), Chairman Efficient Energy GmbH (DE), Board member at Dussur (SA), at ChemicalInvest Holding BV (NL), Deutsche Invest and industrial partner Capital Partners (DE)

3.1.2. Director skills and qualification matrix

The members of the Board of Directors collectively bring the wide set of skills and experience that is required to develop and oversee the Group's long-term strategy and also helps the Board to identify which skills may be needed when considering new Board members.

The skills and experience that the Board of Directors has ranges from strong experience of international industries and markets - for many of them at executive level - to functional domains, like human resources.

Each Director's skills and experience is presented in the Board Skills Matrix below.

	Chemical industry	Finance	Corporate management	Industrial	Research & development	Digital/ IT	Sustainable development	Human resources	International experience
Nicolas Boël		x	x	x			x	x	x
Ilham Kadri	x	x	x	x	x	x	x	x	x
Charles Casimir-Lambert	x	x	x				x	x	x
Hervé Coppens d'Eecken-brugge	x	x	x				x	x	
Françoise de Viron	x		x		x	x	x	x	
Rosemary Thorne		x	x				x		x
Gilles Michel	x	x	x	x			x		
Marjan Oudeman	x	x	x	x			x	x	x
Agnès Lemarchand	x	x	x	x			x		
Matti Lievonen	x	x	x	x		x	x		x
Philippe Tournay	x	x	x				x		
Aude Thibaut de Maisières	x	x			x	x			x
Edouard Janssen	x	x	x			x	x		x
Wolfgang Colberg	x	x	x	x		x	x	x	x

3.1.3. Functioning of the Board of Directors

In 2021, the Board held five regular meetings and five additional meetings in order to react to current events and implement the board strategy, as needed. Each Director's attendance is shown in the table in section 3.1.1. Structure and composition.

The Board of Directors' discussions, reviews and decisions focused on, but were not limited to, the annual review of Group strategy, strategic projects, such as acquisitions, divestments and capital expenditure, capital allocation, financial reporting, the review of Solvay's sustainability initiatives, risk management, intra-group restructuring, Board composition and the reports and resolution proposals for the Shareholders' Meeting.

The Board's focus on ESG has been strengthened this year. The creation of a stand-alone ESG Committee provided a meaningful contribution to the Board's deliberations, helping to further accelerate our sustainability efforts. The new carbon neutrality ambition was the subject of the first ESG Committee meeting and was also the first recommendation it made. The Remuneration Committee and the Board of Directors have been active to further align our ESG mindset, behaviors and projects with our Executives' remuneration. The Board also supported the launch of a Global Share Ownership Program to encourage employees to invest in Solvay shares.

The Board is also very engaged in the company's ESG issues and carefully reviews the environmental and governance controversies encountered by the Group.

To monitor the wellbeing of our employees, Solvay continued to launch Pulse Surveys during the year 2021, the results of which were regularly shared with the Board of Directors.

The evolution of the Group's financial situation was closely monitored, with a focus on cash flow management (reduction of costs, reduction of Capex, working capital requirement).

During 2021, article 7:96 of the Code of Companies and Associations, relating to conflict of interests, was applied by the Board of Directors on February 23, 2021, in relation to decisions regarding the CEO's remuneration:

Prior to any discussion or decision by the Board on this agenda item, Ilham Kadri declared that she had a direct financial interest in the implementation of the Board's decisions regarding her ex-2020 Bonus and 2021 remuneration.

In accordance with Article 7:96 of the Companies and Associations Code, Ilham Kadri withdrew so as not to be present during the Board's deliberations on this decision and not to take part in the vote.

The Board established that Article 7:96 of the Companies and Associations Code was applicable to this decision.

The Board had an exchange on the evaluation of the CEO's performance in 2020, and on the score attributed to each of the individual and collective objectives, which were unanimously approved.

In line with the recommendation of the Remuneration Committee, the Board set the CEO's STI 2020 (payable in 2021) at 147.4% of her Base Salary, i.e. €1,695,100.

"The Board congratulated Mrs. I. Kadri on the results achieved in 2021.

The Board then had an exchange on the basis of market references and set the CEO's 2021 remuneration:
- *Base Salary: €1,250k, +9%.*
- *Bonus: principles unchanged*
- *LTI: principles unchanged; amount of LTI 2021: €862.5k in SOP and €862.5k in PSU (amounts unchanged)*
- *Exceptional allocation of €250k in the form of PSUs"*

The Board noted that the CEO's 2021 objectives will be finalized and submitted to the Board for approval after the Board has approved the 2021 Budget, based on the recommendation of the Remuneration Committee.

3.1.4. Evaluation

Board performance evaluations are undertaken every two to three years with the objective of identifying how to improve the way it functions and better follow best practice. Evaluations focus primarily on the Board composition, including diversity and skills considerations), functioning, disclosures and interactions with executive management, and the composition and functioning of the Committees it creates.

The evaluation was carried out at the end of January 2020, and consisted of a questionnaire based on the evaluation process developed by Guberna (Belgian Association for Governance). The responses were very similar, notably in relation to the execution and implementation of Solvay's business and sustainability strategy and on the cultural evolution of the Group. The interaction and way of working with the CEO and the Executive Leadership Team was appreciated by all Directors. As an area of improvement, the Board agreed to dedicate more time to human capital, including talent development, and innovation.

It is foreseen that a new evaluation will be carried out in the course of 2022.

3.1.5. Induction and continuous Board training

An Induction Program is in place for new Directors and open to every Director who wishes to participate. The program includes a review of the Group's strategy and activities and of the main challenges in terms of growth and competition, as well as finance, research and innovation, human resources management, legal context, corporate governance and compliance.

Site visits are part of the Board's Continuous Training Program, combining meetings with management and local teams, business presentations and field tours. In 2021, a site visit was organized at our Tavaux site in France.

The Board is actively engaged on the topic of sustainability. Every year the Board of Directors dedicates a specific session to receiving updates on various themes, so as to better understand the Group's strengths and weaknesses, including on ESG topics, and to determine the impacts of emerging trends on the Group's business and performance. In addition, the new ESG Committee created by the Board in 2021 will oversee the Group's ESG strategy, policies, progress and effectiveness to help us seize ESG opportunities to create long-term value whilst minimizing risks.

3.2. Board committees

The Board of Directors has set up the following permanent Committees: Audit Committee, Finance Committee, Remuneration Committee, Nominations Committee and ESG Committee.

The terms of all the various Committee members expire on May 10, 2022. The mandate of most members will be renewed, with the following changes.
- Subject to his appointment as director by the Shareholder's Meeting of Tuesday, May 10, 2022, Mr. Pierre Gurdjian will join the Nomination Committee and the Remuneration Committee.
- Subject to her appointment as director by the Shareholder's Meeting of Tuesday, May 10, 2022, Ms. Laurence Debroux will join the Audit Committee.
- Mr. Edouard Janssen will join the Audit Committee in replacement of Mr. Hervé Coppens d'Eeckenbrugge (who shall retain his membership on the Finance Committee).

Further to these renewals and changes, all mandate will expire in May 2024.

	Independent Director	Audit Committee	Finance Committee	Remuneration Committee	Nomination Committee	ESG Committee
Mr. Nicolas Boël			Chairman Attendance: 7/7	Chairman Attendance: 4/4	Member Attendance: 3/3	
Ms. Ilham Kadri			Member Attendance: 7/7			Member Attendance 2/2
Mr. Bernard de Laguiche		Member Attendance: 4/4	Member Attendance: 3/3			
Mr. Charles-Casimir Lambert			Member Attendance: 7/7			
Mr. Hervé Coppens d'Eeckenbrugge		Member Attendance: 6/6	Member Attendance: 7/7			
Ms. Evelyn du Monceau	x			Member Attendance: 1/2	Member Attendance: 1/1	
Ms. Françoise de Viron	x			Member Attendance: 3/4	Member Attendance: 3/3	Member Attendance 2/2
Ms. Amparo Moraleda Martinez	x			Member Attendance: 2/2	Chairwoman Attendance: 1/1	
Ms. Rosemary Thorne	x	Chairwoman Attendance: 6/6				
Mr. Gilles Michel	x		Member Attendance: 7/7	Member Attendance: 4/4	Member Chairman[(1)] Attendance: 3/3	
Ms. Marjan Oudeman	x	Member Attendance: 6/6				
Ms. Agnès Lemarchand	x			Member Attendance: 1/4	Member Attendance: 2/3	Member Attendance 1/2
Mr. Matti Lievonen	x	Member Attendance: 6/6	Member Attendance: 7/7			Member (Chairman) Attendance: 2/2
Mr. Philippe Tournay	x	Member Attendance: 6/6				
Ms. Aude Thibaut de Maisières	x			Member [(3)] Attendance: 2/2	Member Attendance: 2/2	Member Attendance 2/2
Mr. Edouard Janssen						
Mr. Wolfgang Colberg	x	Member [(2)] Attendance 2/2	Member [(2] Attendance 4/4			

(1) Mr. Gilles Michel was appointed as Chairman of the Nomination Committee after the 2021 Shareholders' Meeting (after the departure of Ms. Amparo Moraleda Martinez)

(2) Mr. Wolfgang Colberg was appointed as a member of the Audit and Finance Committees after the departure of Mr. Bernard de Laguiche .

(3) Ms. Aude Thibaut de Maisières was appointed as a member of the Nomination and Remuneration Committees after the 2021 Shareholders' Meeting.

3.2.1. The Audit Committee

Composition:

- Six members. All members are non-executive Directors, a majority of whom are independent.
- The members must fulfill the competency criterion by virtue of the training and the experience they gained in previous functions (see section 3.1.1. regarding the composition of the Board of Directors).
- The Secretary is a member of the Group's internal legal department.

Meetings:

- Six meetings took place in 2021, including four before the Board meetings scheduled to consider the publication of periodic results (quarterly, semiannual and annual).
- Meeting attendance was 100%.

Activities:

- Review and consider reports from the CFO, the Head of the Group Internal Audit, and the auditor in charge of the external audit (Deloitte, represented by Mr. Michel Denayer and Ms. Corine Magnin).
- During the period under review, the Audit Committee reviewed the independence and effectiveness of the external auditor, Deloitte.
- Examine the quarterly report by the Group General Counsel on significant ongoing legal disputes and reports on tax and intellectual property disputes.
- Meet with the auditor in charge of the external audit whenever such a meeting is deemed useful.
- Monitor and assess risk exposure as well as the effectiveness of internal controls and mitigation plans.
- Meet once a year with the Chairman of the Executive Leadership Team and CEO. All other Board members are also invited on this occasion, to discuss the major risks facing the Group.

3.2.2. The Finance Committee

Composition:

- Six non-executive Directors and the CEO.
- Mr. Karim Hajjar (CFO) is invited to attend Finance Committee meetings.
- The Secretary is the Group Corporate Secretary.

Meetings:

- The Finance Committee met seven times in 2021.
- Meeting attendance was 100%.

Activities:

- Gives an opinion on financial matters. These include the amount of the interim and final dividends, the levels, conditions and currencies of indebtedness, monitoring of the credit strength of the Group's balance sheet, hedging foreign exchange and risks, the hedging policy for our long-term incentive plans, the content of financial communication and the financing of major investments.
- Finalizes preparation of press releases announcing the Group's results.
- Gives opinions on Board policies on the above matters, when called upon.

3.2.3. The Remuneration Committee

Composition:

- Five members. All members are non-executive Directors, a majority of whom are independent.
- The Remuneration Committee has the expertise necessary to perform its mission.
- The Chairwoman of the Executive Leadership Team is invited to meetings, except in the case of matters that concern her personally.
- The Secretary is the Group Corporate Secretary.

Meetings:

- Meetings are prepared by the Group's Chief People Officer, who attends the meetings.
- The Remuneration Committee met four times in 2021.
- Meeting attendance was 82,14%.

Activities:

The Compensation Committee fulfills the duties imposed on it by Article 7:100 of the Code of Companies and Associations. It advises the Board of Directors on:

- The preparation of the Company's remuneration policy and remuneration report
- Remuneration levels for members of the Board of Directors and the Executive Leadership Team
- Remuneration, short- and long-term incentives and the performance assessment for the Chairwoman of the Executive Leadership Team
- The allocation of long-term incentives (performance share units and stock options) to the Company's senior management
- While fulfilling its tasks, the Remuneration Committee reviews the feedback received from shareholders on the Company's remuneration practices and disclosures. It prepares the annual remuneration report for the Corporate Governance Statement and receives a yearly report about the compensation of Management.

3.2.4. The Nomination Committee

Composition:

- All members are non-executive Directors, a majority of whom are independent.
- The Chairwoman of the Executive Leadership Team is invited to meetings, except in the case of matters that concern her personally.
- The Secretary is the Group Corporate Secretary.

Meetings:

- Three meetings were held in 2021.
- Meeting attendance was 95,23%.

Activities:

The Nomination Committee leads the composition review and the nomination process for any proposed appointment or renewal of appointments to the Board of Directors (chairman, new members, renewals and committees), to Executive Leadership Team positions (chairman and members) and to general management positions. It recommends suitable director candidates to the Board of Directors.

In 2021, taking into account the results of the externally facilitated Board evaluation process and the succession plans, the Nomination Committee reviewed the composition of the Board of Directors to ensure that the relevant skills and experience are represented to help oversee Solvay's long-term strategy whilst ensuring continuity and stability. The Nomination Committee also took into account gender diversity requirements when reviewing the Board composition. The committee assessed the profile of several candidates and such review was facilitated by an external consultant search firm. The Nomination Committee also took into account the feedback from shareholders regarding the composition of the Board and its key Committees.

This review by the Nominations Committee resulted in the unanimous proposal of the Board to the AGM for mandate renewals and new Board members.

3.2.5. The Environmental, Social and Governance (ESG) Committee:

- The ESG Committee comprises five members, including the CEO and non-executive Directors.
- The majority are independent Directors.
- The Secretary is the Group Corporate Secretary.

Meetings:

- The ESG Committee meets two times per year, with one of these meetings including the full Board of Directors.
- Meeting attendance was 90 % in 2021.

Activities:

- The objective of the ESG Committee is:
  - a) to consider the material ESG issues relevant to the Group's business activities;
  - b) to provide guidance and recommendations to the Board of Directors on these issues, including in the context of the implementation and potential review of the Solvay One Planet sustainability strategy and the Group's non-financial reporting;
  - c) to be in line with the new Corporate Sustainability Reporting Directive (CSRD), when applicable.
- The ESG Committee oversees an annual review of the Group's ESG policies, progress and effectiveness, taking into account:
  - a) relevant risk & opportunity mapping;
  - b) the new sustainability developments, and their impact on the Group;
  - c) the Group's current sustainability performance, and main strengths and challenges;
  - d) future priorities, opportunities and challenges in this respect.
- The results of the Committee's annual review shall be presented to the entire Board and include the following:
  - Environmental topics, including climate-related risk mitigation, legacy environmental risks and regulatory developments, especially in the chemical sector.
  - Social topics, including the health, welfare, and careers of Solvay's employees, contractors, suppliers and the broader communities where we operate.
  - Governance topics, including oversight of the integration of our ESG commitments into Solvay's business activities and related internal and external reporting, and the effectiveness of engagement with stakeholders, such as investors, agencies, experts, proxy advisors and communities, on ESG-related matters. When appropriate, the ESG Committee will also collaborate with other Committees with oversight responsibility for executive remuneration, talent management, compliance and other shared topics.

4. EXECUTIVE LEADERSHIP TEAM

The role, responsibilities, composition, procedures and evaluation of the Executive Leadership Team are described in detail in the Charter.

To accelerate our GROW transformation, the ELT decided the creation of an Operational Leadership Team comprised of heads of businesses, the combination of certain businesses and additional simplification with 17 distinct functions being grouped into 7. These changes reinforce the accountability of the senior leadership team and will simplify and speed up decision making.

✪ Year of first appointment ☑ Presence at ELT meetings in 2021

ILHAM KADRI

French-Moroccan / **Born in:** 1969
✪ 2019 ☑ 11/11
Term of office ends: 2023

Diplomas and main Solvay activities:
Degree in chemical engineering from l'Ecole des Hauts Polymères in Strasbourg, PhD in macromolecular physico-chemistry from Strasbourg's Louis Pasteur University.

Chairwoman of the Executive Leadership Team and CEO

VINCENT DE CUYPER

Belgian / **Born in:** 1961
✪ 2006 ☑ 4/4
End of office: June 2021

Diplomas and main Solvay activities:
Chemical engineering degree (Catholic University of Leuven). Master's in Industrial Management (Catholic University of Leuven). AMP Harvard.

Executive Leadership Team member

KARIM HAJJAR

British / **Born in:** 1963
✪ 2013 ☑ 11/11
Term of office ends: 2023

Diplomas and main Solvay activities:
BSC (Hons) Economics (The City University, London). Chartered Accountancy (ICAEW) qualification

Executive Leadership Team member and CFO

HUA DU

Chinese / **Born in:** 1969
✪ 2018 ☑ 3/3
End of office: April 2021

Diplomas and main Solvay activities:
BS Chemistry (Being University) PhD. Organic Chemistry (University of Illinois, UrbanaChampaign)

Executive Leadership Team member

AUGUSTO DI DONFRANCESCO

Italian / **Born in:** 1959
✪ 2018 ☑ 11/11
Term of office ends: 2022

Diplomas and main Solvay activities:
Graduated from Pisa University with a Master's degree in Chemical Engineering, Senior Executive program from London Business School. Member of the Plastics Europe steering Board.

Executive Leadership Team member

HERVÉ TIBERGHIEN

French / **Born in:** 1964
✪ 2019 ☑ 11/11
Term of office ends: 2023

Diplomas and main Solvay activities:
Master in Human Resources, HEC St Louis, Brussels, Belgium

Executive Leadership Team member and Chief People Officer

DOMINIQUE GOLSONG*

German / **Born in:** 1955
✪ 2021 ☑ 8/8
Term of office ends: 2023

Diplomas and main Solvay activities:
LL.M in Law at Columbia Law School JD of Law at Université de Lausanne
INSEAD YMP
Michigan University FMII
London Business School ADP

Executive Leadership Team member and Group General Counsel & Corporate Secretary

* D. Golsong exercises his function via a SRL

MARC CHOLLET

Fench / **Born in:** 1964
✪ 2021 ☑ 8/8
Term of office ends: 2023

Diplomas and main Solvay activities:
Engineer in Agronomy from the National Institute of Agronomy Paris- Grignon. Specialization in Business Economics & Marketing Management.

Executive Leadership Team member and Chief Strategy Officer

During 2021, some changes occurred in the composition of the Executive Leadership Team.

- In April 2021, Mr. Hua Du left the Executive Leadership Team.
- At the end of June 2021, Mr. Vincent Decuyper left the Executive Leadership Team.
- In April 2021, Mr. Dominique Golsong and Mr. Marc Chollet became members of the Executive Leadership Team.
- On January 1, 2021, the Board of Directors renewed the mandate of Ms. Ilham Kadri for a two-year term.
- On September 1, 2021, the Board of Directors renewed the mandate of Mr. Hervé Tiberghien for a two-year term.
- On October 1, 2021, the Board of Directors renewed the mandate of Mr. Karim Hajjar for a two-year term.
- The Executive leadership Team carries out monthly deep-dives. consisting of in-depth reviews on People, Strategy, Finance, Innovation and other specific topics, depending on current events.

5. REMUNERATION REPORT

5.1. Year in overview

In 2020 Solvay acted decisively to overcome the significant challenges resulting from the onset of the Covid-19 sanitary crisis, cutting costs, adapting its capital investment plans and preserving its leading market positions thereby delivering record cash generation and profitability.

2021 was marked by a rapid resumption in demand, marred by significant dislocation in supply chains that constrained capacity and by exceptionally strong cost inflationary headwinds that continue into 2022. These challenges tested Solvay's teams to the fullest, and enabled us to show our strengths as we accelerated the deployment of digital technologies to maximise production and by working diligently to meet our customers' needs and driving price increases in order to maintain margins. The focus on value creation also motivated us to resume our investment plans with discipline and focused primarily on our high growth businesses.

The financial results that were delivered in 2021 exceeded all our expectations and indeed exceeded growth trends in a number of important end markets as we leveraged on our unique technologies to deliver superior growth, always at the service of our customers.

Our organic EBITDA in 2021 reached an all-time record of €2.35Bn, a 27% increase compared to 2020, and an 8% increase compared to 2019 on a like-for-like basis. This achievement is the combination of growth in the majority of markets, improved pricing power in the latter part of the year and continued discipline and focus on cost reductions reaching €390m of structural savings in the period since 2019, significantly ahead of the €0.5Bn promised by the end of 2024.

We were also able to accelerate investments, finishing the year at €736m Capex, in line with our indications, overcoming supply chain constraints in the first half of 2021. Further, the focus on cash management was maintained and resulted in Free Cash Flow of €843m FCF and a class leading 38% free cash flow conversion.

The focus on returns also resulted in a record ROCE of 11.4%, reaching our mid-term guidance of exceeding 11%, a full three years earlier than indicated in 2019. In short, 2021 can be credibly described as a year of significant progress in the group Transformation.

Finally and importantly, these results also reflect the dedication of Solvay's employees, as none of that would have been possible without their determination and engagement. Indeed, employees systematically and regularly provide feedback through pulse surveys using multiple channels. As an example the Q3 pulse focused on engagement showed an overall engagement score of 80% for the Group, a record. These pulse surveys enable Solvay managers to continually improve and embark employees on the Group's transformation.

More details on our 2021 results and the impact of these on remuneration are disclosed in the relevant sections below.

Developing Solvay's Employee Value Proposition (EVP)

Solvay has launched a number of programs aimed at supporting and empowering our employees. This includes the evolution of our Solvay Cares benefit program, which now offers a global maternity/paternity & co-parent leave policy of 16 weeks for all new parents, regardless of gender and orientation. Besides that Solvay started a global rollout of Employee wellbeing support program available to all employees and members of their household (including children) easy, free and confidential access to mental health and other support services, like psychologist, legal, financial and wellbeing (relating to nutrition, tobacco, mindfulness, parenting, etc.). Since the start of the pandemic, the Solidarity Fund has provided support for employees and Solvay communities in need and in December 2021 we announced employee stock purchase program, aimed at increasing employee alignment with Group performance and encouraging share ownership available to employees as of the second part of 2022.

In addition to other topics relating to remuneration, Solvay is excited to be among the very first to start discussions and hold a more open dialogue on fair and equal pay in our Group. In addition to holding internal dialogue with our stakeholders, we are also disclosing the pay gaps in our organization. This information can be found in section 6.3. Diversity and inclusion, as part of the Extra-financial statements of this report. From our 2022 report onwards, we will communicate our progress in this area. We are committed to closing the gaps, and share plans as soon as possible.

Reinventing executive remuneration

In our journey to bond people, ideas and elements to reinvent progress, we are continuously striving to improve our governance practices, including our approach to executive remuneration. The remuneration report of 2020 received lower shareholder support (87% compared to 95% the year before). This lower level of support, based on our discussions with shareholders and proxy advisors, was primarily due to the discretion used by the Remuneration Committee to adjust the bonus performance objectives in light of Covid-19. While the use of such discretion was considered a one-off decision given Covid-19, the Remuneration Committee used such an opportunity to take a more holistic approach to review and strengthen our Executive Remuneration Policy.

The revised policy, which is being put to a vote at the 2022 general shareholders meeting, takes into account the evolving legal, compliance and regulatory framework and most importantly the feedback gathered through our continuous dialogue with our key stakeholders, namely shareholders, investors, proxy advisors and independent advice from executive remuneration consultants.

The key policy changes we have made enhance alignment with shareholder value creation, strengthen the pay-for-performance model, reinforce the link between executive remuneration and the interests of shareholders through the provision of shares and introducing share ownership requirements for both Non-Executive Directors and ELT Members. The new policy will become effective following approval, if given, from our shareholders in May 2022.

5.2. Remuneration of the board of directors

Solvay SA Directors are remunerated, in line with our Remuneration Policy, with fixed emoluments, the common basis for which is set at the Ordinary Shareholders' Meeting, with any addition to this decided by the Board of Directors. This process is based on Article 26 of our articles of association, which states that:

- "Directors shall receive fixed emoluments payable; the Shareholders' Meeting shall determine the amount and terms of payment";
- "That decision shall stand until another decision is taken";
- "The Board of Directors shall be authorized to grant Directors with special duties, different from their Director's mandate, fixed emoluments in addition to those provided for in the above paragraph";
- "Each of the Directors responsible for day-to-day management and ELT Member, are also entitled to variable remuneration determined by the Board of Directors on the basis of their individual results and of the consolidated results of the Solvay Group".

5.2.1. Board of Directors individual remuneration

The Ordinary Shareholders' Meetings of June 2005 and May 2012, which introduced member and attendance fees respectively, approved Directors' pay to be set as follows, starting from the financial year 2005:

Board fees by type	Gross amount
Annual gross fixed remuneration	€35,000
Board Meeting attendance fee	€4,000
Audit Committee Chairman attendance fee	€6,000
Audit Committee Member attendance fee	€4,000
Remuneration, Nominations, ESG and Financial Committee Chairman attendance fee	€4,000
Remuneration, Nominations, ESG and Financial Committee Member attendance fee	€2,500

- Directors sitting on both the Remuneration Committee and the Nominations Committee do not receive double remuneration if the meetings happen on the same date.
- No attendance fees for the Chairman of the Board, the Chairman of the Executive Committee and the Executive directors taking part in these committees.
- For the Chairman of the Board, the Board of Directors used its authorization under Article 24 of our articles of association to grant an additional yearly fixed remunerationcompensation of €250,000 gross, unchanged since 2012.
- Non-executive Directors do not receive any other remuneration. More specifically, non-executive Directors are not entitled to annual bonuses, stock options or performance share units, or to any supplemental pension scheme.
- Solvay reimburses Directors' travel and expenses for meetings related to their Board and Board Committee functions.

The Group provides administrative support through the provision of an office, use of the General Secretariat and a car to the Chairman of the Board only. The other non-executive Directors receive logistical support from the General Secretariat when needed. Solvay also provides customary insurance policies covering the Board of Directors' activities when carrying out their duties.

Solvay acknowledges that the 2020 Belgian Code of Corporate Governance (the "Code") recommends partial remuneration of our Board Members in shares, and that our policy does not provide for this. The Remuneration Committee considers that the current Remuneration Policy remains relevant, and is aligned with Solvay's long-term strategy and Belgian market practice.

The Remuneration Committee frequently reviews Solvay's Remuneration Policy and market practices. Any changes to the policy with regard to remuneration of the Board will be submitted to our shareholders and only be implemented following shareholder consent.

Reflecting the Board's particular engagement and interest in sustainability issues, which are central to all key decisions made at Board level, we established an ESG Committee. This new Board Committee is responsible for overseeing the Group's ESG policies, progress and effectiveness and ensuring that we are able to make the most of ESG opportunities that could create long-term value. More on this can be found in the Governance section of this report.

In 2021 the Remuneration Committee has not made any changes to the remuneration packages for the Board of Directors since 2012. In 2022 Share ownership guideline requirements to be introduced for the Directors together with other changes proposed in Executive Remuneration policy as indicated and explained in the section 5.1. Year in review of this report.

5.2.2. Amount of the remuneration and other benefits granted directly or indirectly to the members of the Board by the Company or by an affiliated company

GROSS REMUNERATION AND OTHER BENEFITS GRANTED TO DIRECTORS

In €							2021		2020
	Total gross amount including fixed attendance and committee fees	**Board fixed remuneration**	**Board meeting attendance rate**	**For the role in Finance Committee-**	**For the role in Audit Committee**	**For the role in Remuneration and Nomination Committee**	**For the role in ESG Committee**	**Total gross amount including fix fees**	**Board of Directors and Committees attendance fees**
N. Boël									
Fixed emoluments + attendance fees	75,000	35,000	40,000	-	-	-	-	75,000	40,000
"Article 24" supplement	250,000				-	-	-	250,000	
Ilham Kadri	75,000	35,000	40,000	-	-	-	-	75,000	40,000
C. Casimir-Lambert	92,500	35,000	40,000	17,500	-	-	-	94,500	59,500
H. Coppens d'Eeckenbrugge	116,500	35,000	40,000	17,500	24,000	-	-	118,000	83,000
F. de Viron	86,000	35,000	36,000	-	-	10,000	5,000	87,500	52,500
R. Thorne	111,000	35,000	40,000	-	36,000	-	-	117,000	82,000
G. Michel	108,000	35,000	40,000	17,500	-	15,500	-	102,500	67,500
M. Oudeman	104,000	35,000	40,000	-	24,000	-	5,000	103,000	68,000
A. Lemarchand	57,500	35,000	20,000	-	-	2,500	-	93,000	58,000
P. Tournay	99,000	35,000	40,000	-	24,000	-	-	91,000	56,000
M. Lievonen	124,500	35,000	40,000	17,500	24,000	-	8,000	103,500	68,500
A. Thibaut de Maisières	87,500	35,000	40,000	-	-	7,500	5,000	46,222	24,000
E. du Monceau (1)	15,000	12,500	-	-	-	2,500	-	86,000	51,000
A. Moraleda (1)	39,000	12,500	20,000	-	-	6,500	-	96,000	61,000
W.Colberg (2)	60,500	22,500	20,000	10,000	8 ,000	-	-	-	-
E.Janssen (2)	42,500	22,500	20,000	-	-	-	-	-	-
B. de Laguiche (3)	77,087	25,587	28,000	7,500	16,000	-	-	118,000	83,000
Total	1, 620,587	515,587	544,000	87,500	156,000	44,500	23,000	1,656,222	894,000

(1) E. du Monceau, A. Moraleda until May 11th, 2021
(2) W. Colberg, E. Janssen from May 11th, 2021
(3) B. de Laguiche until September 24th, 2021

5.3. Remuneration of the Executive Leadership Team (ELT)

5.3.1. Solvay's remuneration philosophy and policy

Solvay's Remuneration Policy aims to ensure that Solvay Executives are rewarded for their contribution to the execution of Solvay's long-term strategy according to their role, responsibilities and performance.

The remuneration structure is designed in line with the following principles, which apply equally to the ELT Members, other senior executives:

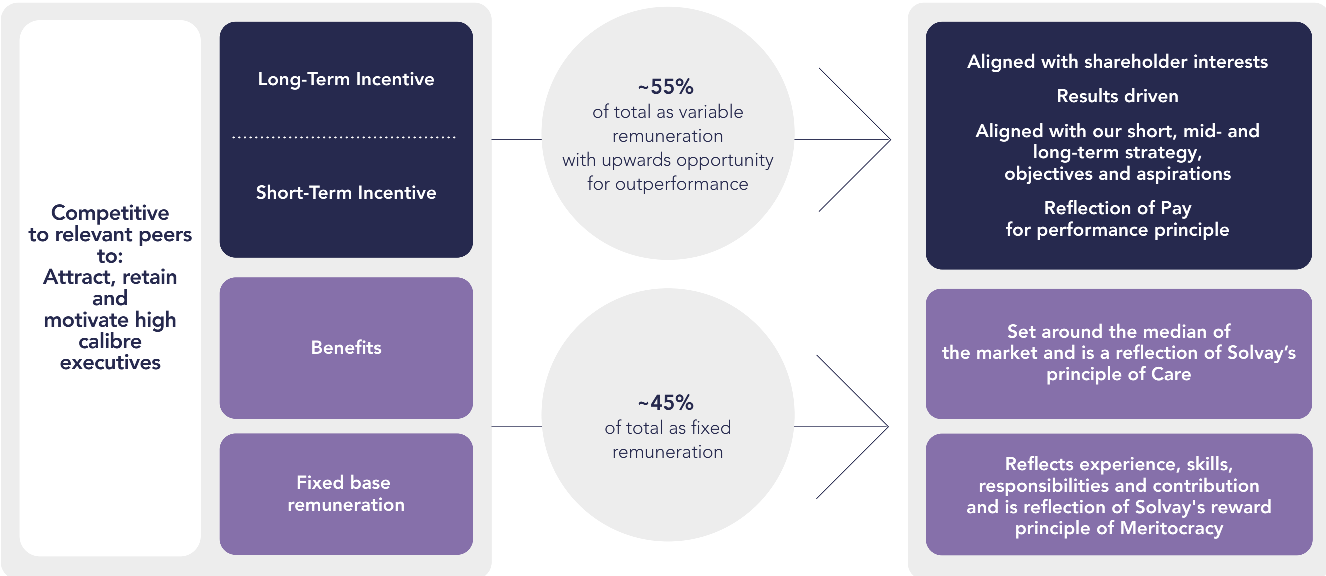
- Total remuneration is set at a level that is competitive in the relevant market and sector, in order to attract, retain and motivate the high caliber talent needed to deliver the Group's strategy and drive business performance.
- Short- and long-term variable remuneration is tied directly to the achievement of strategic objectives, including driving sustainable performance, and recognizes excellent results once delivered.
- Remuneration decisions are compliant and equitable, and balance cost and value appropriately.

In alignment with the Remuneration Policy, remuneration of the ELT Members is benchmarked against that of our peer group. This group remains the same as for the previous reporting period and includes the following companies:

Air Liquide	BAE Systems	BASF	Bayer	Covestro
DSM	Evonik	Johnson Matthey	Lanxess	Michelin
Rolls Royce	Saint Gobain	Umicore	Valero SA	Vallourec

Solvay aims to position our remuneration levels at or around the relevant market median for the Total Cash Target (the sum of fixed base remuneration and variable pay target) and benefits.

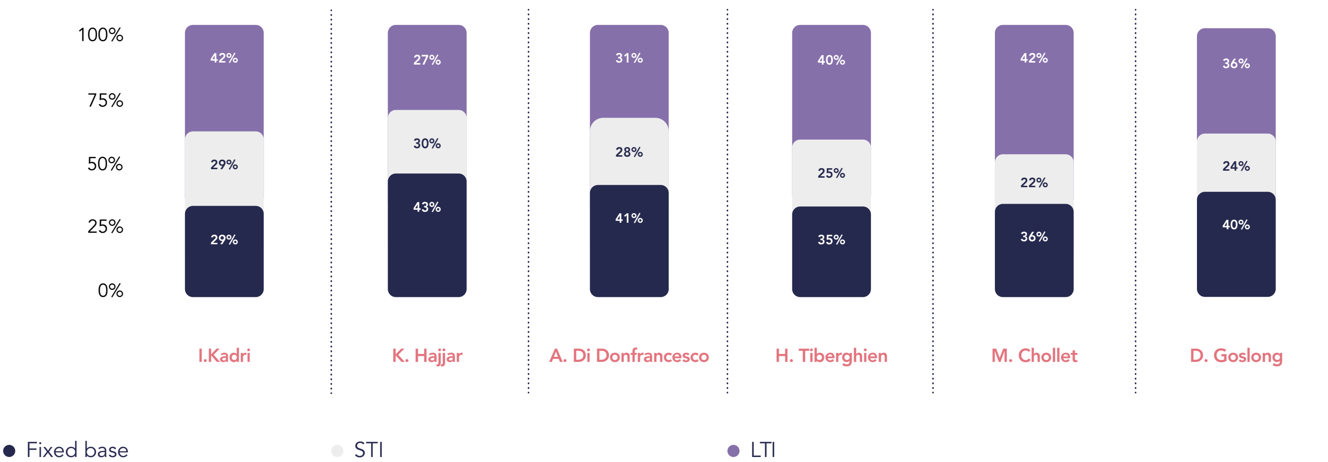
In summary key principles of our remuneration policy are as follows:



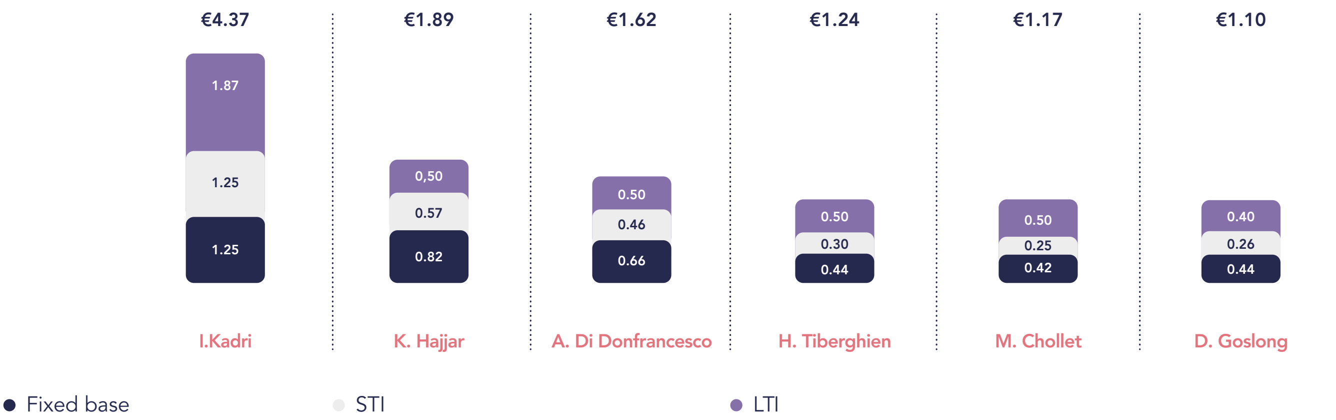
5.3.2. Remuneration opportunities and pay mix of the CEO and ELT Members as on December 31, 2021

Following the guidelines of the Executive remuneration disclosure, find below pay mix of the ELT members as at the end of the reporting period that displays "at target" mix of Total direct remuneration package.

PAY MIX OF THE ELT MEMBERS



REMUNERATION OPPORTUNITY OF THE ELT MEMBERS
(full year with incentives at targets) in million of euros



Name, Position	Fixed Remuneration (on a comparable full year basis)	Value measure-ment	Variable Remuneration: Short Term Incentive Target	Variable Remuneration: LTI target issued as Performance Share Units	Variable Remuneration: LTI target issued as Stock Options	Variable Remuneration: Total LTI Value	Total Direct Remuneration / Pay mix
Ilham Kadri CEO and Chairman of the ELT	€1,250,000	Amount	€1,250,000	€937,500	€937,500	€1,875,000	€4,375,000
		% of Salary	100%	75%	75%	150%	Fixed 30% / Variable 70%
Karim Hajjar CFO and ELT Member	€822,650	Amount	€575,855	€250,000	€250,000	€500,000	€1,898,505
		% of Salary	70%	30%	30%	61%	Fixed 40% / Variable 60%
Augusto Di Donfrancesco ELT Member	€660,000	Amount	€462,000	€250,000	€250,000	€500,000	€1,622,000
		% of Salary	70%	38%	38%	76%	Fixed 40% / Variable 60%
Hervé Tiberghien ELT Member	€436,980	Amount	€305,886	€250,000	€250,000	€500,000	€1,242,866
		% of Salary	70%	57%	57%	114%	Fixed 35% / Variable 65%
Marc Chollet ELT Member (from 01.04.2021)	€420,000	Amount	€252,000	€160,000	€160,000	€320,000	€992,000
		% of Salary	60%	38%	38%	76%	Fixed 40% / Variable 60%
Dominique Golsong ELT Member (from 01.04.2021)	€440,640	Amount	€264,384	€160,000	€160,000	€320,000	€1,025,024
		% of Salary	60%	36%	36%	73%	Fixed 40% / Variable 60%

5.3.3. Base remuneration and Benefits

Fixed base remuneration

Fixed base remuneration reflects an individual's experience, skills, duties, responsibilities, contribution and role within the Group. It is reviewed annually and may be adjusted, taking into consideration a number of factors, including:

- (1) comparable salaries in appropriate comparator groups;
- (2) changes within the scope of the role;
- (3) changes in the Group's size and profile;
- (4) inflation following legal requirements in different countries.

Base remuneration, which does not include the value of any benefits offered to ELT Members, is used to calculate targets for variable remuneration.

Details of the base remuneration of the CEO and ELT Members are disclosed in sections 5.3.2. and 5.3.4. of this report.

Pension and other benefits for the CEO

In accordance with Belgian legal requirements, the CEO has a separate contractual agreement, given her self-employed status in Belgium. This includes pension, death-in-service and disability provision. The CEO also receives a company car in line with market practice in Belgium.

Pension and other benefits for ELT Members

The ELT Members that perform their duties on the basis of a work contract are entitled to pension, death-in-service and disability benefits based on the provisions of the plans applicable in their home countries. ELT Members who do not have a work contract receive remuneration payment of management fees only.

Other benefits, such as medical plans and company cars or car allowances, are also provided, according to local policies. We aim to ensure that the nature and level of these other benefits are in line with median market practice and other Executives in the Group.

5.3.4. Short- and Long-Term variable play

2021 Short-Term Incentive (STI) plan

As approved at the 2020 Annual Shareholders Meeting, the Short-Term Incentive plan (STI) provides a cash opportunity that is based solely on the achievement of pre-set performance targets. The target opportunity provided by the STI plan for the CEO is 100% of fixed base remuneration, with a maximum of 150% of the target. For the other ELT Members the target is up to 70% of fixed base remuneration, with a maximum of 200% of the target (or 140% of fixed base remuneration).

The STI plan uses two performance categories:
- Group performance (60% for the CEO; 70% for other ELT Members).
- Individual performance (40% for the CEO; 30% for other ELT Members).

Considering the role and expectations relating to external and internal stakeholders, the weight of individual performance is slightly higher for the CEO than for the other ELT Members.

Individual performance is measured against predetermined non-financial, quantitative and qualitative objectives. These are defined by the Board of Directors for the CEO and then cascaded down to other Executives by the CEO. The CEO assesses the achievement of individual objectives by the ELT Members, and this assessment is then reviewed and validated by the Board of Directors. The individual performance of the CEO is assessed by the Remuneration Committee, and this is then reviewed and validated by the Board of Directors. Details of the individual performance of the CEO, including targets and their achievement, are explained below, right after the assessment of the Groups performance for the 2021.

Group performance 2021

The Group's 2021 performance results are:

	Min.	Target	Max.	Actual performance	Result for STI payout calculation
Underlying EBITDA organic growth	5%	11%	17%	27%	200%
Free cash flow conversion	30%	35%	40%	38%	155%
Solvay One Planet	At 2019 level of achievement	Improvement compared to 2019	Significant improvement compared to 2019	✓ (between Min. and Target)	88%

● Actual performance

Note: figures do not include the changes of methodologies that occurred after the definition of the STI target

Dimension of One Planet		Min.	Target	Max.	Actual	Result
Climate	GreenHouse Gas (GHG) emissions (current scope Mt)	11.3Mt	10.8Mt	10.3Mt	11Mt	60%
Resources	% of sustainable solutions in sales(constant rules)	52%	53%	55%	53%	100%
	Freshwater withdrawal	325Mm³	314.6Mm³	300Mm³	315.4Mm³	90%
	Industrial wastes without valorization	82Kt	78Kt	72Kt	58Kt	200%
Better Life	Reportable injuries & illness per 200,000 h	0.37	0.34	0.31	0.43	0%
	% of women managers S19+	24.6%	25.6%	27.1%	25.0%	80%
Total One Planet Score						88%

● Actual

- Financial performance in 2021 was strong, with a record level of profit achieved and cash generation ahead of target. More information can be found in the Performance review section of the Annual report.
- At first glance, our Solvay One Planet sustainability performance could be perceived as disappointing. However, it should be noted that we raised the bar significantly, setting ambitious targets that go beyond the Paris agreement commitments. Our 2021 performance in this area is mixed and consideration of the context is important. Further details and disclosures on this subject can be found in the Extra-financial statements of Annual report.

Individual performance of the CEO for STI calculation

With individual performance counting for 40% of the total STI opportunity for the CEO, it plays a significant role in determining the overall assessment and payout. The Board and Remuneration Committee both sets these objectives and tracks their achievement.

For the performance year 2021, the Board of Directors has set and assessed following key objectives for the CEO:

Category	Objective	Key initiatives delivered as part of the objective	Achievement
Strategy 15%	Define Solvay 2030-50 vision	Target: Finalization of 2030 roadmap Extra achievement: · Portfolio evolution with alignment with the strategy and future opportunities · further deployment of One Planet agenda and introduction of CO_2 neutrality roadmap	180%
	Deploy and execute the G.R.O.W strategy	Target: · Deployment of Value Creation Plans of the segments in alignment with G.R.O.W. strategy Extra achievement: · Acceleration of technological growth platforms · Definition and deployment of Digital and Cyber Security roadmaps · Rollout of Fuel For Growth program and mindset · Launch of the new GreenHydrogen Platform · Design and Execute systemic pricing initiatives	190%
Organization 15%	Diffuse the Enterprise leadership culture	Target: · Further deploy "at your best behaviors", role modeling values and ethics · Embedding passion for excellence and performance Extra achievement: · Strengthening senior leadership team and introduction of a new Group-wide operating model	180%
	Define and deploy the Human capital strategy	Target: · Deployment of new Talent management processes · Introduction of robust succession management processes for critical positions Extra achievement: · Definition and roll-out of Diversity, Equity and Inclusion roadmap through introduction of One Dignity and set of measurable objectives · Extension of Solvay Cares program with Introduction and deployment of Global Employee Wellbeing program and maternity / paternity & co-parent leave · Definition Future Top Leaders model and in-depth talent assessment model of "TOP100" · Definition of Global employee share purchase plan set for roll-out in 2022	180%
Others 10%	· Representation of the Group	Target: effective internal and external stakeholder engagement Extra achievement: · Fostering social dialogue with employees and broader society through One Planet, Solvay Cares, One Dignity, Solvay Solidarity Fund and other initiatives	**200%**
Total 40% of STI		**Final individual performance score:**	**187%**

Overall performance of the CEO is recognized as exceptional, far exceeding the expectations for the year, recognizing that the payout of STI is capped at 150%.

STI payout amounts with consideration of performance of the Group and Individual performance of each ELT member fo the results achieved in 2021 are disclosed in section 5.3.4. Amount of remuneration paid and other benefits granted directly or indirectly to the CEO and other ELT Members of this report.

Long-term incentive (LTI)

Long-term incentive grants for the ELT Members were offered according to the current Remuneration Policy, using a mix of Stock Options (SOP) and cash-settled Performance Share Units (PSU).

Long-term Incentive award opportunity

The CEO has an LTI grant target of 150% of fixed base remuneration, with a maximum of 200%. For all other ELT Members, the grant target value is set at €500,000, with a maximum of €750,000.

The actual annual grant value, within the limits of the policy, is determined and approved by the Board of Directors.

Stock options (SOP)

Under Belgian law, unlike most other jurisdictions, taxes on stock options are due at the time of grant. Solvay, like other Belgian companies, therefore sets no additional performance criteria for determining the vesting of stock options. The options have a vesting period of over three calendar years - meaning that options will vest on the first day of the fourth year after the grant year - followed by a four-year exercise period.

The SOP gives each beneficiary the right to buy Solvay shares at a strike price corresponding to the fair market value of the shares upon grant. Every year, the Board of Directors determines the volume of stock options available for distribution, based on an assessment of the economic fair value at grant using the Black Scholes valuation formula. The total volume of options available is subsequently allocated to the eligible population.

SOP features:
- Options are granted at the money (or fair market) value.
- Options become exercisable for the first time three full calendar years after they are granted.
- Options have a maximum term of eight years.
- Options are not transferable inter vivos.
- The plan includes a bad leaver clause.

Performance Share Units (PSUs)

Our PSUs are aligned with typical market practices, allowing Solvay to remain competitive in attracting, retaining and motivating key Executives, aligning interests with shareholders and encouraging a pay for performance mindset.

The PSUs are cash-settled and vest three years from the date of grant, as long as certain, pre-set performance objectives are met. The payout varies from a minimum of zero, if the minimum target is not met, to a maximum payout of 120%, if the maximum target is achieved.

Every year, the Board of Directors determines the budget available for distribution based on the 30 days average closing preceding the grant date of Solvay's share price on the Euronext. The total volume of PSUs available is subsequently allocated to the eligible population.

PSU features:
- The plan is purely cash-based and does not encompass any transfer of shares to beneficiaries.
- The vesting of awards is based on meeting pre-set performance targets (see below).
- The performance period is three years.
- An employment condition applies.
- The plan has a claw back provision for a period of three years after the payout, in case of erroneous results.
- The payout is based on the value of Solvay shares after the vesting.
- Dividends accrue only in respect of vested awards and are paid at the end of the performance period.

The Board of Directors assesses the achievement of the targets set, based on the audited results of the Group. They may use discretion to re-evaluate the targets in exceptional situations. Where such discretion is applied by the Remuneration Committee, the rationale for the use of such discretion will be disclosed. Additionally, discretion, if used, is subject to the award limit stated under the Executive Remuneration Policy. The Remuneration Committee has not applied such discretion in the recent past.

Claw back provisions in respect of PSU plan

Solvay has the right to claim reimbursement of undue amounts paid in accordance with the plan from any PSU plan participant, during a period of three years from the date of the payment, on the basis of erroneous results that were subsequently adjusted or corrected. This claw back clause has not been applied in the recent past.

2018-2020 LTI Performance Share Unit plan performance results

The results of the PSU grant of 2018 were calculated and paid in June 2021, based on a three-year performance period ending on December 31, 2020. As 2020 was heavily impacted by the Covid-19 pandemic, this has left a lasting impact on all Solvay's PSU plans that include performance of the Group in 2020. To date, the Board has not revised the PSU plan performance targets or their thresholds in the context of Covid-19.

Performance against the objectives set in 2018 is summarized below.

Group performance measured over 3 year period	Weight	Minimum target (0% payout)	Target (100%)	Maximum target (120% payout)	Actual result	Achievement compared to target	Performance % used in PSU calculation
Sum of underlying EBITDA growth %	40%	<15%	20%	>25%	<15%	0%	0%
CFROI base point variation	40%	<10 bp	50 bp	>90 bp	<10bp	0%	0%
Greenhouse gas intensity kg/€	20%	> 5,4 kg/€	5,0 kg/€	< 4,7 kg/€	5.25 kg/ €	88%	18%
Total	100%						18%

The share price differential (grant share price versus share price at vesting), and the total dividends, taking into account the number of vested units calculated over three years (€11.25 per unit), resulted in a payout of 18.87% of the PSU value granted in 2018.

Payouts made in 2021 to the ELT Members with regard to the 2018-2020 PSU plan are disclosed in the section below: 5.3.5. Amount of remuneration paid and other benefits granted directly or indirectly to the CEO and other ELT Members.

5.3.5. Amount of remuneration paid and other benefits granted directly or indirectly to the CEO and other ELT Members

According to the Remuneration Policy and based on the Board of Directors' assessment of the performance of the Group and our Executives in 2021, the remuneration of the CEO and other ELT Members was as follows:

		Variable remuneration				Benefits			
Name, Position	**Fixed remuneration**	**Annual variable pay based on 2021 results paid in 2022**	**The value of vested equity based remuneration 2021 [2]**	**Total direct remuneration**	**Extraordinary items [4]**	**Pension**	**Other [3]**	**Total Remuneration**	**Proportion of fixed and variable remuneration**
Ilham Kadri, CEO & Chairman of the ELT	1,225,000	1,875,000[5]	NA	3,100,000	0	662,626	263,345	4,025,971	fixed 53% variable 47%
Karim Hajjar, CFO & ELT member	830,392	950,000	105,194	1,885,586	0	228,341	317,532	2,431,459	fixed 57% variable 43%
Dominique Golsong, ELT member (from 01.04.2021) (1a)	328,320	322,500	NA	650,820	0	0	0	650,820	fixed 50% variable 50%
Marc Chollet, ELT member (from 01.04.2021)	315,000	322,500	30,072	667,572	0	140,709	12,353	820,634	fixed 57% variable 43%
Augusto Di Donfrancesco, ELT member (1b)	646,250	808,000	95,877	1,550,127	0	118,777	114,699	1,783,603	fixed 49% variable 51%
Herve Tiberghien, ELT member	412,134	535,000	NA	947,134	0	107,874	103,696	1,158,704	fixed 54% variable 46%
Vincent De Cuyper, ELT member (Until 30.06.2021)	333,700	NA	95,877	429,577	5,184,046	107,869	31,659	5,753,151	fixed 83% variable 17%
Hua Du, ELT member (until 31.03.2021) (1c)	156,427	NA	95,877	252,304	0	14,958	25,875	293,137	fixed 67% variable 33%

(1a) Acting through and remuneration paid to management company "SRL Dominique Golsong"; as such not eligible to any company paid benefits

(1b) Expatriate assignment in Belgium

(1c) Expatriate assignment in Belgium until March 31st, 2021; compensation paid in HKD; exchange rate 1Eur = 9.1926 HKD

(2) PSU 2018-2020 paid in June 2021; overall plan result 18% of 100% as disclosed in the section "2018-2020 LTI Performance Share Unit plan performance results" of this report

(3) Long-term benefits (e.g. death-in-service, disability & medical benefits) & benefits in kind (e.g. company vehicle, education, expatriation package expenses, tax filing assistance).

(4) statutory termination compensation in accordance with entitlements under the Belgian 1978 Employment Contract Act

(5) Payout capped at 150% of target according to Policy

Stock options and PSU allotted in 2021 to the ELT members

In 2021, following the proposal of the Remuneration Committee, the Board of Directors allocated stock options to approximately 45 Senior Executives in the Group, with an exercise price of €95.58. ELT Members, including the CEO, were offered a total of 95,731 options in February 2021. All options granted were accepted in full.

In combination with the stock option plan, the Board of Directors granted PSUs to approximately 380 Executives and critical high potential talents, for a possible payout in three years' time, if pre-set performance objectives, namely underlying EBITDA growth, ROCE and GHG emissions reduction, are met. ELT Members, including the CEO, were granted a total of 25,974 PSUs in February 2021.

STOCK OPTIONS AND PSUS ALLOTTED IN 2021 TO ELT MEMBERS

Country	Name	Function	Number of Options (1)	Number of PSUs (2)
Belgium	Kadri, Ilham	CEO/Chairman of the ELT	36,985	11,640
Belgium	Hajjar, Karim	ELT Member	11,792	2,877
Belgium	Di Donfrancesco, Augusto	ELT Member	11,792	2,877
Belgium	Du, Hua (3)	ELT Member	10,720	2,616
Belgium	Tiberghien, Herve	ELT Member	10,720	2,616
Belgium	Golsong, Dominique (4)	ELT Member	6,861	1,674
France	Chollet, Marc (4)	ELT Member	6,861	1,674
Total			95,731	25,974

(1) Stock options: Black Scholes fair value for February 2021 grant was €23.32
(2) PSU's share price for February 2021 grant was €95.58
(3) Grant issued before the exit from the ELT
(4) Grants issued before the ELT mandate start date, but covers the period of the ELT mandate

Stock options granted and held in 2021 by the ELT members as on December 31, 2021

Following the guidelines of the Executive remuneration disclosure, the table below shows the evolution of outstanding balances of stock options issued to ELT Members and the balance of the Solvay Stock options held by the ELT Members at the end of the reporting period.

		Changes during the year					
Name	**Balance on 31/12/2020**	**Granted in 2021**	**Exercised in 2021**	**Expired in 2021**	**Vested**	**Non vested**	**Balance on 31/12/2021**
Kadri, Ilham	105,169	36,985	0	0	0	142,154	142,154
Chollet, Marc	69,094	6,861	7,985	0	33,222	34,748	67,970
Di Donfrancesco, Augusto	122,166	11,792	12,477	0	54,103	67,378	121,481
Golsong, Dominique	0	6,861	0	0	0	6,861	6,861
Hajjar, Karim	124,832	11,792	0	0	66,628	69,996	136,624
Tiberghien, Herve	16,415	10,720	0	0	0	27,135	27,135
Total	437,676	85,011	20,462	0	153,953	348,272	502,225

5.4. Comparative information on the evolution of remuneration and company performance

The table below shows the change in remuneration of the Board and the ELT in comparison to the Group's performance over a period of five years.

Remuneration in €	2017	2018	2019	2020	2021
Remuneration of the Board	1,434,572	1,824,260	1,645,433	1,687,500	1,620,587
Remuneration of the CEO Ilham Kadri	-	-	3,328,604	3,790,614	4,025,971
Remuneration of other ELT Members	6,619,926 (1)	9,501,971 (2)	6,499,400 (3)	7,726,374 (4)	7,707,462(5)
Average remuneration of employees	66,274	66,691	69,220	61,945 (6)	67,990 (7)
Ratio between the remuneration of the CEO and the average remuneration of employees (8)			48x	61x	59x
Solvay performance					
Underlying profit for the period (€ million)	992	1,131	1,113	650	1,081
Underlying EBITDA (€ million)	2,230	2,230	2,322	1,945	2,356
Free Cash Flow (€ million)	871	989	1,072	1,206	1,043

(1) V. De Cuyper, R. Kearns, K. Hajjar, P. Juery
(2) V. De Cuyper, R. Kearns (9m), K. Hajjar, P. Juery, C. Tandeau de Marsac (10m), A. Di Donfrancesco (10m), H. Du (10m)
(3) V. De Cuyper, K. Hajjar, A. Di Donfrancesco, H. Du, H. Tiberghien (4m), P. Juery (2m), C. Tandeau de Marsac (2m)
(4) V. De Cuyper, K. Hajjar A. Di Donfrancesco, H. Du, H. Tiberghien
(5) K. Hajjar, A. Di Donfrancesco, H.Tiberghien, V.De Cuyper (6m), H.Du (3m), M.Chollet (9M), D. Golsong (9m)
(6) Impacted by furlough and other cost measures, while variable pay payouts where significantly higher in 2021 than the previous year
(7) Considers impact of 2020 bonus paid in 2021 above target for all employees and impacted by payroll inflation in 2021
(8) ratio will increase in the future considering the performance and vesting of the PSU plan for the CEO (first grant of 2019 will vest in 2022)

The remuneration of the CEO and the ELT Members includes:
- base remuneration paid in 2021;
- STI for the results of 2021;
- PSU value for the results of the 2018-2020 plan, paid in June 2021.

It does not include:
- grant or vested value of LTI's during 2021, as SOPs do not represent a value until exercised and PSUs that vest on December 31 are paid in the following year, taking into account the performance of the Group over the vesting period;
- any one time payments.

Average remuneration of employees is calculated as: "total wages and direct social benefits" divided by the "number of employees on a year over year basis for continued operations", as disclosed in the respective sections of this annual report.

Following the guidance issued by the Belgian Corporate Governance Commission with regard to remuneration disclosure, as published in November 2020, the ratio of the CEO's pay (highest paid Executive in the Group) to that of the lowest paid Solvay employee in Belgium in 2021 is 90x, compared to 108x in 2020. The ratio reduced in 2021, due to several reasons, including changes in the demographics of the lowest paid employee, indexation of pay and higher incentives payouts in 2021 compared to 2020, but most importantly because there were no "one off" payments issued to the CEO in 2021.

The lowest paid employee is defined as a full time employee in Belgium who has worked for a full year and holds the lowest base salary at year end. The actual total remuneration received by this employee is considered in the calculation of the ratio.

5.5. Statements of compliance of remuneration for Chairman and ELT members

This report has been prepared by the Remuneration Committee.

The remuneration packages of Ms. Ilham Kadri, the Chairman of the ELT (or CEO) and the other ELT Members, are in compliance with Article 7:91 of the Belgian Code of Companies and Associations, which provides that, in the absence of statutory provisions to the contrary or express approval by the Annual General Meeting of Shareholders, at least 25% of the variable remuneration shall be linked to predetermined performance criteria that are objectively measurable over a period of at least two years, and at least another 25% should be based on predetermined performance criteria that are objectively measurable over a period of at least three years.

The remuneration packages are set by the Board of Directors, based on recommendations from the Remuneration Committee. These remuneration packages are also compliant with the Belgian Code of Corporate Governance (2020), except in regard to guidance on share ownership, as foreseen by the Code. However following stakeholder recommendations, such guidelines will be proposed in the new Remuneration Policy, which will be submitted for shareholder approval in 2022.

Variable remuneration consisted of an annual incentive based on the performance achieved relative to the Group's economic and sustainable development performance objectives, and on the performance of the individual as measured against a set of pre-determined individual objectives.

ELT Members, including the CEO, receive Stock Options and cash settled PSUs as explained above.

The expenses of the ELT Members, including those of its Chairman (the CEO), are governed by the same rules that apply to all senior management staff, namely the justification of all business expenses, item by item. Private expenses are not reimbursed. In the case of mixed business and private expenses, such as cars, a proportionate rule is applied in the same way as to all management staff in the same position.

According to Belgian Law, any changes to our Remuneration Policy need to be submitted to shareholders for approval before implementation.

5.6. Key provisions of Executive Leadership Team Members' contractual relationships with the Company and/or an affiliated company, including provisions relating to remuneration in the event of early departure

ELT Members, including the Chairman (or CEO), have directorships in Group subsidiaries as a function of their responsibilities. Where such directorships are compensated, they are included in the amounts given above, regardless of whether the position is deemed to be salaried or undertaken on a self-employed basis under local legislation.

At the time of departure from the ELT and the Group on June 30, 2021 Mr. Vincent De Cuyper has received a statutory termination compensation in accordance with his statutory entitlements under the Belgian 1978 Employment Contract Act and taking into account his employment start date on February 1, 1987.

Mr.Hua Du left ELT on the March 31, 2021 without any termination indemnity related thereto and undertook another executive role within the Group.

ELT Members will not benefit from any contractual departure indemnity linked to the exercise of their office. In case of early termination, only the legal system applies, except for the CFO, Karim Hajjar, and the General Counsel and Corporate Secretary, Dominique Golsong[1] . The CFO's employment contract contains a contractual departure indemnity of 12 months of his salary after five years of seniority, and a non-competition clause of 12 months. The General Counsel and Corporate Secretary's services contract[(1)] is for a (renewable) fixed term that coincides with the mandate as ELT Member, but which can be terminated with notice or a departure indemnity of three months' base remuneration. A non-competition clause of 12 months applies after termination. A non-competition clause of 12 months also exists for Hervé Tiberghien and Augusto Di Donfrancesco.

In the event of a decision to terminate Ms. Ilham Kadri's contract, she will be eligible for a contractual indemnity of 12 months of her total target remuneration. In the event that Ms. Ilham Kadri resigns, she is subject to a non-competition clause of 12 months with no additional remuneration.

The above report and the decisions made during 2021 about the Remuneration of the Executives of the Group are aligned with the Remuneration Policy approved at the Annual Shareholders' meeting, which took place on May 12, 2020.

The above is in line with Belgian Corporate governance code requirements.

6. MAIN CHARACTERISTICS OF RISK MANAGEMENT AND INTERNAL CONTROL SYSTEMS

Solvay leaders and managers are accountable for ensuring the adequacy of the risk management and internal control framework in their respective Global Business Units (GBUs) and Functions.

The Internal Audit and Risk Management Department (IA/RM) provides advice and ensures that leaders address the challenges at stake. The team is in charge of setting up and maintaining a comprehensive and consistent system for risk management and internal control across the Group.

The extent to which Solvay is willing to take risks in the pursuit of our business strategy and our objective to create shareholder value is defined by a number of qualitative and quantitative expressions of risk appetite, operated through measures such as limits, triggers and indicators. The IA/RM Department communicates directly with the Audit Committee, helping to regularly ensure that the risk appetite of Management is in alignment with the risk appetite of the Board.

Solvay has set up an internal control system designed to provide reasonable assurance that:
- (i) current laws and regulations are respected;
- (ii) policies and objectives set by general management are implemented;
- (iii) financial and extra-financial information is accurate;
- (iv) internal processes are efficient, particularly those contributing to the protection of Solvay's assets.
- The five components of the internal control system are described below.

1. Acting through Management company SRL Dominique Golsong

6.1. The control environment

As the foundation of the internal control system, the control environment promotes awareness and compliant behavior among all employees. Its various elements create a clear structure of principles, rules, roles and responsibilities, while demonstrating general management's commitment to compliance.

- The Code of Business Integrity is available on Solvay's website. It refers to underlying policies and procedures. Employees receive training regularly on the Code. More information can be found in the chapter on Corporate Governance and Extra-financial section in this report.
- An Ethics Helpline, managed by a third party, enables employees to report potential Code of Business Integrity violations if they cannot go through their managers or through the Compliance organization, or if they wish to remain anonymous. More information can be found in the Extra-financial section of this report.
- Standardized processes are in place for financial and non-financial activities.

6.2. The risk assessment process

The process of risk management takes into account the organization's strategic objectives and is structured into the following phases:

- Risk analysis (identification and evaluation), risk assessment and decision on how to manage the critical risks.
- Implementation of mitigation plans with risk owners accountable for delivery.
- Monitoring of risk mitigation plans for adequacy and effectiveness.

More information on Enterprise Risk Management, including a description of the Group's main risks and the actions taken to avoid or mitigate them, can be found in the Risk management section of this report.

Our approach to designing internal controls for major processes includes a risk assessment step defining which key control objectives to tackle. In particular, this is the case for processes at subsidiary, Shared Services, GBU or corporate level, leading to the production of reliable financial reporting.

6.3. Control activities

Solvay uses a systematic approach to designing and implementing control activities for the most relevant Solvay processes.

After the risk analysis and risk assessment phase, the controls are designed and described by the corporate process managers with the support of the Risk Management team. The descriptions of the controls are used as a reference for the internal control assessment and roll-out across the Group.

At each level of the Group (corporate, Shared Services platforms, and GBUs), the manager operating the process is responsible for the control execution.

Agile internal control governance has been set up under the CFO's sponsorship: Corporate Process Owners and GBU representatives (Process Risk Coordinators) are part of a network aiming to promote an Internal Control system tailored to the risks of each GBU.

Solvay implements policies and processes applicable to all employees in the following domains: management control, financing and cash flow, financial control, financial communication, tax and insurance policies. Control activities are defined for all of these financial processes and in major cross-Group projects, like acquisitions and divestitures. Furthermore, an online Financial Reporting Guide explains how the IFRS rules should be applied throughout the Group.

Financial elements are consolidated monthly and analyzed at every level of responsibility in the Company, including Solvay Business Services, the Finance Director of the entity, Group Accounting and Reporting and the Executive Leadership Team. Elements are analyzed using various methods, such as a variance analysis, plausibility and consistency checks, ratio analysis and comparison with forecasts.

In addition to the monthly reporting analysis prepared by Group Controlling teams, the Executive Leadership Team thoroughly reviews GBU performance every quarter in the context of business forecast reviews.

6.4. Internal control monitoring

The Audit Committee is in charge of monitoring the effectiveness of internal control systems. It supervises the work of Internal Audit and Risk Management with regard to financial, operational, and compliance monitoring. It is kept informed of the scope, programs and results of the internal audit work, and it verifies that audit recommendations are properly implemented. The role and responsibilities of the Audit Committee are further detailed in the Corporate Governance Charter.

Internal audit assignments are scoped, planned and defined on the basis of a risk analysis; due diligence focuses on the areas perceived as having the highest risks. All the consolidated entities within the Group are inspected by Internal Audit at least every five years. Internal Audit recommendations are implemented by management.

The Ethics and Compliance department coordinates investigations of potential Code of Business Integrity infringements.

6.5. Information and communication

Group-wide information systems are managed by the IT department. A large majority of Group operations are supported by a small number of integrated Enterprise Resource Planning (ERP) systems. Financial consolidation is supported by a dedicated tool.

All financial reporting procedures and internal controls ensure that all material information disclosed by Solvay to our investors, creditors and regulators is accurate, transparent and timely, and that it fairly represents the Group's most relevant developments, financial fundamentals and performance.

The Group Accounting and Reporting department circulates detailed written instructions to all financial actors involved before each quarterly closing.

The publication of the quarterly financial results is subject to various checks and validations carried out in advance:
- The Investor Relations team designs, develops, and issues messages and information about the Group with the needs of financial markets in mind. It does so under the supervision and control of the Executive Leadership Team.
- The Audit Committee ensures that financial statements and communications by the Company and the Group conform to generally accepted accounting principles (IFRS for the Group, Belgian accounting law for the Company).
- The Board of Directors approves the consolidated periodic financial statements and those of Solvay SA (quarterly, semiannual and annual) and all related communications.

7. EXTERNAL AUDIT

The audit of the Company's financial situation, financial statements, extra-financial statements and the conformity of these statements – and the entries to be recorded in the financial statements in accordance with the Code of Companies and Associations and the bylaws – are entrusted to one or more auditors. These are appointed at the Shareholders' Meeting and chosen from among the members, either natural or legal persons, of the Belgian Institute of Company Auditors.

The responsibilities and powers of the auditor(s) are set by law.
- The Shareholders' Meeting sets the number of auditors and their emoluments in accordance with the law. Auditors are also entitled to reimbursement of their travel expenses for auditing the Company's sites and administrative offices.
- The Shareholders' Meeting may also appoint one or more alternate auditors. Auditors are appointed for three-year renewable terms, which may not be revoked by the Shareholders' Meeting other than for good reason.
- The Audit Committee assesses the effectiveness, independence and objectivity of the external auditor having regard to the:
    - Content, quality and insights provided in key external auditor plans and reports, in particular those summarizing audit work performed on risks identified by the Company;
    - engagement with the external auditor during Committee meetings;
    - robustness of the external auditor in their handling of key accounting principles;
    - provision of non-audit services.

For the year ended December 31, 2021, professional services were performed by Deloitte Bedrijfsrevisoren BV, the member firms of Deloitte Touche Tohmatsu Limited, and their respective affiliates.

The yearly 2021 audit fees for Solvay SA were set at €1.2 million. They include the audit of the statutory and consolidated accounts of Solvay SA. Additional audit fees for Solvay affiliates in 2021 amount to €4.5 million. Supplementary non-audit fees of €1,1 million were paid in 2021 by Solvay SA and affiliates of which:
- Invoiced by the statutory auditor of the Group:
    - Other assurance missions: €0.3 million,
    - Audit and reviews supporting divestiture activities: €0.2 million.
- Invoiced by other Deloitte entities:
    - Other assurance missions: €0,6 million.

The mandate of Deloitte will expire at the end of the shareholders' meeting of 10 May 2022 and the shareholders' meeting will be requested to approve the appointment of Ernst & Young Bedrijfsrevisoren BV as new statutory auditor of the company for a duration of three years ending after the Ordinary Shareholders' Meeting of 2025 which will be called to approve the accounts for the year 2024. It will be proposed to set the annual fees of the new statutory auditor, which include the audit of the statutory accounts as well as the audit of the consolidation of the Group, at €1,278,402.

8. ITEMS TO BE DISCLOSED PURSUANT TO ARTICLE 34 OF THE BELGIAN ROYAL DECREE OF NOVEMBER 14, 2007

According to Article 34 of the Belgian Royal Decree of November 14, 2007, the Company hereby discloses the following items:

8.1. Capital structure

As of December 31, 2021, the capital of the Company amounted to €1,588,146,240, represented by 105,876,416 ordinary shares with no par value, fully paid up.

All Solvay shares are entitled to the same rights. There are no different classes of shares.

8.2. Transfer of shares and shareholders’ arrangements

Solvay’s bylaws do not contain any restriction on the transfer of shares.

The Company has been informed that certain individual shareholders who hold shares directly in Solvay have decided to consult one another when questions of particular strategic importance are submitted by the Board of Directors to the Shareholders’ Meeting. Each of these shareholders, however, remains free to vote as he or she chooses. None of these individuals, either individually or in concert with others, reaches the initial 3% transparency notification threshold.

Solvay is not aware of any other voting agreements among our shareholders or of the existence of a concert between our shareholders.

8.3. Holders of securities with special control rights

There are no such securities.

8.4. Control mechanism of any employee share scheme where the control rights are not exercised directly by the employees

There is no employee share scheme with such a mechanism.

8.5. Restrictions on the exercise of voting rights

Each Solvay share entitles holders to exercise one vote at Shareholders’ Meetings.

Article 10 of the Company’s articles of association provides that the exercise of voting rights and other rights attached to shares that are jointly owned, or of which the usufruct and bare ownership rights have been separated or are pledged, are suspended pending the appointment of a single representative to exercise the rights attached to the shares. The voting rights attached to the shares in Solvay held by Solvay Stock Option Management, an indirect subsidiary of the company, are, as a matter of law, suspended.

8.6. Appointment, renewal, resignation and dismissal of directors

The articles of association of the Company provide that the Company is to be managed by a Board of Directors composed of no less than five members, their number being determined by the Shareholders’ Meeting (Article 12). Directors are appointed by the Shareholders’ Meeting for four years (and may be reappointed).

The Board of Directors submits Directors’ appointments, renewals, resignations or dismissals to the Ordinary Shareholders’ Meeting for approval. It also invites such Shareholders’ Meetings to vote on the independence of the Directors fulfilling the related criteria, having first sought the advice of the Nominations Committee, whose mission is to define and assess the profile of any new candidate using its criteria for appointment and for specific competences.

The Ordinary Shareholders’ Meeting decides on proposals made by the Board of Directors in this matter by a simple majority.

If a directorship becomes vacant during a term of office, the Board of Directors may appoint a new member, subject to ratification at the next Ordinary Shareholders’ Meeting.

8.7. Amendment of solvay’s articles of association

Amendments to the Company’s articles of association must be submitted as a resolution to the Shareholders’ Meeting, at which at least 50% of the share capital of Solvay must be present or represented. In principle, amendments must be passed by a 75% majority of the votes cast.

If the attendance quorum is not met at the first Extraordinary Shareholders’ Meeting, a second Shareholders’ Meeting may be convened and will take a decision without any attendance quorum requirement.

For certain other matters, such as amendment of the purpose of the Company, higher voting majorities may apply.

8.8. Powers of the board of directors

8.8.1. Powers of the Board of Directors

The Board of Directors is the highest management body of the Company.

It is entrusted with all the powers that are not reserved, by law or under the bylaws, to the Shareholders' Meeting.

The Board of Directors has kept responsibility for certain key areas and has delegated the remainder of its powers to an Executive Leadership Team (further detailed in the Charter).

In all matters for which it has exclusive responsibility, the Board of Directors works in close cooperation with the Executive Leadership Team, which, in particular, is responsible for preparing most of the proposals for decisions by the Board of Directors.

8.8.2. The Board's authorizations to issue and buy back shares and increase the capital

The Shareholders' Meeting of May 12, 2020 authorized the Board of Directors to acquire Solvay's own shares under the following conditions:

- The par value of the acquired shares (including those held in treasury and those acquired by direct subsidiaries) may not exceed 10% of the capital.
- Any purchase to be made at a unit price which may not be (i) more than 10% lower than the lowest price of the last 20 quotations preceding the transaction; and (ii) more than 10% higher than the highest price of the last 20 quotations preceding the transaction, it being understood that the price shall also comply with the requirements of Article 7:215 of the BCCA and Articles 8:2 and following of the Royal Decree implementing the Companies and Associations Code.
- This authorization is valid for a duration of five years as of June 5, 2020.

At the same Shareholder's Meeting, the right for the Board of Directors to increase the Capital of the Company was also authorized, under the following conditions:

- Limitation to an amount of 158,000,000 euros.
- This authorization is valid for a duration of five years as of June 5, 2020.
- The Board of Directors can cancel the preference right of existing shareholders at the occasion of any increase it decides under the authorization..

8.9. Significant agreements or securities that may be impacted by a change of control of the company

The Ordinary Shareholders' Meeting of May 10, 2016 approved the change of control provisions relating to the December 2015 Euro-denominated senior and hybrid bonds and the USD-denominated senior notes issued to finance the acquisition of Cytec and the general corporate purposes of the Solvay Group.

8.10. Agreements between the company and its directors or employees providing for compensation if directors resign or are good leavers, or in the case of a public takeover bid

Not applicable.

Risk management

Risk management

In a context of global economic and political uncertainty, volatile growth dynamics and market cycles and increased sensitivity and expectations related to climate change and the imperatives of energy transition, we believe that effectively monitoring and managing risks is key to achieving Solvay's strategic objectives.

1. RISK MANAGEMENT PROCESS

Value can be created when risk is well understood and managed. Anticipating, mitigating, measuring and monitoring risks is as important to Solvay as the related activity of identifying, managing and optimizing opportunities. The extensive risk-related processes and provisions that we apply with everyone from the Board of Directors and front-line workers to supply chain partners and customers demonstrates this. These processes include:

1.1. Risk analysis and decision on how to manage the critical risks

We analyze risks in three ways. This includes establishing their level of priority for Solvay, which means categorizing them as "main risks" (most critical), "emerging risks" or "other risks". We also identify in which area the risk would have the most impact: the environment, people, economic or reputation. In addition, we classify risks according to their time horizon: short term (up to one year); medium term (more than one year and less than five); and long term (more than five years).

1.2. Risk management in action

Solvay's Enterprise Risk Management methodology requires our Global Business Units (GBUs) and Functions – and the Group as a whole – to prioritize risks, develop and deliver on mitigation plans and continually scan the environment to assess whether risks and exposures are changing and test whether priorities and plans remain appropriate. These assessments, which are recorded systematically, enable us to monitor decisions and measure actions and progress.

Critical risks for the Group are closely and systematically monitored by the Group Risk Committee, which ensures that these risks are assessed for materiality and are adequately addressed. The Committee is composed of the Executive Leadership Team (ELT), the Group General Manager Research & Innovation and the Chief Sustainability and Government Affairs Officer.

Leaders of businesses and functions integrate risk management in decision making to support delivery of objectives

Leaders of GBUs and Functions are responsible for identifying, monitoring and managing the key risks in their domains. Risk management is embedded in the day-to-day operations of each entity, and operational managers are expected to anticipate and react rapidly when circumstances change. Each GBU formally presents their risk matrix and follow-up actions to mitigate any critical risks to the ELT.

Group risks are overseen at Executive Leadership Team level

Group-level risks are managed and monitored at the top level. The Senior Leadership Team contributes to identifying risks, the Group Risk Committee contributes to assessing risks and the ELT members contribute to risk sponsorship, treatment and response. Board members also provide inputs independently, bringing to bear their broad expertise Additional input may be provided by the Corporate Risk Management Department, which scans external sources such as the World Economic Forum Global Risks report, the Risk in Focus report from the ECIIA1 or the AXA Future risks report, for relevant information. These inputs are reviewed and validated by the ELT once a year and are reviewed and updated more frequently when necessary, such as with the significant impacts on market demand at the onset of the Covid pandemic in 2020.

The Audit Committee meets with the CEO and all other members of the Board once a year to discuss the major risks facing the Group. During the year, the Audit Committee reviews progress systematically and covers every Group Risk at least once a year inviting the relevant leaders and Risk Owners' to provide overviews on their risk assessments and progress, such as industrial safety, security, cybersecurity, or ethics and compliance topics.

1. *European Confederation of Institutes of Internal Auditing*

SOLVAY'S RISK MANAGEMENT PROCESS

	Risk analysis & decision	Implementation	Monitoring
Board	Gather input through survey on Group risks	–	Annual Group risk assessment and validation
Audit Comittee	Gather input through survey on Group risks	–	· Assess effectiveness of risk management · Quaterly presentation by risk owners · Periodic assessment of Group risks (minimum annually)
Senior Leadership Team	Define risks at business and function levels	· Mitigation plan developed with risk owners accountable for delivery · Ongoing systematic progress update · Regular update (minimum annually)	
Executive Leadership Team (ELT)	Provide input on Group risks	· Oversees progress as individual Risk sponsors · Ad-hoc risk sessions + Group risk dashboard biannually	
Group Risk Commitee*	Decide Group risks	–	–

** The Group Risk Committee comprises the Executive Leadership Team, (ELT) the Group General Manager Research & Innovation and the Chief Sustainability and Government Affairs Officer.*

Assessment of major projects linked to Solvay's transformation

An appropriate risk assessment methodology is applied to significant projects, such as acquisitions and major capital investments.

Internal control

Internal control is a key aspect of risk management. The Corporate Governance chapter of this report provides a detailed description of Solvay's risk management and internal control system (see chapter 6.).

1.3. Crisis preparedness

There is a structured network within the Group to ensure crisis preparedness. Members of this network perform tasks and implement programs in order to ensure that their business units and functions are prepared for specific crisis situations. These programs include crisis simulations, media training for potential spokespersons, the maintenance of key databases and analysis of relevant internal and external events. The risks identified using our Enterprise Risk Management methodology influence the scenarios used in our simulations.

2. SOLVAY'S MAIN RISKS

The Group Risk Committee assesses the impact of risks and the level of control we have over these risks. To assess impact, we use a four-level scale: low, medium, high or very high.

Impact	Low	Medium	High	Very high
Economic	Less than €10 million	€10 million to €50 million	€50 million to €100 million	€100 million or larger
Injury to people	Nuisance (noise, smoke, odor)	1 or multiple First Aid Injuries or Shelter-in-place	· 1 irreversible Injury · or multiple Reversible Injuries	1 or multiple Fatalities or multiple Irreversible Injuries
Reputation	-	· Local news headlines · Low activity in social media · Moderate to strong reaction from local stakeholders	· National news headlines · Strong activity in social media · Strong reaction from stakeholders	· International news headlines · Massive activity in social media · Severe reaction from all stakeholders
Environment	Non reportable Operating Permit Limits Exceed	· Damages limited to the immediate vicinity of the site · Minor impact on plants or animals around the site	· Reversible damages off-site · Major impact on plants or animals around the site	· Long-term damages off-site (10 years)

Level of control

The Group Risk Committee assesses the level of control by considering the following questions:

- Are key actions and controls clearly identified?
- Is the effectiveness of key actions and controls assessed?
- Is the level of control adequate and proportionate to the risk?
- Are additional mitigation actions appropriate?

Solvay main risks

To determine how critical a risk is, we combine the two ratings relating to impact and level of control.

Criticality	Risk	Time horizon	Trends (after mitigation)	Link with sustainable development high materiality aspects
++ Very High	Security	Short	Improvement	Data security
	Environmental impact and Controversies	Medium to long	Improvement	· Critical incident risk management · Air quality
	Compliance and business integrity	Short to medium	Stable	Management of the legal, ethics & regulatory framework
	Operations safety	Short	Stable	· Critical incident risk management · Employee health and safety · Hazardous materials
+ High	Climate change	Long	Improvement	· Greenhouse gas emissions · Biodiversity · Energy management · Product design and lifecycle management · Waste and wastewatear
Analysis in progress	Regulatory framework for chemicals sustainability	Medium	N/A	Critical incident risk management
Emerging	Geopolitical impacts on trade and supply chain	Short to medium	Emerging*	–

Short term < 1 year < Medium term < 5 years < Long term

**Emerging risk: newly developing or changing risk that may have, on the long term, a significant impact which will need to be assessed in the future.*

The description of the risks relevant to Solvay, and the Group's risk-reduction actions, are listed below. The mitigation efforts described do not guarantee that risks will not materialize or impact the Group, but they show how we proactively manage our exposure to risk.

2.1. Security

RISK HORIZON: SHORT TERM
TREND: IMPROVEMENT

2.1.1. Risk description

Certain security threats can have negative consequences for our business. These include terrorism, crime, violence, vandalism, theft and cyberattacks, which impact employees or other stakeholders, sites, assets, critical information or intellectual property.

Solvay is exposed to physical security risks because it has 62 high-risk operations (high Seveso level, process safety management (PSM) covered). A number of our products, if mishandled, can cause severe damage For more information on this, see the Extra-financial statements section of the report: 6.7 hazardous materials.

We also have sites located in countries where security concerns are rated high by SOS international. Of our 105 sites, 98 have undergone a Security Vulnerability Self-Assessment (SVSA) and four have been assessed as having the highest level of security risk - level 1.

The exposure of Solvay to cyber risk, as for most major companies, comes from our extensive use of information and communication technologies and the gradually increasing automation level of our sites. Like most multinationals, Solvay experiences cyber incidents and responds actively to those incidents to limit the impact. The Solvay management team is not aware of any incident that would have significant consequences on the financial statements or our business.

2.1.2. Prevention and mitigation actions

Solvay has a risk-based security approach to protecting sites, information, and people.

- A Chief Security Officer coordinates all security activities globally in order to ensure efficient security risk mitigation. A Chief Information Security Officer, reporting to the Chief Security Officer, coordinates all related information security activities.
- Three governance bodies lead the security risk management effort:
  - a Security Board, chaired by the CEO, which provides strategic direction for the Group's security risk mitigation;
  - a Cyber Security Leadership Committee, chaired by the Chief Information Security Officer, which oversees all security activities and provides budget and priority recommendations to the Security Board;
  - a Security Coordination Working Group, chaired by the Chief Security Officer, which runs a continuous security threat monitoring program and an optimized security program for the Group.

Solvay management provides updates on information security to the Board at least once a year.

Cyber security program

The three governance bodies leading the security risk management effort also supervise our cyber security program, which includes:

- the use of assessments conducted by external experts;
- the use of penetration tests and internal phishing simulations;
- substantial training for all Solvay Business Services professionals and mandatory security training for all employees;
- the regular publication of cubersecurity tips to increase employee awareness;
- some significant improvements in security posture have been achieved by deploying enhanced security technology across the network. These include controls such as endpoint detection and response, multi-factor authentication, immutable back-ups, DMZ hardening.

A significant cyber-attack could negatively impact Solvay in many ways, including people, operations, results as well as know-how and intellectual property. We will therefore continue to solidify our cyber defenses so that we are able to manage the evolving cyber threat landscape.

Insurance

Solvay is insured to a limited degree against the potential financial impact of a cyberattack. This insurance covers damage to assets, business interruption and cases of fraud, and is only limited by the lack of sufficient insurance market capacity on such risks.

2.1.3. 2021 main actions

In 2021 we continued to implement our cyber security program, focusing on the following key aspects:

- governance and execution;
- cyber hygiene, including a remediation plan resulting from penetration tests;
- identity and access Management, including privileged access management;
- detection and response;
- network, data and application security.

2.2. Environmental impact and controversies

RISK HORIZON: SHORT, MEDIUM AND LONG TERM
TREND: IMPROVEMENT

2.2.1. Risk description

Solvay's activities impact the environment through:

- Our use of raw materials based on fossil or non-renewable resources and our consumption of energy.
- Our access to scarce resources, including water.
- Our management of waste, by-products, emissions and effluents.

Solvay manages or remediates historical soil contamination at all sites for which it is responsible, including divested or discontinued, ensuring continuous compliance with applicable environmental legislation. More information in the Extra financial chapter of the report.

These impacts on environment are in turn creating the following risks:

- The challenges and expenses related to meeting increasingly strict regulatory standards and changing customer expectations, standards and purchasing decisions.
- Changes in investor sentiment and preferences as a result of the changing investor environment.
- Impact on our ability to recruit employees due to negative public perceptions of environmental issues.

2.2.2. Prevention and mitigation actions

- Careful monitoring and management of sites with a history of soil contamination by a dedicated expert team (about 300 locations throughout the world are followed up).
- Rolling out a risk characterization approach at every affected site when relevant.

- Local regulatory monitoring.
- The Group has a strategy to manage chemicals of concern and develop alternatives which reduce their human and/or environmental impact or phase them out.
- We have implemented a comprehensive program to reduce workplace chemical exposure using:
    - chemical risk assessments and risk-based medical surveillance, using both qualitative and quantitative methodologies;
    - pandemic preparedness and mitigation plans;
    - human biomonitoring, when warranted;
    - improving and adapting working conditions;
    - promoting general physical and mental health; and
    - setting more conservative in-house exposure limits for critical substances;
- We regularly review, and update, standards governing discharge from plants.
- We use our SPM tool to help identify substances that can deliver needed results with more limited environmental impact.
- We revise our materiality analysis on a yearly basis to align it with the evolution of stakeholder expectations, including environmental impacts.

2.2.3. 2021 main actions

- Execution of our Solvay One Planet sustainability roadmap, which includes programs to:
    - identify substances of concern and the development of alternatives;
    - reduce our pressure on biodiversity by 30% by 2030, which includes assessing our impact on climate change, terrestrial acidification, water eutrophication and marine ecotoxicity;
    - implement 36 energy transition projects and 18 waste projects.
- Implementation of Best Available Technologies defined by the regulators, monitoring our activities in collaboration with independent academic institutions and engagement with local public authorities. At the end of the soda ash production process in Rosignano, we dispose of the remaining inert, natural materials in the sea- none of which are toxic or dangerous. A release to the sea through an open channel was confirmed to be the best and preferred solution for Rosignano, as it also plays an important role in stabilizing the coastline against erosion.The process is undertaken in full compliance with EU and Italian regulations, as well as our own high standards for health, safety and environmental protection. Every step of the process is monitored by Solvay, regulators and independent academic institutions and all of this research demonstrates that the water near our operations is safe, and consistent with the rest of the Tuscan coast. However, as this contributes to the white color of the beach, we regularly face questions from stakeholders and the public. For more information: see solvay.com.

- Launch of our non-fluorosurfactants technology (Hylar® 5000S and Tecnoflon® LX) in New Jersey, in the US. Today Solvay can confirm that the Group has successfully eliminated the use of fluorosurfactant process aids in the U.S. We recognize however that its work is not yet done. Solvay continues to use a limited number of fluorosurfactant-based process aids in its facility in Spinetta, Italy. At present, The Group is applying state-of-the-art techniques that eliminate nearly 100% of fluorosurfactant emissions.

More information in the litigations section and in the Financial statement statements chapter of the report: F31.B and F36

2.3. Compliance and business integrity

RISK HORIZON: SHORT TO MEDIUM TERM
TREND: STABLE

2.3.1. Risk description

Solvay management, in alignment with the Board, adopts a zero-tolerance approach in relation to non-compliance toward its Compliance and Business Integrity policy. Solvay's activities require that the following risk categories - among others - be considered in relation to compliance and business integrity:

- Failure to comply with governmental laws and regulations in jurisdictions in which Solvay operates.
- Failure to comply with Solvay's Code of Business Integrity, including:
    - intentional misstatements;
    - corruption, misappropriation;
    - by-passing corporate controls, and;
- Human rights violations.
- Failure to implement good governance in a joint venture.
- Failure to comply with chemical product usage standards, such as:
    - inappropriate use of a Solvay product by Solvay personnel or customers, which can lead to adverse health and environmental impacts, property damage and resulting litigation;
    - production of faulty products, which can result in exposure to liability for injury, health impairment and damage, or product recalls. Product liability risk is generally higher for products used in medical devices, healthcare, food contact and feed applications, and sensitive applications in general;
    - chemical and market regulations in countries where a product is marketed, which could have negative consequences.

2.3.2. Prevention and mitigation actions

Solvay's Code of Business Integrity, policies and procedures

- We made significant enhancements to the Code of Business Integrity in 2020 to broaden the scope and include the issues listed above. The new version was deployed in early 2020, and applies to all employees and majority-owned joint venture partners. Our Supplier Code of Business Integrity applies to suppliers.
- We introduced training courses which all employees are required to undertake and to pass. We also require that all employees sign an annual acknowledgement that they have read the Code and that they have nothing to report. We have also created several training courses and communication actions to address specific behavioral risks. These include:
  - anti-bribery and anti-corruption;
  - anti-competitive activity;
  - confidential and proprietary information,
  - conflict of interest;
  - Human Rights in Business Policy: reporting non-compliance;
  - use of a gifts and entertainment tracking system;
  - use of third-party reporting hotlines and a Group-wide "Speak Up" program to report non-compliance.

Chemical product usage

- Solvay Safety Data Sheets (SDS) ensure harmonized content by implementing a common worldwide SAP system for the Group. This SAP system has now been fully implemented across the company. Our Composite Materials activities were the last to join the SAP system (2020-2021).
- SDS are constantly maintained for all products and are distributed worldwide to all customers, in compliance with local regulations and in the local language. Our GBUs ensure that SDS are revised at least once every three years for all the products they sell.
- All GBUs perform an annual inventory of Substances of Very High Concern (SVHC) - defined by Solvay - in the products they sell. A risk assessment and analysis of any available safer alternatives is performed for each SVHC identified in the inventory.
- Recall procedures are developed and deployed as prescribed by the product stewardship programs.
- Insurance reduces the financial impact of a product liability risk, including for first-party and third-party product recalls.

2.3.3. 2021 main actions

Business Integrity

As part of our deployment of the new Code of Business Integrity in 2020, all employees were required to read the new Code, take a mandatory e-learning course and sign an acknowledgement that they had read it. The e-learning training course focused on bribery and corruption, confidential and proprietary information, conflicts of interest, harassment and how to lodge "Speak Up" complaints. A new round of training was launched in 2021.

- 99% of employees have received training on our Code of Business Integrity;
- All employees were required to take the training module on bribery and corruption and a separate Anti-Bribery and Anti-Corruption (ABAC) training course is now available to employees through the Group's e-training platform. In 2021, we launched a new ABAC training campaign, which resulted in a participation rate of 96%.

Chemical product usage

The Solvay Product Safety Management Process (PSMP) identifies risks relating to products marketed by Solvay. All GBUs use this process, with a specific focus on prioritizing the required risk assessments in the product portfolio and on regularly carrying out risk assessments for the most sensitive product applications.

More information on this can be found in the Extra-financial chapter of the report: 3.2. Management of the legal, ethics, and regulatory framework.

2.4. Operations safety

RISK HORIZON: SHORT TERM
TREND: STABLE

2.4.1. Risk description

The safety of our people is a priority for Solvay, as is specified in our Solvay One Planet sustainability roadmap. A major accident - whether occupational, process or transport related - that is linked to our internal or outsourced activities may cause human, environmental or asset damages, lead to significant exposure or cause injuries or fatalities. Solvay industrial sites, like most industrial operations, carry out high pressure and high temperature processes. We also use chemical substances that have risks associated with their chemical composition.

For more information about Solvay's management approach, see the Extra-financial chapter of the report: 6.1 Employee Health and Safety, 6.8 Critical incident risk management (process safety), 6.7 Hazardous materials.

We have identified four major operational risks:
- An occupational safety incident which results in a fatality or irreversible (life-altering) injury;
- A severe process safety incident which results in fatalities, irreversible injuries, environmental harm, and/or loss of physical assets;
- Chronic exposure to occupational agents - chemical, physical, biological or psychological - known to cause work-related disease;
- A severe transport accident in connection with hazardous chemical transportation which results in irreversible injuries, fatalities or environmental damages.

2.4.2. Prevention and mitigation actions

In 2018, Solvay redefined our Health, Safety and Environment (HSE) strategy and issued a new set of Minimum Requirements to create a shared understanding and approach to mitigating major risks. As part of this new approach, we also introduced a new way of working, including a more collaborative and supportive approach to HSE across the Group.

Our HSE strategy is based on the following four levers:
- Culture: promoting a culture of safety for all employees and contractors.
- Continuous improvement: utilizing networking, best practice, common methods and tools, Solvay HSE Minimum Requirements, external monitoring and benchmarking to improve our HSE performance.
- Competency: ensuring all employees have the right level of knowledge and skills to put in place the HSE Minimum Requirements, starting with those working in key positions.
- Compliance: detecting and mitigating regulatory and non-regulatory compliance issues, with a focus on priority risks, both in our operations and commercialized products.

Occupational safety

Solvay has consistently prioritized occupational safety. The results of our efforts are positive, showing a 30% reduction in the total number of injuries, and no fatalities, over the last three years. Our efforts to create a safety culture where all employees work together and care for one another are based on:
- Solvay's Safety Excellence Plan, which enables the involvement and engagement of all Solvay employees. It includes activities such as Safety Days, Leadership Safety Visits, Behavior Based Safety programs, and an individual HSE annual objective for each employee.
- The Solvay HSE Minimum Requirements for the Solvay Life Saving Rules (SLSR).
- The Creating Safety program for leadership teams, aimed at changing mindsets and behavior.
- A monthly review of occupational safety results by the relevant GBUs and at the Executive Leadership Team level.

Industrial Hygiene & Occupational Health

Solvay has implemented a comprehensive approach to reducing the chemical exposure risk in the workplace. Our approach includes:
- Chemical risk assessments and risk-based medical surveillance, using both qualitative and quantitative methodologies;
- Pandemic preparedness and mitigation plans;
- Human biomonitoring, when warranted;
- Improving and adapting working conditions;
- Promoting general physical and mental health;
- Setting more conservative in-house exposure limits for critical substances.

Process safety management

Solvay has created and uses a Process Safety Management System. Among other things, this system includes:
- A preventive risk-based approach founded on systematic Process Hazard Analyses (PHA), and the identification of critical scenarios for which mitigation action must be implemented in a committed time frame;
- Management of changes (MOC);
- A team of process safety experts trained to apply the PHA methodologies.

Transport Safety

We have put in place a number of tools and procedures that allow us to identify and take action to mitigate transport-related risks. These include:
- qualification standards for carriers of dangerous goods;
- enhanced training where appropriate;
- implementation of safety procedures and guidelines;
- collection and sharing of lessons learned;
- providing emergency response hotlines worldwide and in many languages.

Environment

To mitigate environmental risks, the following minimum requirements must be respected:
- The discharge of substances, wastewater and atmospheric emissions from our plants must meet all applicable emission limit values;
- Waste must be disposed of using appropriate technologies and qualified companies;

- For the long-term release of potentially dangerous chemicals, risk assessments must be carried out on a periodic basis to ensure that the impact on the environment or on the neighboring population falls within strict limits, determined by environmental quality standards or by exposure limits.

2.4.3. 2021 main actions

Occupational safety

- 95% implementation rate of the Solvay Life Saving Rules.
- Continuing deployment of our Safety Culture program (training and sharing).
- Systematic tracking and analysis of High Severity Potential (HSP) events.
- Adoption of the OSHA recordable incident reporting standard to enable better peer comparisons. This replaces the Medical Treatment Accident standard.

More information can be found in the Extra-financial statements section of the report: 3.3. Health, safety and environment management.

Industrial Hygiene

We continued to roll-out the SOCRATES (Solvay Occupational Risk Assessment Tool for Employees), reaching an 85% deployment rate. This tool:

- provides easy access to IH methods, tools and databases;
- enable consistent documentation of IH assessments;
- enhances traceability of potential exposure throughout a person's working life.

More information can be found in the Extra-financial statements chapter of the report: 3.3. Health, safety and environmental management

Process Safety

- Application of Process Safety Management Audit protocol on 12 sites.
- Process Hazard Analyses carried out for all units, on all sites, within the last five years, in line with Group requirements.
- All detected high-risk situations are treated within one year, with any extensions having to be duly authorized.
- Investigation of a selection of Process Safety Incidents and lessons learned shared with all sites.

More information can be found in the Extra-financial statements chapter of the report: 6.8. Critical incident risk management.

Transport Safety

- Improvement of our processes on Qualification of Logistics Service Providers for Dangerous Goods, including tolling and storage operations.
- Continued application of Transport Emergency Response in all countries for those classified as levels 1, 2 and 3.
- Continued development of expertise in Transport Safety in the following areas:
  - Global Transport Safety Network.
  - Feedback on transport accidents.
  - Regular training of key people.

More information can be found in the Extra-financial statements chapter of the report: 6.8. Critical incident risk management

Environment

- Detailed annual reporting of environmental emissions (air and water), water management and waste. In particular, we focus on emissions of Substances of Very High Concern (SVHC), which are tracked and used for regular exposure assessments. We have also defined internal emission reduction targets for SVHC emissions in air and water.
- Reporting of all types of environmental non-compliance, including any occasions on which we have exceeded emission limits due to a process issue or process safety incident.
- Assessing potential climate change impact on our operations due to flooding, water scarcity, hurricanes and other environmental events, through the application of best-in-class models and collaboration with external experts.

More information can be found in the Extra-financial statements chapter of the report: 5.3. Air quality, 5.4. Water and wastewater, 5.5. Waste

Occupational health

Many actions were taken to mitigate the impact of the global health crisis caused by the Covid-19 pandemic, including:

- Implementation of preventive measures, testing and return-to-work case management processes, as defined by the medical network.
- Purchase and distribution of Covid-19 tests at work sites.
- Promotion and facilitation of Covid-19 vaccination.
- Points of contact in each country or zone, able to advise the crisis management teams.
- Awareness raising and training of employees, through tools such as a wiki page, posters and other communications.
- Mental health support.

More information can be found in the Extra-financial statements chapter of the report: 6.1 Employees health and safety

2.5. Climate change

RISK HORIZON: SHORT AND LONG TERM
TREND: IMPROVEMENT

2.5.1. Risk description

The Group strategy to address climate-related risks, as defined by the Task Force on Climate-related Financial Disclosures (TCFD), could be ineffective and damage the environment, the lives of current and later generations and Solvay's reputation. This, in turn, could cause business losses, undervaluation and difficulty attracting long-term investors. The possible risks to Solvay that we have identified are as follows:

A - Transition risks:

Solvay's energy mix (use of coal), raw materials (use of petrochemicals) and end markets (automotive and aerospace, building and construction) mean that we are exposed to risks and opportunities as part of the energy transition. This transition risk can be further detailed as displayed hereafter:

- Policies and legal context: regulations and actions to limit CO_2 emissions, such as increasing carbon taxes, barring internal combustion engines, mandating use of certain fuel types, tightening environmental standards.
- Technology: unsuccessful investment in new, lower-emission technologies.
- Markets: failure to adapt to changing customer behavior.
- Financial: inability to cope with the influence of climate change on investors' and lenders' decisions.
- Changed climate: failing to adequately anticipate the impact of upcoming changes on industrial operations and in the value chain or the tightening of environmental standards.
- Reputation: negative stakeholder attitudes caused by failing to address stakeholder climate change concerns effectively.

B- Physical risks:

- Sites in water scarcity regions
- Sites in flood zone

2.5.2. Prevention and mitigation actions

- Implementation of a strategy focused on shifting to businesses with reduced environmental exposure and high value-adding potential that have positive environmental effects.
- Progression toward ambitious 2030 goals to reduce greenhouse gas emissions from operations by 30% - an annual pace aligned with the Paris Agreement objectives - and to phase-out the use of coal for energy where renewable alternatives exist.
- Design of a Carbon Neutrality roadmap to reach carbon neutrality on scope 1 and 2 by 2040 for all GBUs, expect Soda Ash and before 2050 for the hard to abate Soda Ash activity. This roadmap will require around €2 bn investments and is expected to generate compelling economic returns.
- Develop scope 3 targets to set Science Based Targets by mid-2022, as committed in October 2020, connecting with customers and suppliers, especially through the suppliers engagement program which engaged 250+ executives from 130+ companies, creating 60 collaborative projects.
- Assessment of potential climate change impacts on our operations due to flooding, water scarcity, hurricanes, and other environmental events through the application of best-in-class models and collaboration with external experts.
- Establishment of a task force that develops renewable energy and other energy transition projects adapted to local markets and regulations.
- Internal carbon price was raised from €50 to €100 per metric ton of CO_2 on greenhouse gas emissions from operations and a Sustainable Portfolio Management tool (SPM) assessment on all capital investment decisions worldwide.
- Alignment of R&I projects with market expectations and assessment of operations exposure relating to the environment using an SPM lens.
- Linking long term incentives of senior executives to our achievements in reducing greenhouse gas emissions.

2.5.3. 2021 main actions

Our work covers four main workstreams:

- Climate emissions reductions actions are described in detail in the Extra-financial section of the report. Among the numerous actions taken,
    - In Rheinberg (Germany), the first boiler shifting coal to biomass started in May 2021, and the decision to install a 2nd boiler to start before 2025 has been taken. This will allow to phase out coal and reduce the Group GHG emissions by 4%
    - In Dombasle (France), the decision to shift from coal to RDF (Refuse Derived Fuel) has been taken and will allow to phase out coal by 2024 and reduce the Group GHG emissions by 2%
    - The Energy Transition multiple projects implemented or committed globally in 2021 will reach 35% renewable electricity purchase
- An annual review of climate-related risks and opportunities for each product in each market performed with the Solvay SPM tool. This shows that our climate-related "Solutions" (18% of sales) out number our climate-related "Challenges" (3% of sales). For more information, see 5.1 "Product Design and Life Cycle Management" in the Extra-financial Statements section of this report.
- A scenario analysis, conforming to TCFD recommendations, was performed in 2019, using the International Energy Agency's "Sustainable Development" scenario as a reference. The impact on energy and CO_2 costs and on markets were assessed, showing that the potential impact on sales outweighs the potential impact on costs. Four ELT members were directly involved in the exercise, which will be updated in 2022, taking into account the IPCC AR6 report conclusions. Updates of the IEA "Sustainable Development" in 2020 did not justify a revision of the scenario analysis. A full revision of the scenario analysis is planned in 2022, including reference to recent 1.5°C scenarios.

- The current risk linked to floods and hurricanes is assessed annually with our insurers. This exercise identifies sites in risk areas and a maximum foreseeable loss greater than 10M USD. Seven Solvay sites are located in high frequency (2% chance per year) flood areas, with a loss expectancy range of US$13.5-196.4 million. Fifteen Solvay sites are located in low frequency (0.2% chance per year) flood areas, with a loss expectancy range of US$14-243.3 million. One site is located in a wind exposed area, with a loss expectancy of US$17.3 million. Solvay has a damage insurance program in place to cover catastrophic risks, while covering smaller losses through self-insurance.
- Sites in areas of water scarcity have been identified, and the risks have been assessed based on their water consumption and maximum foreseeable loss. Thirty-one Solvay sites are located in areas subject to hydric stress, of which eight have been identified as having a high business impact. The highest annual business interruption value is €400 million.

More information can be found in the Extra-financial statements chapter of the report: 4. Climate section

2.6. Regulatory framework for chemicals sustainability

RISK HORIZON: MEDIUM TERM

2.6.1. Risk description

In all major regions chemicals management legislation is developing and changing, but particularly in the EU and the US. We are closely monitoring the upcoming European Union Chemical Strategy for Sustainability (CSS) regulatory framework, including its possible impact on our business and operations. We are also considering the potential additional opportunities that could come from this legislation, regarding less harmful and more biodegradable and sustainable products. Based on public comments from EU regulators and key decision makers the main focus will be on consumer facing products and protecting human health and the environment. The US Administration is also developing a stricter regulatory framework for chemicals, as well as a framework relating to Environmental Justice.

2.6.2. Prevention and mitigation actions

- Solvay has participated in an industry wide impact assessment, led by the European Chemical Industry Council (CEFIC), of the current proposals in the CSS. Within this framework, the Sustainability Department of the Group of Solvay analysed the business impact with our GBUs.
- The Government and Public Affairs Department(GPA) of Solvay, together with the Product Stewardship team in our Industrial Function, is closely monitoring the regulatory and legislative proposals that will come from the CSS, starting in Q1 2022. Meanwhile the GPA has set up a multidisciplinary Task Force within Solvay to analyze new regulatory and legislative proposals and develop an advocacy strategy.

2.7. Emerging risk

2.7.1. Geopolitical impacts on trade and supply chain

Geopolitical rivalries can cause trade wars, supply chain constraints and regulatory deadlocks. This can make it impossible to trade across our three key regions, impacting financial results, and potentially leading to fines and/or litigation. Our actions to mitigate this threat are currently being defined.

3. OTHER RISKS

3.1. Market and growth – strategic risk

RISK HORIZON: MEDIUM TO LONG TERM

3.1.1. Risk description

Strategic risks in market and growth concern Solvay's exposure to developments in our markets or our competitive environment, and the risk of making erroneous strategic decisions.

3.1.2. Prevention and mitigation actions

- Systematic and formal analysis of markets and marketing challenges with respect to investments and innovation project ramp-ups.
- Regular performance review of strategy deployment.
- Development of long term GDP+ growth markets and building on sustainable development opportunities, particularly in the mobility, Home and Personal Care, Healthcare, resources and environment, electrical and electronics, and Agro, Feed and Food markets.
- Development of customized, mission-critical solutions with Solvay key accounts.
- Adaptation of our operations to new energy and CO_2 markets.
- Strong focus on cash conversion and generation.
- Disposal of businesses that fall below the cyclicality threshold.

3.2. Supply chain and manufacturing reliability risk

RISK HORIZON: SHORT TERM

3.2.1. Risk description

There are several risks relating to raw materials, energy, materials and equipment for construction and maintenance, suppliers, production, storage units, and inbound and outbound transportation. These include:

- Inability of suppliers to deliver contracted volumes or capacities in line with required specifications, due to force majeure, for example, or because the supplier has insufficient access to Logistic Service Provider capacities.
- Insufficient contracting of volumes or capacities, from both a volume and delivery timing perspective, to fulfill our demand.
- Delayed delivery of volumes or capacities.

3.2.2. Prevention and mitigation actions

In order to ensure manufacturing reliability, we:

- Ensure our production units are distributed across the world.
- Use Process Safety Management.
- Define equipment and materials as critical elements to be ordered ahead for projects and maintenance.
- Close inspection loops with suppliers.
- Established the Group property loss prevention program, which focuses on the prevention and mitigation of damage to assets and loss of profit due to fire, explosion, accidental chemical release and other adverse events, like natural catastrophes.

To mitigate risks in our supply chain we:

- Use third party corporate social responsibility assessments and adhere to the Solvay Supplier Code of Business Integrity;
- Take ownership of mines and quarries of trona, limestone, and salt, and implement programs to reduce energy consumption.
- Improved our planning processes to help us anticipate demand, both in terms of volume and timing).
- Maintain contingency plans for the most critical suppliers.

More information can be found in the Extra-financial chapter of the report: 3.5. Supply Chain and Procurement

3.3. Financial risk

RISK HORIZON: SHORT TO MEDIUM TERM

3.3.1. Risk description

We face various different types of financial risk. These include:

- Liquidity risk (see note F32 to the consolidated financial statements, Financial instruments and financial risk management);
- Foreign exchange risk (see note F32 to the consolidated financial statements, Financial instruments and financial risk management).
- Interest-rate risk (see note F32 to the consolidated financial statements, Financial instruments and financial risk management).
- Counterparty risk (see note F32 to the consolidated financial statements, Financial instruments and financial risk management).
- Pension obligation risk (see note F31.A. Provisions for employee benefits.
- Tax litigation risk (see note F31.B. Provisions other for employee benefits.

3.3.2. Prevention and mitigation actions

A prudent financial profile and conservative financial discipline

- Investment Grade status: the Group is rated Baa2/P2 (stable outlook) by Moody's and BBB/A2 (stable outlook) by Standard & Poor's as of the 2021 closing.
- Solvay promotes transparency of information and engages in regular discussions with leading credit rating agencies.

Strong liquidity reserves

- As of the end of 2021, the Group has €1.2 billion in cash and cash equivalents (other current financial instruments), as well as €2.9 billion of committed credit facilities (a multilateral revolving credit facility of €2.0 billion and an additional €0.9 billion from bilateral revolving credit facilities with key international banking partners), which were all undrawn at the end of 2021.
- The Group has access to a Belgian Treasury Bill program for €1.5 billion and, as an alternative, to a US commercial paper program for US$500 million, both unused at the end of 2021.

Currency hedging policy

Solvay monitors the foreign exchange market closely and takes hedging measures to:

- Limit the fluctuation of the Group's forecasted gross margin due to currency volatility for material exposures.

- Mitigate the foreign exchange transactional risk at Group level by limiting P&L impact of rate fluctuations between the time of invoicing and the time of cash settlement.
- There are two periods of hedge: 2021/2025 (where Solvay is hedged at 64%) and 2026/2030 (where we are hedged at 42%). Overall avg hedge % on 2021/2030 57%

Interest rate hedging policy

- The Group locks in the majority of its net indebtedness at fixed interest rates. Solvay monitors the interest rate market closely and enters into interest rate swaps whenever they are deemed appropriate.

Energy and CO_2 hedging policy

- Solvay is hedging energy prices (gas, coal and electricity) based on the net exposure of our sales not indexed on energy prices. This policy includes multi-year hedging transactions.
- The Group net exposure to carbon pricing is managed through hedging transactions spanning across the time horizon of the European Union Emissions Trading Systems.

Monitoring of Group counterparties' ratings

- For its treasury activities, Solvay works with banking institutions of high creditworthiness (investment grade - selected based on major rating systems) and minimizes the concentration of risk by limiting its exposure to each of these banks to a predefined threshold. We regularly monitor Credit Default Swaps trends to assess changes in bank creditworthiness and take rapid action if required.
- For our commercial activities, Solvay's external customer risk and cash collection are monitored by a professional network of credit managers and cash collectors located in the Group's various operating regions and countries. Their controls are supported by a set of detailed procedures and managed through Corporate and GBU Credit Committees. These loss mitigation measures have led, over the past few years, to a record low rate of customer defaults.

Pension governance and pension plan optimization

- Pension governance: Solvay engages proactively and constructively with trustees and stakeholders to ensure that funding, liability management and investment policies are appropriate, in line with best practice and in full compliance with domestic regulatory expectations and laws.
- Pension plan optimization: we reduce the Group's exposure to defined-benefit plans either by converting existing plans into pension plans with a lower risk profile for future services or closing them to new entrants.
- For each of the main Group pension plans, which represent about 90% of the Group's gross or net pension obligations, Asset Liability Management (ALM) analyses are performed at least once every three years to identify and manage corresponding risks.

Control processes for tax regulation compliance and transfer pricing policies

- Our control processes for tax regulation compliance involve monitoring procedures and systems, which we carry out thorough internal reviews and audits performed by reputable external consultants.
- Our transfer pricing policies, procedures and controls are aimed at meeting the requirements of the authorities.
- Solvay's Tax department pays close attention to the correct interpretation and application of new tax rules This ensures compliance with applicable rules and regulations and avoids tax and future litigation risks.

3.3.3. 2021 main actions

- Successful cash tender offer of the €750 million bonds due in September 2022 (3m par call, coupon of 1.625%) with a repurchase of €372.5 million bonds (outstanding: €377.5 million).
- Monitoring of ESG debt capital market issuances in the chemical industry.
- Compliance for "Ibor-transition rates" to risk free rates and adjustments of financing documentations
- Competitive financing of both biomass boilers in Rheinberg (commission of a first boiler and construction of a second), including ESG content.
- Optimizing our liquidity reserves and rebalancing the refinancing strategy of some bilateral credit facilities.
- Extension of the Treasury Management Systems to bonds and credit facilities;
- Additional voluntary pension contributions: Belgium up to €100 million in Q1 2021; UK up to €140 million in Q4 2021. Further contribution of up to €155 million in Germany under consideration for early 2022.

3.4. IT risk

3.4.1. Risk description

Our IT risk relates to an inability to:

- Ensure the continuity of digital technology services to business;

- Provide our businesses with new and sustainable capabilities while deploying Solvay's digital technology ambition under our new operating model.

3.4.2. Prevention and mitigation actions

- Close monitoring of the cybersecurity roadmap. (see cybersecurity section).
- Close monitoring of security and performance indicators.
- Annual IT audit program to ensure compliance with group security policies.

4. LITIGATION

With our variety of activities and geographic distribution, the Solvay Group is exposed to legal risks, particularly in the areas of product liability, contractual relations, antitrust laws, patent disputes, tax assessments and HSE matters. In this context, litigation cannot be avoided and is sometimes necessary in order to defend the rights and interests of the Group.

The outcome of proceedings cannot be predicted with certainty. It is therefore possible that adverse final court decisions or arbitration awards could lead to liabilities (and expenses) that are not covered, or not fully covered, by provisions or insurance, and that could have a material impact on the revenues and earnings of the Group.

Ongoing legal proceedings involving the Solvay Group that are currently considered to involve significant risks are outlined below. The legal proceedings described below do not constitute an exhaustive list.

The fact that litigation proceedings are reported below is unrelated to the merits of the cases. In all the cases cited below, we are defending ourselves vigorously and believe in the merits of our defense.

For certain cases, we have created reserves or provisions in accordance with accounting rules, to cover financial risk and defense costs (see the section "Provisions for litigation to the consolidated financial statements" in this report).

Antitrust proceedings

In Brazil, CADE (the Brazilian antitrust authority) issued fines against Solvay and others in May 2012, relating to hydrogen peroxide activities, and in February 2016, relating to perborate activities. Solvay's share of these fines amounts to €29.6 million and €3.99 million respectively. We have filed a claim with the Brazilian Federal Court contesting these administrative fines.

HSE related proceedings

- Asbestos Cases: Up to now, 21 civil proceedings have been brought before Italian Courts by past workers and relatives of deceased workers at Solvay sites seeking damages, provisionally quantified at €12 million, in relation to diseases allegedly caused by exposure to asbestos.
  - Five proceedings have ended with damages awarded for a total of around €40,000.
  - One proceeding has ended with damages awarded of approximately €550,000.
  - One proceeding has ended with a decision entirely favorable to Solvay, with an appeal pending.
  - Ten proceedings are currently pending before the Courts of First Instance.
  - One proceeding is presently pending before the Court of Appeal, after damages amounting to €13,000 were awarded by the Court of First Instance.
  - One proceeding is currently pending before the Cassation Court, after damages amounting to €3,000 were awarded by the Court of Appeal.
  - Two proceedings were settled before the Court of Appeal for about €8,000 each.
  - One proceeding has been definitively terminated in favor of Solvay.
- Rosignano and Spinetta sites: criminal preliminary investigations are pending before the Criminal Court of Livorno and of Alessandria respectively, regarding the contamination of certain areas outside these industrial sites.
- Bussi site: administrative litigation is pending in relation to the identification of the polluter of external areas at Bussi (external discharges, sold in 2017) and of the industrial site (divested in 2016).
- PFAs: Solvay Specialty Polymers USA, LLC (SpP) is a defendant in 25 separate lawsuits in the US relating to SpP's use of per- and polyfluoroalkyl substances (PFAS). The vast majority of these cases are in the federal and state courts in New Jersey, in the US, and the majority are claims by private plaintiffs seeking medical monitoring or compensation for personal injury or other economic loss. Two of the cases involve civil claims by separate US State governmental authorities - New Jersey and Michigan - seeking various damages, including natural resource damages. The lawsuit brought by the State of New Jersey also seeks the environmental cleanup of PFAS pollution caused by SpP's lone operating facility in New Jersey.

Pharmaceutical activities (discontinued):

The contractual arrangements for the sale of our pharmaceutical activities in February 2010 defined terms and conditions for the allocation and sharing of liability arising out of activities carried out before the sale. This means that, subject to limited exceptions, Solvay's exposure for indemnifications to Abbott for liabilities arising out of sold activities is limited to an aggregate amount representing €500 million and with limited duration. All post-closing indemnification claims made against Solvay have now been resolved except the following:

- Liabilities arising from private civil antitrust claims made against the buyer of the business. Solvay's potential exposure is limited to a possible clawback of the €300 million received by Solvay as an additional purchase price based on post-closing ANDROGEL® sales.

Extra-financial statements

EXTRA-FINANCIAL STATEMENTS

Highlights of 2021

In 2021, we made further advances in our sustainability journey, in line with the targets set out in our Solvay One Planet roadmap - an integral part of our G.R.O.W. strategy and company Purpose. Building on stakeholder feedback, we continued to take actions toward becoming a low-carbon and more inclusive company. This includes reallocating resources to growth and sustainable businesses and further integrating sustainability into all of our key strategic decisions, including on research and innovation, capital expenditure, mergers and acquisitions activities, and investment.

In 2021, we raised the bar in the three main areas of our Solvay One Planet roadmap – Climate, Resources and Better Life – and we delivered on our commitments.

Climate

→ Unveiling our plans to reach carbon neutrality on Scope 1 and 2 emissions before 2040 for all businesses except soda ash, and before 2050 for soda ash. As a consequence, we upgraded our 2030 target for greenhouse gas emissions from -26% to -30%, as compared to the 2018 baseline. Our Scope 3 target shall at least meet the 2°C criteria of the Science Based Targets initiative.

→ Achieving a 14% (11% structural) reduction in Scope 1 and 2 emissions since 2018.

→ Accelerating the energy transition in our plants, with 36 projects underway globally that will save 2.5 million tons of CO_2 emissions per year.

→ Launching a strategic initiative to mobilize suppliers in working together to transform the value chain. As part of this, we called on our 400 strategic suppliers to join us in our climate journey.

→ Continuing our efforts to phase out the use of coal for energy production by 2030 at a second soda ash plant, in Dombasle, France. The plant is transitioning to primarily refuse-derived fuel.

→ Improving our CDP Climate rating from B to A-, which is higher than the chemical sector average of B.

→ Receiving recognition for our progress in reducing our pressure on biodiversity. Our Paulinia site in Brazil was awarded the Wildlife Habitat Council's (WHC) Gold Certificate, a first for a chemical company in this country.

→ Mobilizing 15,000 employees and more than 7,500 people from local communities and NGOs to participate in actions promoting biodiversity, as part of our annual Citizen Day.

Resources

→ Equalling our 2019 record of 53% of Group sales generated by sustainable solutions. We are focusing resources on developing more sustainable solutions that meet higher performance requirements. We have a clear roadmap for developing the solutions for the next generation of battery technologies and, as the European leader for this new technology, we are investing to create the most advanced pilot plant in Europe.

→ Reinforcing our portfolio of bio-based solutions, with the acquisition of a bio-based seed care portfolio and the development of new bio-sourced solutions for home and personal care.

→ Partnering to create circular businesses. This includes partnering with Bridgestone and Arlanxeo to launch TECHSYN, a new technology that gives tires unrivaled strength and environmental performance, and advancing our tripartite partnership with Veolia and Renault to establish a sustainable supply source for strategic battery raw materials.

→ Surpassing our 2030 target to reduce industrial waste not treated in a sustainable way by 30%.

Better life

→ Launching Solvay One Dignity, committing to nine objectives and action plans to drive diversity, equity and inclusion at Solvay.

— **Diversity:** we are accelerating efforts to achieve gender equity at all mid and senior levels by 2030. In 2021, the number of women working at these levels reached 25%. Our upcoming Gender Impact Assessment will help us identify where current policies may be negatively impacting the advancement of female employees. Three new employee resource groups (ERGs) were also launched in 2021, helping to encourage employees to bring their "whole self" to work.

— **Equity:** we are working to ensure fair recruitment. This includes collecting data to help us identify any unjustified pay inequities across Group profiles and publishing the results in this report for the most significant countries, in an effort to promote transparency. We also launched a new mentoring program for women, which almost 25% of our female junior managers volunteered to take part in.

— **Inclusion:** we launched a global survey assessing inclusive culture at Solvay, the results of which will be used to track our progress.

→ Launching Solvay's first employee share purchase program to promote an ownership mindset among employees by encouraging deeper engagement and driving value creation.

→ Extending the scope of our Solvay Solidarity Fund to provide support for employees and local communities facing hardship in a variety of different situations, in addition to the pandemic.

→ Hazardous materials: we closely monitor the Substances of Very High Concern (SVHC) listed in the EU REACH Candidate list and EU REACH Authorization list, by identifying all marketed products sold in the EU and worldwide containing a concentration of those substances above 0.1%. We go beyond what is required by regulation, screening our own broader internal reference list of SVHC for our products marketed worldwide. Our target is to phase out all SVHCs present in our marketed products at a concentration above 0.1% by 2030, wherever feasible.

→ EU Taxonomy eligible activities: we identified Solvay activities eligible for the EU Taxonomy, an EU classification system aimed at establishing a list of environmentally sustainable economic activities to help the EU to scale up sustainable investment.

Extra-financial statements

1. OVERVIEW OF THE CONSOLIDATED EXTRA-FINANCIAL STATEMENTS

Past figures are as published (without restatements).

R: reasonable assurance

L: limited assurance

Mt: Million metric tons

Mm^3: Million cubic meters

PJ: Peta Joules

CLIMATE

		Units	2021	2020	2019	2018	2017
	PRIORITY ASPECTS						
	Greenhouse gas emissions						
R	Scope 1	Mt CO_2 eq.	9.6	8.9	10.6	10.4	10.2
R	Scope 2 - gross market-based	Mt CO_2 eq.	1.4	1.2	1.4	1.9	2.1
R	Total Scope 1+2	Mt CO_2 eq.	11.0	10.1	12.0	12.3	12.3
R	Scope 3	Mt CO_2 eq.	25.8	28.8	32.6	34.2	-
	Total Scope 1+2+3	Mt CO_2 eq.	36.8	38.9	44.6	46.5	-
L	Biodiversity						
	Species potentially affected	Number	93	107	116	122	-
	MATERIAL ASPECTS						
	Energy						
	Fuel consumption for energy production	PJ	105	99	107	93	92
	Energy purchased	PJ	33	34	38	45	49
	Energy sold	PJ	33	31	32	23	22
L	Primary energy consumption	PJ	106	103	113	115	119
L	Solid fuels	PJ	27	27	32	33	38

RESOURCES

		Units	2021	2020	2019	2018	2017
	PRIORITY ASPECTS						
	Product design and life cycle management						
	Revenue breakdown by Sustainable Portfolio Management (SPM) categories						
R	Solutions	%	53	52	53	50	49
R	Neutral	%	28	27	27	30	31
R	Challenges	%	9	8	7	7	8
R	Not evaluated	%	10	13	13	13	12
	SPM Solutions: sales by main impact category						
	Climate	€ billion	1.7	1.6	2.2	2.2	-
	Resources	€ billion	3.7	3.2	3.5	3.1	-
	Better life	€ billion	3.2	3.1	3.3	3.1	-
	Total solutions net sales	€ billion	5.1	4.7	5.4	5.1	-
	Circular economy						
L	Share of of products based on recycled or re-newable resources	%	5	5	4	-	-
	Water						
R	Total freshwater withdrawal	Mm^3	315	314	330	330	326
	Freshwater withdrawal in water-stressed areas	Mm^3	30.7	29.0	-	-	-
L	Chemical oxygen demand - COD	metric tons	5,735	5,265	6,248	-	-
	Waste						
R	Non-hazardous industrial waste	1,000 tons	1,316	1,457	1,596	1,602	1,641
R	Hazardous industrial waste	1,000 tons	74.8	71.6	86.6	93.1	99.7
R	Total industrial waste	1,000 tons	1,391	1,529	1,682	1,696	1,741
R	Industrial non-hazardous waste not treated in a sustainable way	1,000 tons	41.9	51.4	69.2	-	-
R	Industrial hazardous waste not treated in a sus-tainable way	1,000 tons	15.9	18.2	27.2	-	-
R	Total industrial waste not treated in a sustainable way	1,000 tons	57.8	69.7	96.4	-	-
R	Mining waste	1,000 tons	618	637	799	-	-
	MATERIAL ASPECTS						
	Air emissions						
L	Nitrogen oxides - NOx	metric tons	5,882	5,587	6,197	7,704	9,432
L	Sulfur oxides - SOx	metric tons	3,449	2,808	2,888	3,750	4,252
L	Non-methane volatile organic compounds - NMVOC	metric tons	3,956	3,286	4,109	4,252	4,132
	Ozone-depleting substances (ODS)	metric tons	7.7	-	-	-	-

BETTER LIFE

		Units	2021	2020	2019	2018	2017
	PRIORITY ASPECTS						
	Employee health and safety						
R	Reportable Injury and Illness Rate (RIIR) employees and contractors	per 200,000 hours	0.43	-	-	-	-
R	Lost Time Injury and Illness Rate (LTIIR) employees and contractors	per 200,000 hours	0.22	0.14	0.13	-	-
R	Fatal accidents - employees and contractors	number	0	0	0	0	1
	Diversity and inclusion						
	Women in senior and middle management	%	25.0	24.7	24.3	23.7	-
R	Women in Solvay's workforce	%	23	24	23	23	23
R	Total headcount		21,606	23,663	24,155	24,501	24,459
	MATERIAL ASPECTS						
	Employee engagement						
L	Coverage by collective agreements	%	100	100	100	100	100
L	Engagement index						
	Customer satisfaction						
L	Net Promoter Score®	%	32	NA	33	42	36
	Corporate Citizenship						
	Hazardous materials						
L	Substance of very high concern (SVHC) according to REACH criteria present in products sold	Number	37	40	29	-	-
L	Percentage of completion of analysis of safer alternatives for marketed products	%	45	51	54	-	-
	Of which effective replacement	%	30	31	30	-	-
	Critical incident risk management						
L	Process safety incident with release to environment	Number	30	26	34	-	-

2. BASIS OF PREPARATION

The main reporting frameworks used to prepare the Annual Integrated Report are:

- Global Reporting Initiative (GRI): the GRI standards are the main reference for Solvay's sustainability reporting; the latest edition of the standards is used, including the new GRI-1 and GRI-2 universal standards.
- United Nations Global Compact: the information provided serves as a progress report on implementation of the United Nations Global Compact's ten principles.
- International Integrated Reporting Council (IIRC): Solvay adheres to the principles and content elements of Integrated Reporting, as described in the "International Framework" published by the IIRC.
- 2014/95/EU: Solvay uses the GRI Standards to comply with Directive 2014/95/EU of the European Parliament and of the Council of October 22, 2014 amending Directive 2013/34/EU as regards disclosure of non-financial and diversity information. The Directive was transposed into Belgian law in September 2017.
- Sustainability Accounting Standards Board (SASB): Solvay aligns our materiality analysis with the SASB approach to prepare the SASB Materiality Map™. For more details, see the Materiality Analysis section of this chapter.
- World Business Council for Sustainable Development (WBCSD): Solvay's report aligns with the WBCSD ESG Disclosure Handbook guidance in terms of process and content selection.
- World Economic Forum: Measuring Stakeholder Capitalism - Towards Common Metrics and Consistent Reporting of Sustainable Value Creation - September 2020: Solvay reports on the WEF report Core Metrics and Disclosures.
- United Nations Sustainable Development Goals: Solvay has identified the nine Sustainable Development Goals on which it can have the most impact, through its operations or across the value chain, in line with the materiality analysis.
- Task force on Climate-related Financial Disclosures (TCFD): Solvay reports on our alignment with the 11 recommendations of the TCFD.
- RESPONSIBLE CARE®: Solvay is a signatory to the International Council of Chemical Associations' (ICCA) Responsible Care Global Charter®.
- EU Taxonomy: a first estimate of eligible activities as defined by the EU Taxonomy in the delegated act of April 2021 is presented in 5.1. Product design and life cycle management.

2.1. Reporting practices

GRI DISCLOSURES 2-2 2-3 2-4 2-7

2.1.1. Reporting scope and boundaries

Unless stated otherwise, the environmental and social reporting boundaries are consistent with the financial reporting scope and boundaries, as described in the "List of companies included in the consolidation scope" in the financial statements. In other words, social and environmental indicators are consolidated according to the equity share approach described in the Greenhouse Gas Protocol Corporate Accounting and Reporting Standard.

Solvay uses the "rolling base year" approach described in the Greenhouse Gas Protocol Corporate Accounting and Reporting Standard to calculate target achievements.

Unless stated otherwise, past years are not restated for extra-financial indicators.

The reporting scope includes all material aspects, as identified in Solvay's materiality analysis. Some additional disclosures have been included because they are requested by specific groups of stakeholders.

Reporting practices specific to the dimension reported are integrated in the corresponding "Definitions" subsection.

2.2. Materiality analysis

GRI DISCLOSURES: 3-1 3-2

Solvay bases our sustainability priorities on a materiality analysis. This approach identifies economic, environmental and social aspects which can impact Solvay, or on which Solvay has the most impact, positive or negative.

Solvay uses two external references for our materiality analysis:

- Global Reporting Initiative (GRI) for the materiality analysis process;
- Sustainability Accounting Standards Board (SASB) for the list of aspects and for prioritization criteria.

2.2.1. Material topics

Category	Material topics (priority topics are underlined)
Governance	Management of the legal, ethics and regulatory framework
Climate	Greenhouse gas emissions Energy Biodiversity
Resources	Product design and lifecycle management Air quality Water and wastewater Waste
Better life	Employee health and safety Employee engagement and wellbeing Diversity and inclusion Customer welfare Corporate citizenship Hazardous materials Critical incident risk management

2.2.2. Materiality analysis process

Solvay's Sustainable Development Function coordinates materiality analysis with an internal network of Sustainability Champions in the Global Business Units and Functions. Experts in each Corporate Function review the analysis of each aspect, paying particular attention to ensuring consistency with the Group's risk analysis.

Identification of aspects	Use of the Value Reporting Foundation - SASB Materiality Map list of aspects. The SASB Materiality Map identifies likely material sustainability aspects on an industry-by-industry basis.
Prioritization of aspects	Use of the SASB Materiality Map prioritization criteria: - Evidence of interest, for Solvay and/or for Solvay stakeholders, including evidence of potential impacts - Evidence of financial impact, actual or potential: sales, profit, return or risk profile. - Forward-looking adjustment The network of Sustainability Champions and internal experts for each material aspect was involved in the prioritization analysis.
Validation	Review of the analysis by the Executive Committee and the Global Business Units and Corporate Functions leaders. The review includes verification of the consistency with the analysis of the Group's main risks, and a comparison with the Value Reporting Foundation - SASB Materiality Finder for the chemical sector.
Review	A review led by the Sustainable Development Function takes place annually, based on feedback from stakeholders and Solvay experts. The findings inform and contribute to the prioritization review in the next reporting cycle.
Stakeholder inclusiveness and sustainability context	Indirectly taken into account through: - The exhaustive list of aspects of the SASB's Materiality Map; - The "evidence of interest criteria", which includes the analysis of documents from representatives of stakeholder groups, with emphasis on written evidence.
Report	The material aspects are included in Solvay's dashboards and reported in the annual report, with assurance from corporate auditors.

2.2.3. 2021 updates

Solvay's materiality analysis is unchanged compared to 2020. The Covid-19 crisis confirmed the priorities defined during the Solvay One Planet preparative work, and in particular:

- An increased emphasis on climate change and biodiversity, with evidence of the link between human activities and the pandemic and the changes in air quality during lockdown phases.
- An increased emphasis on social aspects, with evidence of minorities being the most vulnerable populations.

2.2.4. Why is it material?

The tables below summarize Solvay's assessment of material aspects for each category. The corresponding United Nations Sustainable Development Goals (SDGs) are used to describe what impacts are considered, where they may occur and how they may be caused. For more information about these goals, see https://www.globalgoals.org/.

GOVERNANCE

Aspect	Boundaries	Evidence of interest	Evidence of financial impact	Forward looking adjustment	Materiality
Management of the legal, ethics and regulatory framework Alignment to ethics frameworks and regulatory requirements.	Operations Value chain SDG-12	High High materiality for the Chemical industry	Medium Revenue, costs: yes Assets, liabilities: yes Cost of capital: no	Yes Probability, magnitude: yes Externalities: yes	High

CLIMATE

Aspect	Boundaries	Evidence of interest	Evidence of financial impact	Forward looking adjustment	Materiality
Greenhouse gas emissions Management of scope 1, 2 and 3 greenhouse gas emissions	Operations Value chain SDG-13	High High materiality for the Chemical industry; Solvay is more CO_2-intensive than the chemical industry average	High Revenue, costs: yes Assets, liabilities: yes Cost of capital: no	Yes Probability, magnitude: yes Externalities: yes	Priority
Energy Energy production and consumption optimization and management of energy transition	Operations Upstream value chain SDG-13 SDG-7	High Solvay is more energy-intensive than the chemical industry average	High Revenue, costs: yes Assets, liabilities: yes Cost of capital: no	Yes Probability, magnitude: yes Externalities: yes	Priority
Biodiversity Management of impacts on biodiversity through operations and throughout the value chain	Operations Value chain SDG-14 SDG-15	High Priority issue at planetary scale	Low Revenue, costs: low Assets, liabilities: no Cost of capital: no	Yes Probability, magnitude: yes Externalities: yes	Priority

RESOURCES

Aspect	Boundaries	Evidence of interest	Evidence of financial impact	Forward looking adjustment	Materiality
Product design and life cycle management Management of value chain economic, environmental and social impacts of products and services	Operations Value chain SDG-12	High High materiality for the chemical industry	High Revenue, costs: yes Assets, liabilities: yes Cost of capital: no	Yes Probability, magnitude: yes Externalities: yes	Priority
Air quality Management of emissions of air pollutants from operations	Operations SDG-15	High High materiality for the chemical industry	High Revenue, costs: yes Assets, liabilities: yes Cost of capital: no	Yes Probability, magnitude: yes Externalities: yes	High
Water and wastewater Management of water withdrawals, discharge and consumption	Operations SDG-6 SDG-14	High High materiality for the chemical industry	High Revenue, costs: yes Assets, liabilities: yes Cost of capital: no	Yes Probability, magnitude: yes Externalities: yes	Priority
Waste Management of solid wastes from operations, including hazardous wastes	Operations SDG-12	High High materiality for the chemical industry	High Revenue, costs: yes Assets, liabilities: yes Cost of capital: no	Yes Probability, magnitude: yes Externalities: yes	Priority

BETTER LIFE

Aspect	Boundaries	Evidence of interest	Evidence of financial impact	Forward looking adjustment	Materiality
Employee health and safety Occupational safety, industrial hygiene and health management of employees and contractors	Operation Contractors SDG-3	High High materiality for the chemical industry	High Revenue, costs: yes Assets, liabilities: yes Cost of capital: no	Yes Probability, magnitude: yes Externalities: yes	Priority
Employee engagement and well-being Management of labor practices, social dialogue and employee well-being	Operations SDG-8	High Historical commitment of the Solvay Group since its foundation	Medium Revenue, costs: yes Assets, liabilities: yes Cost of capital: no	Yes Probability, magnitude: no Externalities: yes	High
Diversity and inclusion Non-discrimination and diversity management in operations and management structures	Operations SDG-8	High Growing importance of regional diversity for specific business units	Medium Revenue, costs: yes Assets, liabilities: no Cost of capital: no	Yes Probability, magnitude: yes Externalities: yes	Priority
Customer welfare Customer relations and customer satisfaction management	Downstream value chain SDG-12	Medium High for some business units (access to customers' development pipelines)	High Revenue, costs: yes Assets, liabilities: no Cost of capital: no	Yes Probability, magnitude: yes Externalities: yes	High
Corporate citizenship Management of community relationships, corporate citizenship and philanthropy. Business programs for social needs	Local communities Value chain Society at large SDG-17	High May be linked to license to operate; potential positive or negative impacts beyond chemical value chain impacts	Low Revenue, costs: no Assets, liabilities: yes Cost of capital: no	Yes Probability, magnitude: yes Externalities: no	High
Hazardous materials Management of hazardous materials in raw materials, production processes and sold products	Operations Value chain SDG-3	High High materiality for the chemical industry; REACH/SVHC	High Revenue,costs: yes Assets, liabilities: yes Cost of capital: no	Yes Probability, magnitude: yes Externalities: yes	High
Critical incident risk management Process safety programs and management of consequences of environmental accidents	Operations Local communities SDG-3	High High materiality for the chemical industry	High Revenue,costs: yes Assets, liabilities: yes Cost of capital: no	Yes Probability, magnitude: yes Externalities: yes	High

2.3. World Economic Forum: Measuring Stakeholder Capitalism: Core metrics and disclosures

Solvay discloses most of the sustainability disclosure topics and accounting metrics listed in the WEF report "Measuring Stakeholder Capitalism - Towards Common Metrics and Consistent Reporting of Sustainable Value Creation", September 2020.

Theme	Governance: Core metrics and disclosures	Reference
Governing purpose	**Setting purpose** The company's stated purpose, as the expression of the means by which a business proposes solutions to economic, environmental and social issues. Corporate purpose should create value for all stakeholders, including shareholders.	https://www.solvay.com/en/our-company/our-purpose
Quality of governing body	**Governance body composition** Composition of the highest governance body and its committees by: competencies relating to economic, environmental and social topics; executive or non-executive; independence; tenure on the governance body; number of each individual's other significant positions and commitments, and the nature of the commitments; gender; membership of under-represented social groups; stakeholder representation.	Corporate governance statement
Stakeholder engagement	**Material issues impacting stakeholders** A list of the topics that are material to key stakeholders and the company, how the topics were identified and how the stakeholders were engaged.	Extra-financial statements: 2.2 Materiality analysis
Ethical behavior	**Anti-corruption** 1. Total percentage of governance body members, employees and business partners who have received training on the organization's anti-corruption policies and procedures, broken down by region: a) total number and nature of incidents of corruption confirmed during the current year, but related to previous years; and b) total number and nature of incidents of corruption confirmed during the current year, related to this year. 2. Discussion of initiatives and stakeholder engagement to improve the broader operating environment and culture, in order to combat corruption.	Corporate governance statement Extra-financial statements: 3.2. Management of the legal, ethics and regulatory framework
	Protected ethics advice and reporting mechanisms A description of internal and external mechanisms for: 1. seeking advice about ethical and lawful behavior and organizational integrity; and 2. reporting concerns about unethical or unlawful behavior and lack of organizational integrity.	Extra-financial statements: 3.2. Management of the legal, ethics and regulatory framework
Risk and opportunity oversight	**Integrating risk and opportunity into business process** Company risk factor and opportunity disclosures that clearly identify the principal material risks and opportunities facing the company specifically (as opposed to generic sector risks), the company appetite with respect to these risks, how these risks and opportunities have moved over time and the response to these changes. These opportunities and risks should integrate material economic, environmental and social issues, including climate change and data stewardship.	Risk management Extra-financial statements: 5.1. Product design and life cycle management

Theme	Planet: Core metrics and disclosures	
Climate change	**Greenhouse gas (GHG) emissions** For all relevant greenhouse gasses (e.g. carbon dioxide, methane, nitrous oxide, F-gasses, etc.), report in metric tons of carbon dioxide equivalent (tCO_2e) GHG Protocol scope 1 and scope 2 emissions. Estimate and report material upstream and downstream (GHG Protocol scope 3) emissions where appropriate.	Extra-financial statements: 4.1. Greenhouse gas emissions
	TCFD implementation Fully implement the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD). If necessary, disclose a timeline of at most three years for full implementation. Disclose whether you have set, or have committed to set, GHG emissions targets that are in line with the goals of the Paris Agreement – to limit global warming to well below 2°C above pre-industrial levels and pursue efforts to limit warming to 1.5°C – and to achieve net-zero emissions before 2050.	Extra-financial statements: 2.4. Task force on Climate-related Financial Disclosure
Nature loss	**Land use and ecological sensitivity** Report the number and area (in hectares) of sites owned, leased or managed in or adjacent to protected areas and/or key biodiversity areas (KBA).	Extra-financial statements: 4.3. Biodiversity
Freshwater availability	**Water consumption and withdrawal in water-stressed areas** Report for operations where material: megaliters of water withdrawn, megaliters of water consumed and the percentage of each in regions with high or extremely high baseline water stress, according to WRI Aqueduct water risk atlas tool. Estimate and report the same information for the full value chain (upstream and downstream) where appropriate.	Extra-financial statements: 5.4. Water and wastewater

Theme	People: Core metrics and disclosures	
Dignity and equality	**Diversity and inclusion (%)** Percentage of employees per employee category, by age group, gender and other indicators of diversity (e.g. ethnicity).	Extra-financial statements: 6.3. Diversity and inclusion
	Pay equality (%) Ratio of the basic salary and remuneration for each employee category by significant locations of operation for priority areas of equality: women to men, minor to major ethnic groups and other relevant equality areas.	Extra-financial statements: 6.3. Diversity and inclusion
	Wage level (%) Ratios of standard entry level wage by gender compared to local minimum wage. Ratio of the annual total compensation of the CEO to the median of the annual total compensation of all employees, except the CEO.	Wage level data is disclosed according to the legal requirements of various countries but metrics are not currently unified. Work is ongoing to define the appropriate consolidation metric. Corporate governance statement: 6. Compensation report
	Risk for incidents of child, forced or compulsory labor An explanation of the operations and suppliers considered as having significant risk for incidents of child labor, forced or compulsory labor. Such risks could emerge in relation to: a) type of operation (such as manufacturing plant) and type of supplier; and b) countries or geographic areas with operations and suppliers considered at risk.	Extra-financial statements: 3.2. Management of the legal, ethics, and regulatory framework
Health and well-being	**Health and safety (%)** The number and rate of fatalities as a result of work-related injury; high-consequence work-related injuries (excluding fatalities); recordable work-related injuries; main types of work-related injury; and the number of hours worked. An explanation of how the organization facilitates workers' access to non-occupational medical and healthcare services, and the scope of access provided for employees and workers.	Extra-financial statements: 6.1. Employee health and safety
Skills for the future	**Training provided (#, $)** Average hours of training per person that the organization's employees have undertaken during the reporting period, by gender and employee category (total number of hours of training provided to employees divided by the number of employees). Average training and development expenditure per full time employee (total cost of training provided to employees divided by the number of employees).	Extra-financial statements: 6.4. Recruitment, development and retention

Theme	Prosperity: Core metrics and disclosures	
Employment and wealth generation	**Absolute number and rate of employment** 1. Total number and rate of new employee hires during the reporting period, by age group, gender, other indicators of diversity and region. 2. Total number and rate of employee turnover during the reporting period, by age group, gender, other indicators of diversity and region.	Extra-financial statements: 6.4. Recruitment, development and retention
Community and social vitality	**Economic contribution** 1. Direct economic value generated and distributed (EVG&D), on an accruals basis, covering the basic components for the organization's global operations, ideally split by: – revenues – operating costs – employee wages and benefits – payments to providers of capital – payments to government – community investment. 2. Financial assistance received from the government: total monetary value of financial assistance received by the organization from any government during the reporting period.	Extra-financial statements: 1. Overview of the consolidated results
	Financial investment contribution 1. Total capital expenditures (Capex) minus depreciation, supported by narrative to describe the company's investment strategy. 2. Share buybacks plus dividend payments, supported by narrative to describe the company's strategy for returns of capital to shareholders.	Financial statements: 2. Notes to the consolidated financial statements
Innovation of better products and services	**Total R&D expenses ($)** Total costs related to research and development.	Financial statements: 2. Notes to the consolidated financial statements
Community and social vitality	**Total tax paid** The total global tax borne by the company, including corporate income taxes, property taxes, non-creditable VAT and other sales taxes, employer-paid payroll taxes and other taxes that constitute costs to the company, by category of taxes.	Financial statements: 2. Notes to the consolidated financial statements

2.4. Task Force on Climate-related Financial Disclosure

The Financial Stability Board Task Force on Climate-related Financial Disclosures (TCFD) developed voluntary, consistent, climate-related financial risk disclosures, which can be used by companies to provide information to investors, lenders, insurers and other stakeholders.

The Task Force structured its recommendations around four themes that represent key aspects of how organizations operate: governance, strategy, risk management, and metrics and targets.

This section addresses the disclosures, with links to the relevant sections of the annual report, and provides a self-assessment of Solvay's level of alignment with the TCFD recommendations.

TCFD recommendation	Reference
GOVERNANCE	
The Charter of Corporate Governance describes how the Board of Directors manages sustainability-related aspects and is available on the Solvay website. The Board devotes at least one meeting per year to an update on trends in global sustainable development issues, including climate change risks and opportunities.	Corporate governance statement
A Climate Risks Officer has been appointed at the Executive Committee level. They are in charge of ensuring that climate-related aspects are adequately considered in the Group's strategy and operations.	Risk management: 1. Risk management process
STRATEGY	
Long-term horizon assumptions are presented in the description of megatrends in the "Global business trends driving our markets" section of this report. Medium-term assumptions (in the coming five years) are explained in the description of Solvay's main markets. Short-term assumptions (one year) are presented in the Group's outlook.	Reinventing: 3. Business environment Performance: 7. Outlook
Climate-related risks and opportunities were fully reviewed in 2019 and are described in the "Risk management" chapter. Four main risk categories were analyzed: value chain transition risks (using the Sustainable Portfolio Management methodology); - scenario analysis, using the International Energy Agency "Sustainable Development" scenario as a reference; - acute physical risks linked to droughts, hurricanes and earthquakes; - chronic physical risks linked to water scarcity.	Risk management: 2. Solvay's main risks
A scenario analysis was conducted in 2019, using the International Energy Agency "Sustainable Development" scenario as a reference. Impacts on energy and CO_2 costs (including impact on raw material costs) and impacts on main markets were assessed. Four Executive Committee members were directly involved in the exercise. According to this exercise, the order of magnitude of favorable impacts on markets outweighs the negative impact on energy and CO_2 costs.	Risk management: 2. Solvay's main risks
The presentation of the Group's main risks includes timescales (short-, medium- or long-term horizons). Quantification of impacts is not disclosed.	Risk management: 2. Solvay's main risks
RISK MANAGEMENT	
The risk management process, the main risks and the process used to rank them are described in the "Risk management" chapter.	Risk management
Analysis of value chain sustainability-related risks and opportunities is done through the Sustainable Portfolio Management methodology, for each product in each application or market, and includes climate change transition risks.	Extra-financial statements: 5.1. Product design and life cycle management
"Greenhouse gas emissions" (GHG) have been identified as a priority in the Group's materiality analysis. "Climate transition risks" have been identified as part of the Group's main risks. Links between main risks and material issues are part of the materiality analysis process.	Extra-financial statements: 2.2. Materiality analysis Risk management: 2. Solvay's main risks
The Sustainable Portfolio Management tool is a requirement in key Group processes and, in particular, in the assessment of capital expenditures projects, research and innovation projects, and acquisition and divestiture projects.	Extra-financial statements: 5.1. Product design and life cycle management
METRICS AND TARGETS	
The strategic objectives used to drive sustainable value creation are described in the Solvay scorecard. They have been fully reviewed in the context of the Solvay One Planet sustainability ambition, published in February 2020.	Reinventing: 4. Sustainable value creation
Greenhouse gas emissions, energy consumption, and Sustainable Portfolio Management metrics and targets are reported in the "Extra-financial statements" chapter. Solvay has set a new 2030 objective to reduce scope 1 and 2 greenhouse gas emissions, in line with a "well below 2°C" trajectory, committed to set science-based targets, in line with the Science Based Targets initiative requirements, and targets carbon neutrality before 2050. Solvay will also not build new coal-powered plants and commits to phase out coal usage in energy production by 2030 wherever renewable alternatives exist.	Extra-financial statements: 4.1 Greenhouse gas emissions 5.1. Product design and life cycle management
Greenhouse gas scope 1, scope 2 and scope 3 emissions are fully reported and audited. The scope of emissions reporting is consistent with financial reporting.	Extra-financial statements: 4.1 Greenhouse gas emissions

2.5. United Nations Sustainable Development Goals

In 2015, the United Nations established a set of goals to end poverty, protect the planet and ensure prosperity for all. Each of these 17 Sustainable Development Goals (SDGs) includes specific targets to be achieved by 2030. Achieving the SDGs requires efforts by governments, the private sector, civil society, communities and individuals.

Nine leading chemical companies, including Solvay, and two industry associations formed a dedicated working group, convened by the World Business Council for Sustainable Development (WBCSD). This working group took a leadership role in piloting and refining the three-step framework described in the WBCSD's SDG Sector Roadmap Guidelines.

As part of this exercise, Solvay identified the Sustainable Development Goals on which we could have a material impact, positive or negative. We then integrated these sustainable development goals into our materiality analysis as the official agenda of the "Planet" (Governments and NGOs) stakeholder group.

This preliminary list was reviewed in 2019, within the context of the Solvay One Planet sustainability ambition, with an increasing focus on the impact of products and operations.

Solvay's main impacts can be grouped into three categories: climate, resources and quality of life. The corresponding list of SDGs on which Solvay can have the most impact, positive or negative, through our operations and the products we sell, is as follows:

- Climate and biodiversity, which includes the Group's energy consumption and greenhouse gas emissions, and other emissions or effluents that put pressure on biodiversity, but also products that may impact customers' energy consumption or greenhouse gas emissions:
  - SDG 7: Affordable and clean energy
  - SDG 13: Climate action
  - SDG 14: Life below water
  - SDG 15: Life on land
- Resources, which includes the Group's raw material consumption, water consumption, effluents, emissions and waste generation, but also products' life cycles and end-of-life management:
  - SDG 12: Responsible consumption and production
- Better life, which includes the Group's management of hazardous materials, people, process and product safety, social dialogue initiatives and potential social impacts of our product portfolio:
  - SDG 3: Good health and well-being
  - SDG 6: Clean water and sanitation
  - SDG 8: Decent work and economic growth
  - SDG 17: Partnership for the goals

2.6. Sustainability Accounting Standards Board (SASB)

Solvay bases our materiality analysis on the SASB Materiality Map® list of material aspects. In some cases, aspects have been rephrased to fit the vocabulary commonly used in the chemical industry, or combined differently.

Solvay list of material aspects	2020 SASB Materiality Map® topics list
Management of the legal, ethics and regulatory framework	Business ethics, competitive behavior, human rights, management of the legal and regulatory framework
Supply chain and procurement	Supply chain management, materials sourcing and efficiency
Risk management	Systemic risk management, physical impacts of climate change
Greenhouse gas emissions	GHG emissions
Energy	Energy management
Biodiversity	Ecological impacts
Product design and life cycle management	Product design and life cycle management, business model resilience
Air quality	Air quality
Water and wastewater	Water and wastewater management
Waste	Waste
Employee health and safety	Employee health and safety
Employee engagement and well-being	Labor practices
Diversity and inclusion	Diversity and inclusion
Recruitment, development and retention	Employee engagement
Customer welfare	Customer welfare
Corporate citizenship	Community relations
Hazardous materials	Hazardous materials management, product safety
Critical incident risk management	Critical incident risk management

Solvay discloses most of the sustainability disclosure topics and accounting metrics listed in the SASB Chemicals Sustainability Accounting Standard (October 2018).

Topic	SASB - CHEMICALS disclosure topics	Reference
Greenhouse gas emissions	Gross global Scope 1 emissions, percentage covered under emissions-limiting regulations	Extra-financial statements: 4.1 Greenhouse gas emissions
	Discussion of long-term and short-term strategy or plan to manage scope 1 emissions, emissions reduction targets and an analysis of performance against those targets	Extra-financial statements: 4.1 Greenhouse gas emissions
Air quality	Air emissions of the following pollutants: (1) NOX (excluding N2O), (2) SOX, (3) volatile organic compounds (VOCs), (4) hazardous air pollutants (HAPs)	Extra-financial statements: 5.3. Air quality Hazardous air pollutants not disclosed
Energy management	(1) Total energy consumed, (2) percentage grid electricity, (3) percentage renewable energy, (4) total self-generated energy	Extra-financial statements: 4.2. Energy
Water management	(1) Total water withdrawn, (2) total water consumed, percentage of each in regions with high or extremely high baseline water stress	Extra-financial statements: 5.4. Water and wastewater
	Number of incidents of non-compliance associated with water quality permits, standards and regulations	Extra-financial statements: 6.8. Critical incident risk management
	Description of water management risks and discussion of strategies and practices to mitigate those risks	Extra-financial statements: 5.4. Water and wastewater
Hazardous waste management	Amount of hazardous waste generated, percentage recycled	Extra-financial statements: 5.5. Waste
Community relations	Discussion of engagement processes to manage risks and opportunities associated with community interests	Extra-financial statements: 6.6. Corporate citizenship
Workforce health and safety	(1) Total recordable incident rate (TRIR), (2) fatality rate for (a) direct employees and (b) contract employees	Extra-financial statements: 6.1. Employee health and safety
	Description of efforts to assess, monitor and reduce exposure of employees and contract workers to long-term (chronic) health risks	Extra-financial statements: 6.1. Employee health and safety
Product design for use-phase efficiency	Revenue from products designed for use-phase resource efficiency	Extra-financial statements: 5.1. Product design and life cycle management
Safety and environmental stewardship of chemicals	(1) Percentage of products that contain Globally Harmonized System of Classification and Labeling of Chemicals (GHS) Category 1 and 2 Health and Environmental Hazardous Substances, (2) percentage of such products that have undergone a hazard assessment	Extra-financial statements: 6.7. Hazardous materials
	Discussion of strategy to (1) manage chemicals of concern and (2) develop alternatives with reduced human and/or environmental impact	Extra-financial statements: 6.7. Hazardous materials
Genetically modified organisms	Percentage of products by revenue that contain genetically modified organisms (GMOs)	Not disclosed
Management of the legal and regulatory environment	Discussion of corporate positions related to government regulations and/or policy proposals that address environmental and social factors affecting the industry	Extra-financial statements: 2.7. Membership in associations
Operational safety, emergency preparedness and response	Process Safety Incidents Count (PSIC), Process Safety Total Incident Rate (PSTIR) and Process Safety Incident Severity Rate (PSISR)	Extra-financial statements: 6.8. Critical incident risk management
	Number of transport incidents	Extra-financial statements: 6.8. Critical incident risk management
Activity metric	Production by reportable segment	Solvay cannot share information that can be considered competitively sensitive for antitrust compliance reasons.

2.7. Membership in associations

GRI DISCLOSURES 2-28

The Group maintains a dialogue with stakeholders and is a member of several associations at global, regional and national levels. Trade associations adopt policy positions as close as possible to a consensus. Member companies can still express disagreement in a number of ways, including internal discussion within working groups or public stances that differ from those of the trade associations.

Senior Solvay representatives sit on the steering boards of many of those associations. We also participate in working groups and policy coordination groups. The major association memberships in the regions and countries where Solvay is present are listed below.

2.7.1. International Council of Chemical Associations

Solvay is an active member of the International Council of Chemical Associations (ICCA). Solvay's CEO, Ilham Kadri, is a member of the Board of Directors. Through Responsible Care®, which is an essential part of the ICCA's contribution to the Strategic Approach to International Chemicals Management (SAICM), global chemical manufacturers commit to pursuing safe chemical management and performance excellence worldwide.

2.7.2. European Chemical Industry Council

The European Chemical Industry Council (Cefic) is the forum and the voice of the chemical industry in Europe. Solvay CEO Ilham Kadri is Vice-President and Member of the Cefic Board ExCom. The association facilitates dialogue that allows the industry to share its technical expertise with policymakers and other stakeholders. Solvay experts provide input on energy, industrial, environmental and research policy, as well as on issues relating to product stewardship. Solvay representatives also work with the different Cefic sector groups on specific issues related to individual substances or groups of substances. In addition, we play an active role within Cefic in leading a proactive industry response to the need for a more innovative and sustainable chemical industry.

2.7.3. France Chimie

France Chimie represents chemical sector companies in France in front of public authorities at national, European and international level. Solvay France Délégué Général François Pontais is a Member of France Chemie's Board and ExCom. The association integrates 12 regional federations, representing 1200 companies nationwide, and provides expertise and support relating to technical, economic and fiscal legislation, and social and labor affairs. Solvay representatives contribute to all key commissions. This includes those concerning competitiveness with two Solvay sites rated among a pool of "unique" sites in France, energy and logistics, which focuses on the decarbonation subsidy plan, and health, safety and environment (HSE).

2.7.4. Federchimica

Federchimica is the Italian chemical industry association. Our Country Manager in Italy is Vice-President of the association's Board. Federchimica facilitates dialogue with regional and national policy makers and government bodies, by sharing technical expertise and knowledge with policymakers and other stakeholders. Solvay experts participating in Federchimica provide input on energy, industrial, environmental and research policy, as well as issues relating to product stewardship.

2.7.5. American Chemistry Council

The American Chemistry Council (ACC) represents a diverse set of companies engaged in the chemistry business. Solvay sits on the Executive Committee, as well as on several Board-level committees that contribute to setting the association's strategy. Solvay representatives contribute their expertise to the ACC's work on transportation, energy, environment, sustainability, chemical management, process safety, trade and product stewardship issues. Solvay experts also provide technical input for activities that focus on product-related issues relevant for Solvay businesses, such as advanced materials and sustainable technologies.

2.7.6. Brazilian Chemical Industry Association

Solvay works with the Brazilian Chemical Industry Association (ABIQUIM) and its other members to help make Brazil's chemical industry more competitive and sustainable. Solvay is represented on the Board of Directors and in all of ABIQUIM's key commissions and supported activities. These cover topics such as the Chemical Industry Parliamentary Coalition, Responsible Care management, energy and climate change, product stewardship, community dialogue, labor, international trade and trade remedies, logistics and supply chain, and innovation.

2.7.7. Indian Chemical Council

The Indian Chemical Council (ICC) is the leading industry body representing all segments of the Indian Chemical Industry. Solvay sits on the Executive Council of the ICC. The ICC monitors and helps frame industry-specific government legislation, formally interacts with the relevant authorities regarding policies and regulatory matters and is recognized as the official voice of the Indian Chemical Industry. It also provides a forum for dialogue and debate within the chemical industry, channeling and reinforcing the industry's endeavors to boost development in India. The ICC promotes the Responsible Care® initiative and encourages safety, research and development, energy conservation and quality consciousness within the industry by organizing workshops and seminars and presenting annual awards recognizing excellence and outstanding contributions to the chemical industry.

2.7.8. China Petroleum and Chemical Industry Federation

The China Petroleum and Chemical Industry Federation (CPCIF) is a comprehensive national industry organization and the official representative of the Chinese chemical industry in the International Chemical Industry Association (ICCA). The CPCIF speaks up for the interests of the industry, while also serving as a bridge between businesses and the government in China. Solvay sits on the Executive Board of the Committee of Multinationals (MNC) of the CPCIF, which is a CPCIF sub-committee representing nearly 70 multinational companies in China. Solvay is a founding member of this committee, which was set up in 2013. Key interests of the committee include, but are not limited to, industrial policies, regulatory demands, chemical management, carbon trade, sustainability and innovation. Solvay CEO Ilham Kadri gave a virtual keynote speech at its annual event, “CPCIC”, in 2020.

2.7.9. Association of International Chemical Manufacturers

The AICM represents nearly 70 major multinational companies in the Chinese chemical industry active in the manufacture, transportation, distribution and disposal of chemicals. Together with other leading international chemical players in China, Solvay helps promote Responsible Care® and other globally recognized chemical management principles among all stakeholders, advocates cost-effective, science- and risk-based policies to policy makers, and strengthens the contributions made by the chemical industry to the economy.

2.7.10. BusinessEurope

BusinessEurope is the leading European business trade association. Its direct members are national business federations, but selected companies may participate in BusinessEurope through the Advisory and Support Group (ASG). BusinessEurope and its members campaign on the issues that most influence the business performance and growth of European companies, in Europe and globally. Within this framework, Solvay provides input through participation in working groups dealing with energy, environment and research, as well as trade policy. Solvay's position on climate is more ambitious than the federation position.

2.7.11. European Round Table of Industrialists

The European Round Table of Industrialists (ERT) is a forum that brings together around 50 CEOs of European companies. Solvay CEO Ilham Kadri is a member of the Steering Committee of the ERT. Among its activities, the ERT advocates policies to improve European competitiveness, growth and employment. In particular, Solvay actively participates in the working groups dealing with energy, trade, competitiveness and innovation, jobs and skills, and finance, as well as competition policies. Solvay CFO Karim Hajjar is a member of the ERT Finance Task Force, and sustainable finance is a key part of the agenda.

2.7.12. World Business Council for Sustainable Development

The World Business Council for Sustainable Development (WBCSD) is a CEO-led organization of over 200 leading businesses working together to accelerate the transition to a sustainable world. Solvay has been an active member since 2010, and Solvay CEO Ilham Kadri is personally involved. In 2021, the WBCSD appointed Ilham Kadri as its new executive committee chair. She is the WBCSD's first female chair in its 26-year history. Solvay CFO Karim Hajjar serves as co-chair of the Redefining Value Program. Solvay plays an active role in four of the six programs:

- Redefining Value Program: Redefining Value helps companies measure and manage risk, gain competitive advantage and seize new opportunities by understanding environmental, social and governance (ESG) information. By building collaborations and developing tools, guidance, case studies, engagement and education opportunities to help companies incorporate ESG performance into mainstream business and finance systems, the ultimate goal is to improve decision-making and external disclosure, eventually transforming the financial system so that it rewards the most sustainable companies.
- Circular Economy: The future of business is circular, and there’s no room for waste in it. Factor 10, the WBCSD's circular economy program, brings circularity into the heart of business leadership and practice. It builds a critical mass of engagement within and across businesses to spur the circular economy to deliver and scale the solutions needed to build a sustainable world.
- Climate and Energy: Combating climate change and transforming the energy system are core challenges on the path to a sustainable future for business, society and the environment. The Paris Agreement has sent a decisive and global signal that the start of the transition to a thriving, clean economy is inevitable, irreversible and irresistible. The WBCSD Climate and Energy Program facilitates interaction on cutting-edge climate and energy topics between WBCSD members, their peers and stakeholders as they address critical industry issues and share best practice and solutions.
- People: Our current society is characterized by a range of dynamic shifts and evolutions. We are faced with a world that is polarizing, a world that presents risks and opportunities in the way we work, a world that is on the move and a world in which people are living beyond their means. The People program provides solutions that support companies by ensuring that they remain in tune with the needs, rights, goals and aspirations of society against the backdrop of this rapidly evolving landscape.

Solvay also plays an active role in the WBCSD Chemicals Group. Together with leading chemical company members, ACC and Cefic published the SDG Roadmap for the Chemical Sector in 2018. This methodology provides clear guidance on how the chemical sector can contribute to change across the spectrum of the SDGs, unlocking their value by acting on key impact opportunities. Notably, Solvay works proactively to accelerate adoption of our Sustainable Portfolio Management system across the chemical industry and other sectors.

3. GOVERNANCE

3.1. Solvay One Planet Guide

GRI DISCLOSURES 2-24

3.1.1. Definition

The Solvay One Planet Guide is the new sustainability reference framework for the Solvay Group. While the previous Solvay Way reference framework focused mainly on processes, the Solvay One Planet Guide explains our ambitions and the reasons why we must act now.

This Guide is organized in three work axes: content, performance and assessment.

Through the content axis we help every Solvay employee understand the indicators that are part of our Solvay One Planet program. The Group targets are sorted per impact category, namely climate, resources and better life, and for each target we describe:

What we are talking about, why it is important and the main legislation (where relevant).

Solvay's ambition: internal definitions which are relevant for the target, our footprint, our actions and ambitions, and key contacts.

The performance axis includes a dashboard with the results of the Solvay One Planet targets for the entire Group.

The assessment axis allows us to identify each entity's main strengths and weaknesses, and develop plans for improvement.

3.1.2. Management approach

The Solvay One Planet Guide was launched on September 1, 2021, and addressed to every Solvay employee.

Solvay's Corporate Sustainable Development Function defines and deploys Solvay One Planet. The content axis has already been deployed, while the performance axis is under construction, integrating all existing tools currently used to measure the performance of each component of the strategy. The assessment axis is currently being evaluated in order to provide a solid framework for progress.

In each of our Global Business Units (GBUs), a member of the leadership team acts as head of sustainability. They are in charge of integrating sustainability aspects into the GBU's strategy and operations.

A network of Sustainability Champions and correspondents ensures that the Guide is deployed in all Solvay sites, GBUs and Corporate Functions. They inform their entity about any changes in the strategy and objectives, ensure necessary training is organized and develop an annual and multi-year roadmap to meet final objectives. They are then responsible for implementing the roadmap in their entity.

Definitions, management approach, indicators and targets, and main actions specific to each topic are described in the corresponding sections of the Extra-financial statements. The management approach is adjusted each year based on the following elements:

- evolution of frameworks and reporting standards, such as GRI Standards;
- auditors report on material aspects;
- feedback from practitioners;
- feedback from sustainability rating agencies;
- feedback received on the annual report, such as the World Business Council for Sustainable Development's "Reporting Matters" yearly analysis;
- evolution of Solvay's strategy.

3.1.3. Indicators and targets

Solvay One Planet is our roadmap to a sustainable future that provides shared value for all. It is structured around the three major impact categories, climate, resources, and better life, and sets out the following main targets to be achieved by 2030, as compared to the 2018 baseline:

Climate Pillar

- GHG reduction: -30% of scope 1 and 2 greenhouse gas emissions by 2030 and carbon neutrality by 2050.
- Coal phase-out: phase out coal usage in energy production wherever renewable alternatives exist.
- Biodiversity preservation: -30% of negative pressure.

Resource Pillar

- Sustainable solutions: 65% of total Group sales from sustainable solutions.
- Circular economy: more than double total Group sales from renewable or recycled resources.
- Waste: -30% of industrial waste.
- Water: -25% of freshwater intake.

Better Life Pillar

- Safety: make Solvay a safe organization with a zero accidents mindset.
- Inclusion and diversity: gender parity for mid- and senior-level management by 2030.
- Maternity and paternity leave: extended to 16 weeks and to co-parents inside the company regardless of gender in 2021.

3.2. Management of the legal, ethics, and regulatory framework

GRI DISCLOSURES 2-26 2-27 3-3 205-2 205-3 406-1 415-1
MATERIALITY: HIGH

Management of the legal, ethics and regulatory framework encompasses business ethics, namely human rights, anti-corruption and non-discrimination, and anti-competitive behavior.

3.2.1. Commitments and policies

Solvay's Code of Business Integrity

Solvay's Code of Business Integrity and the policies and procedures adopted to enhance good governance apply to all employees wherever they are located. In addition:

- third parties are expected to act within the framework of the Code of Business Integrity;
- all core suppliers must confirm that they adhere to the principles set out in the Solvay Supplier Code of Business Integrity;
- majority-owned joint ventures are held to the Solvay Code of Business Integrity, or to a separate code adopted based on similar principles.

The Code of Business Integrity is available on Solvay's website.

Anti-Bribery and Anti-Corruption Policy and Policy on Gifts and Entertainment

Solvay's Code of Business Integrity expressly states that the Group prohibits bribery in any form. Solvay and our employees do not use gifts or entertainment to gain competitive advantage. Facilitation payments are not permitted by Solvay and disguising gifts or entertainment as charitable donations is also a violation of the Code of Business Integrity.

The Code is supported by more detailed policies. At the end of 2020, Solvay split our Gifts, Entertainment and Anti-Bribery Policy into two separate policies: an Anti-Bribery and Anti-Corruption Policy and a Policy on Gifts, Entertainment, Charitable Donations, and Sponsorship.

The Group employs an internal tracking system to record gifts and entertainment that exceed the acceptable reasonable value applicable in each region, as well as charitable donations and sponsorship with charitable purpose and requires manager approval for accepting or giving them. The use of the Gift and Entertainment Tracking System ("GETS") is part of Solvay's Internal Audit review process.

Solvay is also a member of Transparency International Belgium.

Human Rights in Business Policy

Solvay's Human Rights in Business Policy, published on our website, sets out Solvay's commitment to respecting human rights and acting with due diligence to avoid any infringement of human rights or any adverse impact on or abuses of such rights. The policy emphasizes Solvay's commitments to our stakeholders, namely our employees and business partners, the communities and environment in which we operate, and children.

Solvay has a Global Human Rights Committee (GHRC), which oversees implementation of the policy, ensures compliance and monitors the Group's performance. Members of the Global Human Rights Committee include the heads of the following Solvay business service activities and/or their delegates: General Counsel, Compliance, Human Resources, Procurement, Communication, Internal Audit and Risk Management, and Sustainable Development. The GHRC is chaired by the Group General Counsel, who is the head of the General Counsel Function. Members of Solvay's Global Business Units and other business service activities contribute to the work of the GHRC on an ad hoc basis, as necessary.

The GHRC discusses its activities before the Group's annual report is issued, and also validates any human rights reporting made in conjunction with the report. Upon request, the Chair of the GHRC may be called upon to provide an annual report to the Audit Committee.

Human rights due diligence and risk assessment

Two parallel processes are used to assess human rights risks at Solvay sites. These focus on Solvay employees, based on internal data, or on our business partners, namely suppliers and contractors identified according to the risk associated with the country they operate in. Six human rights dimensions are considered: child labor; forced labor; trafficking in persons; human development; freedom of association; and collective bargaining. The assessment is used by Solvay's internal auditors to identify priorities for their work on the subject.

The assessment was suspended during the Covid-19 crisis, as priorities shifted to protecting the most vulnerable employees and local communities from the impact and consequences of the pandemic.

Competition Law Policy

Solvay's goal is to conduct business ethically and not to enter into any business arrangements that eliminate or distort competition. Solvay develops and maintains a culture of compliance to keep the company and our people on the right side of the law. Solvay has a formal Competition Law Policy that stresses the importance of strict adherence to all competition laws. It has been approved by Solvay's Executive Committee and is published on the Solvay intranet, to which all our employees have access. Any violation of this policy may result in disciplinary action, subject to and in conformity with applicable laws.

3.2.2. Resources and responsibilities

A compliance organization under the leadership of the Chief People Officer reinforces a Group-wide culture based on ethics and compliance.

The Ethics and Compliance Department consists of Regional Compliance Officers who serve in the four zones in which the Group operates, under the direction of the Chief Compliance Officer. This department is responsible for investigating, either alone or with the assistance of other departments, all reports that are brought to its attention. The Chief Compliance Officer reports to the Chief People Officer. All acts of non-compliance concerning the Solvay Code of Business Integrity and the related policies and procedures, including Speak Up cases, are reported to the Leadership Team and the Board of Directors Audit Committee annually.

For Competition Law, Solvay has a dedicated team within the General Counsel Function, which is responsible for implementing the Competition Law Compliance Program. They are in charge of providing competition law advice and guidance, as well as deploying effective and regular communication and training on competition law-related subjects.

Implementation of the Competition Law Policy

Solvay has put in place a Competition Law Compliance Program that propagates a zero-tolerance approach to competition law infringements. As part of our Competition Law Compliance Program, Solvay provides a competition law toolkit on our intranet that includes up-to-date guidelines on specific areas of competition law, including guidance on dealing with competitors, dawn raids, information exchange on mergers and acquisitions transactions, swaps, price announcements and vertical relationships.

To minimize cartel risks, Solvay has put in place a computer-based system that tracks all contacts that relevant employees have with competitors through a managerial approval procedure.

3.2.3. Grievance mechanisms

Employees are encouraged to report suspected violations or concerns through various internal avenues, including management, Human Resources, the General Counsel Function, Ethics and Compliance, Internal Audit, or through employees' representatives.

A Group-wide Speak Up program is in place and overseen by the Audit Committee of the Board of Directors. An external, third-party helpline, active 24 hours a day, 365 days a year, allows employees to ask questions, raise concerns or file reports. The helpline is open to internal and external parties.

The following chart shows the types of claims made from January to December 2021 through Solvay's Speak Up program.

Solvay's speak up program

Categories have been modified in 2021.

Number of claims	2021	2020	2019
Misconduct or inappropriate behavior	15	27	48
Discrimination	14		
Harassment including Retaliation	28		
Previously: Discrimination including harassment and retaliation		14	34
Conflict of interest	7	4	14
Computer, Email, Internet use and Social Media	3		
Previously: Computer, email, internet		2	1
Environmental, Health or Safety	9		
Previously: Environmental, health or safety law		14	5
Accounting, Auditing Matters, Financial Records and Banking	4		
Previously: Accounting or auditing		0	4
Bribery/Corruption	2		
Antitrust/Competition	2		
Previously: Anti-bribery		5	0
Confidentiality and Misappropriation	5		
Previously: Confidentiality/misappropriation		1	4
International Trade/Trade compliance	2		
Previously: International trade compliance		0	0
Substance abuse	5	0	3
Embezzlement, Theft, Robbery	4		
Previously: Theft		2	3
Violence or threat	3	3	0
HR Matters	23		
Other	11	33	24
Total	137	105	140

Through the Speak Up program, any concern regarding a breach is investigated by the Ethics and Compliance Function. In keeping with our commitment to transparency, the Speak Up tool is used to report progress on investigations and is used to communicate the results of investigations directly to those concerned when concluded. Posters and an online brochure are available to employees and advertise the website and toll-free numbers needed to access this tool in their regions. The Board's Audit Committee oversees the running of Speak Up.

In 2021:

- **137** cases opened:
  - 25 cases still in progress;
  - 112 cases resolved. These include:
    - 33 substantiated cases
    - 51 unsubstantiated cases
    - 6 insufficient information
    - 21 misdirected
    - 1 referred

RESOLVED CASES

	No action necessary	No action taken	Policy / Process review	Training	Discipline	Termination	Resignation
Substantiated	0 (0%)	0 (0%)	4 (12,1%)	7 (21,2%)	9 (27,3%)	12 (36,4%)	1 (3%)
Unsubstantiated	17 (33,3%)	20 (39,2%)	8 (15,7%)	5 (9,8%)	1 (2%)	0 (0%)	0 (0%)

3.2.4. Communication and training

Solvay's Code of Business Integrity

Mandatory Code of Business Integrity training, both live and web-based, is organized for all employees to ensure understanding and to address behavioral risks such as anti-bribery and corruption, conflict of interest and harassment. As part of this training, employees are also trained on the Speak Up Helpline. Specific anti-corruption training is tailored to management. Special campaigns to maintain and enhance the level of awareness within the Group are identified and adopted annually. In 2020-2021, 100% of the target population was trained on the Code of Business Integrity and 96% on the Anti-Bribery and Anti-Corruption Policy.

Competition Law and Antitrust

Solvay has a concrete Competition Law Compliance Action Plan, designed to mitigate the specific risks the Group has identified in this field of law. It has been in force since 2003 and is updated yearly. In 2021, it covered:

- an update of the existing Group policy on competition law and the relevant guidelines;
- continuation of the "General Antitrust Training" sessions for new employees, which was successfully completed by 93% of the targeted population;
- continuation of the roll-out of a video on the Contacts with Competitors Tracking System (CCTS), used to train 1470 of the individuals targeted;
- additional, tailored, face-to-face training sessions for 365 high-risk individuals;
- roll-out of a new trade association training, which was attended by 97% of the relevant target audience.

Anti-Corruption

Anti-Bribery and Anti-Corruption training is now done on a two-year cycle for the pre-identified target population. For the 2021 cycle, 96% of the target population (all cadres S15 and above) completed the online training course. In addition, the Code of Business Integrity online training course that is mandatory for all employees to complete, also covers the topic of anti-corruption.

3.2.5. Public policy

The Government Affairs and Country Management Function is responsible for raising Group awareness about the general political context, the main challenges faced by public authorities and more specific policy issues. In line with Solvay's Code of Business Integrity, and with the aim of ensuring the best possible business environment, the Government Affairs and Country Management team works to foster long-term partnerships with public authorities and other relevant stakeholders. They do this by building a transparent and constructive dialogue in support of company strategy.

Issues that fall within the scope of activities of the Government Affairs Function include:

- Promoting climate change solutions for the energy transition: Solvay supports the UN Paris Climate Agreement and contributes to its implementation. Solvay therefore argues for the development of a clear and predictable legislative framework that promotes sustainable growth while maintaining competitiveness for industry, and ensuring a balanced transition to a low carbon economy.
- Competitiveness: Solvay advocates for a regulatory system that fosters entrepreneurship and industrial innovation by safeguarding or improving competitiveness, and that creates highly skilled jobs worldwide.
- Environmental and chemical policy: Solvay collaborates with trade associations, public authorities and other stakeholders to develop science- and risk-based regulations and standards in the interest of a more sustainable industry and products.
- Promoting global trade: As an international company, Solvay recognizes the importance of free trade based on a multilateral and rules-based trading system. Reducing trade barriers is essential for economic growth and thus for industrial activity.
- Geopolitical assessment: Solvay assesses the geopolitical situation in order to better understand the potential impact, in relation to trade, logistics, investments and security, on our businesses.
- Supporting the business: Solvay works to develop new markets and new geographies for business, and to obtain the necessary permits for our facilities and registrations for our products.

Solvay's public policy activities also include participation in many trade associations, as outlined in section 2.8.

The Group does not take part in party political activities, nor do we make corporate donations to political parties or candidates. We engage in constructive debate with public authorities on subjects of legitimate interest to Solvay, where necessary, but only those employees specifically authorized to do so may carry out such activities.

Solvay respects the freedom of our employees to make their own political decisions. Any personal participation or involvement by an employee in the political process must be done on an individual basis, on the employee's own time and at the employee's personal expense.

3.2.6. Animal testing

Solvay provides innovative products for a wide variety of uses and a large number of users. The Group must have a proper understanding of the hazards of our product in order to carry out our activities and to protect users, the general public, Solvay personnel and the environment. With society expressing a continuing demand for new, better and safer chemicals and plastics, there is growing demand from both regulatory authorities and the public for product risk and hazard assessments. These require testing, both with and without the use of animals.

Testing

To comply with new and existing chemical regulations, or to further consolidate safety data, Solvay commissioned animal tests in 2021. Solvay avoids animal testing whenever possible, but in cases in which animal testing is required we commit to conducting studies that treat animals humanely, giving them the best care possible, and using all animals responsibly, with great regard for their welfare. In compliance with European cosmetic regulations, Solvay does not perform specific testing solely to support cosmetic uses.

Substance-based testing for multiple applications

Solvay carries out tests required for all regulations and applications relating to a given substance just once . We avoid the need for new studies by actively advocating for the reuse of data from studies conducted within a given framework, such as REACH, for other registration systems.

Ethical compliance

Solvay's policy, outlined in the Solvay Animal Care and Use Procedure, is to apply the "3R principles" (Replacement, Reduction and Refinement) in each case and to comply with all applicable regulations. All of our studies comply with international standards, such as OECD guidelines. Regulatory studies are almost exclusively performed by laboratories accredited by the Association for Assessment and Accreditation of Laboratory Animal Care International (AAALAC). This worldwide organization sets quality standards for testing laboratories and ensures responsible and humane treatment of laboratory animals. Before they start, all studies commissioned by Solvay are subject to an ethical assessment at local or national level by the laboratory conducting the study.

Once a study is underway, Solvay staff monitor the execution and quality of the studies and maintain a continuing qualification and evaluation program for the laboratories. A dedicated Solvay corporate committee reviewed the animal testing activities commissioned by Solvay during 2021, verifying conformity with the principles and the mandatory elements of Solvay's Animal Care and Use Procedure.

VERTEBRATE ANIMAL TESTS COMMISSIONED BY SOLVAY IN 2021

	Number of studies	Number of vertebrates (*)
Registration obligations (EU, China, Korea, US)	20	9,963
Additional product safety questions (toxicity, classification)	7	200
Total	**27**	**10,163**

(*) Includes all animals, including control animals not being exposed to test substances and used as reference

Regulatory testing

In 2021, 99% of the vertebrate animals (representing 74% of the animal studies) were used to address mandatory requirements from authorities. The remaining 1% were used to address additional product safety questions. In total, 10163 vertebrate animals (82% rats, 9% rabbits, 8% fish, 0.8% guinea pigs and 0.2% mice) were used. Solvay did not commission any studies on dogs, cats, pigs or non-human primates. Most vertebrate animals (99%) were used in tests required by the EU REACH Regulation, although these studies will also be valid for demonstrating compliance with chemical regulations elsewhere in the world. The number of studies and vertebrate animals used in 2021 was about half that of 2020.

Drivers for the future

While studies are needed for regulatory and scientific purposes, Solvay continues to strengthen its capabilities and understanding of alternative methodologies that do not involve vertebrate animals. Further advances were made in quantitative structure-activity relationships (QSARs), a computer-based method used to predict the properties of chemicals based on information about similar substances. These models are fit for regulatory use and will increase our ability to avoid animal testing when assessing our products.

However, the higher tier animal studies requested by authorities, which required the largest number of animals in 2021, will continue to be the major driver for animal tests in the near future. The EU chemicals strategy for sustainability, which was published at the end of 2020, does not suggest a major shift in this respect. Solvay therefore fully supports the joint position of the European Chemicals Industry (Cefic) and Cruelty Free Europe, published in July 2021, calling on the European Commission to include animal testing in the REACH Impact Assessment and to do more to support non-animal methods.

Advances in the implementation of non-animal methods and alternative hazard identification strategies are crucial if a reduction of animal use in hazard assessment is to be achieved. For instance, with the upcoming information requirements for nanomaterials and endocrine disruptors, more, rather than less, animal testing appears to be required in Europe.

3.3. Health, safety and environment management

GRI DISCLOSURE 2-25
MATERIALITY: PRIORITY

3.3.1. Definition

Solvay's health, safety and environment (HSE) management system is aligned with ISO 45001 and ISO 14001 definitions and our Responsible Care Policy.

Through our Responsible Care Policy, we commit to safeguarding people and the environment, by continuously improving our environmental, health and safety performance, the security of our facilities, processes, and technologies, and chemical product safety and stewardship throughout the supply chain. This reflects Solvay's position as a signatory to the ICCA's Responsible Care Global Charter®.

3.3.2. Management approach

Solvay's HSE strategy relies on the following:

- An approved HSE management system, which is implemented at every industrial (manufacturing, and research and innovation) site.
- The HSE management system includes a Responsible Care Policy and a set of risk-based procedures that apply to all areas, including health monitoring, industrial hygiene, occupational safety, process safety, transport safety, environment and product safety. For each domain, a network is organized at group level to ensure implementation of the procedures, compliance with regulations and sharing of good practice.
- A Product Safety Management System (PSMS) is applied in every Global Business Unit.
- A safety culture approach, which ensures people's safety, health and well-being. It relies on a safety leadership style, where managers act as mentors and demonstrate genuine care for all.
- A reporting process used to evaluate performance, analyze events, and define short- and long-term improvement plans.

Industrial sites

Each industrial site:

- Implements at least one approved health, safety and/or environment management system, in compliance with Solvay's Responsible Care Policy.
- Sets up a dedicated, systematic regulatory watch mechanism.
- Undergoes a compliance audit, both on regulatory and internal requirements by a third party, either internal or external, at least once every five years.
- Addresses all identified risks, areas for improvement and gaps in compliance.

Environmental rehabilitation

Solvay's Sustainable Environment and Climate (SEC) Department is responsible for managing the environmental liabilities resulting from the Group's industrial and mining activities. SEC helps the sites and GBUs manage their environmental legacy, whether historical or recent, providing them with technical expertise and cash management through environmental provisions. Where the local regulations allow it, a risk-based approach is used to define management actions. For our operational sites, SEC collaborates with the local HSE team. Our closed sites are managed directly by the SEC team on behalf of the relevant GBU. SEC is also responsible and accountable for managing Group environmental provisions.

3.3.3. Indicators

Approved HSE management systems at sites

76% of our sites (96) have a management system and have been audited by a third party in the past five years. We aim to reach 100% by the end of 2022. Sites with fewer than ten people or that are not under Solvay's operational control are excluded.

68 of our sites are certified by ISO 45001 or by the American Chemistry Council's Responsible Care Management System (ACC RCMS). 69 are certified by ISO 14001 and/or by ACC RCMS 14001 and 52 have implemented both systems.

26 of our sites have another approved management system in place:

- The Responsible Care Program by Asociación Nacional de la Industria Química (ANIQ) in Mexico.
- The Responsible Care Program by Associação Brasileira da Indústria Química (ABIQUIM) in Brazil.
- The Occupational Safety and Health management system" (GB/T 33000-2016) in China.
- The Occupational Safety and Health Administration Voluntary Protection Programs (OSHA VPP management system) in the US.

At 24 of our sites, we plan to implement a management system by the end of 2022.

Regulatory Watch

100% of our sites have installed a systematic process for health, safety and environment regulatory watch.

3.4. Research and innovation

MATERIALITY: PRIORITY

3.4.1. Definition

Solvay R&I is the Group engine for delivering highly differentiated and valuable innovations that address major human challenges associated with resource scarcity, climate change and quality of life. Solvay wants to build a better future by developing profitable and sustainable innovative solutions that turn science and chemistry into business and create value for the Group, our shareholders, our customers and all other stakeholders.

3.4.2. Management approach

Solvay's G.R.O.W. strategy led to a redefinition of R&I priorities in 2020. Our priorities are now aligned with the ambitions and mandates of Solvay GBUs and Growth Platforms, taking into account their missions and strategic directions. The Chief Technology Officer (CTO) is in charge of all Group R&I activities and reports to the CEO.

The main missions of the CTO are:

- to define an innovation vision and strategy that is in alignment across the Group;
- to drive Group R&I portfolio management and allocation of resources to maximize and accelerate value delivery;
- to manage talent, efficiency and the implementation of transformational programs within the organization.

The key guiding principles for Solvay R&I are:

- Mobilization on market megatrends, namely lightweighting, electrification, resource efficiency, healthcare, digitalization and bio-based solutions, meeting key customers' priorities to accelerate business growth.
- Delivery of innovations in alignment with our Solvay One Planet sustainability roadmap.
- Reinforcement of a Group-wide scouting effort to identify and develop new growth opportunities beyond the core of the existing businesses.
- Deployment of a "one R&I" mindset that encourages agility and nurtures a community of talents.

In 2021, our main achievements in R&I were:

- The launch of the Green Hydrogen Platform: Aimed at contributing to the emerging hydrogen economy - an outstanding global market opportunity - the platform is built around Solvay's ion conducting polymer technology, which will be a key enabler for the proton exchange membrane (PEM) electrolyzer and fuel cell markets.
- The creation of a single Materials GBU, integrating our Specialty Polymers and Composites businesses, including their research activities: Bringing these activities together will enable us to fully leverage Solvay's connection to customers and R&I competencies across the enterprise.
- Connected Research: We launched a digital program to accelerate the virtualization of experiments and to better leverage internal and external knowledge in order to improve R&I teams' productivity and accelerate the time-to-market for innovations.
- Group R&I Technology Scouting: We created additional synergies between our breakthrough innovation program and the venturing activity (Solvay Ventures), ensuring that we are able to make the most of Solvay's scientific expertise to accelerate new venturing opportunities (VC investments and partnerships).
- Allocation of budget and resources: We continued our efforts to allocate R&I budgets at Group level in a way that prioritizes growth businesses (the "G" from G.R.O.W.) and our Growth Platforms, in order to optimize value creation. Our GBUs and R&I Function are now managed in an agile way, in order to accommodate relevant shifts caused by the pandemic, while remaining aligned with their G.R.O.W. strategic mandate.

3.4.3. Indicators

		2021	2020
Expected revenue from sustainable solutions	%	78	77
R&I Effort	€ million	298	291
R&I Staff	FTE	1,950	1,950
First patent filings	Number	181	135
New sales ratio	%	14	15

3.4.4. Key achievements

Together with customers and partners, Solvay innovates to develop sustainable solutions by addressing the key drivers that will shape our future and focus on the world's sustainability needs. Solvay also believes in the importance of working together with academia, and with other companies or startups, to identify new solutions. In total, the Group currently manages more than 100 collaborative innovation projects.

Innovations to fight the pandemic

Since the onset of the Covid-19 pandemic, consumers and businesses have been looking for ways to uphold health standards and feel protected in an uncertain world. Actizone™, a patented technology, is a line of ready-to-use products and ingredients developed by Solvay that rapidly kills germs to protect consumers from harmful bacteria and viruses, including coronavirus.

Amni® Virus-Bac OFF, is a functionalized polyamide textile yarn, developed to eliminate the proliferation of bacteria and inhibit the transmission of viruses on textiles. The Amni® Antiviral yarn acts on groups of enveloped and non-enveloped viruses and bacteria, providing a powerful barrier against the spread of Covid-19. Articles made with Amni® Virus-Bac OFF are long-lasting and durable. For example, it has been used successfully for masks, school and professional uniforms, seat coverings in public transportation, sports clothing and hospital bed linen.

Solvay's Materials GBU and emerging opportunities

Solvay's Materials GBU continues to develop new solutions that enable sustainable mobility, digitalization and connectivity, and healthy living.

For example, our ability to deliver materials with both structural and electrical properties, such as Ketaspire® PEEK in e-motors, allows us to improve energy and power density in electric vehicles (EV). The breadth of our materials portfolio has also enabled the development of multi-layer and multi-material solutions for electronic shielding and transmissivity. Solvay's short and long fiber composites, compounds and adhesives enable lightweighting, and we collaborate on these with customers who seek to transform the boundaries of mobility, such as Vertical Aerospace and Avio. And through expanding the range of thermal conductivity, stiffness and compatibility in our polymer science capabilities, we are now able to provide solutions for noise and vibration in consumer applications and advanced filtration.

We also continue to reinvent our portfolio through sustainable solutions. This includes increasing sourcing from renewable feedstocks. Our collaborations range from producing bio-sourced acrylonitrile with Trillium, to introducing Amodel Bios PPA, our bio-based polymer for use in e-mobility.

Batteries and the circular economy

Solvay and Veolia came together as a circular economy consortium to offer new solutions to improve resource efficiency for critical metals used in lithium-ion EV batteries. We have since been joined in this consortium by Renault. Solvay's role in this project is to optimize the extraction and purification of critical metals such as cobalt, nickel, and lithium and transform them into high-purity raw materials for new batteries, helping to close the circular economy loop for EV batteries. The project is supported by BPi France.

While Solvay is present in the current EV and hybrid battery value chain, through our high-performance specialty polymers for binders and separators and specialty additives for electrolytes, we are also focused on the future. Solvay is fully involved in the EU's Horizon 2020 program, notably in the field of batteries, through the CoFBAT, Spider and Naima projects. We are also part of both the European Battery Alliance and the IPCEI (Important Project of Common European Interest), which are working to develop the solid-state battery of the future, which involves developing state-of-the-art electrolytes, electrode binders and separators.

Open Innovation: a long tradition of collaboration with academia worldwide

Solvay continues to be heavily involved in high-level scientific collaborations with top universities globally. These collaborations range from direct contracts to longer term partnerships. The latter includes our Joint Research Units set up with the CNRS (National Scientific Research Center) and universities in Bordeaux, France, focused on microfluidics and high throughput screening, and in Shanghai, China, focused on organic chemistry and catalysis. Other long-term partnerships established with Ecole Polytechnique Fédérale de Lausanne (EPFL) and the National Institute of Advanced Industrial Science and Technology, Tsukuba (AIST), have delivered very interesting results on modeling and machine learning. A series of more recent collaborations have also been launched on topics related to energy generation and storage), biobased chemistry, advanced polymers and formulations with institutions such as the University of Chicago, Edinburgh University and Politecnico Milano.

Venture capital and start-ups

In 2021, Solvay's venture capital fund of Solvay, Solvay Ventures, closed three new investments:

- DMC Biotechnologies is a developer of bio-based products designed for the low-cost and sustainable transformation of bio-based feedstocks. DMC uses engineered microbes, leveraging a technology that reduces biological complexity and enhances the speed of development for new sustainable markets.
- Sepion is an energy storage company aimed at speeding up the electrification revolution. Their unique material membrane can be used to create safe, energy-dense, lithium-metal batteries for long-range and low-cost electric transportation. This investment is in alignment with the acceleration of the Solvay battery platform.
- Longwater (fund II) is a venture capital fund dedicated to new technologies in material science and chemistry. Its management company, Longwater Investment, is a partner of choice to help us tap into the dynamic innovation ecosystems in China.

3.5. Supply chain and procurement

GRI DISCLOSURES 308-1 308-2 407-1 414-1

3.5.1. Definition

Our supply chain organization accounts for 2,200 people. Most of them are located in the Global Business Units (GBUs), where they are in charge of planning, customer care, logistics operations and improvement projects. In addition to this, a small Supply Chain Excellence team is located in Solvay's Excellence Center. We have programs in place to foster continuous improvement in the value chain performance of our GBUs, while also improving cash generation, cost and customer experience.

Our procurement organization consists of 580 people, located in Corporate Procurement, the GBUs, or Purchasing Service Line support.

3.5.2. Management approach

Solvay integrates our Corporate Social Responsibility (CSR) principles and Solvay One Planet ambition into our procurement processes and strategies in order to create sustainable business value with our suppliers.

Supplier Code of Business Integrity

Our Supplier Code of Business Integrity is key for the implementation of our Responsible Procurement Policy. It is fully aligned with Solvay's Code of Business Integrity and our CSR agreements with IndustriALL Global Union. It was inspired by the UN Global Compact principles and Responsible Care® practices.

All written procurement contracts must make reference to the Supplier Code of Business Integrity or a valid alternative. In addition, and even given the existence of a written purchase contract, all of our Core Suppliers must subscribe to the principles detailed in the Supplier Code of Business Integrity.

Together for Sustainability initiative

Solvay is a founding member of the Together for Sustainability (TfS) initiative, a unique member-driven organization set up in 2011 to help member companies shape the future of the chemical industry together. A global, procurement-driven initiative, with regional representation in Asia and North and South America, TfS provides the global standard for environmental, social and governance performance in chemical supply chains.

The TfS program is based on the UN Global Compact and Responsible Care® principles. It provides a framework and tools (TfS Assessments and TfS Audits) that can be used to assess and improve the sustainability performance of chemical companies and their suppliers. The TfS program also addresses scope 3 GHG emissions, Product Carbon Footprint and global capability building activities. TfS operates according to the principle of "an assessment or audit for one member company is an assessment or audit for all". By sharing supplier evaluations among the 34 global chemical companies involved, we are able to lessen the administrative burden and leverage synergies among the member companies. TfS assessments are carried out by the initiative's key partner EcoVadis, a global service provider specialized in sustainability performance assessments. For audits, TfS cooperates with a TfS-approved audit company.

Solvay Chief Procurement Officer (CPO) Lynn De Proft is a member of the TfS Steering Committee.

Procurement strategy

Procurement strategies are defined by category experts in collaboration with the GBUs. These strategies are executed and deployed at global, regional or local level, depending on the supplier market structure.

Procurement resources and capabilities are shared across an international network of category and sourcing managers and individuals responsible for site procurement, all of whom follow the common way of working known as the Solvay global procurement process. Procurement priorities are centered around two main topics: "Act NOW", focused on protecting and running the business in the present and "Prepare for the FUTURE".

3.5.3. Indicators

Core Suppliers

Solvay applies supplier segmentation in order to identify key suppliers, which we refer to as Core Suppliers. Core Suppliers encompass three categories:

- Strategic Alliances: strategic suppliers at Group level that contribute to Solvay's growth, market differentiation and innovation.
- Strategic Partners: suppliers that deliver strategic materials or services to Solvay that can have a possible business impact.
- Bottlenecks: suppliers that represent a high potential risk to Solvay or the business.

This approach enables Solvay to focus on managing performance, mitigating supply risk and improving relationships, while also forming the basis for collaboration and stimulating innovation.

Actions to be performed, such as performing a supplier evaluation survey, or requesting a mandatory third party sustainability assessment, are defined according to the type of supplier. Key Account Managers are appointed for some of our Core Suppliers, allowing us to generate additional value and mitigate risk through strategic relationships. We have identified 448 suppliers as Core Suppliers.

Core Supplier assessment

Our Core Suppliers are distributed is as follows:

	Raw Materials	Technical Goods and Services	Logistics and Packaging	Energy	General Expenses IT and Telecom	Total
Asia Pacific	70	5	3		4	82
Europe, Middle East, Africa	86	47	29	8	46	216
Latin America	10	8	2		5	25
North America	78	13	17	1	16	125
Total	244	73	51	9	71	448

Ecovadis assessment

Within Solvay's portfolio, 2,016 suppliers were assessed through EcoVadis in 2021. This makes Solvay the fourth best performer in terms of suppliers, when compared to the other Together for Sustainability members.

Raw materials

As a large chemical manufacturer, Solvay uses raw materials from a range of suppliers and sources: the overall volume purchased in 2021 was over 4.92 million metric tons. The Solvay Group transforms large quantities of petrochemicals and uses large amounts of water.

Solvay is concerned that the trade in tantalum, tin, tungsten and gold, and the metals known as 3TGs that are refined from such minerals and mined in certain conflict-affected and high-risk regions, such as the Democratic Republic of the Congo and neighboring countries, may be contributing to human rights abuses. Our product portfolio does not contain 3TG products needed for the functioning or production of products that directly or indirectly finance or benefit armed groups in these regions. We continue to work to verify the integrity of our sourcing, and to support the actions of governments, our customers and suppliers toward achieving this aim globally. If our suppliers fail to meet our expectations in this regard, we will take these factors into consideration when making future business and sourcing decisions.

NON-BIOSOURCED AND BIOSOURCED RAW MATERIALS – MATERIAL PURCHASED

		2021	2020	2019
Mineral products	1,000 metric tons	2,690	2,370	2,970
Biosourced products	1,000 metric tons	240	230	260
Natural gas	1,000 metric tons	940	900	980
Petrochemical	1,000 metric tons	950	830	980
Other raw materials	1,000 metric tons	100	120	390
Total	**1,000 metric tons**	**4,920**	**4,450**	**5,580**

4. CLIMATE

4.1. Greenhouse gas emissions

4.1.1. Definitions

GRI DISCLOSURES 3-3 305-1 305-2 305-3 305-4 305-5
MATERIALITY: PRIORITY
SDG 3 12 13 14 15

Solvay uses the following references to address greenhouse gas emissions:

- the Guidance for Accounting and Reporting Corporate Greenhouse Gas Emissions (GHG) in the Chemical Sector Value Chain published by the World Business Council for Sustainable Development;
- the Greenhouse Gas Protocol Corporate Accounting and Reporting Standard;
- the Greenhouse Gas Protocol Corporate Value Chain (scope 3) Standard.

To better reflect our sustainability policy, we decided to use the market-based method to calculate CO_2 emissions associated with purchased electricity (scope2). To comply with Global Reporting Initiative requirements, we apply the following criteria (in decreasing order of priority) when selecting the CO_2 emission factor of each electricity supply contract:

- Energy attribute certificates: emission factors resulting from specific instruments such as green energy certificates.
- Contract-based: the emission factor obtained from contract agreements on specific sources for which there is no emission of specific attributes.
- Supplier or utility emission rates: the emission factor disclosed as a result of the supplier's retail mix.
- Residual mix: if a residual mix is unavailable, grid-average emission factors are used as a proxy.
- Location-based: if none of the above factors are available, we use the national emission factor published by national authorities or the International Energy Agency. Based on a World Resources Institute (WRI) recommendation, Emissions and Generation Resource Integrated Database (eGRID) emission factors published by the United States Environmental Protection Agency are used for the US, instead of the state emission factor. Similarly, grid emission factors published by the Ministry of Ecology and Environment are used for China, instead of the state emission factors.

4.1.2. Management approach

In October 2021 we announced our plans to reach carbon neutrality on scope 1 and 2 emissions before 2050. We have committed to set science based targets in 2020. Our scope 3 target shall at least meet the 2C criteria of the Science Based Targets initiative. A strategic initiative has been launched to spur transformative progress with our suppliers in 2021. We will continue our effort in that direction beyond 2030 within our 2050 neutrality vision. We also upgraded our emissions scope 1 and scope 2 reduction target from -26% to -30% by 2030, as compared to the 2018 baseline.

To achieve our targets, we are taking a range of different actions. This includes transforming our energy mix and investing in clean technologies. We are developing a growing pipeline of energy-climate transition opportunities through collaborations between a dedicated team of experts in energy transition and operational teams at the industrial sites. For greenhouse gas emissions not related to energy, specific task forces have been set up with strong technical support in order to help them develop the required clean technologies. In addition, Solvay applies an internal carbon price of €100 per metric ton of CO_2 to all greenhouse gas emissions in our capital investment decisions worldwide.

An externally verified greenhouse gas emission reporting system, and responses to rating agencies such as the Carbon Disclosure Project, help the Group align our efforts with the magnitude of the greenhouse gas challenges we face.

4.1.3. Indicators

Solvay's target is to reduce greenhouse gas emissions by 30% by 2030, compared to the 2018 baseline.

GREENHOUSE GAS EMISSIONS – TARGET ACHIEVEMENT

Total greenhouse gas emissions (scope 1 and 2) in 2021	Mt CO_2eq	11.0
Total greenhouse gas emissions (scope 1 and 2) in 2020 - as published	Mt CO_2eq	10.1
Variation due to changes in reporting scope (structural changes)	Mt CO_2eq	-0.11
Variation due to changes in methodology or improvements in data accuracy	Mt CO_2eq	+0.23
Emissions increase or reduction at constant scope year on year	Mt CO_2eq	+0.78
Cumulative emissions increase or reduction since 2018 at constant scope	Mt CO_2eq	-1.73
Percentage increase or reduction since 2018 at constant scope (reference 2018: 12.3 Mt CO_2eq)	%	-14
Cumulative emissions increase or reduction since 2017 at constant scope	Mt CO_2eq	-1.7

Cumulative emissions reduction since 2017 at constant scope is -1.7 Mt CO_2eq. This is in line with our previous objective, to reduce scope 1 and 2 greenhouse gas emissions by one million tons in comparison with 2017 by no later than 2025 at constant scope.

Increased emissions of 0.78 Mt CO_2eq in 2021 as compared to 2020 can be explained mainly by the restart of activity following the Covid-19 crisis.

GREENHOUSE GAS EMISSIONS (SCOPES 1 AND 2)

	Units	2021	2020	2019
Direct and indirect CO_2 emissions (scopes 1 and 2)	Mt CO_2	9.7	8.8	10.0
Other greenhouse gas emissions according to Kyoto Protocol (scope 1)	Mt CO_2eq	1.4	1.3	2.0
Total greenhouse gas emissions according to Kyoto Protocol	Mt CO_2eq	11.0	10.1	12.0
Other greenhouse gas / CO_2 emissions not according to Kyoto Protocol (scope 1)	Mt CO_2eq	0.0	0.0	0.1

DIRECT GREENHOUSE GAS EMISSIONS (SCOPE 1)

	Units	2021	2020	2019
Methane – CH4	Mt CO_2eq.	1.0	0.80	1.02
Nitrous oxide – N2O	Mt CO_2eq.	0.03	0.02	0.03
Sulfur hexafluoride – SF6	Mt CO_2eq.	0.00	0.05	0.07
Hydro fluoro carbons – HFCs	Mt CO_2eq.	0.06	0.03	0.11
Perfluorocarbons – PFCs	Mt CO_2eq.	0.26	0.38	0.78
Nitrogen trifluoride – NF3	Mt CO_2eq	0.0	0.0	0.0
Total other greenhouse gas emissions	Mt CO_2eq	1.36	1.28	2.01
Carbon dioxide - CO_2	Mt CO_2	8.23	7.6	8.58
Total direct emissions	Mt CO_2eq.	9.59	8.89	10.59

In 2021, direct emissions were 0.69 Mt CO_2eq higher than in 2020. In addition to higher activity levels following Covid-19, the improvement in the reduction of CF4 emissions in Spinetta, Italy (-0.13 Mt CO_2eq) was offset by a degradation of CH_4 emissions at Green River (+0.19 Mt CO_2eq), which is linked to an increase in mine activity.

INDIRECT CO_2 EMISSIONS (SCOPE 2)

	Units	2021	2020	2019
Gross market based				
Electricity purchased for consumption	Mt CO_2	0.7	0.7	0.9
Steam purchased for consumption	Mt CO_2	0.7	0.5	0.5
Total indirect CO_2 – Gross market-based	Mt CO_2	1.4	1.2	1.4
Gross location based				
Electricity purchased for consumption	Mt CO_2	0.9	0.9	1.0
Steam purchased for consumption	Mt CO_2	0.7	0.5	0.5
Total indirect CO_2 – Gross location based	Mt CO_2	1.6	1.4	1.5

Since implementing the market-based method, we carry out a detailed review of emissions factors for purchased electricity at all of our sites every year.

The increase in indirect CO_2 emissions linked to the increase in activity following Covid-19 was offset by additional purchases of green electricity in the US. The increase of 0.2 Mt CO_2 compared to 2020 results from a change in methodology.

OTHER INDIRECT GREENHOUSE GAS EMISSIONS (SCOPE 3)

	Units	2021	2020	2019
Purchased goods and services	Mt CO_2eq	4.9	5.6	4.9
Capital goods	Mt CO_2eq	1.8	1.5	1.8
Fuel- and energy-related activities	Mt CO_2eq	1.3	1.0	1.0
Upstream transportation and distribution	Mt CO_2eq	Included in purchased goods and services		
Waste generated in operations	Mt CO_2eq	Included in purchased goods and services		
Business travel	Mt CO_2eq	0.001	0.002	0.01
Employee commuting	Mt CO_2eq	0.03	0.03	0.05
Upstream leased assets	Mt CO_2eq	0	0	0
Downstream transportation and distribution	Mt CO_2eq	0.7	0.5	0.6
Processing of sold products	Mt CO_2eq	3.2	4.3	5.6
Use of sold products	Mt CO_2eq	5.7	8.1	10.1
End-of-life treatment of sold products	Mt CO_2eq	7.8	6.9	7.4
Downstream leased assets	Mt CO_2eq	0	0	0
Franchises	Mt CO_2eq.	0	0	0
Investments	Mt CO_2eq	0.4	0.9	1.1
Total scope 3 emissions	Mt CO_2eq.	25.8	28.8	32.6

4.1.4. Key achievements

At Solvay's Spinetta site in Italy, an innovative clean technology developed in-house and commissioned in 2019 with further add-ons led to a decrease of 1.1 Mt CO_2eq of CF4 emissions in 2021, compared to 2018.

At Rheinberg plant in Germany, the first biomass boiler was commissioned in 2021, replacing coal firing.

In 2021, 28 of our sites sourced a share of their electricity supply from renewable energy, such as solar or wind. This represents a total saving of 0.18 Mt CO_2eq compared to 2020.

4.2. Energy

GRI DISCLOSURES 3-3 302-1 302-2 302-3 302-4
MATERIALITY: PRIORITY
SDG 7 12 13

4.2.1. Definitions

The different components of Solvay's energy consumption are converted into primary energy sources as follows:

- fuels, using the net calorific values;
- steam purchased, taking into account the boiler efficiency reference value for the type of fuel used to generate the steam, for example 90% efficiency based on the net calorific value for natural gas;
- electricity purchased, assuming an average efficiency of 39.5% for all types of power production except for nuclear power (33%), hydro (100%), solar (100%) and wind (100%), based on net calorific value (source: International Energy Agency - IEA).

4.2.2. Management approach

Solvay has both industrial activities that consume large amounts of energy, such as our synthetic soda ash plants and peroxides, and industrial activities that have a relatively low energy content as a percentage of the sales price, such as fluorinated polymers.

The Group considers it particularly important to swiftly transition our energy consumption towards zero- or low-carbon sources without compromising competitiveness or supply security. We have therefore taken the following strategic initiatives:

- Creation of a Sustainable Environment and Climate (SEC) Department within Solvay's Industrial Function to support the development of energy transition projects worldwide, taking into account the specifics of each site's local energy market.
- Technological leadership in processes and high-performance industrial operations to minimize energy consumption.
- Diversification and flexible use of the different types and sources of primary energy.
- Periodic review of the condition of industrial sites' energy assets and connections.
- A strategy of supply coverage, with long-term partnerships and medium- to long-term contracts, and price-hedging protection mechanisms when needed.
- In-house market intelligence and direct access to energy markets, including gas hubs, electrical grids, financial spots and future exchanges, when possible.
- Dedicated services aimed at optimizing energy purchasing and helping Global Business Units manage energy and greenhouse gas emissions.

The Group has reduced its overall energy intensity. Key factors in this progress have been the SOLWATT® energy efficiency program rolled out at most plants worldwide and the dissemination of technological breakthroughs to improve the overall energy efficiency of our operations.

4.2.3. Indicators

FUEL CONSUMPTION FROM NON-RENEWABLE AND RENEWABLE SOURCES

	Units	2021	2020	2019
Solid fuels	PJ	27	27	32
Liquid fuels	PJ	0.4	0.3	0.4
Gaseous fuels	PJ	71	66	69
Total non-renewable energy sources	PJ	99	93	102
Renewable energy sources	PJ	6.2	5.7	5
Total fuel consumption	PJ	105	99	107

Note: the accounting methodology was adapted in 2020. Coke and anthracite used as raw materials in chemical reactions have been removed from classification as solid fuels. Historical figures have been restated retroactively.

Fuel consumption from non-renewable sources increased in 2021. This variation is explained mainly by the restart of activity following the Covid-19 crisis. There is a decrease in coal use, from 32 PJ in 2019 to 27 PJ in 2021, which is in line with Solvay's objective of phasing out coal used as energy by 2030. Over the same period, renewable fuel consumption increased by 1.5 PJ, from 5 PJ in 2019 to 6.2 PJ in 2021.

SECONDARY ENERGY PURCHASED FOR CONSUMPTION

	Units	2021	2020	2019
Electricity	PJ	20	22	26
Heating	PJ	0	0	0
Cooling	PJ	0	0	0
Steam	PJ	13	12	12
Total	PJ	33	34	38

In 2021, secondary energy purchased for consumption remained at the same level as in 2020.

ENERGY SOLD

	Units	2021	2020	2019
Electricity	PJ	18	17	19
Heating	PJ	0	0	0
Cooling	PJ	0	0	0
Steam	PJ	15	14	13
Total	PJ	33	31	32

In 2021, the sale of self-generated secondary energy remained at the same level as in 2020.

TOTAL RENEWABLE ENERGY

	Units	2021	2020	2019
Energy produced from renewable energy sources	PJ	6.2	5.7	5.1
Renewable electricity purchased	PJ	1.6	1.0	0.5
Renewable electricity sold	PJ	0	0	-
Total renewable energy	PJ	7.8	6.7	5.6

ENERGY CONSUMPTION OUTSIDE THE ORGANIZATION

The life cycle assessment performed for the Sustainable Portfolio Management analysis makes it possible to estimate cradle-to-gate energy consumption:

	Units	2021	2020	2019
Cradle to gate energy consumption	PJ	235	246	265

4.2.4. Key achievements

During 2021, we continued to increase our involvement in the production of renewable energy sources. In 2021, six sites derived part of their heat production from biomass, which represents a total of 6 PJ, and two sites started to use biogas, representing a total of 0.2 PJ. The ramp-up of renewable electricity purchases has continued for the third consecutive year with a further 0.6 PJ impact in 2021.

4.3. Biodiversity

GRI DISCLOSURE 3-3 304-1 304-2 304-3 304-4
MATERIALITY: PRIORITY

4.3.1. Definitions

The calculation of the Solvay Group's pressure on biodiversity is performed along the value chain, from cradle-to-gate, for our entire portfolio of products. This is a global approach that is based on a Life Cycle Impact Assessment (LCIA) methodology: the ReCiPe2016 method. This method translates emissions and resource extractions into a limited number of environmental impact scores by means of what are known as characterization factors.

The first step in this method involves using emissions from environmental reporting that are linked with the following "midpoint impact categories":

- global warming, from CO_2 and greenhouse gas emissions, for example;
- water use;
- freshwater ecotoxicity;
- freshwater eutrophication;
- ozone depletion;
- terrestrial acidification;
- terrestrial ecotoxicity;
- marine ecotoxicity;
- land use or transformation;
- use of mineral resources;
- use of fossil resources.

The potential damage to nature is calculated by connecting the midpoint indicator with an endpoint factor, such as damage to freshwater, marine or terrestrial species and natural resources. The unit for measuring ecosystem quality is local relative species loss in terrestrial, freshwater and marine ecosystems, respectively, measured over space and time: potentially disappeared fraction of species per square meter per year or potentially disappeared fraction of species per cubic meter per year).

4.3.2. Management approach

Local biodiversity

We have screened all of our sites and their potential impact on protected areas according to the International Union for the Conservation of Nature (IUCN) management categories. We prioritized sites for risk assessment according to their proximity to protected areas and the IUCN management category. This led to us working with local administrations in charge of the protected areas to track and analyze the actions required to alleviate our impact, depending on the type of biodiversity that needed protecting.

For example, our Rosignano, in Italy, is located near the protected area of the Pelagos Sanctuary for the Conservation of Marine Mammals. The plant is therefore currently working on an action plan to reduce its impact on marine biodiversity, through possible partnerships with local universities and the possible rehabilitation of our quarries. The first actions to promote biodiversity at the site were undertaken during Solvay's 2021 Citizen Day (see section 3) and a detailed action plan will be launched in 2022.

Global biodiversity

As part of Solvay One Planet, we set a target to reduce our pressure on biodiversity by 30% by 2030, as compared to 2018. Using the environmental profiles of our products, and looking at their entire life cycle from raw material to distribution, we were able to identify the areas of our portfolio that contribute the most to biodiversity pressure. We found that greenhouse gas emissions, freshwater eutrophication, marine ecotoxicity and soil acidification represent 90% of the drivers affecting biodiversity.

As part of our efforts to contribute to biodiversity preservation, Solvay joined the Caisse des Dépôts et Consignations' Business for Biodiversity (B4B+) interest group, which is working on an international Global Biodiversity Score (GBS) as part of a European initiative. Solvay is also a founding member of Entreprises pour l'Environnement (EpE), which was created in 1992. It is a think-tank and platform for expertise, bringing together around 60 large French and international companies from all sectors of the economy to work together to better integrate the environment into both their strategies and their day-to-day management. Within the EpE, Solvay is an active member of the Commission on Biodiversity.

4.3.3. Indicators

Local biodiversity

55% of Solvay sites are within a 5km radius of a protected area.

Two sites have been prioritized for risk assessment as a result of their proximity to the closest protected area and their IUCN management category:

Country	Site name	Distance (meters)	Name of protected area	Category	IUCN Management category
Germany	EPE	0	LSG-Eilermark, Eper Venn, Graeser Venn	Landscape Protection Area	IV
Italy	ROSIGNANO	500 – 2000	Pelagos Sanctuary for the Conservation of Marine Mammals	Specially Protected Areas of Mediterranean Importance (Barcelona Convention)	Not Assigned

IUCN Red List species and national conservation list species with habitats in areas affected by our operations have not yet been identified for all sites. Solvay has prioritized the work on global pressure on biodiversity, which has allowed us to identify areas in which we can take action.

The geographic location of all Solvay sites is available on our website.

Global biodiversity

GLOBAL PRESSURE ON BIODIVERSITY

	Units	2021	2020	2019
Species potentially affected	Number	93	107	116
Of which:				
Global warming potential	%	50	43	43
Acidification	%	11	14	14
Eutrophication	%	15	16	16
Marine ecotox	%	17	16	17
Other (Land use, Water…)	%	7	11	10

Our baseline pressure on biodiversity, from 2018, was 122 species potentially affected. The results for 2021 show that we have decreased our pressure on biodiversity by 24%. While we estimate that a significant part of this progress is explained by methodology improvements, such as updated ecoprofiles, the overall trend is fully aligned with our objective to decrease our impact on biodiversity by 30% by 2030.

4.3.4. Key achievements

Our Paulinia site in Brazil was awarded the Wildlife Habitat Council's (WHC) Gold Certificate in 2021. It is the highest level of certification awarded by the WHC, an international organization promoting biodiversity conservation practices in the private sector. The site is a hub for wildlife in the region, following several decades of work to promote harmonious coexistence with nature.

Our efforts to restore the Cuchia Quarry in Spain also received recognition in 2021. The project won the European Council of Chemical Industry Federations (Cefic) award for ecosystem preservation. The quarry supplied our site in Torrelavega with limestone for almost 80 years - from 1927 to 2006. Restoration efforts have been underway for the last 30 years, including when the quarry was still in operation.

5. RESOURCES

5.1. Product design and life cycle management

GRI DISCLOSURE 3-3 416-1
MATERIALITY: PRIORITY

5.1.1. Definitions

Solvay's Sustainable Portfolio Management (SPM) focuses on sustainable business solutions. The SPM methodology is designed to boost Solvay's business performance and deliver higher growth, by letting decision-makers know how our products contribute to sustainability with regard to two factors:

- The environmental footprint related to their production and associated risks and opportunities, based on cradle-to-gate Life Cycle Assessments.
- How their applications create benefits or challenges from a market perspective, based on a qualitative assessment using a cradle-to-cradle scope.

Life Cycle Assessment (LCA) is a tool for compiling inputs and outputs, along with an evaluation of the potential environmental impacts of a product system throughout its life cycle. LCA methodologies meet international standards, namely ISO 14040, ISO 14044 and ISO 14046 norms.

A sustainable solution is defined by Solvay's Sustainable Portfolio Management tool as a product in a given application that makes a greater social and environmental contribution to the customer's performance and, at the same time, demonstrates a lower environmental impact in its production phase.

5.1.2. Management approach

SPM assessments are performed every year in order to capture the most recent signals from the market and cover more than 80% of Group revenue. Since its implementation in 2009, the Sustainable Portfolio Management tool has been widely adopted by Solvay Global Business Units and Functions to integrate sustainability into their key processes:

- The Sustainable Portfolio Management profile is an integral part of strategic discussions between Global Business Units and the Executive Committee.
- The SPM tool is used to evaluate mergers and acquisition projects, to determine whether an investment is feasible in light of Sustainable Portfolio targets.

- Investment decisions (capital expenditure above €10 million and acquisitions) made by the Executive Committee or the Board of Directors include a sustainability aspect that involves an exhaustive SPM analysis of the potential investment.
- All research and innovation projects are evaluated using SPM.
- SPM is used in marketing and sales to engage customers on fact-based sustainability topics, such as climate change action, renewable energy, recycling and air quality, with the goal of differentiating and creating value for Solvay and the customer.

Solvay Life Cycle Assessments are managed by a dedicated corporate team with direct links to all business units and services. Having a dedicated LCA team makes it possible to maintain a high level of staff competency and coordinate updates of the main methodologies used based on best practice. Core LCA activity is based on recognized tools, software and databases, and we also have our own database, specific to Solvay business and innovation segments, for instance in material science or battery development.

The LCA team is also called upon to support business activity concerning customer relations, by sharing environmental and LCA data on products in order to enhance understanding and environmental impact assessments along the value chain, from cradle to grave or recycling. Examples include the automotive sector, the construction sector and Product Carbon Footprint declarations for our customers.

Taking part in world class Life Cycle Assessment platforms

To maintain a high level of LCA expertise, we participate in the following collaborative platforms:

- International Reference Centre for the Life Cycle of Products, Processes and Services (CIRAIG): - Solvay joined CIRAIG in 2012 as an industrial partner, ensuring access to high level research and expertise on Life Cycle Assessment methodologies.
- Association Chimie du Végétal: Solvay is a member of this association in France, focused on the use of bio-sourced materials in chemistry.
- SCORE Life Cycle Assessment platform: this platform was created in March 2012 to promote collaboration between industrial, institutional and scientific actors, and to foster positive developments in environmental quantification methods, particularly in Life Cycle Assessments, to be shared and recognized at the European and international levels.
- World Business Council for Sustainable Development (WBCSD): Solvay takes part in Life Cycle Assessment projects and Product Carbon Footprint working groups organized by the WBCSD.
- Roundtable for Product Social Metrics: this association of industry representatives and consultants establishes guidelines for assessing the social impacts of industrial product life cycles.

5.1.3. Indicators

Extensive cradle-to-gate Life Cycle Assessments were performed for 96% of our products, by turnover share, placed on the market, as compared to 94% last year. Solvay's LCA team manages its own product database representing more than 1,300 different chemicals and materials, which is continuously updated to include the most recent industrial or innovation data. As set out in our Solvay One Planet sustainability roadmap, we will continue to shift our portfolio toward opportunities that grow our sustainable solutions, with a target of increasing sustainable solutions to 65% of total Group sales by 2030.

REVENUE BREAKDOWN BY SPM HEAT MAP CATEGORIES

	Units	2021	2020	2019
Solutions	%	53	52	53
Neutral	%	28	27	27
Challenges	%	9	8	7
Not evaluated	%	10	13	13

In 2021, the proportion of sales from sustainable solutions improved by +1 percentage point, largely reflecting the reduction of environmental impact in production within Specialty Polymers and Peroxides, the acquisition of new agriculture activities, and the requalification of some solutions for coatings.

Effective 2022, the CO_2 reference price was increased from €75 to €100 per metric ton CO_2 eq. As a consequence, the level for 2021 will be restated to 50%.

SPM SOLUTIONS: SALES BY MAIN IMPACT CATEGORY

	Units	2021	2020	2019
Climate	€ billion	1.7	1.6	2.2
Resources	€ billion	3.7	3.2	3.5
Better life	€ billion	3.2	3.1	3.3
Total Solutions net sales	€ billion	5.1	4.7	5.4

The total Solutions net sales figure is inferior to the sum of impact categories because products may have multiple impacts. For example, composite materials used in planes make the plane lighter, allowing lower greenhouse gas emissions (climate impact), but they also increase the plane's lifespan (resources impact).

EXTERNAL VALIDATION

Since 2009 with the exception of 2019 and 2020, Arthur D. Little (ADL), our partner in developing and improving our SPM methodology, has performed an in-depth verification of our market alignment results. In 2021, ADL screened every Product Application Combination (PAC) in the database and selected 70 PACs for deeper review.

Discussions with Arthur D. Little revealed that we reach the same conclusion for 43 PACs out of the sample of 70, representing an agreement rate of 61%. For 21 PACs (30%), Arthur D. Little came to a more negative conclusion than Solvay. For six PACs (9%), Arthur D. Little did not reach final results. For these six PACs, all of which relate to the PFAS family of compounds, ADL identified indicative evidence for an 'Exposed' assessment, and therefore recommended deeper exploration of PFAS before finalizing results. For a sizable number of the PACS concerned, we will not change our SPM 2021 score. Instead, we will instead commit to exploring these results in depth in 2022. In the meantime, our 2021 conclusions remain as they were.

EU TAXONOMY ELIGIBLE ACTIVITIES

The EU taxonomy (2020/852) is a classification system, establishing a list of environmentally sustainable economic activities. It is intended to play an important role in helping the EU scale up sustainable investment and implement the European Green Deal. The EU taxonomy would provide companies, investors and policymakers with appropriate definitions under which economic activities can be considered environmentally sustainable. According to the new timeline set out in the Taxonomy's Delegated Act 2021, companies will have to publish their first Taxonomy eligibility report in 2022.

In order to be taxonomy-eligible, an economic activity must contribute substantially to at least one of the six environmental objectives - climate mitigation, climate adaptation, water, circular economy, pollution prevention and biodiversity - and do no significant harm to the others. Currently, only climate mitigation and climate adaptation are considered. As such, the taxonomy only addresses a limited number of Solvay activities.

Our calculation of the share of 2021 Solvay sales eligible for the EU taxonomy is based on our best interpretation of the EU Taxonomy texts, including the 2021 version of Technical Annex of the Taxonomy Report. Our only manufacturing activities eligible as "transition activities" are soda ash and polymers.

Figures reported for soda ash correspond to the Soda Ash and derivatives business, which is a mono-technology business as described on Solvay's website.

Figures reported for plastics in primary form correspond to the Speciality Polymers business. Solvay's portfolio of specialty polymers is described on Solvay's website.

Enabling economic activities as referred to in Article 10(1), point (i), of Regulation (EU) 2020/852 do not substantially contribute to climate change mitigation through their own performance. Such activities play a crucial role in the decarbonisation of the economy by directly enabling other activities to be carried out at a low carbon level of environmental performance.

We identified eligible enabling activities using our Sustainable Portfolio Management methodology, taking into account product / application combinations identified as "climate Solutions" as described above. This enables us to avoid double counting, as double counting is neutralized in the Sustainable Portfolio Management reporting of Solutions for each impact category as described above. Possible double counting between transition activities and enabling activities are detailed in the table.

Some of our activities, such as polymer membranes in batteries, or soda ash for glass in double glazing, may be eligible both as transitional and enabling activities We have therefore removed these activities from the total of eligible activities.

The basis on which the turnover, capital expenditure and operating expenditure were calculated is explained in the Financial statements chapter of this report: note F1: revenue and segment information.

Capital expenditures and operating expenditures corresponding to enabling activities are not yet available. The eligible share of investments depends on the estimation of the corresponding eligible share of future sales and allocation rules have not been defined yet.

Activities	NACE codes	2021 share of sales	2021 share of capital expenditures	2021 share of operational expenditures
Eligible as transitional activities				
Production of soda ash	C.20.1.3	14.9%	19%	17%
Manufacture of plastics in primary forms	C.20.1.6	21.5%	28%	20%
Total eligible as transitional activities		36.4%	47%	37%
Eligible as enabling activities				
3.1. Manufacture of renewable energy technologies	C25 C26 C27 C28	0.1%	NA	NA
3.4. Manufacture of batteries	C27.2, E38.3.2	1.7%	NA	NA
of which plastics		1.7%	NA	NA
3.6. Manufacture of other low carbon technologies	C22.1.1, C22.2.9,	16.0%	NA	NA
of which soda ash		0.6%	NA	NA
of which plastics		3.1%	NA	NA
Total eligible as enabling activities		17.8%	NA	NA
Total of eligible activities		48.7%		

NA: not available. Work is going on to adapt databases to be able to extract capital expenditures and operational expenditures corresponding to selected projects, and to allocate the share of the capital expenditures of each project corresponding to enabling activities eligibility criteria.

5.2. Circular Economy

5.2.1. Definitions

Circular economy is a new approach to business that aims to decouple economic growth from resource consumption. Solvay's Circular Economy Business Solution Program is underpinned by a transition to renewable energy sources. It is based on three principles:

- Shifting our product portfolio to bio-based feedstocks and renewable-based feedstock.
- Retaining the value of the products and materials currently in use by enabling recycling (process additives and technology) or recyclability (by design) of the product.
- Designing products that increase the longevity of reusable materials.

We use the following definitions:

- Renewable resources: materials that are continually replenished at a rate equal to or greater than the rate of depletion. This includes plant-based materials from cultivation and animal-based materials from breeding. To fit in a circular economy, the material should be produced from food waste or using regenerative production practices.
- Renewable energy: energy produced from renewable resources, namely solar, wind, hydroelectric power, biomass or geothermal. Energy provided by technological waste, such as solid recovered fuels, is not considered.
- Products enabling recycling: products designed to increase the recycling yield, with regard to quality and quantity.
- Products enabling increased durability: products designed to increase the longevity and durability of other products further down in the value chain in such a way that encourages longer use than the industry standard and at scale, without compromising circularity at the end of the product's functional life.

The measurement of products based on recycled or renewable materials and renewable energy is weighted by applying a factor of 85% to renewable materials and 15% to renewable energy, according to the average manufacturing cost weight. A similar approach has been defined at the research and innovation level to monitor the contribution of innovation projects to Solvay's circularity ambition.

5.2.2. Management approach

Our Circular Economy Transition Program focuses on three categories of actions:

- Increasing the use of bio-based and recycled raw materials.
- Innovating with regard to materials recycling in closed and open circles, and business models.
- Innovating to increase the lifespan of materials.

The transformation of Solvay into a circular economy driver is embedded in our G.R.O.W. strategy. We are working individually and with customers, suppliers and partners to identify opportunities where the Group can leverage our capabilities.

Our research and innovation project portfolio is screened and prioritized according to the principles of the circular economy and around 20% of our innovation budget was attributed to circular innovation in 2021.

By 2030 we want to more than double our sales of circular products to 15% of Group sales.

Solvay is the Chemical Strategic Partner of the Ellen MacArthur Foundation - to contribute to accelerating the transition towards a circular economy. Chemistry, as a science and an industry, is a tremendously relevant and powerful enabler in material transformation and re-use.

5.2.3. Indicators

We monitor our progress in circular sales in accordance with the three principles of Solvay's circular business solutions, outlined above.

	Units	2021	2020	2019
Turnover of products based on recycled or renewable resources	%	5	5	4*
Turnover of products enabling recycling	%	n.r.	n.r.	n.r.
Turnover of products increasing longevity	%	n.r.	n.r.	n.r.

n.r. (not relevant) these indicators will be deployed in 2022.
** : the method of reporting applied in 2019 was not applying a weight factor between the renewable raw materials and the renewable energy.*

External assessment

Our Circular Economy performance level is assessed annually using the Circulytics® framework, co-developed with the Ellen MacArthur Foundation.

Circulytics® aims to:

- measure the entire company's circularity, not just products and material flows;
- support decision-making and strategy development for circular economy adoption;
- demonstrate strengths and highlight areas for improvement.
- Representatives from the main Solvay Functions and Global Business Units are involved in order to collect relevant information. This process is used as an opportunity to develop a circular economy mindset throughout the organization.

A single point of contact is identified to consolidate the data and fill in the questionnaire for assessment. The scorecard and feedback provided by the Foundation are shared and discussed at an appropriate level inside the Group.

5.3. Air quality

GRI DISCLOSURES 3-3 305-6 305-7
MATERIALITY: HIGH
SDG 3 15

5.3.1. Definitions

Nitrogen oxide (NOx) emissions, conventionally expressed as nitrogen dioxide (NO_2), comprise the emissions of nitrogen monoxide (NO) and nitrogen dioxide (NO_2). NOx emissions from Solvay's operations result mainly from the combustion of fossil fuels. Emissions of nitrous oxide (N2O) are excluded from this definition, as they have no impact on acidification. The impact of our N2O emissions is taken into account when assessing Solvay's contribution to climate change.

Sulfur oxide (SOx) emissions, conventionally expressed as sulfur dioxide (SO_2), comprise the emissions of sulfur dioxide (SO_2) and sulfur trioxide (SO_3). SOx emissions arise mainly from the combustion of coal or anthracite.

According to the EU Solvent Directive 1999/13/EC, Volatile Organic Compounds (VOCs) are compounds with a standard boiling point below or equal to 250°C. Non-methane volatile organic compounds (NMVOCs) include all VOCs other than methane. The impact of methane emissions from Solvay's mining activity at Green River, Wyoming, in the US, is therefore not included here, but is taken into account when calculating our contribution to climate change.

Ozone-depleting substances (ODS) are expressed as ODP Tonnes, which is defined as the metric tonnes of ODSs weighted by their Ozone Depletion Potential (ODP).).

5.3.2. Management approach

Air quality is managed through the health, safety and environment management systems deployed by our sites, in line with their regulatory requirements and those of the Group. Solvay works in close cooperation with local stakeholders to improve air quality at local and regional levels.

5.3.3. Indicators

ABSOLUTE AIR EMISSIONS

	Units	2021	2020	2019
Nitrogen oxides – NOx	metric tons	5,882	5,587	6,197
Sulfur oxides – SOx	metric tons	3,449	2,808	2,888
Non-methane volatile organic compounds – NMVOC	metric tons	3,956	3,286	4,109
Ozone-depleting substances - ODS	metric tons	7.7		

In 2021, NOx emissions at Group level increased by 295 metric tons - equivalent to 5% - in comparison with 2020. This was mainly due to the economic upsurge following the 2020 pandemic, which is reflected in higher auto-energy production, which increased by 2.7%). The increase is also partly explained by the need to use more Russian coal instead of petcoke at our Devnya site in Bulgaria.

The SOx emissions at Group level increased by 641 metric tons - equivalent to 25% - between 2020 and 2021. The sites which have contributed the most to this global change are Torrelavega, in Spain (+301 metric tons), Atequiza, in Mexico (+219 metric tons, due to the higher production rate of dithiophosphate) and Devnya, in Bulgaria (+118 metric tons, caused by a boiler problem in the desulfurization unit).

The start-up of the new WoodPower I boiler in Rheinberg, in Germany, on April 1, 2021 resulted in an improvement in SOx emissions by 62 metric tons, achieved through reduced coal usage. The impact of this new biomass boiler on our future SOx emissions will be more visible in 2022.

NMVOC emissions increased by 670 metric tons - equivalent to 20 % - in 2021, as compared to 2020. The biggest increases have been observed on the sites of Green-River (+470 metric tons) and Panoli (+89 metric tons), both linked to far higher productions; and also on Saint-Fons (+81 metric tons) due to an issue in one of the production units.

5.4. Water and wastewater

GRI DISCLOSURES 3-3 303-01 303-02 303-03 303-4 303-5
MATERIALITY: PRIORITY
SDG 3 6 12 15

5.4.1. Definitions

Water management encompasses the management of water flows and water quality, from extraction from the natural environment to restitution in the same or another part of the environment.

Freshwater withdrawal, measured in millions of cubic meters per year, is the amount of incoming freshwater purchased from third parties (e.g. drinking water from the public network) or pumped by Solvay from the public network (drinking water), freshwater systems, such as rivers and lakes, and groundwater sources (aquifers). Freshwater consumption, also measured in millions of cubic meters per year, is calculated as the sum of water lost through evaporation, leakage and exportation of products and wastes. For example, water that is taken from a river for cooling and returned to it after use counts as freshwater withdrawal but not as freshwater consumption.

Chemical Oxygen Demand (COD) is the amount of oxygen-reducing substances, mainly dissolved organic matter, discharged into aqueous receivers. COD is expressed as metric tons of oxygen. In addition to nitrogen and phosphorus species, COD also contributes to aquatic eutrophication.

Our estimation of water consumption for Solvay's cradle-to-gate production is effectively equivalent to the water consumption of a product. Simply put, it is the amount of water withdrawn, minus the amount of water of the same quality released back into the same watershed. This means that the water used in turbines for hydropower and the cooling of water in open-loop systems are not included in this indicator. Solvay's main areas of water consumption are in production, or what is known as industrial water, and in irrigation for bio-based raw materials.

5.4.2. Management approach

Solvay has a company-wide approach to water that includes limiting freshwater withdrawal and consumption, particularly in locations subject to hydric stress, and ensuring that the water quality remains good in bodies of water in which effluents are discharged, so that the impact on downstream users and natural biota is minimized. Specifically, we focus on reducing the impact of freshwater withdrawal and Chemical Oxygen Demand releases.

The water balance of the Group for 2021 is shown in the table below.

Water withdrawal (Mm³)		Water discharge (Mm³)	
Surface water (freshwater)	199.8	Surface water (freshwater)	241.3
Surface water (other water)	0	Surface water (other water)	4.4
Groundwater (freshwater)	71.9	Groundwater (freshwater)	0
Groundwater (other water)	5.2	Groundwater (other water)	0
Sea water	79.5	Sea water	83.6
Third party water (freshwater)	130.6	Third party water (freshwater)	99.1
Third party water (other water)	13.5	Third party water (other water)	43.9
Other sources	15.7	All losses	43.3
TOTAL	516.3	TOTAL	515.5

5.4.3. Indicators

FRESHWATER WITHDRAWAL

	Units	2021	2020	2019
Freshwater withdrawal	Million cubic meter	315	314	330

The freshwater withdrawal at Group level for 2021 remained stable compared to 2020, despite an organic growth of 17%. The biggest changes were observed on the sites of Dombasle (-6 Mm3, linked to a production decrease of -9 %), Paulinia (+ 6.4 Mm3, linked to a 17 % higher production rate) and Spinetta (+ 3.0 Mm3, linked to a +26 % production increase).

The table below shows the number and percentage of sites located in areas subject to hydric stress and gives the freshwater withdrawal and freshwater consumption for each of these groups in 2021.

2021	Units	Areas subject to water stress	Areas not subject to water stress	All areas
Number of sites	Number	25	102	127
Percentage of industrial sites under operational control	%	20.0%	80.0%	100%
Freshwater withdrawal (Million cubic meter)	Million cubic meters	30.7	284	315
Freshwater consumption (Million cubic meter)	Million cubic meters	11.6	31.7	43.3

CHEMICAL OXYGEN RELEASES

	Units	2021	2020	2019
Chemical oxygen demand (COD)	metric tons O_2	5,735	5,265	5,344

The Group's 2021 Chemical Oxygen Demand was 470 metric tons O_2 (+8.9%) higher than in 2020. This global increase fits well with the organic growth of +17%. Some deteriorations or improvements have been noticed on individual sites, which could be linked to production shutdowns/restarts, changes in product mix or in the COD removal efficiency of our WWTPs (WasteWater Treatment Plants).

WATER CONSUMPTION IN THE VALUE CHAIN

Cradle-to-gate Life Cycle Assessments allow us to estimate water consumption, including in the upstream value chain.

	Units	2021	2020	2019
Water consumption including the upstream value chain	Millions cubic meters	195	501	541

For 2021, the value reported here is lower due to a change in methodology. The 2021 figure corresponds to water consumption calculated as the difference between intake and discharge, while the previous model used for 2020 and 2019 measured water intake.

5.5. Waste

GRI DISCLOSURES 3-3 306-1 306-2 306-3 306-4 306-5 416-1
MATERIALITY: PRIORITY
SDG 3 6 12 13 14

5.5.1. Definitions

Industrial waste is defined as the waste resulting from our regular manufacturing and research activities. It does not include domestic waste and waste from demolition or construction projects. Mining waste, which results from the prospecting and extraction of minerals, is considered separately from industrial waste. All our waste volumes are expressed as dry matter.

For EU sites, Hazardous Industrial Waste (HIW) is defined according to Appendix III of the Waste Framework Directive (2008/98/EC). For non-EU countries, classification follows local legislation.

Non-sustainably treated waste comprises waste that is landfilled or incinerated without energy recovery.

5.5.2. Management approach

For industrial waste, and particularly hazardous industrial waste, Solvay's focus is on switching to more sustainable methods of disposal that avoid landfilling or incineration without energy recovery and therefore promote material or thermal recovery.

For non-hazardous, mostly mineral, waste, Solvay is launching material recovery initiatives aligned with our ambition to contribute to the circular economy.

5.5.3. Indicators

WASTE PRODUCTION

	Units	2021	2020	2019
Non-hazardous industrial waste	1,000 tons*	1,316	1,457	1,596
Hazardous industrial waste	1,000 tons*	74.8	71.6	86.6
Total industrial waste	1,000 tons*	1,391	1,529	1,682
Hazardous industrial waste not treated in a sustainable way	1,000 tons*	15.9	18.2	27.2
Non-hazardous industrial waste not treated in a sustainable way	1,000 tons*	41.9	51.4	69.2
Total industrial waste not treated in a sustainable way	1,000 tons*	57.8	69.7	96.4
Mining waste	1,000 tons*	618	637	799

** Metric tons of dry waste*

The total industrial waste not treated in a sustainable way for the Group was 11.9 Kt (17%) lower in 2021 compared to 2020, of which:

- -5.9 Kt due to improvements in data accuracy
- -0.6 Kt due to scope changes,
- -3.0 Kt due to valorization of the dry matter content of the wastewater sludge in Zhanjiagang (China),
- -0.73 Kt due to process improvements in Salindres (France),
- -0.46 kt due to coal usage reduction in Tavaux (France),
- -0.43 Kt due to material recovery in diverse industrial applications in Massa (Italy).

6. BETTER LIFE

6.1. Employee health and safety

GRI DISCLOSURES 2-25 3-3 403-1 403-2 403-3 403-4 403-5 403-6 403-7 403-8 403-9 403-10
MATERIALITY: PRIORITY
SDG 3

6.1.1. Definitions

Employee health and safety management encompasses occupational safety, industrial hygiene and occupational health.

Occupational safety is about preventing work-related injuries. Accidents are mostly linked to falls at the same level, human energy, such as pushing, pulling or striking an object, and exposure while opening a line or system. Industrial hygiene management encompasses the assessment, monitoring and management of workers' potential exposures to ergonomic, chemical and physical hazards. Occupational health includes all the preventive actions undertaken in order to protect and promote physical and psychological health at work, both collectively and for each individual Solvay employee.

In mid-2020, Solvay began using the OSHA definitions of occupational accidents in order to comply with GRI standards and enable comparisons outside Solvay. These are as follows:

- Occupational accident: a work-related unexpected and undesirable event resulting in damage or harm, namely injury or illness. Accidents on the way to or from home are not considered as work-related unless the worker was travelling for Solvay at the time of the accident.
- Lost Time Injury or Illness (LTII): a work-related injury or illness that results in a work interruption of one or more days, not including the day of the accident.
- Lost Time Injury and Illness Rate (LTIIR): the number of LTIIs resulting from an accident per 200,000 work hours.
- Reportable Injury and Illness (RII): work-related injury or illness resulting from an accident with severity above first aid, according to US OSHA 29 CFR 1904.
- Reportable Injury and Illness rate (RIIR): the number of reportable injury or illness per 200,000 work hours.

6.1.2. Management approach

Solvay requirements for implementing management systems on our sites are covered under section 3.3. Health, safety and environment management. The occupational health and safety management systems cover all Solvay employees, while external visitors, parcel delivery people and transport drivers not performing loading or unloading on-site fall outside the scope. In addition, our safety management system applies to contractors.

Hazard identification and risk assessments are performed according to Group procedures, which define minimum requirements for methods and the hierarchy of controls. They cover the following topics or activities:

- chemical hazard communication;
- chemical risk assessment and management;
- hearing conservation (noise exposure management);
- prevention of legionellosis;
- managing asbestos in buildings and facilities;
- respiratory protection equipment;
- Group requirements for occupational health;
- minimum safety requirements for lifting;
- working at height;
- working on powered systems;
- line breaking;
- working in confined spaces;
- working in an explosive atmosphere;
- lifting;
- excavation;
- traffic;
- personal protective equipment (PPE);
- work permits;
- management of change (MOC);
- contractor management.

All procedures contain training requirements, guidelines and on-boarding presentations for use in implementation on our sites. Quality, evaluations and process improvements are ensured through the sites' management systems. Sites' reporting processes identify unsafe situations, near-misses, incidents or accidents, as well as those cases with potentially high severity, and also set guidelines for investigating incidents and taking corrective actions.

Industrial hygiene (IH) ensures hazards are identified and eliminated. Risk assessments are performed in collaboration with occupational health experts. Occupational physicians perform risk-based medical surveillance, provide advice on improving and adapting working conditions, and promote physical and mental health. All these processes contribute to managing and minimizing risks at work.

On the shop floor, workers collaborate with industrial hygienists on risk assessments using SOCRATES (Solvay Occupational Risk Assessment Tool to Employees). This tool gives widespread, easy access to IH methods, tools and databases, consistently performs and documents IH risk assessments and enhances traceability of an individual's potential exposures throughout their working life. Workers are informed of their work-related risks by supervisors, industrial hygienists and occupational physicians or nurses.

Formal joint management–worker health and safety committees are established on our sites according to country legislation. Solvay also contributes to complementary health insurance, for which the terms vary according to the country.

Initiatives for health promotion are taken at site level in collaboration with local physicians and nurses. Examples of such initiatives include nutritional advice, cardiovascular prevention programs, general check-ups and fitness sessions led by trainers. During 2021, multilingual communication campaigns strongly promoted Covid-19 vaccination at Group level.

6.1.3. Indicators

Improvements in occupational health and safety indicators result from the safety culture approach implemented to protect everyone working at Solvay. This approach is explained in the Risk management chapter of this report.

Solvay started recording reportable injuries and illnesses on July 1, 2020.

The figures in the first three tables below relate to all sites under Solvay's operational control for which the Group manages and monitors safety performance. This includes our manufacturing, research and innovation and administrative sites, as well as a series of closed sites with limited activities, and covers Solvay employees and contractors working on these sites. The figures in the remaining tables relate to those manufacturing, research and innovation, administrative and closed sites in the Solvay Group to which the relevant HSE domain and indicator apply.

NUMBER OF ACCIDENTS

	Units	2021	2020	2019
Fatal accidents - Employees	Number	0	0	0
Fatal accidents - Contractors	Number	0	0	0
H-RII - Employees	Number	8	6	11
H-RII - Contractors	Number	19	3	1
H-RII - Employees and contractors	Number	27	9	12
RII - Employees	Number	90	-	-
RII - Contractors	Number	41	-	-
RII - Employees and Contractors	Number	131	-	-
LTII - Employees	Number	44	26	38
LTII - Contractors	Number	24	16	13
LTII - Employees and contractors	Number	68	42	51

Note: RII was introduced in mid-2020. In previous years, definitions of reportables were specific to Solvay and therefore cannot be compared.

HOURS WORKED

	Units	2021	2020	2019
Work hours - Employees	1,000 hours	42,967	45,359	52,266
Work hours - Contractors	1,000 hours	18,622	16,577	25,491
Work hours - Employees and contractors	1,000 hours	61,589	61,936	77,758

Employees' work hours are based on the full time equivalent multiplied by an average of work hours per employee per year in each country. Contractors' work hours are reported monthly by all sites.

ACCIDENT FREQUENCY RATES

	Units	2021	2020	2019
H-RIIR - Employees	Accidents per 200,000 hours worked	0.04	0.03	0.04
H-RIIR - Contractors	Accidents per 200,000 hours worked	0.2	0.04	0.01
H-RIIR - Employees and contractors	Accidents per 200,000 hours worked	0.09	0.03	0.03
RIIR - Employees		0.42	-	-
RIIR - Contractors		0.44	-	-
RIIR - Employees and Contractors		0.43	-	-
LTIIR - Employees	Accidents per 200,000 hours worked	0.20	0.11	0.15
LTIIR - Contractors	Accidents per 200,000 hours worked	0.26	0.19	0.10
LTIIR - Employees and contractors	Accidents per 200,000 hours worked	0.22	0.14	0.13

Note: RII were introduced during 2020. 2021 is the first full year of application of the OSHA metrics.

The rate of high severity accidents (H-RIIR) was three times higher in 2021 than in 2020, mostly due to the impact of the Covid-19 situation on behaviors and the impact on operations (volume growth, supply chain disruptions) created by the very strong recovery. In addition, four accidents involving employees and resulting in amputations occurred in 2021 compared to zero in 2020 for both employees and contractors. The rate of Lost Time accidents (LTIIR) also increased significantly for employees and contractors.

The Group objective of an RIIR below or equal to 0.34 for 2021 was not achieved. This objective was probably too ambitious, as it was based on only six months of experience using OSHA reporting standards on all our sites. A target of an RIIR of less than 0.4 would have been more realistic, although this is still lower than the result of 0.43 achieved in 2021.

Globally, our safety results deteriorated in 2021, for several reasons:

- Root causes: taking short-cuts to save time, lack of attention or a sense that something is "always done that way".
- Behaviors:
  - the impact of the Covid-19 situation, specifically a lower presence of leaders and support staff on site;
  - moving from low to high production demand in a short time.

Ongoing changes have also added another level of complexity and increased workload.

To ensure improvements, the following actions will be implemented in 2022:

- ensuring that not only site but also Group safety results are communicated to front-line workers, in order to increase awareness of the shift in performance;
- site leadership, including front-line leaders, are to spend more time in the field;
- providing support, through physical presence, on selected sites, to help identify risks and provide coaching;
- re-energizing campaigns relating to the Solvay Life Saving Rules;
- implementing Competency and Complacency training;
- sites are to share their HSE performance and commitment at Solvay's Executive Leadership Team meetings.

Industrial hygiene (IH)

A key aspect of our approach to protecting health is the systematic assessment and management of workers' potential exposures to ergonomic, chemical and physical hazards. Global industrial hygiene (IH) procedures define minimum requirements for Solvay's IH risk assessments and management strategies, including the hierarchy of controls. The IH program encompasses:

- Comprehensive chemical inventories established and reviewed at site level, with screening and priority ranking of substances that carry potential health impacts.
- Solvay Acceptable Exposure Limits (SAELs) developed internally for insufficient or outdated established Occupational Exposure Limits (OELs).
- Occupational Exposure Banding (OEB) in cases where no established OEL exists or there is limited toxicological data. Solvay's OEB approach provides a simple, quick and easy-to-understand hazard ranking.
- Implementation of SOCRATES, a new global tool, at identified sites. We expect to complete this process by the end of 2022, ensuring:
  - widespread and easy access to IH methods, tools, and databases;
  - consistent performance and documentation of IH risk assessments;
  - enhanced traceability of an individual's potential exposures throughout their working life.
- Established KPIs that allow for identification and tracking of the completion of site chemical and noise risk assessments.

Occupational Health

Key indicators for occupational health are:

- Occupational diseases: the incidence rate and causes of disease are used to define preventive and corrective actions.
- Advanced risk-based medical surveillance rate: used to assess that our medical surveillance is effective.
- Human biomonitoring indicators: used where applicable to assess chemical exposures and suggest preventive actions.
- Stress prevention and well-being at work (see chapter 6.2.2 of this report): used to identify main causal factors and launch action plans atsite and Group levels.
- Health promotion: encouraging employees to get the seasonal flu vaccination.

RECOGNIZED OCCUPATIONAL ILLNESSES

	Units	2021	2020	2019
Occupational illness frequency rate (OIFR)	per million hours worked	0.23	0.49	0.54

OIFR is the total number of recognized occupational illnesses recorded per million hours worked. It covers Solvay workers who are active, retired or have left the company and takes into account all recognized occupational diseases, not only short- or mid-latency diseases reported in previous years.

RECORDABLE OCCUPATIONAL ILLNESSES BY TYPE

	Units	2021	2020	2019
Hearing disorders	Number	0	3	3
Musculoskeletal diseases	Number	2	5	10
Other non-carcinogenic diseases	Number	1	9	9
Asbestos-related diseases and cancers	Number	17	25	39
Other cancers	Number	1	5	4
Not specified/Unknown	Number	0	0	1
Total	Number	21	47	66

The figures in the table above relate to recordable work-related illnesses contracted by Solvay employees who are active, retired or have left the company.

Advanced Risk-Based Medical Surveillance

A site is considered as performing Advanced Risk-Based Medical Surveillance if all the following criteria are fulfilled:

- The Chemical Risk Assessment completion rate(*) is at least 30%. This is the ratio of the total number of Chemical Risk Assessments, both inhalation and dermal, completed by the site within the last five years, to the total number of Chemical Risk Assessments to be conducted based on the Chemical Risk Assessment List established by the site.
- The site regularly communicates identified potential occupational risks to the Medical Service provider.
- At least 70% of the employees scheduled for Risk-Based Medical Surveillance during the year have completed their medical visit.

In 2021, 61.9% of our manufacturing and research and innovation sites fulfilled all these criteria, as compared to 44% in 2020.

Human biomonitoring of exposure

Human biomonitoring (HBM) of exposure involves measuring the concentration of a substance or its metabolites in human fluids, such as blood or urine. It can be used to assess exposure to specific chemicals and helps to verify whether protective measures are effective.

In 2021, 19 sites performed HBM of exposure, for 30 different chemicals (substances/group of substances).

HUMAN BIOMONITORING (HBM) OF EXPOSURE

	Units	2021	2020	2019
Sites performing HBM of exposure	Number	19	25	35
Sites with at least one result above the Biological Limit Value (BLV)	Number	0	1	3

For sites, which had results above the biological limit values, action plans were put in place to reduce the exposure levels.

Flu vaccination campaign

An intensive awareness campaign was conducted in order to encourage employees to get vaccinated against seasonal flu, specifically within the context of Covid-19. This resulted in 20.18% of Solvay employees receiving the vaccination. The number of employees vaccinated is likely to be higher than this, as the figure does not include vaccinations that may have been done by private physicians.

COVID-19 vaccination campaign

Solvay has actively promoted and facilitated Covid-19 vaccination. In countries where it was authorized and possible to do so, Solvay has organized Covid-19 vaccination campaigns and administered vaccinations. In total, 22 sites administered vaccines and seven additional sites organized vaccination for their employees.

6.1.4. Key achievements

In 2021, we obtained a Special Commendation in the CEFIC Responsible Care awards, for our project on supporting and transforming health and well-being in times of Covid-19. It was a global project that included a range of initiatives in support of employee, community and societal health. In particular, CEFIC appreciated our global approach to creating a sustainable and better life at work, as well as our donations to local communities.

6.2. Employee engagement and well-being

GRI DISCLOSURES 2-30 3-3 401-2 403-4 407-1
MATERIALITY: HIGH
SDG 3 8

6.2.1. Definitions

Employee engagement is the level of commitment, passion and loyalty an employee has toward their work, team and company. Solvay believes that engagement increases performance through higher productivity and employee retention and that engagement is fostered by fair labor practices and well-being at work.

A constructive relationship with employees and their representatives, built on trust, is considered the basis of fair labor practices at Solvay. This relationship reflects the Group's commitment to respect employees' fundamental human rights and guarantee their social rights.

Well-being at work is a holistic concept which relates to all aspects of the quality of working life that ensure workers are safe, physically and mentally healthy, satisfied, engaged and efficient. It addresses recognition and support, work-life balance, employee growth and development, and good communication and collaboration, based on International Labor Organization and World Health Organization definitions.

6.2.2. Management approach

ONE Pulse

Employee engagement is measured through confidential surveys open to all employees. This includes global surveys as well as local initiatives, such as "Voice of the People'' surveys.. The results of our surveys enable the Group and local management to identify strengths and areas where the working environment and employee experience can be improved.

In 2021, we continued our series of short quarterly surveys, known as ONE Pulse surveys. Available in 14 languages, the ONE Pulse surveys enable us to listen to the feedback and opinions of Solvay employees around the world. This not only promotes a feedback culture, where everyone can safely share their opinions and have open conversations with their team and leaders, but also helps to improve employee experience at work. Our objective was to equip leaders at all levels in the organization with insights about the wellbeing and experience of their team, foster open dialogue and ensure continuous improvement throughout the year.

Better Life at Work

Since October 2016, a multidisciplinary Committee on Better Life at Work (BLAW) has been in place to define and promote a well-being at work (WBAW) program. It includes occupational physicians and psychologists, Human Resources, health, safety and environment experts, Global Business Unit (GBU) representatives, and sustainable development experts, representing all regions.

In 2021, a new Better Life at Work program was launched, focused on three pillars:

- Governance: a multidisciplinary Better Life at Work Steering Committee, including representatives from our Human Resources (HR), Occupational Medicine, Health, Safety and Environment (HSE) and Sustainable Development Functions, as well as an employees' representative. Solvay's Chief People Officer serves as the Sponsor.
- Observatory: the Better Life at Work Observatory includes indicators gathered from HR and HSE data, the Pulse surveys, and from diagnosis and assessment (see below).
- Positive actions: These will be defined using the information gathered through the Observatory.

For diagnosis, we have launched pilots at three Solvay sites, one each in Europe, the Americas and Asia, in collaboration with Jaume I University in Spain. The project aims to assess not only risk factors we need to address for well-being at work, but also positive factors that we can build on, in order to create a sustainable Better Life at Work. A similar approach is being developed in the European H-Work Project, which aims to promote mental health in small and medium-sized enterprises and public workplaces drawing on funding from the European Union's Horizon 2020 research and innovation program.

In September 2021, Solvay began deploying a new, standardized global well-being support program, which offers support to all employees requesting coaching or psychological consultations. Previous to this, a third of Solvay's population was not covered by any mental health support plan. We have also provided training from qualified experts for 66 physicians and nurses, to help them to support employees that may have been impacted by the Covid-19 crisis.

Regarding labor relations, discussions and activities are held at four levels: site, country, european and Group.

Solvay Global Forum

In 2015, Solvay created a global employee representative body, the Solvay Global Forum, composed of nine employee representatives from the main areas where Solvay operates, namely Europe, the US, China, Brazil, India and South Korea. Video Conferences are held quarterly, bringing together the Solvay Global Forum and the Group's top management to comment on and discuss the quarterly results of the Group and to keep everyone informed of the main new projects. Two agreements have been signed with the Solvay Global Forum: Global Performance Sharing 2021 and Solvay Cares, the latter of which extended maternity and co-parent leave to 16 weeks. In December 2021, the Group launched a Global employee shareholding initiative, that the Solvay Global forum wished to be an inclusive, simple and meaningful way to create sustainable shared value for all.

Solvay Shares program will be open to employees around the world, irrespective of their position or grading. The employees will get a discount rate on the share price and free shares for every three shares they own after a lock-in period. By mid-2023, most of the employees will be offered the possibility to buy shares, and get the same rights like every other shareholder. This program should increase their understanding of the Group's performance as well as their sense of belonging.

European Works Council

We have been in permanent dialogue with our European Works Council (EWC) for more than 20 years. In 2021, the EWC met physically on two occasions and the EWC Secretariat met ten times, either virtually or physically, with senior Group management to help steer Solvay's evolution. The main topics discussed were reorganizations, actions taken by the Group to navigate the Covid-19 pandemic, digitization, the evolution of working conditions with the extension of mobile working, the Group Sustainable Development strategy and Solvay's financial results.

Solvay Cares

In February 2017 Solvay signed a global agreement guaranteeing a minimum level of welfare and healthcare protection for all Solvay Group employees worldwide. Solvay Cares was fully deployed in 2019 and aims to provide four major benefits:

- full income protection during parental leave, with 16 weeks for both parents;
- a minimum coverage of 75% of medical fees in the event of hospitalization or severe illness;
- disability insurance in the event of lasting incapacity;
- life insurance, including coverage for the family or partner.

An addendum to the agreement was signed in December 2021, offering to introduce more flexibility for parents to enjoy parental leave according to family needs, and adding the Employee Wellbeing Support program, through which we committed to giving all employees access to confidential mental health support as from December 2021. By January 2023, when all provider contracts will be reviewed, globally aligned standards of the Employee Wellbeing Support Program will apply, ensuring coverage not only for the employee, but also for all members of the employee's household.

The IndustriALL Global Union Framework Agreement

On December 17, 2013, Solvay signed a Corporate Social and Environmental Agreement for the whole Group with IndustriALL Global Union. This agreement is based on International Labor Organization standards and the principles of the United Nations Global Compact. It is a tangible expression of Solvay's determination to ensure that basic labor rights and the Group's social standards in the areas of health, safety and environmental protection are respected at all of our sites.

In February 2017, we renewed our Global Framework Agreement with IndustriALL Global Union, adding new social projects, including societal actions and the protection of mental safety in the workplace. Every year, IndustriALL Global Union representatives meet Solvay employees to check on compliance in the field. Assessments take place at two different sites: one measures the results of the Group's safety policy and the other examines the application of the agreement, covering the following health and safety aspects:

- ensuring good working conditions;
- managing risk as a daily concern;
- defining demanding internal policies and their strict application;
- improving safety performance and regular monitoring of both Solvay's and contractors' employees;
- ensuring healthy working conditions for all, regardless of the job they perform and its associated risks.

In 2021, IndustriALL representatives, together with Solvay management, visited four of our Italian subsidiaries in order to assess labor relations. It was; an opportunity to confirm the positive working atmosphere, safety situation and industrial relations, and identify areas for improvement.

6.2.3. Indicators

With regards to engagement and well-being at work, four recurring surveys were launched worldwide between November 2020 and September 2021, collecting an average of 12,000 responses, a response rate 50% higher than for 2020 surveys.

Each survey is made up of between ten to 12 questions measuring well-being, safety and other dimensions related to employee experience, such as relationships with managers, remote working, Solvay behaviors and workload.

In the four surveys, employees were asked how they were feeling. The percentage of respondents feeling "OK or better" was over 70% on average, remaining relatively stable as compared to last year. In addition to our Employee Assistance Program, Solvay has put together a guide for managers to help them better support their teams and a flyer for all employees, available in multiple languages., These provide guidance and suggestions about where to turn for help and encouragement, in order to better support those employees who have reported feeling "less than OK".

During the last four weeks, in general, how have you been feeling?

	Units	Nov. 2020	Mar. 2021	Jun. 2021	Sep. 2021
OK or better	%	73	67	74	76
Less than OK	%	27	33	26	24

We also include three engagement questions in our ONE Pulse survey annually. This revealed that about 75% of employees were satisfied and proud to be working at Solvay and that about 70% would recommend the company as a great place to work.

Employee Representation Indicator

100% of Solvay employees are covered by a collective agreement. This is the Solvay Cares collective agreement with the global employee representative body, the Solvay Global Forum.

Trade unions are present at a majority of Solvay sites around the world. Union membership is estimated at 20% in Europe, 25% in South America, 30% in North America and 70% in Asia.

6.2.4. Key achievements

In responding to the Covid-19 crisis, it was proven that people could work collaboratively from outside the office. As a result, we successfully launched a global mobile working policy, which was deployed across 35 of our administrative sites in 19 countries. More than 7,500 employees are now working in a hybrid mode with both remote and on-site work.

During this period we continued to develop the framework used for meeting with our representatives in a hybrid mode. This involved face-to-face meetings where possible, but also making use of the flexibility offered by remote communication, especially in cases where a topic justified a shorter discussion or needed to be held at shorter notice.

6.3. Diversity and inclusion

GRI DISCLOSURES 3-3 405-1 405-2
MATERIALITY: PRIORITY
SDG 8

6.3.1. Definitions

Solvay defines diversity, equity and inclusion in the following way:

- Diversity is the representation of various identities and differences of individuals in a group.
- Equity is creating equal access to opportunity by recognizing the existence of advantages for some and barriers for others; promoting justice, impartiality and fairness within the procedures, processes and distribution of resources by institutions and systems.
- Inclusion is actively and intentionally engaging people with different identities and enabling them to feel valued, able to fully contribute and be welcomed within a given setting.

6.3.2. Management approach

We have identified nine action plans to foster diversity, equity and inclusion by 2025:

Diversity:

- Accelerate gender parity at all mid and senior levels: achieve gender parity by 2030. The first step is carrying out a Gender Impact Assessment (GIA) to identify where current policies may be negatively impacting the advancement of female employees within the organization.
- Make our workplace more appropriate for people with disabilities: set up a Solvay Disability Equality Index and improve our results. The first step is conducting an audit of the organization, encompassing everything from premises to services, to identify potential barriers.

- Develop Resource Groups to encourage employees to bring their "whole self" to work: set up diverse employee resource groups (ERGs) worldwide. The first step was to launch the first ERGs for Women, Men Advocating for Real Change, LGBTQ+ and at least one Ethnic Minority Group by the end of 2021.

Equity:

- Assess if there are undesired pay gaps and close them: identify potential structural and gender pay gaps and develop and implement a plan of action to close them. The first step is building and reporting the ratio of pay of women to men by management level.
- Ensure fair recruitment: all mid and senior level job openings to have a shortlist comprising 50% of under represented groups, including women. The first step is reviewing and adjusting job descriptions and recruitment campaigns to be more diverse and friendly.
- Ensure equitable access to career opportunities and development: set up mentor/mentee programs starting with under-represented groups. The first step was to ensure that all our selected Future Top Leader Women and Asian talents had a structured mentorship program in place by the end of 2021.

Inclusion:

- Build an inclusive employee experience: set up an Inclusion Index and improve our score. The first steps are developing and deploying inclusive training for new employees at Solvay, and setting up a survey to have a first point of reference.
- Assessment and development program for Solvay leaders to grow and nurture an inclusive mindset: the Global Business Unit (GBU) Presidents and Heads of Functions have a DEI score for their GBUnit or Function and develop a plan to improve their score. The first step is enrolling all of the Senior Leadership Team in inclusion workshops.
- Build a culture in which individuals feel empowered to speak out or speak up when they experience or witness non-inclusive behaviors, in line with our Code of Business Integrity: 90% of our employees must feel safe to speak up or speak out when confronted with non-inclusive behaviors. The first step is running an awareness campaign to inform all employees about what inclusive behavior is and what it is not.

6.3.3. Indicators

At Group level, we have identified five areas of focus for diversity, which receive specific attention and monitoring to ensure consistent improvement across the organization:

- improving the gender mix at all levels of the organization;
- leveraging the generational mix to optimize learning, knowledge and experience;
- developing national and cultural talent that mirrors growth opportunities;
- enriching the team mix by leveraging experiences and backgrounds;
- measuring the ratio of base salary of women to men by management categories in our largest countries of operation.

Country- and site-specific actions are also crafted in response to the local context, thanks to Solvay's sustainability network and best practices.

WOMEN IN SENIOR + MIDDLE MANAGEMENT

	Unit	2021	2020	2019
Senior and Middle management	%	25.0	24.7	24.3

GENDER DIVERSITY BY EMPLOYEE CATEGORY

	Units	2021	2020	2019
Women in senior management	%	16	15	14
Women in middle management	%	26	26	26
Women in junior management	%	35	34	33
Women in non-managerial positions	%	19	20	20
Total women in Solvay	%	23	24	23

AGE GROUP BY EMPLOYEE CATEGORY

	Units	2021	2020	2019
Senior management	headcount	328	364	369
Percentage under 30 years old	%	0	0	0
Percentage between 30–49 years old	%	29	27	29
Percentage 50 years old and older	%	71	73	71
Middle management	headcount	2,697	2,819	2,895
Percentage under 30 years old	%	0	0	0
Percentage between 30–49 years old	%	48	47	49
Percentage 50 years old and older	%	52	53	51
Junior management	headcount	4,743	4,993	5,246
Percentage under 30 years old	%	8	8	10
Percentage between 30–49 years old	%	65	65	64
Percentage 50 years old and older	%	27	27	26
Non-managerial	headcount	13,838	15,487	15,645
Percentage under 30 years old	%	11	16	14
Percentage between 30–49 years old	%	55	50	55
Percentage 50 years old and older	%	33	34	32

SOLVAY’S WORKFORCE BY AGE

	Units	2021	2020	2019
Under 30 years old	Number	1,976	2,928	2,649
Between 30–49 years old	Number	12,127	12,425	13,422
50 years old and older	Number	7,503	8,310	8,084
Total headcount	Number	21,606	23,663	24,155

According to the above table, the age structure is currently:

- 35% older than 50;
- 56% between the ages of 30 and 49;
- 9% younger than 30.

RATIO OF BASIC SALARY OF WOMEN TO MEN BY MANAGEMENT CATEGORY

The table below represents the ratio of unadjusted (without correction for age or seniority) average pay between male and female employees where the average pay of male employees is 1.00:

Country	Junior management	Middle management	Senior management
Belgium	0.97	0.96	1.06
Brazil	0.93	0.93	ND**
China	0.89	0.99	ND**
France	0.97	0.95	0.95
Italy	0.99	0.89	0.88
US	0.94	0.99	0.95

***ND: not disclosed; too few data points in one or two measurement groups to make a statistically meaningful measurement.*

6.4. Recruitment, development, and retention

GRI DISCLOSURES 2-7 2-8 3-3 401-1 401-2 404-1 404-2 404-3

6.4.1. Definitions

Recruitment, development and retention provide data linked to talent management. This relates to how Solvay is attracting, retaining and developing talent and includes details on career management and access to training, coaching and mentoring that enables each employee to take the lead in developing their career and reaching their full potential.

Headcount refers to employees that have a contract with Solvay and are classified as active, as they have a position in the organizational chart. Full-Time Equivalent (FTE) corresponds to the working time capacity of active employees. Apprentices, trainees and students are excluded from our figures.

6.4.2. Management approach

Recruitment and Retention

Of the 1,591 positions recruited for in 2021, 591 were filled by employees aged below 30. The Group also welcomed 238 apprentices, 51 trainees and 195 students.

Onboarding newcomers

Of all newcomers who joined Solvay in 2021, 94.2% were satisfied with the hiring process and 98.0% of newcomers were satisfied with their decision to join the Group.

Learning and Development

AVERAGE HOURS OF TRAINING PER EMPLOYEE

By management level	Units	2021	2020
Senior manager	hours	11.6	7.02
Middle manager	hours	13.3	5.29
Junior manager	hours	14.8	8.75
Non managerial	hours	15	14.27

AVERAGE TRAINING HOURS

By gender	Units	2021	2020
Women	hours	15.2	11.87
Men	hours	14.5	11.92

Performance and development cycle

The performance and development cycle applies to the entire managerial population. It is also used by about 4,270 non-managerial employees, representing 27% of the non-managerial population. Local performance and development tools and processes are available for the population not covered by the performance and development cycle online tool.

6.4.3. Indicators

SOLVAY'S WORKFORCE BY REGION

	Units	2021	2020	2019
Europe	Number	10,318	11,428	11,264
Women	%	25	26	25
Permanent staff	%	96	89	97
Asia-Pacific and rest of the world	Number	4,088	4,336	4,411
Women	%	25	25	25
Permanent staff	%	78	77	73
North America	Number	5,129	5,553	6,175
Women	%	20	21	20
Permanent staff	%	100	100	100
Latin America	Number	2,071	2,346	2,305
Women	%	19	20	20
Permanent staff	%	89	93	98
Total headcount	Number	21,606	23,663	24,155
Women	%	23	24	23
Permanent staff	%	92	90	93

The scope of this table is consistent with financial reporting.

SOLVAY'S WORKFORCE

	Units	2021	2020	2019
By contract and by gender				
Permanent contract	Number	20,288	22,925	22,534
of which women	%	23	24	23
Temporary contract	Number	1,320	738	1,621
of which women	%	29	22	28
By employment type				
Full-time contract	Number	20,981	22,621	23,575
of which women	%	22	23	22
Part-time contract	Number	417	524	580
of which women	%	54	70	71
By employment category				
Senior manager	Number	328	364	369
Middle managers	Number	2,697	2,819	2,895
Junior manager	Number	4,743	4,993	5,246
Non managerial	Number	13,838	15,487	15,645
Total headcount	Number	21,606	23,663	24,155

HIRINGS

	Units	2021	2020	2019
By region				
Asia and rest of the world	Number	203	238	258
Europe	Number	749	847	727
North America	Number	488	273	520
Latin America	Number	151	342	175
By gender				
Male	Number	1,103	1,081	1,185
Female	Number	488	532	495
By age				
<30	Number	591	959	759
30–49	Number	845	597	791
>49	Number	155	129	130
Total hirings	Number	1,591	1,700	1,680

ALL LEAVES

	Units	2021	2020	2019
By region				
Asia and rest of the world	Number	475	365	325
Europe	Number	771	1,571	948
North America	Number	865	989	632
Latin America	Number	309	652	336
By gender				
Male	Number	1,724	2,450	1,636
Female	Number	695	1,123	605
By age				
<30	Number	392	1,253	458
30–49	Number	1,064	1,070	1026
>49	Number	964	1,253	757
Total leaves	Number	2,420	3,577	2,241

VOLUNTARY LEAVES

	Units	2021	2020	2019
By region				
Asia and rest of the world	Number	236	207	208
Europe	Number	304	591	396
North America	Number	318	205	286
Latin America	Number	57	322	88
By gender				
Male	Number	628	828	1636
Female	Number	287	497	605
By age				
<30	Number	213	594	274
30–49	Number	539	455	526
>49	Number	163	275	178
Total voluntary leaves	Number	915	1,325	978

6.4.4. Key achievements

To support our employees through the Covid-19 crisis, we increased our focus on virtual delivery and virtual content, particularly with workshops to help employees and managers with topics specific to the crisis. Employees have access to a pool of internal coaches and mentors, and can also develop by contributing to a project. Some examples include:

- Upskill our Front line:
  - Solvay's Leadership Team approved a significant investment in the continued development of our customer-facing teams. The launch of our Sales Academy will help our commercial teams continue to develop long-term, mutually beneficial relationships.
- Face the Crisis:
  - Our internal coaching community has been mobilized to support more than 60 individuals. This includes "flash coaching", through three targeted sessions, to boost remote management abilities, deal more efficiently with uncertainty and to re-engage more than 30 teams.
  - Specific support has been provided to top leaders through reverse mentoring to upskill them in using remote collaboration tools to reconnect.
  - Coaching tips are included in communications with senior managers, on topics such as performance dialogue and crisis management.
- Focus on Remote Learning:
  - Instructor-led classes represented 33% of total training hours in 2021, as compared to 50% in 2020. Web-based and Virtual Classroom hours increased by 108% compared to last year.

6.5. Customer welfare

GRI DISCLOSURES 3-3
MATERIALITY: HIGH

6.5.1. Definitions

The Net Promoter Score (NPS) is the indicator used to measure customer loyalty for each of Solvay's Global Business Units (GBUs). The metric was developed by, and is a registered trademark of, Fred Reichfeld, Bain & Company and Satmetrix. GBU scores are consolidated at the Group level through a revenue-based weighted average.

The Net Promoter Score is calculated based on customer responses to a single question: "How likely is it that you would recommend our company to a friend or colleague?" Answers can range from 0 to 10. Those who respond 9 or 10 are called Promoters and considered likely to exhibit value-creating behaviors, making positive referrals to other potential customers. Those who respond with a score from 0 to 6 are labeled Detractors and are not supportive. Those who give a response of 7 or 8 are labeled Passives. The Net Promoter Score is calculated by subtracting the percentage of Detractors from the percentage of Promoters.

Solvay uses the Net Promoter System℠ methodology to boost customer loyalty by promoting a culture of customer feedback and by developing active listening skills at every single touchpoint in the customer journey. The objective is to go far beyond "just a score" toward a deep transformation of the Group by fostering a more customer-centric culture.

The Net Promoter System℠ is structured around two pillars, allowing us to gather insights at both the strategic and operational levels. The objective of the first and more strategic stage is to identify and further reinforce the areas where the Group truly stands out against the competition in order to raise customer loyalty and accelerate growth. The second, more operational, stage captures how customers perceive our offer from a day-to-day perspective. These key insights trigger tangible action plans – both account-specific and at the GBU level – to bring Solvay closer to our customers and better serve them by delivering more suitable and efficient services.

6.5.2. Management approach

Since 2014, each GBU has conducted a customer satisfaction survey at least once every two years to check their strategic alignment with the trends in their business environment. The aim is to identify and select the right areas for each GBU to focus on, as well as to foster differentiation and accelerate growth.

The Net Promoter Score has been selected as the key indicator of customer loyalty for the Group. It is measured at the Global Business Unit level, consolidated at the Group level and published annually.

In 2018, Solvay decided to take this approach to the next level by launching the Net Promoter System℠, aimed at transforming the work practices of the entire frontline population across all GBUs and geographies. This ensures that a customer feedback culture is embedded in our DNA.

The insights gathered from our customers trigger action plans, allowing us to continuously adapt our value proposition to better serve our customers and increase our share of wallet.

6.5.3. Indicators

In 2021, we sent more than 10,000 surveys to our customers and collected more than 2,000 reponses. This feedback, provided by NPS surveys, combined with other Voice of Customer feedback, was used to drive tactical and strategic changes.

In 2022, the approach described above will evolve to ensure a better focus on customers that are generating the highest value for the company, in line with our customer segmentation approach, in place from 2020.

	Units	2021	2020	2019
Solvay's Net Promoter Score (NPS)	%	32	NA	33

ECOVADIS ASSESSMENT

About 150 customers, representing more than 20% of Solvay's sales, use EcoVadis to assess Solvay's performance as a supplier. The EcoVadis sustainability assessment methodology is an evaluation of how well a company has integrated the principles of sustainability and Corporate Social Responsibility (CSR) into their business and management system.

Solvay is in the top 1% of companies rated by EcoVadis in the manufacture of basic chemicals, fertilizers and nitrogen compounds, plastics and synthetic rubber in primary forms industry.

SOLVAY'S ECOVADIS SCORE

	Units	2021	2020	2019
Environment	%	70	70	70
Labor and Human Rights	%	80	80	80
Ethics	%	70	70	70
Sustainable Procurement	%	80	80	80
Overall score	**%**	75	**75**	**75**

6.6. Corporate citizenship

GRI DISCLOSURES 3-3 413-1
MATERIALITY: HIGH
SDG 9 17

Value creation is now a collaborative effort, both within Solvay and between Solvay and our stakeholders. We build on this collaborative effort by facilitating employee participation in projects that serve society and by offering Solvay's expertise in the regions where we operate. Disclosure of Solvay's indirect economic impact is provided in this section.

6.6.1. Definitions

Our corporate citizenship is carried out through societal actions, which consist of volunteer activities developed by a site or Global Business Unit (GBU), or at the corporate level. These actions have a positive societal impact on at least one of the United Nations Sustainable Development Goals and are aligned with one of the following three pillars: science and innovation, education and sustainability.

6.6.2. Management approach

The Corporate Citizenship Steering Committee is composed of five members and chaired by Solvay's Chief Executive Officer. The Committee gathers three times a year, approves budgets and decides on projects costing €50,000 or more. The latter are all presented to the Committee by an internal sponsor, who is also the person who will follow up the project.

In 1923, Solvay created the Ernest Solvay Fund to honor the founder of the company, who died a year earlier. Today, the majority of Solvay's corporate philanthropy goes through the Ernest Solvay Fund, which is managed by the independent King Baudouin Foundation. Examples include the Solvay Prize and the Solvay Institutes, our partnership with the Ellen MacArthur Foundation and the Bertrand Piccard Alliance.

Business Programs for Social Needs are programs that generate business value through addressing social needs. These programs fall under the governance of the relevant GBU. Examples include the Sustainable Guar Initiative, managed by Novecare, and the Sustainable Vanilla Initiative, managed by Aroma.

The Site Director is accountable for developing and implementing each site's societal actions plan. This involves assembling a dedicated working group including the Site Director, HR Manager, Communication Manager, the local sustainability correspondent and employee representatives. Employee initiatives are encouraged and supported. An example of this are our Citizen Day actions. The event itself is organized and managed by the Corporate Citizenship committee, but implemented by the individual sites.

6.6.3. Indicators

Citizen Day 2021

Citizen Day gives Solvay employees around the world the opportunity to engage in actions with local communities. The event was created by our CEO, Ilham Kadri, in 2019 to reinforce our purpose - we bond people, ideas, and elements to reinvent progress - and encourage employees to act as one team for one planet.

Biodiversity was the theme of our Citizen Day in 2021. The event provided a unique opportunity for Solvay employees to reconnect, raise awareness on this topic and take actions to help strengthen biodiversity.

Employees involved in Citizen Day 2021 actions reported the following outcomes:

- 14,770 participations
- 523 actions
- 121 participating sites
- 20,000 Euros raised and donated to biodiversity-related NGOs

A diverse number of actions were organized as part of the event, from bird shelter building workshops to large conferences with talks from scientists. It was also a great opportunity to present successful nature restoration projects. All organized events were recorded, creating a useful database for future projects.

6.6.4. Major projects

Covid-19 actions and contributions

Solvay's various businesses around the globe have supported local communities and healthcare workers during the Covid-19 pandemic. We partnered with customers to provide much-needed face shields, ventilators and other emergency supplies to help heroic healthcare and other workers on the front line in the fight against the virus. Solvay also donated hydrogen peroxide and hand sanitizers to hospitals and pharmacies, and provided support to local nonprofits and community organizations caring for the most vulnerable populations impacted by the pandemic.

The Chemistry for the Future Solvay Prize

The Chemistry for the Future Solvay Prize recognizes major scientific discoveries with the potential to shape chemistry in the future and advance human progress. Created in 2013, this prize perpetuates Ernest Solvay's lifelong support of, and passion for, scientific research. Our objective is to endorse key research and highlight the essential role of chemistry, both as a science and an industry, in helping to solve some of the world's most pressing issues.

The 2022 Science for the Future Solvay Prize has been awarded to Katalin Karikó, Adjunct Professor at the University of Pennsylvania, in the US, and Professor at the University of Szeged, in Hungary, for her work on the biochemical modification of synthetically produced messenger RNA (mRNA), which has enabled the rapid development of vaccines. Her research was most notably used by Pfizer/BioNTech and Moderna to build Covid-19 mRNA vaccines, which have saved many lives. It could also help fight other diseases like cancer, infection from influenza, malaria or HIV in the future. Professor Karikó has dedicated her 40-year career to using RNA as a therapeutic, with chemistry as a key element to modify the mRNA to avoid the risk of rejection by the immune system.

The XperiLAB.be project

The XperiLAB.be project exists to increase awareness of science among young people, using a personal, hands-on approach. XperiLAB.be is also an opportunity to give pupils and teaching staff the tools that they often lack in class. It is designed for children in the last two years of primary school and the first two years of secondary school. Every year about 10,000 pupils attend sessions in the XperiLab.

Ellen MacArthur Foundation

In January 2018, Solvay and the Ellen MacArthur Foundation signed a three-year Global Partner agreement that gives the Group an opportunity to make a difference in accelerating the transition to a circular economy in the chemicals sector.

Sustainable Guar Initiative

Solvay is the world's leading producer of guar derivatives. Guar is a drought-resistant legume grown in semi-arid areas, predominantly in India. Rajasthan accounts for approximately 70% of the country's production.

Since 2015, Solvay has been spearheading a large-scale development initiative to make guar cultivation more sustainable, while boosting the incomes of the farmers who produce it. In collaboration with L'Oreal and Henkel, two of our strategic customers active in personal care, and with the support of the NGO TechnoServe, more than 7,000 farmers in Bikaner were trained over four years, and more than 971 kitchen gardens were developed in 36 villages.

The initiative's primary objective is to encourage sustainable and climate-smart agriculture, thereby increasing farmers' revenues through good guar cultivation practices for seed selection, seed treatment, sowing and pest management. The initiative also empowers women through specific training on hygiene, health, and nutrition, which enables us to:

- Encourage better nutritional practices by growing vegetables in kitchen gardens in a region where the traditional diet is very limited.
- Improve health and hygiene practices for the women themselves and their children.

The initiative also focuses on agroforestry, with more than 66,000 trees planted to fight sand movement and soil erosion in the fields. In addition to this, trees are planted in communities and technical advice is provided, making 12 different types of fruit available to these communities.

As water is a rare resource in Rajasthan, a village pond with a capacity of 15.89 million liters was created, helping 150 households to have increased access to drinking water. Rooftop rainwater harvesting systems were also installed, collecting 8,000 liters of water used for the kitchen gardens.

The Solvay Solidarity Fund has also donated €100,000 to help address Indian guar farmers' urgent economic and sanitary needs resulting from the Covid-19 crisis. Guar farmers have seen a drop in their income because of severe restrictions on movement. They have also been affected by poor monsoon conditions, which have reduced guar yields. The donation will help the farmers meet their urgent needs, through the distribution of sanitary kits and agricultural inputs, while also helping them to become more resilient in the future, by building lake ponds, for instance.

The result of this initiative is that guar farmers can earn a better living, global buyers can obtain higher quality guar and the market can benefit from improved supply security.

6.7. Hazardous materials

GRI DISCLOSURES 2-23 3-3 403-7 416-1
MATERIALITY: HIGH
SDG 3 6 12 13 14

6.7.1. Definitions

Product stewardship means managing risks throughout a product's entire life cycle, from the design stage to end of life. Risks include the possibility of injury or impact on health for a third party or damage to third party property arising from the misuse of Solvay products in a customer's plant or use in an application for which the product is not designed. Risk management is particularly important for products used in healthcare, food and feed applications.

6.7.2. Management approach

Solvay's Responsible Care policy requires the Group to:

- Maintain a comprehensive understanding of each product's hazards, risks and impacts related to all life-cycle steps and intended applications.
- Manage product knowledge so as to comply with local requirements on product information, while ensuring worldwide consistency.
- Keep records of all necessary and required product safety information to ensure availability throughout the full life cycle, beyond the commercialization period.
- Send standardized product safety data sheets to customers along with the first delivery and when required by local regulations. This key information is consistently maintained and distributed worldwide for all products to all customers, in compliance with local regulations and in the local languages.

In line with our Responsible Care commitment, we are constantly improving our knowledge of how Solvay products are used and the associated risks. The extensive knowledge this represents allows Solvay to characterize and manage risks related to product handling and to prioritize mitigation actions related to potential inappropriate use. The management of Safety Data Sheets reflects this commitment to ensuring the information on hazards associated with our products is readily available to our employees and customers.

Solvay ensures that our product portfolio complies with all the relevant regional and national chemicals regulations such as REACH (Registration, Evaluation, Authorization and Restriction of Chemical Substances) in the European Union, UK REACH in the United Kingdom, K-REACH in South Korea, KKDIK in Turkey and TSCA in the US.

In addition, Solvay has a strategy to decrease the use of Substances of Very High Concern (SVHC) in marketed products and more broadly throughout the entire value chain. We focus on the SVHC on the EU REACH authorization list (annex XIV) and EU REACH candidate list, but we also go beyond this, following an internal process in our operations worldwide. Specifically, we have set up our own reference list of SVHCs, the Solvay-SVHC and Substance Requiring Attention (SRA). This was established in 2015 and includes three categories:

- Black list Solvay-SVHCs: already undergoing a regulatory phasing out process with a known deadline in at least one country or zone, or a restriction for Solvay relevant uses.
- Red list Solvay-SVHCs: currently included in regulatory lists of substances that could enter into a process of special authorization or restriction in the medium term.
- Yellow list S-SRAs: substances requiring specific attention, such as substances under scrutiny by authorities, NGOs, scientists and industries due to their known hazardous properties or potential effects.

Risk studies and Analysis of Safer Alternatives (ASA) for red and black Solvay-SVHCs placed on the market are underway, and substances are replaced with safer alternatives where feasible.

New Analysis of Safer Alternatives (ASA) covering newly identified listed SVHC are performed within three years. All current Analysis of Safer Alternatives shall be reviewed every three years.

6.7.3. Indicators

SAFETY DATA SHEETS

Solvay currently places over 15,000 products on the market and produces safety data sheets (SDS) in 41 languages and specific SDS for 65 countries. Product Stewardship programs give adequate information and technical assistance to customers, ensuring a good understanding of products and how to safely use and handle them. Each of our Global Business Units (GBUs) are responsible for ensuring that SDS are revised at least once every three years, or every time a substance undergoes significant modifications. Solvay manages product information centrally and as legislation continues to evolve, the Group learns more about the conditions under which products are used so as to record and assess any associated risks.

To make sure that customers are receiving new and updated Safety Data Sheets, and to limit the quantity of paper printed, Solvay uses an automatic system to send SDS by email. In 2021, this automated shipping function was activated for 94.6% of Solvay sales, and the roll-out will continue in 2022. This automatic delivery of the SDS was successful for 83% of shipments, where SDS were available for the delivery country and the customer's email address was also available). When errors occurred, SDS were emailed manually.

PRODUCTS REGISTRATION

REACH is an advanced European framework regulation requiring companies to have detailed knowledge of substances, their hazards and risks during use. This knowledge must be collected and organized into reliable and systematic safety information that includes all uses and risks incurred along the value chain. Solvay fully complies with the extensive REACH requirements for product registrations. We registered 744 dossiers and are the lead or sole registrant for 263 substances. In accordance with the Cefic Action Plan program, we are also dedicated to improving the quality of REACH dossiers.

Regular updates of dossiers are performed according to REACH obligations, either as new information becomes available or at the request of the European Chemical Agency (ECHA). In total, we have carried out 621 REACH updates on dossiers, with 91 in 2018, 152 in 2019, 142 in 2020 and 236 in 2021**.**

Based on the knowledge we have gathered through REACH on our products and associated risks, Solvay has updated the classification of all products based on the new Global Harmonized System.

In addition, Solvay continues to adapt to new product regulations in many countries, notably to cope with emerging, REACH-like regulations in non-European countries. More specifically we have:

- registered 13 dossiers in 2019 and 23 in 2021 in the framework of Korean REACH;
- reported 545 substances or polymers to be registered in the framework of KKDIK Reach Turkey, including 66 potential lead dossiers;
- reported 5,216 substances in the framework of "existing chemicals" in the Eurasian inventory;
- reported 275 substances in the framework of the National Chemical Inventory (NCI) of Vietnam;
- submitted 8 substances in the framework of the new Chinese MEE order N°12.

For UK REACH, Solvay successfully completed 136 grandfathering registrations and 1569 Downstream User Import Notifications ('DUIN') within the relevant regulatory deadlines.

SAFER ALTERNATIVES FOR MARKETED PRODUCTS: SVHC according to the EU REACH legislation

Solvay is closely monitoring the SVHC according to the EU REACH Candidate list and EU REACH Authorization list (annex XIV) by identifying all Marketed products containing a concentration above 0.1% of those substances,sold not only in the EU but Worldwide.

	Units	2021	2020	2019
SVHCs EU REACH Candidate list (1) present in Marketed products above 0.1% on a worldwide scope	Number	37	40	29
Analysis of safer alternatives required (2)	Number	62		
Of which completed	%	58		
Of which effective replacement achieved	%	29		

(1) According to the EU REACH authorization list (annex XIV) and EU REACH Candidate list. SVHCs manufactured by, or forming part of, the composition of products sold by Solvay worldwide. REACH is a European Union Regulation, adopted to improve the protection of human health and the environment against the risks that can be posed by chemicals.

(2) Analysis of Safer Alternatives for potential substitution for an SVHC. A substance may be present in more than one product.

Analysis of safer alternatives is required and planned for a total of 62 combinations of products and applications. Of the 35 analyses of safer alternatives completed as of December 31, 2021, since the start of the program:

- 10 have led to effective replacement, either through SVHC substitution or reduction below required threshold, or through stopping production.
- 17 are ongoing, meaning that an alternative has been identified and discussed with customers for implementation.
- 8 have resulted in no available alternatives, either because no substitute is available, there are regulatory obligations to use SVHC for some applications, or because an alternative has not been requested due to the application in the final product.

The 37 substances identified from the EU REACH Candidate list and EU REACH Authorization list (annex XIV) , present in sold products above 0.1% on a worldwide scope, are the following:

Substance	CAS Number
1,2-Ethanediamine	107-15-3
2,2-bis(bromomethyl)propane-1,3-diol	3296-90-0
2-Ethoxyethanol	110-80-5
2-Methoxyethanol	109-86-4
2-Methylimidazole	693-98-1
4,4'-Methylenedianiline	101-77-9
5-Methylhexahydrophthalic anhydride	19438-60-9
Acrylamide	79-06-1
Benz[a]anthracene	56-55-3
Benzo α pyrene	50-32-8
Bis(2-methoxyethyl) ether	111-96-6
Chromic acid strontium salt	7789-06-2
Chrysene	218-01-9
Decamethylcyclopentasiloxane	541-02-6
Dicyclohexyl phthalate	84-61-7
Dioxane	123-91-1
Ethanol, 2-[2-[2-[2-(4-nonylphenoxy)ethoxy]ethoxy]ethoxy]-	7311-27-5
Ethoxylated nonylphenol (various grades of EO)	68412-54-4
Ethoxylated octylphenol (9 EO)	9002-93-1
Fluoranthene	206-44-0
Methoxyacetic acid	625-45-6
N, N-Dimethylacetamide	127-19-5
N,N-Dimethylformamide	68-12-2
N-Methylpyrrolidone	872-50-4
Nonylphenol Ethoxylate 6 mol	34166-38-6
Nonylphenol, ethoxylated (various grades of EO)	9016-45-9
Octamethylcyclotetrasiloxane	556-67-2
Octylphenol ethoxylated (various grades of EO)	68987-90-6
Phenanthrene	85-01-8
Phenol, 4,4'-(1-methylethylidene)bis-	80-05-7
Phenol, 4-nonyl-, branched	84852-15-3
Poly(oxy-1,2-ethanediyl), .alpha.-(isononylphenyl)-.omega.-hydroxy-	37205-87-1
Poly(oxy-1,2-ethanediyl), .alpha.-[(1,1,3,3-tetramethylbutyl)phenyl]-.omega.-hydroxy	9036-19-5
Poly(oxy-1,2-ethanediyl), α-(4-nonylphenyl)-α-hydroxy-, branched	127087-87-0
Pyrene	129-00-0
Refractory brick	142844-00-6
Tris (nonylphenyl) phosphite	26523-78-4

Safer alternatives for marketed products: beyond legislative requirements

We go beyond what is required by regulation, screening our own broader internal reference list of substances of Very High Concern (Solvay-SVHCs, as described above) for our products marketed worldwide. Solvay has a target to phase out all substances of very high concern present in marketed products at a quantity of more than 0.1% by 2030, whenever feasible.

	Units	2021	2020	2019
All Solvay-SVHCs[1] present in Marketed products above 0.1% on a worldwide scope	Number	133	97	78
Analysis of safer alternatives required [2]	Number	152	130	117
Of which completed	%	45	51	54
Of which effective replacement achieved	%	30	31	30

(1) According to the black and red Solvay-SVHC lists. SVHCs manufactured by, or forming part of, the composition of products sold by Solvay worldwide.
(2) Analysis of Safer Alternatives for potential substitution for an SVHC. A substance may be present in more than one product.

Analysis of safer alternatives is required and planned for a total of 152 combinations of products and applications. Of the 69 analyses of safer alternatives completed as of December 31, 2021, since the start of the program:

- 22 have led to effective replacement, either through SVHC substitution or reduction below required threshold, or through stopping production.
  - Example: N,N-Dimethylformamide: product commercialization stopped
  - Example: N-Methylpyrrolidone: product replaced by an NMP-free product variant
- 24 are ongoing, meaning that an alternative has been identified and discussed with customers for implementation.
- 23 have resulted in no available alternatives, either because no substitute is available, there are regulatory obligations to use SVHC for some applications, or because an alternative has not been requested due to the application in the final product.

6.8. Critical incident risk management

GRI DISCLOSURE 2-27 3-3
MATERIALITY: HIGH
SDG 3 12 13

6.8.1. Definitions

The reporting of Process Safety Incidents is aligned with the globally harmonized metrics from the ICCA (International Council of Chemical Associations) and Cefic (European Chemical Industry Council). The Process Safety Incident rate (PSI rate) corresponds to the number of Process Safety Incidents per 100 Full Time Equivalent (including employees and contractors and assuming 2,000 working hours per worker, per year). This rate is monitored and enables benchmarking with peers.

Transport Safety Incidents are incidents occurring during the movement of a chemical product such as:

- loading or unloading at a Solvay site;
- circulating inside a Solvay site in a vehicle, on the way in or out of the site;
- Circulating on public roads, rail, air, inland waterways, or sea;
- Loading or unloading at an off-site location, if Solvay or a logistics provider contracted by Solvay is performing the loading or unloading.

6.8.2. Management approach

Process safety

Process Safety Management is a management system for designing and operating industrial processes that handle large quantities of hazardous chemicals. For preventing and controlling incidents in industrial processes, Solvay applies the Process Safety Management Principles on all industrial sites, regardless of whether or not the site is covered by regulatory requirements.

Key elements are:

- Completion of Process Hazard Analyses to identify high-risk situations. These are performed on each unit with a unique risk matrix to quantify the risk level of every potential accidental scenario, combining severity and probability factors.
- Activation of an Emergency Response Plan in case of severe incidents on site. Relevant internal and external parties are informed through the application of Solvay's crisis management procedure. If needed, the Corporate Crisis Cell (Crisis alert duty 24/7) is also activated.
- Systematic analysis of each incident as soon as possible, in order to identify root causes and implement preventive actions to avoid similar incidents in the future.

- Central reporting of Process Safety Incidents. The incident severity - medium, high or catastrophic - is assessed by applying internal criteria including consequences on-site or off-site, damage to the immediate vicinity and quantity of spilled material.
- Publication of Process Safety bulletins for the most significant incidents, distributed to all sites. These bulletins are used by the sites as support materials for safety talks to increase the process safety knowledge of employees.

Transport safety

The major goal of the Transport Safety Management system is a reduction in incidents that could lead to catastrophic consequences. The main elements are :

- regulatory watch and compliance with applicable transport regulations;
- training;
- selection process of Logistics Service Providers, based on hazard and risk assessment;
- operational management of day-to-day transport operations, including loading and unloading;
- emergency preparedness and response for level 1, level 2 and level 3;
- incident reporting and investigation;
- auditing.

6.8.3. Indicators

Process safety

Solvay's target is to avoid any high or catastrophic severity incidents and to reduce the Process Safety Incident rate.

	Units	2021	2020	2019
Process Safety Incident rate	per 100 FTE	0.9	0.9	0.9
Process Safety Incidents with high or catastrophic severity	Number	0	0	1

Number of Process Safety Incidents per 100 full time employees (employees and contractors, assuming 2,000 hours of work per worker per year).

	Units	2021	2020	2019
Process Safety Incidents with release to the environment	Number	30	26	34
of which with operating permit exceedance	Number	17	14	16
of which without permit exceedance	Number	13	12	18

This consolidated data covers all operational sites, including research and innovation centers with significant chemical process risks, but excluding mines, quarries and laboratories with lower risks.

No incidents with significant off-site environmental impact were reported in 2021. In 2021, 30 process incidents with release to the environment were reported and, among those, 17 generated reportable cases of having exceeded an operating permit limit. The reduced number of releases into the environment in 2020 is a consequence of the reduction in industrial activity caused by Covid-19.

Transport safety

All medium, high and catastrophic transport safety incidents must be reported in the corporate reporting tool, with a detailed description and classification. Root cause analysis, including actions to prevent recurrence and lessons learned bulletins are mandatory for all high severity and catastrophic incidents, and for medium severity incidents resulting in a fire or an explosion.

TRANSPORT SAFETY INCIDENTS:

	Units	2021
Medium severity	Number	7
High severity	Number	0
Catastrophic	Number	1

The main incident reported in 2021 was:

- Catastrophic: during a road pre-carriage operation prior to an air shipment, a truck driver had an accident while reversing on a parking lot at Mumbai airport, which resulted in the death of one person.

7. GRI CONTENT INDEX

7.1. Statement of use and GRI 1 used

Solvay has reported in accordance with the GRI Standards for the period January 1, 2021 to December 31, 2021.

GRI 1 used: GRI 1 Foundation 2021

Applicable GRI Sector Standards: not applicable

For the Content Index - Advanced Service, GRI Services reviewed that the GRI content index is clearly presented, in a manner consistent with the Standards, and that the references for all disclosures are included correctly and aligned with the appropriate sections in the body of the report.

The service was performed on the Online English version of the report.

GRI CONTENT INDEX ADVANCED SERVICE 2022

7.2. GRI 2: general disclosures 2021

THE ORGANIZATION AND ITS REPORTING PRACTICES

Disclosure	Location	Omission
2-1 Organizational details	Financial statements: Note F1 Revenue and segment information, page 213 Note F40 List of companies included in the consolidation scope, page 312	
2-2 Entities included in the organization's sustainability reporting	Extra-financial statements: 2.1. Reporting practices, page 145 Financial statements: Note F40 List of companies included in the consolidation scope, page 312	
2.3 Reporting period, frequency and contact point	Reporting period: from January 1, 2021 to December 31, 2021 Frequency: yearly and aligned on financial reporting Contact point: investor.relations@solvay.com Publication date: April 4, 2022	
2.4 Restatements of information	Financial Statements: Consolidated Financial Statements: Main events and changes in consolidation scope during the year, page 214 Extra-financial statements: 2.1. Reporting practices, page 145	
2-5 External assurance	Auditor's report for the extra-financial statements, page 324	

ACTIVITIES AND WORKERS

Disclosure	Location	Omission
2-6 Activities, value chain and other business relationships	Value chain, page 60 Performance: Underlying figures per segment, page 80	
2-7 Employees	Extra-financial statements: 2.1. Reporting practices Extra-financial statements: 6.4. Recruitment, development and retention, page 192	
2-8 Workers who are not employees	Extra-financial statements: 6.4. Recruitment, development and retention, page 192	

GOVERNANCE

Disclosure	Location	Omission
2-9 Governance structure and composition	Corporate Governance Statement: Board of Directors and Board Committees, page 94	
2-10 Nomination and selection of the highest governance body	Corporate Governance Statement: Board of directors and board committees, page 94 Charter of Corporate Governance https://www.solvay.com/en/investors/corporate-governance	
2-11 Chair of the highest governance body	Corporate Governance Statement: Board of directors and board committees, page 94	
2-12 Role of the highest governance body in overseeing the management of impacts	Charter of Corporate Governance https://www.solvay.com/en/investors/corporate-governance	
2-13 Delegation of responsibility for managing impacts	Corporate Governance Statement, page 88	
2-14 Role of the highest governance body in sustainability reporting	About this report, page 2 Declaration by the persons responsible, page339	
2-15 Conflicts of interest	Corporate Governance Statement: Functioning of the Board of Directors, page 100 Corporate Governance Statement: Introduction, page 91 Charter of Corporate Governance https://www.solvay.com/en/investors/corporate-governance	
2-16 Communication of critical concerns	Corporate Governance Statement: Functioning of the Board of Directors, page 100	
2-17 Collective knowledge of the highest governance body	Corporate Governance Statement: Induction and continuous Board training, page 101	
2-18 Evaluation of the performance of the highest governance body	Corporate Governance Statement: Evaluation, page 101	
2-19 Remuneration policies	Corporate Governance Statement: Remuneration report, page 107	
2-20 Process to determine remuneration	Corporate Governance Statement: Remuneration report, page 107	
2-21 Annual total compensation ratio	Corporate Governance Statement: Remuneration report, page 107	

STRATEGY, POLICIES AND PRACTICES

Disclosure	Location	Omission
2-22 Statement on sustainable development strategy	Presidents message, page 4	
2-23 Policy commitments	Extra-financial statements: 3.2. Management of the legal, ethics and regulatory framework, page 159 Extra-financial statements: 6.7. Hazardous materials, page 199	
2-24 Embedding policy commitments	Extra-financial statements: 6.8. Critical incident risk management, page 202 Extra-financial statements: 3.1 Solvay One Planet Guide, page 158	
2-25 Processes to remediate negative impacts	Extra-financial Statements: 6.1. Health, safety and environment management, page 183	
2-26 Mechanisms for seeking advice and raising concerns	Extra-financial statements: 3.2. Management of the legal, ethics and regulatory framework, page 159	
2-27 Compliance with laws and regulations	Extra-financial statements: 3.2. Management of the legal, ethics and regulatory framework, page 159 Extra-financial statements: 6.8. Critical incident risk management, page 202	
2-28 Membership associations	Extra-financial statements: 2.7. Membership of associations, page 156	

STAKEHOLDER ENGAGEMENT

Disclosure	Location	Omission
2-29 Approach to stakeholder engagement	Reinventing: Presidents message, page 156	
2-30 Collective bargaining agreements	Extra-financial statements: 6.2. Employee engagement and well-being, page 187	

7.3. GRI 3: material topics 2021

Disclosure	Location	Omission
3-1 Process to determine material topics	Extra-financial statements: 2.2. Materiality Analysis, page 146	
3-2 List of material topics	Extra-financial statements: 2.2. Materiality Analysis, page 146	

MANAGEMENT OF THE LEGAL, ETHICS AND REGULATORY FRAMEWORK (MATERIAL)

Source	Disclosure	Location	Omission
GRI 3: Material Topics 2021	3-3 Management of material topics	Extra-financial statements: 3.2. Management of the legal, ethics and regulatory framework, page 159	
GRI 205: Anti-corruption 2016	205-1 Operations assessed for risks related to corruption	Risk management: Compliance and Business Integrity, page 130	
GRI 205: Anti-corruption 2016	205-2 Communication and training about anti-corruption policies and procedures	Extra-financial statements: 3.2. Management of the legal, ethics and regulatory framework, page 159	
GRI 205: Anti-corruption 2016	205-3 Confirmed incidents of corruption and actions taken	Risk management: Litigation, page 138 Extra-financial statements: 3.2. Management of the legal, ethics and regulatory framework, page 159	
GRI 206: Anti-competitive behavior 2016	206-1 Legal actions for anti-competitive behavior, antitrust, and monopoly practices	Risk management: Litigation, page 138	
GRI 406: Non-discrimination 2016	406-1 Incidents of discrimination and corrective actions taken	Extra-financial statements: 3.2. Management of the legal, ethics and regulatory framework, page 159	
GRI 415: Public policy 2016	415-1 Political contributions	Extra-financial statements: 3.2. Management of the legal, ethics and regulatory framework, page 159	

GREENHOUSE GAS EMISSIONS (PRIORITY)

Source	Disclosure	Location	Omission
GRI 3: Material Topics 2021	3-3 Management of material topics	Extra-financial statements: 4.1. Greenhouse gas emissions, page 169	
GRI 305: Emissions 2016	305-1 Direct (scope 1) GHG emissions	Extra-financial statements: 4.1. Greenhouse gas emissions, page 169	
GRI 305: Emissions 2016	305-2 Energy indirect (scope 2) GHG emissions	Extra-financial statements: 4.1. Greenhouse gas emissions, page 169	
GRI 305: Emissions 2016	305-3 Other indirect (scope 3) GHG emissions	Extra-financial statements: 4.1. Greenhouse gas emissions, page 169	
GRI 305: Emissions 2016	305-4 GHG emissions intensity	Extra-financial statements: 4.1. Greenhouse gas emissions, page 169	
GRI 305: Emissions 2016	305-5 Reduction of GHG emissions	Extra-financial statements: 4.1. Greenhouse gas emissions, page 169	

ENERGY (PRIORITY)

Source	Disclosure	Location	Omission
GRI 3: Material Topics 2021	3-3 Management of material topics	Extra-financial statements: 4.2. Energy, page 172	
GRI 302: Energy 2016	302-1 Energy consumption within the organization	Extra-financial statements: 4.2. Energy , page 172	
GRI 302: Energy 2016	302-2 Energy consumption outside of the organization	Extra-financial statements: 4.2. Energy, page 172	
GRI 302: Energy 2016	302-3 Energy intensity	Extra-financial statements: 4.2. Energy, page 172	
GRI 302: Energy 2016	302-4 Reduction of energy consumption	Extra-financial statements: 4.2. Energy, page 172	

BIODIVERSITY (PRIORITY)

Source	Disclosure	Location	Omission
GRI 3: Material Topics 2021	3-3 Management of material topics	Extra-financial statements: 4.3. Biodiversity, page 173	
GRI 304: Biodiversity 2016	304-1 Operational sites owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas	Extra-financial statements: 4.3. Biodiversity, page 173	
GRI 304: Biodiversity 2016	304-2 Significant impacts of activities, products and services on biodiversity	Extra-financial statements: 4.3. Biodiversity, page 173	
GRI 304: Biodiversity 2016	304-3 Habitats protected or restored	Extra-financial statements: 4.3. Biodiversity, page 173	
GRI 304: Biodiversity 2016	304-4 IUCN Red List species and national conservation list species with habitats in areas affected by operations	Extra-financial statements: 4.3. Biodiversity, page 173	

PRODUCT DESIGN & LIFECYCLE MANAGEMENT (PRIORITY)

Source	Disclosure	Location	Omission
GRI 3: Material Topics 2021	3-3 Management of material topics	Extra-financial statements: 5.1. Product design and lifecycle management, page 175	
GRI 416: Customer health and safety 2016	416-1 Assessment of the health and safety impacts of product and service categories	Extra-financial statements: 5.1. Product design and life cycle management, page 175 Extra-financial statements: 5.5. Waste, page 182 Extra-financial statements: 6.7. Hazardous materials, page 199	
GRI 416: Customer health and safety 2016	416-2 Incidents of non-compliance concerning the health and safety impacts of products and services	Risk management: Environmental impacts and controversies, page 129	
Solvay	Products based on a circular sourcing	Extra-financial statements: 5.2. Circular Economy, page 178	

AIR QUALITY (MATERIAL)

Source	Disclosure	Location	Omission
GRI 3: Material Topics 2021	3-3 Management of material topics	Extra-financial statements: 5.3. Air quality, page 179	
GRI 305: Emissions 2016	Disclosure 305-6 Emissions of ozone-depleting substances (ODS)	Extra-financial statements: 5.3. Air quality, page 179	
GRI 305: Emissions 2016	305-7 Nitrogen oxides (NOx), sulfur oxides (SOx) and other significant air emissions	Extra-financial statements: 5.3. Air quality, page179	Requirement omitted: Hazardous air pollutants, Particulate matter Reason: Information unavailable / incomplete Explanation: sites report data according to national requirements; this does not allow consolidation. There is no internationally recognized reference list. We are working on a global list to report on and expect to be able to report in 2023

WATER AND WASTEWATER (PRIORITY)

Source	Disclosure	Location	Omission
GRI 3: Material Topics 2021	3-3 Management of material topics	Extra-financial statements: 5.4. Water and wastewater, page 180	
GRI 303: Water and effluents 2018	303-1 Interactions with water as a shared resource	Extra-financial statements: 5.4. Water and wastewater, page 180	
GRI 303: Water and effluents 2018	303-2 Management of water discharge-related impacts	Extra-financial statements: 5.4. Water and wastewater, page 180	
GRI 303: Water and effluents 2018	303-3 Water withdrawal	Extra-financial statements: 5.4. Water and wastewater , page 180	
GRI 303: Water and effluents 2018	303-4 Water discharge	Extra-financial statements: 5.4. Water and wastewater, page 180	
GRI 303: Water and effluents 2018	303-5 Water consumption	Extra-financial statements: 5.4. Water and wastewater, page 180	

WASTE (PRIORITY)

Source	Disclosure	Location	Omission
GRI 3: Material Topics 2021	3-3 Management of material topics	Extra-financial statements: 5.4. Waste, page 182	
GRI 306: Waste 2020	306-1 Waste generation and significant waste-related impacts	Extra-financial statements: 5.5. Waste, page 182	
GRI 306: Waste 2020	306-2 Management of significant waste-related impacts	Extra-financial statements: 5.5. Waste, page182	
GRI 306: Waste 2020	306-3 Waste generated	Extra-financial statements: 5.5. Waste, page 182	
GRI 306: Waste 2020	306-4 Waste diverted from disposal	Extra-financial statements: 5.5. Waste, page 182	
GRI 306: Waste 2020	306-5 Waste directed to disposal	Extra-financial statements: 5.5. Waste, page 182	

EMPLOYEE HEALTH AND SAFETY (PRIORITY)

Source	Disclosure	Location	Omission
GRI 3: Material Topics 2021	3-3 Management of material topics	Extra-financial statements: 6.1. Employee health and safety, page 183	
GRI 403: Occupational health and safety 2018	403-1 Occupational health and safety management system	Extra-financial statements: 6.1. Employee health and safety, page 183	
GRI 403: Occupational health and safety 2018	403-2 Hazard identification, risk assessment and incident investigation	Extra-financial statements: 6.1. Employee health and safety, page 183	
GRI 403: Occupational health and safety 2018	403-3 Occupational health services	Extra-financial statements: 6.1. Employee health and safety, page 183	
GRI 403: Occupational health and safety 2018	403-4 Worker participation, consultation and communication on occupational health and safety	Extra-financial statements: 6.1. Employee health and safety, page 183 Extra-financial statements: 6.2. Employee engagement and well-being, page 187	
GRI 403: Occupational health and safety 2018	403-5 Worker training on occupational health and safety	Extra-financial statements: 6.1. Employee health and safety, page 183	
GRI 403: Occupational health and safety 2018	403-6 Promotion of worker health	Extra-financial statements: 6.1. Employee health and safety, page 183	
GRI 403: Occupational health and safety 2018	403-7 Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	Extra-financial statements: 6.1. Employee health and safety, page 183	
GRI 403: Occupational health and safety 2018	403-8 Workers covered by an occupational health and safety management system	Extra-financial statements: 6.1. Employee health and safety, page 183	
GRI 403: Occupational health and safety 2018	403-9 Work-related injuries	Extra-financial statements: 6.1. Employee health and safety, page 183	
GRI 403: Occupational health and safety 2018	403-10 Work-related ill health	Extra-financial statements: 6.1. Employee health and safety, page 183	

EMPLOYEE ENGAGEMENT AND WELL-BEING (MATERIAL)

Source	Disclosure	Location	Omission
GRI 3: Material Topics 2021	3-3 Management of material topics	Extra-financial statements: 6.2. Employee engagement and well-being, page 187	
GRI 401: Employment 2016	401-2 Benefits provided to full-time employees that are not provided to temporary or part-time employees	Extra-financial statements: 6.2. Employee engagement and well-being, page 187 Extra-financial statements: 6.4. Recruitment, development and retention, page 187	
GRI 402: Labor/ Management Relations 2016	402-1 Minimum notice periods regarding operational changes		Not applicable: the minimum notice periods are based on local legislations and local collective agreements.
GRI 407: Freedom of association and collective bargaining 2016	407-1 Operations and suppliers in which the right to freedom of association and collective bargaining may be at risk	Extra-financial statements: 6.2. Employee engagement and well-being, page 187	

DIVERSITY AND INCLUSION (PRIORITY)

Source	Disclosure	Location	Omission
GRI 3: Material Topics 2021	3-3 Management of material topics	Extra-financial statements: 6.3. Diversity and inclusion, page 189	
GRI 405: Diversity and equal opportunity 2016	405-1 Diversity of governance bodies and employees	Extra-financial statements: 6.3. Diversity and inclusion, page 189	
GRI 405: Diversity and equal opportunity 2016	405-2 Ratio of basic salary and remuneration of women to men	Extra-financial statements: 6.3. Diversity and inclusion, page 189	

CUSTOMER WELFARE (MATERIAL)

Source	Disclosure	Location	Omission
GRI 3: Material Topics 2021	3-3 Management of material topics	Extra-financial statements: 6.5. Customer welfare, page 195	
Net Promoter System	Net Promoter Score	Extra-financial statements: 6.5. Customer welfare, page 195	

CORPORATE CITIZENSHIP (MATERIAL)

Source	Disclosure	Location	Omission
GRI 3: Material Topics 2021	3-3 Management of material topics	Extra-financial statements: 6.6. Corporate citizenship, page 197	
GRI 413: Local communities 2016	413-1 Operations with local community engagement, impact assessments and development programs	Extra-financial statements: 6.6. Corporate citizenship, page 197	
GRI 413: Local communities 2016	413-2 Operations with significant actual and potential negative impacts on local communities	Risk management: Environmental impacts and controversies, page 129	

HAZARDOUS MATERIALS (MATERIAL)

Source	Disclosure	Location	Omission
GRI 3: Material Topics 2021	3-3 Management of material topics	Extra-financial statements: 6.7. Hazardous materials, page 199	
GRI 403: Occupational health and safety 2018	403-7 Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	Extra-financial statements: 6.7. Hazardous materials, page 199 Extra-financial statements: 6.1. Employee health and safety, page 183	
Solvay	Safer alternatives for marketed products	Extra-financial statements: 6.7. Hazardous materials, page 199	

CRITICAL INCIDENT RISK MANAGEMENT (MATERIAL)

Source	Disclosure	Location	Omission
GRI 3: Material Topics 2021	3-3 Management of material topics	Extra-financial statements: 6.8. Critical incident risk management, page 202	

7.4. Additional disclosures included in this report

RECRUITMENT, DEVELOPMENT AND RETENTION

Source	Disclosure	Location	Omission
GRI 3: Material Topics 2021	3-3 Management of material topics	Extra-financial statements: 6.4. Recruitment, development and retention, page 192	
GRI 401: Employment 2016	401-1 New employee hires and employee turnover	Extra-financial statements: 6.4. Recruitment, development and retention, page 192	
GRI 401: Employment 2016	401-2 Benefits provided to full-time employees that are not provided to temporary or part- time employees	Extra-financial statements: 6.4. Recruitment, development and retention, page 192	
GRI 404: Training and education 2016	404-1 Average hours of training per year per employee	Extra-financial statements: 6.4. Recruitment, development and retention, page 192	
GRI 404: Training and education 2016	404-2 Programs for upgrading employee skills and transition assistance programs	Extra-financial statements: 6.4. Recruitment, development and retention, page 192	
GRI 404: Training and education 2016	404-3 Percentage of employees receiving regular performance and career development reviews	Extra-financial statements: 6.4. Recruitment, development and retention, page 192	

SUPPLY CHAIN AND PROCUREMENT

Source	Disclosure	Location	Omission
GRI 3: Material Topics 2021	3-3 Management of material topics	Extra-financial statements: 3.5. Supply chain and procurement, page 167	
GRI 308: Supplier Environmental Assessment 2016	308-1 New suppliers that were screened using environmental criteria	Extra-financial statements: 3.5. Supply chain and procurement, page 167	
GRI 308: Supplier Environmental Assessment 2016	308-2 Negative environmental impacts in the supply chain and actions taken	Extra-financial statements: 3.5. Supply chain and procurement, page 167	
GRI 407: Freedom of Association and Collective Bargaining 2016	407-1 Operations and suppliers in which the right to freedom of association and collective bargaining may be at risk	Extra-financial statements: 3.5. Supply chain and procurement, page 167	
GRI 414: Supplier social assessment 2016	414-1 New suppliers that were screened using social criteria	Extra-financial statements: 3.5. Supply chain and procurement, page 167	

Financial Statements

FINANCIAL STATEMENTS

Financial statements

1. CONSOLIDATED FINANCIAL STATEMENTS

Solvay (the "Company") is a public limited liability company governed by Belgian law and quoted on Euronext Brussels and Euronext Paris. The principal activities of the Company, its subsidiaries, joint operations, joint ventures and associates (jointly the "Group") are described in note F1 on *revenue and segment information*.

On February 22, 2022, the Board of Directors authorized the consolidated financial statements for issuance. They have been prepared in accordance with IFRS accounting policies as endorsed by the European Union, as disclosed hereafter.

MAIN EVENTS AND CHANGES IN THE CONSOLIDATION SCOPE

On January 18, 2021, Solvay sent a Call Option Notice to the European Bank for Reconstruction and Development (EBRD) to purchase the EBRD shares in the Solvay holding of the Rusvinyl Joint Venture. The option price of € 52 million for the call option held by Solvay was equal to the option price for the put option held by the EBRD, which was booked as an Other current liability at the end of 2020. The option price was paid in Q1, 2021, thus settling the liability for the same amount.

In 2021, additional voluntary contributions of € 102 million and € 134 million were made to the Belgian and UK pension plans respectively. In 2020, additional voluntary contributions of approximately € 380 million, € 80 million and € 95 million were made to the French, US and German pension plans respectively.

In January 2021, Solvay launched a new chapter of its strategic transformation aimed to further align its structure to its G.R.O.W. strategy. This builds on previous plans announced in 2020, and represents a profound simplification of all support functions to serve the business more effectively. The plan will lead to an additional net reduction of approximately 500 roles by the end of 2022 and annual cost savings of € 75 million. As a consequence of the new restructuring plan, a restructuring provision of around € 150 million was recognized in Q1 2021.

On November 29, 2021, Solvay closed its tender offer of the buyback operation related to its € 750 million senior bonds at 1.65% due in 2022 (ISIN:BE6282459609) accepting for purchase in cash all the validly tendered bonds in an aggregate principal amount of € 373 million. See note F33 Net Indebtedness for additional information.

Portfolio management

During 2021, the assets and liabilities related to the following businesses previously classified as "held for sale" were divested:
- the Peroxides sodium chlorate business line and related assets in Povoa (Portugal),
- the various fluorine chemicals assets in Onsan, South Korea, part of Special Chem,
- the Peroxides sodium percarbonate business line and related assets in Bad Hönningen (Germany),
- the Barium Strontium business and the joint venture with Chemical Products Corporation (CPC),
- the Process Materials business (part of Composite Materials),
- the Novecare amphoterics surfactants activities, and
- the Novecare surfactants and anti-oxidants business in Rasal (India).

These divestments lead to a decrease in sales of € 220 million in 2021 compared to 2020. There was no material capital gain/loss on these divestments.

On January 31, 2020, Solvay announced it had formally completed the divestment of its Performance Polyamides activities to BASF and DOMO Chemicals. The transaction is based on an enterprise value of € 1.6 billion and the selling proceeds net of costs of disposals on the combined transaction were € 1.3 billion (selling proceeds of € 1.5 billion received on January 31, 2020). The capital gain after taxes was € 140 million after the agreement on the final purchase price with DOMO Chemicals, finalized in Q4 2020 and the final agreement with BASF reached in 2021 without significant changes, but not yet settled.

On November 5, 2020, Solvay and Composites One LLC, entered into an exclusive negotiation period for the acquisition of Solvay's Process Materials (PM) business by Composites One. This business line had sales of approximately € 80 million in 2020 and operated 6 production sites in the US, France, Italy and the United Kingdom. The transaction was completed in Q1 2021.

On November 23, 2020, Solvay reached an agreement with Latour Capital to sell its technical-grade barium and strontium business in Germany, Spain and Mexico as well as its sodium percarbonate business in Germany. Solvay's barium and strontium business includes a joint venture with Chemical Products Corporation (CPC), which is part of the transaction. The transaction was completed in Q1 2021.

On December 22, 2020, Solvay signed an agreement to sell its North American and European amphoteric surfactant business to OpenGate Capital, a private equity firm with headquarters in Los Angeles, California (USA). The sale includes three production sites supporting the amphoteric product lines located in University Park, Illinois (USA), Genthin (Germany), Halifax (United Kingdom), and a tolling business in Turkey. The agreement also includes tolling and service agreements between Solvay and OpenGate to ensure a seamless transition and minimal customer disruption. The Group closed the sale in Q2 2021.

On July 1 2021, Solvay announced the closing of the acquisition, from Bayer, of a seed coating business, with facilities in Méréville, France, and tolling operations in the U.S. and Brazil. This is a natural extension to Solvay's own AgRHO® family of sustainable seed boosting solutions (part of Novecare) and supports the drive toward more bio-based, sustainable technologies.

COVID-19 impact

The total net impact of COVID-19 on the full year 2021 EBITDA was not considered to be material to the Group (€ (434) million EBITDA impact in 2020) as the short-term mitigation actions related to labor costs (including furloughs) and indirect spend were substantially completed at December 31, 2020. COVID-19 triggered some impacts and actions in 2020 that have been described in Note F24 Impairment. The Group will continue to monitor any future evolution of the sanitary crisis.

CONSOLIDATED INCOME STATEMENT

In € million	Notes	2021	2020
Sales	*(F1)*	**11,434**	**9,714**
of which revenue from non-core activities	*(F3)*	1,330	749
of which net sales		10,105	8,965
Cost of goods sold		-8,508	-7,207
Gross margin		**2,926**	**2,507**
Commercial costs		-287	-312
Administrative costs		-946	-900
Research and development costs		-325	-300
Other operating gains and (losses)	*(F4)*	-80	-149
Earnings from associates and joint ventures	*(F23)*	158	58
Results from portfolio management and major restructuring	*(F5)*	-133	-1,549
Results from legacy remediation and major litigations	*(F5)*	-123	-20
EBIT		**1,190**	**-665**
Cost of borrowings	*(F6)*	-107	-114
Interest on loans and short term deposits	*(F6)*	9	8
Other gains and (losses) on net indebtedness	*(F6)*	-4	-8
Cost of discounting provisions	*(F6)*	1	-68
Result from equity instruments measured at fair value		6	3
Profit/(loss) for the year before taxes		**1,094**	**-844**
Income taxes	*(F7)*	-110	-248
Profit/(loss) for the year from continuing operations		**985**	**-1,092**
Profit for the year from discontinued operations	*(F8)*	5	163
Profit/(loss) for the year		**989**	**-929**
attributable to:			
- Solvay share		948	-962
- non-controlling interests		41	33
Basic earnings per share from continuing operations (€)		9.11	-10.90
Basic earnings per share from discontinued operations (€)		0.04	1.58
Basic earnings per share (€)	*(F9)*	9.15	-9.32
Diluted earnings per share from continuing operations (€)		9.09	-10.90
Diluted earnings per share from discontinued operations (€)		0.04	1.58
Diluted earnings per share (€)	*(F9)*	9.13	-9.32

CONSOLIDATED STATEMENT OF COMPREHENSIVE INCOME

In € million	Notes	2021	2020
Profit/(loss) for the year		**989**	**-929**
Other comprehensive income			
Gains and losses on hedging instruments in a cash flow hedge	*(F10)*	-16	44
Currency translation differences - Subsidiaries and joint operations	*(F10)*	487	-605
Share of other comprehensive income of associates and joint ventures	*(F10)*	30	-99
Recyclable components		**500**	**-660**
Gains and losses on equity instruments measured at fair value through other comprehensive income	*(F10)*	33	2
Remeasurements of the net defined benefit liability	*(F10)*	562	-174
Share of other comprehensive income of associates and joint ventures	*(F10)*	0	-1
Non-recyclable components		**594**	**-174**
Income tax relating to recyclable and non-recyclable components	*(F10)*	-78	-3
Other comprehensive income/(loss), net of related tax effects	***(F10)***	**1,017**	**-837**
Comprehensive income/(loss) for the year		**2,006**	**-1,766**
attributable to:			
- Solvay share		1,956	-1,793
- non-controlling interests		50	27

CONSOLIDATED STATEMENT OF CASH FLOWS

The amounts below include both continuing and discontinued operations.

In € million	Notes	2021	2020
Profit/(loss) for the year		**989**	**-929**
Adjustments to profit / (loss) for the year			
- Depreciation, amortization and impairments	*(F11)*	849	2,416
- Earnings from associates and joint ventures	*(F23)*	-158	-58
- Other non-operating and non-cash items	*(F12)*	-113	-294
- Additions and reversals of provisions	*(F15)*	464	186
- Net financial charges		94	182
- Income tax expense/income	*(F13)*	110	444
Changes in working capital	*(F14)*	-92	249
Use of provisions	*(F15)*	-303	-331
Use of provisions for additional voluntary contributions (pension plans)	*(F15)*	-236	-552
Dividends received from associates and joint ventures	*(F23)*	129	25
Income taxes paid (excluding income taxes paid on sale of investments)	*(F13)*	-233	-97
Cash flow from operating activities		**1,499**	**1,242**
of which cash flow related to internal portfolio management and excluded from Free Cash Flow		-7	0
Acquisition (-) of subsidiaries	*(F16)*	-22	-12
Acquisition (-) of investments - Other	*(F16)*	-22	-46
Loans to associates and non-consolidated companies		4	-6
Sale (+) of subsidiaries and investments	*(F16)*	169	1,297
Acquisition (-) of property, plant and equipment	*(F16)*	-561	-454
of which capital expenditures required by share sale agreement and excluded from Free Cash Flow		0	-14
Acquisition (-) of intangible assets	*(F16)*	-75	-81
Sale (+) of property, plant and equipment and intangible assets	*(F16)*	30	8
of which cash flow related to the sale of real estate in the context of restructuring/dismantling/ remediation		*15*	*0*
Dividends from equity instruments measured at fair value through other comprehensive income		5	4
Changes in non-current financial assets		2	2
Cash flow from investing activities		**-470**	**711**
Proceeds from perpetual hybrid bonds issuance	*(F28)*	0	493
Redemption of perpetual hybrid bonds	*(F28)*	0	-499
Acquisition (-) / sale (+) of treasury shares	*(F30)*	42	-19
Increase in borrowings	*(F33)*	248	557
Repayment of borrowings	*(F33)*	-614	-1,368
Changes in other financial assets	*(F33)*	-130	-5
Payment of lease liabilities	*(F33)*	-99	-108
Net interests paid		-95	-103
Coupons paid on perpetual hybrid bonds	*(F28)*	-75	-119
Dividends paid		-431	-419
Other	*(F17)*	50	-101
Cash flow from financing activities		**-1,104**	**-1,692**
of which increase/decrease of borrowings related to environmental remediation		0	6
Net change in cash and cash equivalents		**-76**	**261**
Currency translation differences		7	-61
Opening cash balance		1,009	809
Closing cash balance	*(F33)*	941	1,009
of which cash in assets held for sale		0	7

CONSOLIDATED CASH FLOWS FROM DISCONTINUED OPERATIONS

In € million	2021	2020
Cash flow from operating activities	-12	10
Cash flow from investing activities	0	-34
Cash flow from financing activities	0	6
Net change in cash and cash equivalents	**-12**	**-17**

See Note F18 Cash flow from Discontinued Operations

CONSOLIDATED STATEMENT OF FINANCIAL POSITION

In € million	Notes	December 31, 2021	December 31, 2020
Assets			
Intangible assets	(F19)	2,103	2,141
Goodwill	(F20, F24)	3,379	3,265
Property, plant and equipment	(F21)	4,943	4,717
Right-of-use assets	(F22)	466	405
Equity instruments measured at fair value	(F32)	114	66
Investments in associates and joint ventures	(F23)	637	495
Other investments		42	42
Deferred tax assets	(F7)	779	788
Loans and other assets	(F32)	724	390
Other financial instruments	(F33)	30	0
Non-current assets		**13,216**	**12,308**
Inventories	(F25)	1,745	1,241
Trade receivables	(F32)	1,805	1,264
Income tax receivables		109	109
Other financial instruments	(F33)	229	119
Other receivables	(F26)	2,004	519
Cash and cash equivalents	(F33)	941	1,002
Assets held for sale	(F27)	0	229
Current assets		**6,833**	**4,484**
Total assets		**20,049**	**16,792**
Equity & liabilities			
Share capital	(F28)	1,588	1,588
Share premiums		1,170	1,170
Other reserves		5,982	4,439
Non-controlling interests	(F29)	112	106
Total equity		**8,851**	**7,304**
Provisions for employee benefits	(F31)	1,574	2,209
Other provisions	(F31)	724	689
Deferred tax liabilities	(F7)	462	487
Financial debt	(F33)	2,576	3,233
Other liabilities		331	95
Non-current liabilities		**5,666**	**6,713**
Other provisions	(F31)	302	190
Financial debt	(F33)	773	287
Trade payables	(F32)	2,131	1,197
Income tax payables		115	113
Dividends payables		160	159
Other liabilities	(F34)	2,051	720
Liabilities associated with assets held for sale	(F27)	0	110
Current liabilities		**5,531**	**2,775**
Total equity and liabilities		**20,049**	**16,792**

CONSOLIDATED STATEMENT OF CHANGES IN EQUITY

In € million	Notes	Equity attributable to equity holders of the parent			
		Share capital	Share premiums	Treasury shares	Perpetual hybrid bonds
December 31, 2019		**1,588**	**1,170**	**-274**	**1,789**
Profit/(loss) for the year					
Items of other comprehensive income	*(F10)*				
Comprehensive income					
Proceed from perpetual hybrid bonds	*(F28)*				*494*
Redemption of perpetual hybrid bonds	*(F28)*				-497
Cost of stock options					
Dividends					
Coupons of perpetual hybrid bonds					
Acquisition (-) / sale (+) of treasury shares				-12	
Other					
December 31, 2020		**1,588**	**1,170**	**-286**	**1,786**
Profit for the year					
Items of other comprehensive income	*(F10)*				
Comprehensive income					
Cost of stock options					
Dividends					
Coupons of perpetual hybrid bonds					
Acquisition (-) / sale (+) of treasury shares				54	
Other					
December 31, 2021		**1,588**	**1,170**	**-232**	**1,786**

Equity attributable to equity holders of the parent							
		Revaluation reserve (fair value)					
Retained earnings	Currency translation differences	Equity instruments measured at fair value through other comprehensive income	Cash flow hedges	Defined benefit pension plan	Total other reserves	Non-controlling interests	Total equity
6,462	**-454**	**10**	**-21**	**-756**	**6,757**	**111**	**9,625**
-962					**-962**	33	**-929**
	-699	1	35	-169	**-831**	-6	**-837**
-962	***-699***	***1***	***35***	***-169***	***-1,793***	***27***	***-1,766***
					494		**494**
-3					**-501**		**-501**
7					**7**	0	**7**
-387					**-387**	-31	**-417**
-119					**-119**		**-119**
-7					**-19**		**-19**
-6				5	**-1**	0	**-1**
4,985	**-1,153**	**12**	**14**	**-919**	**4,439**	**106**	**7,304**
948					**948**	41	**989**
	508	25	-11	486	**1,008**	9	**1,017**
948	***508***	***25***	***-11***	***486***	***1,956***	***50***	***2,006***
8					**8**		**8**
-389					**-389**	-43	**-432**
-75					**-75**		**-75**
-12					**42**		**42**
2	0	-14	0	12	**1**	-2	**-1**
5,467	**-645**	**23**	**3**	**-421**	**5,982**	**112**	**8,851**

2. NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

IFRS GENERAL ACCOUNTING POLICIES

1. Basis of preparation

This information was prepared in accordance with European Regulation (EC) 1606/2002 on the application of international accounting standards dated July 19, 2002. The Group's consolidated financial statements for the year ended December 31, 2021 were prepared in accordance with IFRS (International Financial Reporting Standards) as published by the International Accounting Standards Board (IASB), and endorsed by the European Union.

The accounting standards applied in the consolidated financial statements for the year ended December 31, 2021 are consistent with those used to prepare the consolidated financial statements for the year ended December 31, 2020. The Group has not early adopted any other standards, interpretations or amendments that have been issued but is not yet effective.

Standards, interpretations and amendments applicable for the first time in 2021

In August 2020, the IASB issued Interest Rate Benchmark Reform- Phase 2 (IBOR Reform) which amends IFRS 9 Financial Instruments, IAS 39 Financial Instruments: Recognition & Measurement, IFRS 7 Financial Instruments: Disclosure, IFRS 4 Insurance Contracts, and IFRS 16 Leases which is effective for periods commencing on or after January 1, 2021 and has been endorsed by the EU. The amendments enable entities to reflect the effects of transitioning from benchmark interest rates, such as interbank offer rates (IBORs) to alternative benchmark interest rates without giving rise to accounting impacts that would not provide useful information to users of financial statements.

During 2021, Solvay identified the main areas where the reform could have an impact and going forward will continue to monitor the market evolution resulting from the decisions taken by each of the relevant authorities of such benchmarks. The identification covers all financial instruments where a benchmark is referenced including loan and lease contracts for the purpose of calculating interest applicable to such financial instruments. As displayed in note F32.D, Financial Risk Management, the majority of the underlying debts are at fixed rates, which indicates the impact of IBOR Reform under the current understanding did not have more than an insignificant impact on the Group's consolidated financial statements.

In March 2021, the IASB issued an amendment to IFRS 16 Leases COVID-19 Related Rent Concessions beyond June 30, 2021, which was endorsed by the EU in August 2021 and was effective for annual periods starting on or after April 1, 2021. The amendment did not have more than an insignificant impact on the Group's consolidated financial statements.

In April 2021, the IFRS Interpretations Committee (IFRS IC) issued a final agenda decision on IAS 19 Employee Benefits, which included updates regarding the periods of service to which an entity attributes benefit for a particular defined benefit plan. The application of this agenda decision resulted in a decrease to the defined benefit obligation of € 8 million with the impact recorded in other comprehensive income. The Group is still assessing the impact of this agenda decision in the various local entities and these impacts will only be determined in future accounting periods when a globally consistent and locally supported methodology is reached.

In April 2021, the IFRS IC issued its second final agenda decision on IAS 38 Intangible Assets, which clarifies how a customer should account for the costs of configuring or customizing the supplier's application software in a Software as a Service (SaaS) arrangement that is determined to be a service contract. The application of the agenda decision did not have more than an insignificant impact on the Group's consolidated financial statements.

In addition to the standards, interpretations and amendments mentioned above, no other standards, interpretations, or amendments applicable for the first time in 2021 had more than an insignificant impact on the Group's consolidated financial statements.

Standards, interpretations and amendments applicable for the first time in 2022

Standards, interpretations, or amendments applicable for the first time in 2022 are not expected to have more than an insignificant impact on the Group's consolidated financial statements.

Standards, interpretations and amendments applicable for the first time after 2022

Standards, interpretations and amendments applicable for the first time after 2022 are not expected to have a more than insignificant impact on the Group's consolidated financial statements.

2. Basis of measurement and presentation

The consolidated financial statements are presented in millions of euros, which is also the functional currency of the parent company.

The preparation of the consolidated financial statements requires the use of estimates and assumptions that have an impact on the application of accounting policies and the measurement of amounts recognized in the consolidated financial statements. The areas for which the estimates and assumptions are material with respect to the consolidated financial statements are presented in the section Critical accounting judgments and key sources of estimation uncertainty.

3. Principles of consolidation

3.1. Consolidation scope

3.1.1. General

The consolidated financial statements incorporate the financial statements of the Company, and:

- entities controlled by the Company (including through its subsidiaries) and that hence qualify as subsidiaries (see 3.1.2. below);
- arrangements over which the Company (including through its subsidiaries) exercises joint control, and that qualify as joint operations (see 3.1.3. below);
- arrangements over which the Company (including through its subsidiaries) exercises joint control, and that qualify as joint ventures (see 3.1.4. below);
- entities over which the Company (including through its subsidiaries) has significant influence and that hence qualify as associates (see 3.1.4. below).

Where necessary, adjustments are made to the financial statements of the investees so as to align their accounting policies with those of the Group.

In accordance with the principle of materiality, certain companies, which are not of a significant size, have not been included in the consolidation scope. Companies are deemed not to be significant when, during two consecutive years, they do not exceed any of the three following thresholds in terms of their contribution to the Group's accounts:

- sales of € 30 million;
- total assets of € 15 million;
- headcount of 150 persons.

Companies that do not meet these criteria are, nevertheless, consolidated where the Group believes that they have a potential for rapid development, or where they hold shares in other companies that are consolidated based on the above criteria.

In the aggregate, the non-consolidated companies have an immaterial impact on the consolidated financial statements of the Group.

The full list of companies can be obtained at the Company's head office.

3.1.2. Investments in subsidiaries

A subsidiary is an entity over which the Group has control. Control is achieved when the Group has (a) power over an investee, (b) exposure, or rights, to variable returns from its involvement with the investee, and (c) the ability to use its power over the investee to affect the amount of the investor's returns. To assess whether the Group has control, potential voting rights are taken into account. Subsidiaries are fully consolidated. The results of subsidiaries acquired or disposed of during the year are included in the consolidated income statement from the effective date of acquisition and up to the effective date of disposal.

Intra-group transactions, balances, income and expenses are eliminated on consolidation.

Non-controlling interests in subsidiaries are presented separately from the Group's equity. Non-controlling interests are initially measured, either at fair value (full goodwill method), or at the non-controlling interests' proportionate share in the recognized amounts of the acquiree's identifiable net assets (proportionate goodwill method). The choice of measurement is made on an acquisition-by-acquisition basis. Subsequent to the acquisition, the carrying amount of non-controlling interests is the amount of those interests at initial recognition plus the non-controlling interests' share of subsequent changes in equity. Total comprehensive income is attributed to non-controlling interests even if this results in the non-controlling interests having a deficit balance.

Changes in the Group's equity interest in a subsidiary that do not result in a loss of control are accounted for as equity transactions. The carrying amounts of the Group's interests and the non-controlling interests are adjusted to reflect the changes in their relative interests in the subsidiary. Any difference between the amount by which the non-controlling interests are adjusted and the fair value of the consideration paid or received is recognized directly in equity.

When the Group loses control of a subsidiary, the profit or loss on disposal is calculated as the difference between (i) the aggregate of the fair value of the consideration received and the fair value of any retained interest, and (ii) the previous carrying amount of the assets (including goodwill) and liabilities of the subsidiary and any non-controlling interests. Amounts previously recognized in other comprehensive income in relation to the subsidiary are accounted for (i.e. Reclassified to profit or loss or transferred directly to retained earnings) in the same manner as would be required if the relevant assets or liabilities were disposed of. The fair value of any investment retained in the former subsidiary at the date when control is lost is considered to be the fair value on initial recognition for subsequent accounting in accordance with IFRS 9 Financial Instruments or, when applicable, the cost on initial recognition of an investment in an associate or joint venture in accordance with IAS 28 Investments in Associates and Joint Ventures.

3.1.3. Investments in joint operations

A joint operation is a joint arrangement whereby the parties that have joint control of the arrangement have rights to the assets, and obligations for the liabilities, relating to the arrangement. Joint control is the contractually agreed sharing of control of an arrangement, which exists only when decisions about relevant activities require the unanimous consent of the parties sharing control. In its consolidated financial statements, the Group recognizes its share of the joint operations' assets, liabilities, revenue and expenses, based on its ownership interest in the joint operations.

3.1.4. Investments in associates and joint ventures

An associate is an entity over which the Group has significant influence and that is neither a subsidiary, nor an interest in a joint arrangement. Significant influence is the power to participate in the financial and operating policy decisions of the investee but is not control or joint control over those policies.

A joint venture is a joint arrangement whereby the parties that have joint control of the arrangement have rights to the net assets of the arrangement. Joint control is the contractually agreed sharing of control of an arrangement, which exists only when decisions about relevant activities require the unanimous consent of the parties sharing control.

The results, assets and liabilities of associates and joint ventures are incorporated in the consolidated financial statements using the equity method of accounting, except when the investment is classified as held for sale, in which case it is accounted for in accordance with IFRS 5 *Non-current Assets Held for Sale and Discontinued Operations*. Under the equity method, on initial recognition, investments in associates and joint ventures are recognized in the consolidated statement of financial position at cost, and the carrying amount is adjusted for post-acquisition changes in the Group's share of the net assets of the associate or joint venture, less any impairment of the value of individual investments. Losses of an associate or joint venture in excess of the Group's interest in that associate or joint venture (which includes any long-term interests that, in substance, form part of the Group's net investment in the associate or joint venture) are recognized only to the extent that the Group has incurred legal or constructive obligations or made payments on behalf of the associate or joint venture.

Any excess of the cost of acquisition over the Group's share of the net fair value of the identifiable assets and (contingent) liabilities of the associate or joint venture recognized at the date of acquisition is goodwill. The goodwill is included within the carrying amount of the investment and is assessed for impairment as part of that investment.

Where a Group entity transacts with an associate or joint venture of the Group, profits and losses are eliminated to the extent of the Group's interest in the relevant associate or joint venture.

4. Foreign currencies

The individual financial statements of each Group entity are prepared in the currency of the primary economic environment in which the entity operates (its functional currency). For the purpose of the consolidated financial statements, the results and financial position of each Group entity are expressed in euros (EUR), which is the presentation currency of the Group's consolidated financial statements.

In preparing the financial statements of the individual entities, transactions in currencies other than the entities' functional currency are recognized at the exchange rates prevailing at the dates of the transactions. At the end of each reporting period, monetary items denominated in foreign currencies are translated at the closing rate. Non-monetary items carried at fair value that are denominated in foreign currencies are translated at the rate when the fair value was measured. Non-monetary items that are measured in terms of historical cost in a foreign currency are not translated at the closing rate.

Exchange differences are recognized in profit or loss in the period in which they arise except for:

- exchange differences on monetary items receivable from or payable to a foreign operation for which settlement is neither planned nor likely to occur in the foreseeable future (therefore forming part of the net investment in the foreign operation), which are recognized initially in other comprehensive income under "currency translation differences"; and
- exchange differences on transactions entered into in order to hedge certain foreign currency risks (see note F32 Financial instruments and financial risk management for hedge accounting policies).

The main exchange rates used are:

		Year-end rate		Average rate	
1 Euro =		**December 31, 2021**	December 31, 2020	**2021**	2020
Brazilian Real	BRL	6.3089	6.3731	6.3778	5.8950
Yuan Renminbi	CNY	7.2188	8.0240	7.6275	7.8749
Pound Sterling	GBP	0.8401	0.8981	0.8596	0.8896
Indian Rupee	INR	84.1963	89.6502	87.4271	84.6303
Japanese Yen	JPY	130.4077	126.4617	129.8783	121.8240
Korean Won	KRW	1,346.4377	1,332.8358	1,353.6608	1,345.7603
Mexican Peso	MXN	23.1537	24.4329	23.9889	24.5300
Russian Ruble	RUB	85.3452	91.4630	87.1511	82.7249
US Dollar	USD	1.13265	1.2270	1.1827	1.1420

5. Government grants

Government grants are not recognized until there is reasonable assurance that the Group will comply with the conditions attaching to them and that the grants will be received.

Government grants relating to the purchase of property, plant and equipment are deducted from the cost of those assets. They are recognized in the consolidated statement of financial position at their expected value at the moment of initial recognition. The grant is recognized in profit or loss over the depreciation period of the underlying assets as a reduction of depreciation expense.

Other government grants are recognized as income on a systematic basis over the periods in which the related costs, which they are intended to compensate, are recognized. Government grants that are receivable as compensation for expenses or losses already incurred or for the purpose of giving immediate financial support to the Group with no future related costs are recognized in profit or loss in the period in which they become receivable.

6. Climate Change

In preparing the consolidated financial statements, management has considered the impacts of climate change, particularly in the context of the disclosures included in the risk report and Extra-financial Statements and the Group's progression towards the ambitious 2030 goals to reduce scope 1 and 2 greenhouse gas emissions from our operations by 30%, an annual pace aligned with the Paris Agreement objectives, and to phase-out the use of coal for energy where renewable alternatives exist.

In October 2021, the Group also published its ambitions to become carbon neutral by 2040 for all businesses except Soda Ash, which is targeted to be carbon neutral by 2050.

Solvay plans to invest up to € 1 billion to reach carbon neutrality by 2040 for all its businesses other than Soda Ash with an additional investment of approximately € 1 billion identified for Soda Ash to pave its path towards full carbon neutrality for the Group before 2050. These investments will be partially supported by non-recourse financing and government subsidies, enabling Solvay to also continue to invest in its growth initiatives. Further studies on technology innovation will determine the future investment needs beyond 2040.

For a number of years now, the Group has adopted an internal carbon price and it has imputed that as an input cost into all investment decisions, irrespective of prevailing market prices. The internal cost was originally set at € 25 per metric ton in 2015, was doubled to € 50 in 2019 and was raised to € 100 per metric ton of CO_2 in 2021. This approach ensures that all investments contribute positively to the resilience of the Group in the face of climate change risk and are also oriented towards achieving carbon neutrality.

In addition to the strategic direction, policies and commitments, it is important to note that Solvay is taking concrete actions aligned with its climate change commitments. These are extensively developed in the Sustainability Report. As an example of the Group's commitment to phase out of coal in Soda Ash business, two projects were initiated comprising:

- The construction of two waste-wood boilers accounted for as finance leases in Rheinberg, Germany;
- An equity investment at the Dombasle site of which Solvay has a 10% share. The project is valued at approximately € 225 million and is financed largely through non-recourse debt executed in February 2022 and government subsidies. Included in the investment are two refuse derived fuel boilers.

When such investments are made, the Group verifies the useful life of the assets that are replaced and adjusts the estimated useful life if necessary. For 2021, no material revisions were needed and there is no indication that any material amounts of existing assets would be impaired as a result of the investment plans in other fuel types in the future.

The Group is also actively working on sourcing its energy needs from more environmentally friendly resources including long-term renewable energy generation solutions both onsite and offsite at certain facilities. These include long-term solar and wind power purchase agreements generally accounted for as executory own use contracts. In addition, the Group has entered into long-term contracts to purchase Renewable Energy Certificates, which will cover almost one quarter of the electricity purchased and consumed in the United States. The latter are recorded in operating expenses.

Management has also considered the impact of climate change in making some key estimates within the consolidated financial statements, including the execution of the Solvay One Planet strategy, which is included in the budgets, mid-term plan and long-term forecasts, which are used to:

- estimate future cash flows used in impairment assessments of the carrying value of non-current assets (such as intangible assets and goodwill) (see Note F24 Impairment);
- estimate future profitability used in the assessment of the recoverability of deferred tax assets (see Note F7.C. Deferred taxes in the consolidated statement of financial position), provisions, etc.;
- estimate the long-term accounting assumptions, including CO_2 emission rights and energy prices for the energy intensive Soda Ash GBU.

The Group's CO_2 emission rights and energy prices (gas/electricity/coal) are an important element of the cost structure, especially for the Soda Ash business. The Group has hedged a significant portion of its expected use through 2030. The hedges were taken into consideration in the goodwill impairment test performed and the long-term assumptions considered the higher capex required by the energy transition of the business after the hedged period. Considering the significant headroom on the Soda Ash CGU, no sensitivity is provided. See Note F24 Impairment.

The same exercise was done for the other cash generating units and management believes there are no realistic scenarios regarding climate change today, which would lead to an impairment of these assets.

Refer also to note B2: Underlying raw material & energy costs in the Business Review section and Note F2 Consolidated Income Statement by Nature for further insights on the main cost drivers of the business.

In summary, the Group's climate change considerations mentioned above did not have a material impact on the financial reporting judgments and estimates during the year. Further, the Group concludes that the climate change risk does not impact the going concern assessment for December 2021.

CRITICAL ACCOUNTING JUDGMENTS AND KEY SOURCES OF ESTIMATION UNCERTAINTY

1. Critical accounting judgments

No critical accounting judgements have been identified for the year ended December 31, 2021.

2. Key sources of estimation uncertainty

Impairment

The Group performs annual impairment tests on (groups of) CGUs to which goodwill has been allocated, and each time there are indicators that their carrying amount might be higher than their recoverable amount. This analysis requires management to estimate the future cash flows expected to be generated by the CGUs and a suitable discount rate in order to calculate present value. The recoverable amount is highly sensitive to discount and growth rates.

Further details are provided in note F20 Goodwill and Business Combinations and F24 Impairment.

Income taxes

Deferred tax assets

The carrying amount of the deferred tax assets is reviewed at each reporting date. The carrying amount of a deferred tax asset is reduced to the extent that it is no longer probable that the Group will earn sufficient taxable profits against which the deductions can be utilized. Any such reduction is reversed to the extent that it becomes probable that sufficient taxable profits will be available.

Deferred tax assets other than tax loss carryforwards are analyzed on a case by case basis, taking into account all relevant facts and circumstances. For example, a zero taxable profit, after deducting the amounts paid to retirees under a defined benefit plan and for which a deductible temporary difference existed, can justify the recognition of the underlying deferred tax assets.

Recognition of deferred tax assets for tax loss carryforwards requires a positive taxable profit during the year that enables the utilization of tax losses that originated in the past. Because of uncertainties inherent to predicting such positive taxable profit, recognition of deferred tax assets from tax loss carryforwards is based on a case by case analysis, which is usually based on five-year profit forecasts, except with respect to any financial company for which ten-year financial profit forecasts are considered highly predictable and are consequently used.

The corporate tax reporting team, which monitors the Group's deferred tax positions, is involved in assessing deferred tax assets.

Further details are provided in Note F7.C. Deferred taxes in the consolidated statement of financial position.

Provisions

Restructuring provision for the Group's simplification and transformation program

In 2021, Solvay launched a new chapter of its strategic transformation aimed to further align its structure to its G.R.O.W. strategy. This builds on previous plans announced in 2020, and represents a profound simplification of all support functions to serve the business more effectively. As a consequence of the new restructuring plan, a restructuring provision of around € 150 million was recognized in Q1 2021.

The estimate of the provision is based on the number and the cost of redundancy and relocation packages that the Group expects to pay. It is inherently subject to uncertainty and is monitored by the Human Resources department, in close cooperation with the Finance department.

Defined benefit obligations - General

The actuarial assumptions used in determining the defined benefit obligations at December 31 as well as the annual cost can be found in note F31 Provisions. All main employee benefits plans are assessed annually by independent actuaries. Discount rates and inflation rates are defined centrally by management. The other assumptions (such as future salary increases and expected rates of medical care cost increases) are defined at a local level. All plans are supervised by the Group's central Human Resources department with the help of a central actuary to check the reasonableness of the results and ensure consistency in reporting.

Further details are provided in note F31.A. Provisions for employee benefits.

Environmental provisions

Environmental provisions are managed and coordinated jointly by the Environmental Rehabilitation department and the Finance department. In case of environmental impacts stemming from historical production activities, generally, no provision is recognized for remediation works beyond the 20 years due to the inherent high level of uncertainty as to whether there will be any obligation after the lapse of this period.

The forecasts of expenses are discounted to their present value. The discount rates fixed by geographical area correspond to the average risk-free rate on 10-year government bonds or the inflation rate if higher. These rates are set annually by the Finance Department and can be revised based on the evolution of economic parameters of the country involved. To reflect the passage of time, the provisions are increased each year at the discount rates described above.

Further details are provided in note F31.B. Provisions other than for employee benefits.

Provisions for litigations

Any significant litigations (post M&A and other, including threat of litigation) are reviewed by Solvay's in-house lawyers with the support, when appropriate, of external counsels at least every quarter together with the Finance and Insurance Departments. This review includes an assessment of the need to recognize provisions, disclose contingent liabilities and/or contingent assets.

Further details are provided in note F31.B. Provisions other than for employee benefits and F36 Contingent assets, liabilities and financial guarantees.

Leases – Assessment of lease term

Determining the lease term requires judgment. Elements that are considered include assessing the probability that early termination options or extension options will be exercised. All facts and circumstances relevant to the assessment are considered, and the main ones have been described in note F22 Right-of-use assets and lease obligations. Lease terms are determined with the support of the departments that have the relevant knowledge, and that mainly includes the Purchasing department, and the Facilities department.

NON-IFRS (UNDERLYING) METRICS

In addition to the IFRS accounts, the Group also presents underlying income statement performance indicators. The objective is to generate a measure that avoids distortion and facilitates the appreciation of performance and comparability of results over time.

See Glossary for definitions of adjustments (IFRS vs Underlying metrics) and Business Review for more information and reconciliation with IFRS figures.

NOTES TO THE CONSOLIDATED INCOME STATEMENT

Preliminary comment: consistent with the presentation in the consolidated income statement, the notes to the consolidated income statement as presented hereafter do not include the consolidated income statement impacts from discontinued operations that are presented on a separate line. Those are disclosed in note F8 Discontinued operations.

NOTE F1
REVENUE AND SEGMENT INFORMATION

Accounting policy

IFRS 15 establishes a five-step model to account for revenue arising from contracts with customers:
- Identify the contract,
- Identify the performance obligations,
- Determine the transaction price,
- Allocate the transaction price to the performance obligations in the contract, and
- Recognize revenue when or as the Group satisfies a performance obligation.

Under IFRS 15, revenue is recognized at an amount that reflects the consideration to which the Group expects to be entitled in exchange for transferring goods or services to a customer.

Sale of goods: Contracts can be short term (including based only on a purchase order) or long term, some have minimum off-take requirements. As the Group is in the business of selling chemicals, contracts with customers generally concern the sale of goods. As a result, revenue recognition generally occurs at a point in time when control of the chemicals is transferred to the customer, generally on delivery of the goods.

Distinct elements: a good or service that is promised to a customer is distinct if both of the following criteria are met: (a) the customer can benefit from the good or service either on its own or together with other resources that are readily available to the customer (i.e. The good or service is capable of being distinct); and (b) the Group's promise to transfer the good or service to the customer is separately identifiable from other promises in the contract (i.e. The promise to transfer the good or service is distinct within the context of the contract).

The revenue of the Group consists mainly of sales of chemicals, which qualify as separate performance obligations. Value-added services – mainly customer assistance services – corresponding to Solvay's know-how are rendered predominantly over the period that the corresponding goods are sold to the customer.

Variable consideration: some contracts with customers provide trade discounts or volume rebates. Trade discounts and volume rebates give rise to variable consideration under IFRS 15, and are required to be estimated at contract inception and subsequently at each reporting date. IFRS 15 requires the estimated variable consideration to be constrained to prevent overstatement of revenue.

Moment of recognition of revenue: revenue is recognized when (or as) the Group satisfies a performance obligation by transferring a promised good or service (i.e. an asset) to a customer. An asset is transferred when (or as) the customer obtains control of that asset. Substantially all revenue stems from performance obligations satisfied at a point in time, i.e. The sale of goods. Revenue recognition for those takes into account the following:

- The Group has a present right to payment for the asset;
- The customer has legal title to the asset;
- The Group has transferred physical possession of the asset;
- The customer has the significant risks and rewards of ownership of the asset (in this respect, incoterms are considered); and
- The customer has accepted the asset.

Products sold to customers generally cannot be returned, other than for performance deficiencies. Customer acceptance clauses are in many cases a formality that would not affect the Group's determination of when the customer has obtained control of the goods. Revenue from services is recognized in the period those services have been rendered.

The Group sells its chemicals to its customers, (a) directly, (b) through distributors, and (c) with the assistance of agents. When the Group delivers a product to distributors for sale to end customers, the Group evaluates whether that distributor has obtained control of the product at that point in time. No revenue is recognized upon delivery of a product to a customer or distributor if the delivered product is held on consignment. Indicators of consignment inventory include:

- The product is controlled by the Group until a specified event occurs, such as the sale of the product to a customer of the distributor or until a specified period expires;
- The Group is able to require the return of the product or transfer the product to a third party (such as another distributor); and
- The distributor does not have an unconditional obligation to pay for the product (although he might be required to pay a deposit).
- Agents facilitate sales and do not purchase and resell the goods to the end customer.

Warranties: warranties provide a customer with assurance that the related product will function as the parties intended because it complies with agreed-upon specifications. Substantially all warranties do not provide the customer with a service in addition to the assurance that the product complies with agreed-upon specifications, and are hence accounted for in accordance with IAS 37 Provisions, Contingent Liabilities and Contingent Assets.

An **Operating Segment** is a component of the Group that engages in business activities from which it may earn revenues and incur expenses, whose operating results are regularly reviewed by the entity's chief operating decision maker and for which discrete financial information is available. Solvay's chief operating decision maker is the Chief Executive Officer.

General

Solvay is organized into four Operating Segments:

- **Materials** offer a unique portfolio of high-performance polymers and composite technologies used primarily in sustainable mobility applications. Its solutions enable weight reduction and enhance performance while improving CO_2 and energy efficiency. Major markets served include next-generation mobility in automotive and aerospace, healthcare and electronics.
- **Chemicals** host chemical intermediate businesses focused on mature and resilient markets. Solvay is a world leader in soda ash and peroxides and major markets served include building and construction, consumer goods and food. Its Silica, Coatis and Rusvinyl businesses are also high quality assets with strong positions in their markets. This segment provides resilient cash flows and the company selectively invests in these businesses to become the #1 cash conversion chemical player.
- **Solutions** offer a unique formulation & application expertise through customized specialty formulations for surface chemistry & liquid behavior, maximizing yield and efficiency of the processes they are used in while minimizing the eco-impact. Novecare, Technology Solutions, Aroma, Special Chem and Oil & Gas focus on specific areas such as resources (improving the extraction yield of metals, minerals and oil), industrial applications (such as coatings) or consumer goods and healthcare (including vanillin and guar for home and personal care).
- **Corporate & Business Services** includes corporate and other business services, such as Group research & innovation or energy services, whose mission is to optimize energy consumption and reduce CO_2 emissions.

External net sales by cluster

The Oil & Gas GBU was created on July 1, 2021, regrouping activities that were previously included in Novecare and Technology Solutions. The following table presents restated figures for these GBUs since the beginning of 2020.

In € million	2021	2020
Materials	**2,903**	2,695
Specialty Polymers	2,173	1,820
Composite Materials	730	875
Chemicals	**3,357**	2,948
Soda Ash & Derivatives	1,509	1,450
Peroxides	636	642
Silica	467	386
Coatis	745	470
Solutions	**3,838**	3,316
Novecare	1,547	1,330
Special Chem	840	761
Technology Solutions	560	491
Aroma Performance	473	435
Oil and Gas	418	299
Corporate & Business Services	**7**	**6**
CBS and NBD	7	6
Total	**10,105**	**8,965**

Sales by market

Sales by market are presented in the Business Review, see note B1.

Net sales by country and region

The sales disclosed below are allocated based on the customers' location.

In € million	2021	%	2020	%
Belgium	170	2%	146	2%
Germany	737	7%	647	7%
Italy	431	4%	403	4%
France	363	4%	337	4%
Netherlands	88	1%	87	1%
Spain	144	1%	148	2%
European Union - Other	491	5%	488	5%
European Union	**2,423**	**24%**	**2,256**	**25%**
Europe - Other	**352**	**3%**	**330**	**4%**
United States	2,496	25%	2,355	26%
Canada	134	1%	127	1%
North America	**2,630**	**26%**	**2,482**	**28%**
Brazil	813	8%	596	7%
Mexico	215	2%	186	2%
Latin America - Other	280	3%	194	2%
Latin America	**1,308**	**13%**	**975**	**11%**
Australia	90	1%	98	1%
China	1,203	12%	975	11%
Hong Kong	42	0%	37	0%
India	240	2%	191	2%
Indonesia	115	1%	87	1%
Japan	340	3%	310	3%
Russia	66	1%	55	1%
Saudi Arabia	128	1%	116	1%
South Korea	301	3%	273	3%
Thailand	175	2%	155	2%
Turkey	74	1%	74	1%
Other	617	6%	551	6%
Asia and rest of the world	**3,391**	**34%**	**2,922**	**33%**
Total	**10,105**	**100%**	**8,965**	**100%**

Sales from the UK were reclassified to Europe – Other due to the UK's withdrawal from the European Union. 2020 amounts were reclassified to conform to the 2021 presentation.

Information per segment

2021 - In € million	Materials	Chemicals	Solutions	Corporate & Business Services	Group Total
Income statement items					
Net sales (including inter-segment sales)	2,912	3,395	3,844	7	10,157
- Inter-segment sales	-9	-38	-6		-53
Net sales	2,903	3,357	3,838	7	10,105
Revenue from non-core activities	19	433	30	848	1,330
Gross margin	1,102	838	986	0	2,926
Depreciation and amortization	313	174	266	95	848
Earnings from associates and joint ventures	8	141	7	2	158
Underlying EBITDA(1)	*879*	*1,009*	*701*	*-232*	*2,356*
EBIT	**568**	**864**	**439**	**-680**	**1,190**
Net financial charges					-96
Income taxes					-110
Profit for the year from discontinued operations					5
Profit/(loss) for the year					**989**

December 31, 2021 - In € million	Materials	Chemicals	Solutions	Corporate & Business Services	Group Total
Statement of financial position and other items					
Capital expenditures	250	212	172	101	736
Investments	1	1	32	11	44
Working capital					
Inventories	684	425	607	28	1,745
Trade receivables	382	563	577	283	1,805
Trade payables	379	676	515	560	2,131

(1) Underlying EBITDA is a key performance indicator followed by management and includes other elements than those presented above (see Business Review section for reconciliation of Underlying with IFRS figures).

2020 - In € million	Materials	Chemicals	Solutions	Corporate & Business Services	Group Total
Income statement items					
Net sales (including inter-segment sales)	2,702	2,982	3,318	6	9,009
- Inter-segment sales	-7	-34	-3		-44
Net sales	2,695	2,948	3,316	6	8,965
Revenue from non-core activities	19	218	42	470	749
Gross margin	913	741	832	21	2,507
Depreciation and amortization	1,126	277	895	119	2,416
Earnings from associates and joint ventures	0	44	13	1	58
Underlying EBITDA[(1)]	*712*	*816*	*566*	*-149*	*1,945*
EBIT	**-465**	**504**	**-366**	**-338**	**-665**
Net financial charges					-179
Income taxes					-248
Profit for the year from discontinued operations					163
Profit/(loss) for the year					**-929**

December 31, 2020 - In € million	Materials	Chemicals	Solutions	Corporate & Business Services	Group Total
Statement of financial position and other items					
Capital expenditures (continuing operations)	191	183	142	95	611
Capital expenditures (discontinued operations)		33			33
Investments (continuing operations)	38	8	9	3	58
Working capital					
Inventories	483	303	432	23	1,241
Trade receivables	282	438	421	123	1,264
Trade payables	219	401	356	221	1,197

(1) Underlying EBITDA is a key performance indicator followed by management and includes other elements than those presented above (see Business Review section for reconciliation of Underlying with IFRS figures).

NON-CURRENT ASSETS, CAPITAL EXPENDITURES AND INVESTMENTS BY COUNTRY AND REGION (CONTINUING OPERATIONS)

In € million	Non-current assets				Capital expenditures and investments			
	December 31, 2021	%	December 31, 2020	%	**2021**	%	2020	%
Belgium	272	2%	272	2%	-22	3%	-7	1%
Germany	400	3%	321	3%	-44	6%	-39	6%
Italy	626	5%	616	6%	-111	14%	-79	12%
France	2,764	24%	2,755	25%	-178	23%	-146	22%
Spain	134	1%	140	1%	-16	2%	-14	2%
European Union - Other	319	3%	335	3%	-39	5%	-26	4%
European Union	**4,516**	**39%**	**4,439**	**40%**	**-409**	**52%**	**-310**	**46%**
Europe - Other	**159**	**1%**	**161**	**1%**	**-17**	**2%**	**-20**	**3%**
United States	5,047	43%	4,752	43%	-201	26%	-233	35%
Canada	177	2%	170	2%	-7	1%	-9	1%
North America	**5,225**	**45%**	**4,922**	**44%**	**-208**	**27%**	**-242**	**36%**
Brazil	218	2%	204	2%	-27	3%	-17	3%
Latin America - Other	19	0%	29	0%	-5	1%	-3	0%
Latin America	**238**	**2%**	**234**	**2%**	**-32**	**4%**	**-20**	**3%**
Russia	293	3%	197	2%	0	0%	0	0%
Thailand	99	1%	114	1%	-5	1%	-3	0%
China	598	5%	527	5%	-90	12%	-49	7%
South Korea	77	1%	84	1%	-4	1%	-3	1%
India	240	2%	234	2%	-5	1%	-13	2%
Singapore	36	0%	40	0%	-3	0%	-3	0%
Japan	18	0%	20	0%	-3	0%	-2	0%
Other	185	2%	160	1%	-3	0%	-4	1%
Asia and rest of the world	**1,547**	**13%**	**1,376**	**12%**	**-113**	**15%**	**-77**	**11%**
Total	**11,684**	**100%**	**11,131**	**100%**	**-779**	**100%**	**-669**	**100%**

Non-current assets, CapEx and investments in the UK were reclassified to Europe – Other due to the UK's withdrawal from the European Union. 2020 amounts were reclassified to conform to the 2021 presentation.

Non-current assets are those other than deferred tax assets, loans and other assets, and other financial instruments. Capital expenditures and investments include acquisitions of property, plant and equipment, right-of-use assets, intangible assets and investments in subsidiaries and other investments (joint operations, joint ventures and associates). Both exclude discontinued operations.

NOTE F2
CONSOLIDATED INCOME STATEMENT BY NATURE

In € million	Notes	2021	2020
Net sales	*(F1)*	10,105	8,965
Revenue from non-core activities	*(F3)*	1,330	749
Raw materials, utilities and consumables used		-5,910	-4,050
Changes in inventories		424	-103
Personnel expenses		-2,002	-1,999
Wages and direct social benefits		*-1,469*	*-1,466*
Employer's contribution for social insurance		*-286*	*-262*
Pensions and insurance benefits		*-98*	*-95*
Other personnel expenses		*-148*	*-175*
Amortization, depreciation and impairment	*(F11)*	-849	-2,416
Other variable logistics expenses		-776	-634
Other fixed expenses		-1,017	-1,061
Addition and reversal of provisions (excluding employee benefit provisions)	*(F31)*	-323	-148
Significant income related to prior years	*(F4)*	97	
M&A costs and gains and losses on disposals	*(F5)*	-47	-25
Earnings from associates and joint ventures	*(F23)*	158	58
EBIT		**1,190**	**-665**

M&A costs and gains and losses on disposals excludes a portion of PIS/COFINs.

NOTE F3
REVENUE FROM NON-CORE ACTIVITIES

This revenue primarily comprises commodity and utility third party transactions and other revenue, considered to not correspond to Solvay's know-how and core business. The increase compared to 2020 is mainly related to higher gas and electricity prices and to increased volumes after the rebound in the activity of our customers.

NOTE F4
OTHER OPERATING GAINS AND LOSSES

In € million	2021	2020
Start-up and preliminary study costs	-11	-13
Capital gains/losses on sales of property, plant and equipment and intangible assets	12	3
Net foreign exchange gains and losses	1	-1
Amortization of intangible assets resulting from PPA	-147	-166
PIS/COFINs credits recognition	61	
Other	5	28
Other operating gains and losses	**-80**	**-149**

A Supreme Court ruling in Brazil issued in August 2021 conferred the right to recover Federal indirect tax on sales, so-called "PIS/COFINs", to a number of companies, including Solvay. As a result of that ruling, a total gain of € 97 million related to operations from 2003 to the present date was quantified and assessed as recoverable before tax of € (26) million. Of that, € 36 million were recognized under "Results from portfolio management and major restructuring" mainly as the relevant period pre-dated the Groups' acquisition of Rhodia in August 2011 (see note F5 Results from Portfolio Management and Major Restructurings, Legacy Remediation and Major Litigations – included in line "M&A costs and gains and losses on disposals").

The remaining € 61 million were recorded as "Other operating gains & losses" as the period related to operations subsequent to August 2011 and still in Solvay's perimeter. The € 97 million gain is expected to be recovered mainly through the offset of income tax payments over the next 3 years.

NOTE F5

RESULTS FROM PORTFOLIO MANAGEMENT AND MAJOR RESTRUCTURINGS, LEGACY REMEDIATION AND MAJOR LITIGATIONS

Accounting policy

Results from portfolio management and major restructurings include:

- gains and losses on the sale of subsidiaries, joint operations, joint ventures, and associates that do not qualify as discontinued operations;
- acquisition costs of new businesses;
- one-off operating external costs related to internal management of portfolio (carve-out of major lines of businesses);
- gains and losses on the sale of real estate not directly linked to an operating activity;
- restructuring charges driven by portfolio management and by major reorganizations of business activities, including impairment losses resulting from the shutdown of an activity or a plant;
- impairment losses (reversals) resulting from testing of CGUs.

Results from legacy remediation and major litigations include:

- the remediation costs not generated by on-going production facilities (shut-down of sites, discontinued productions, previous years' pollution); and
- the impact of significant litigations.

RESULTS FROM PORTFOLIO MANAGEMENT AND MAJOR RESTRUCTURING

In € million	2021	2020
Restructuring costs and impairment	-122	-1,523
Impairment	*58*	*-1,401*
Restructuring costs	*-181*	*-122*
M&A costs and gains and losses on disposals	-11	-25
Results from portfolio management and major restructuring	**-133**	**-1,548**

RESULTS FROM LEGACY REMEDIATION AND MAJOR LITIGATIONS

In € million	2021	2020
Major litigations	-26	-20
Remediation costs and other costs related to non-ongoing activities	-97	
Results from legacy remediation and major litigations	**-123**	**-20**

In 2021, restructuring costs relate mainly to the new simplification program of the support functions for € 157 million. The impairments include the impairment reversal of the joint venture RusVinyl for € 66 million (see note F24) and impairment losses of other non-performing assets for € (8) million. In 2021, the M&A costs and gains and losses on disposals include a € 36 million gain related to PIS/COFINs (see note F4). The remediation costs increased versus last year due to higher inflation assumptions and investigation costs. 2020 benefited from one-time settlement indemnities partially compensating the remediation costs.

In 2020, impairments primarily relate to Composite Materials (€ (798) million), Technology Solution (€ (280) million), Novecare Oil & Gas (€ (155) million) and other assets, mainly in the Solutions Segment (€ (168) million). Restructuring costs mainly related to the initiatives following the launching of the G.R.O.W strategy for € (122) million.

See note F24 Impairment for more information.

NOTE F6
NET FINANCIAL CHARGES

Accounting policy

Interest on borrowings is recognized in costs of borrowings as incurred, with the exception of borrowing costs directly attributable to the acquisition, construction and production of qualifying assets (see note F21 Property, Plant and Equipment).

Net foreign exchange gains or losses on financial items and changes in fair value of derivative financial instruments related to net indebtedness are presented in "Other gains and losses on net indebtedness", with the exception of changes in fair value of derivative financial instruments that are hedging instruments in a cash flow hedge relationship, and which are recognized on the same line as the hedged item, when the latter affects profit or loss.

In € million	2021	2020
Cost of borrowings	-89	-93
Interest expense on lease liabilities	-19	-21
Interest on loans and short term deposits	9	8
Other gains and losses on net indebtedness	-4	-8
Net cost of borrowings	**-103**	**-113**
Cost of discounting provisions	-47	-64
Impact of change of discount rate on provisions	48	-5
Result from equity instruments measured at fair value	6	3
Net financial charges	**-96**	**-179**

Details are included in note F33 Net indebtedness.

The net cost of borrowings variance is mainly explained by the decrease:

- in the cost of borrowings attributable to the continuing efforts of repayment of debt, including the early repayment of € 372.5 million on the € 750 million senior bond in December 2021;
- in other gains and losses on net indebtedness from € (8) million for 2020 to € (4) million for 2021, largely attributable to currency swaps (interest element) offset by one-off costs for € (6) million related to the early repayment of € 372.5 million on the € 750 million senior bond in December 2021.

The cost of discounting provisions relates to post-employment benefits (€ (12) million) and to environmental provisions (€ (34) million) and its decrease is largely attributable to the evolution of the applicable discount rates (see also note F31 Provisions).

NOTE F7

INCOME TAXES IN THE INCOME STATEMENT AND THE STATEMENT OF FINANCIAL POSITION

Accounting policy

Current taxes

The current tax payable is based on taxable profit of the year. Taxable profit differs from profit as reported in the consolidated income statement because of items of income or expense that are taxable or deductible in other years and items that are never taxable or deductible. The Group's liability for current tax is calculated using tax rates that have been enacted or substantively enacted by the end of the reporting period.

Deferred taxes

Deferred taxes are recognized for temporary differences between the carrying amounts of assets and liabilities in the consolidated financial statements and their corresponding tax bases used in the computation of taxable profit.

Deferred tax assets are generally recognized for all deductible temporary differences to the extent that it is probable that taxable profits will be available against which those deductible temporary differences can be utilized.

Deferred tax liabilities are generally recognized for all taxable temporary differences.

No deferred tax liabilities are recognized following the initial recognition of goodwill. In addition, no deferred tax assets or liabilities are recognized with respect to the initial recognition of an asset or liability in a transaction which is not a business combination and affects neither accounting profit nor taxable profit.

Deferred tax liabilities are recognized for taxable temporary differences associated with investments in subsidiaries, joint operations, joint ventures, and associates, except where the Group is able to control the timing of the reversal of the temporary difference and it is probable that the temporary difference will not reverse in the foreseeable future.

The carrying amount of the deferred tax assets is reviewed at each reporting date. The carrying amount of a deferred tax asset is reduced to the extent that it is no longer probable that the Group will earn sufficient taxable profits against which the deductions can be utilized. Any such reduction is reversed to the extent that it becomes probable that sufficient taxable profits will be available.

Deferred tax assets other than tax loss carryforwards are analyzed on a case by case basis, taking into account all relevant facts and circumstances. For example, a zero taxable profit, after deducting the amounts paid to retirees under a defined benefit plan and for which a deductible temporary difference existed, can justify the recognition of the underlying deferred tax assets. Recognition of deferred tax assets for tax loss carryforwards requires a positive taxable profit during the year that enables the utilization of tax losses that originated in the past. Because of uncertainties inherent to predicting such positive taxable profit, recognition of deferred tax assets from tax loss carryforwards is based on a case by case analysis, which is usually based on five-year profit forecasts, except with respect to any financial company for which ten-year financial profit forecasts are considered highly predictable and are consequently used.

The corporate tax reporting team, which monitors the Group deferred tax positions, is involved in assessing deferred tax assets.

Further details are provided in note F7.B.

Deferred tax assets and liabilities are measured at the tax rates that are expected to apply in the period in which the liability is settled or the asset is realized, based on tax rates (and tax laws) that have been enacted or substantively enacted by the end of the reporting period. The measurement of deferred tax liabilities and assets reflects the tax consequences that would follow from the manner in which the Group expects, at the end of the reporting period, to recover or settle the carrying amount of its assets and liabilities.

Current tax assets and liabilities are offset when there is a legally enforceable right to set off the recognized amounts and when the Group intends to settle its current tax assets and liabilities on a net basis.

Deferred tax assets and liabilities are offset when there is a legally enforceable right to set off current tax assets against current tax liabilities and when they relate to income taxes levied by the same taxation authority and the Group intends to settle its current tax assets and liabilities on a net basis.

Current and deferred taxes for the period

Current and deferred taxes for the period are recognized as an expense or income in profit or loss, except when they relate to items that are recognized outside profit or loss (whether in other comprehensive income or directly in equity), in which case the tax is also recognized outside profit or loss, or when they arise from the initial accounting for a business combination. In the case of a business combination, the tax effect is taken into account in the accounting for the business combination.

Exception to the above, as from January 1, 2019, the Group applies the amendments to IAS 12, that apply to the income tax consequences of dividends recognized on or after the beginning of the earliest comparative period, i.e. January 1, 2018. In 2018, the income tax consequences of the coupons on perpetual hybrid bonds classified as equity were recognized in equity. As a result of the adoption of the amendment, those income tax consequences are now recognized in profit or loss.

F7.A. Income taxes

The income taxes (net expense) recognized in the consolidated income statement decreased by € 138 million in 2021 compared to 2020. The income taxes (net expense) recognized in other comprehensive income increased by € (74) million in 2021 compared to 2020, mainly due to the movement in employee benefit provisions (see note F31A).

In € million	2021	2020
Current taxes related to current year	-236	-114
Provisions for tax litigations	-1	1
Other current taxes related to prior years		-3
Current taxes	**-237**	**-116**
Changes in unrecognized deferred tax assets (a)	127	-27
Deferred tax income on amortization of PPA step-ups	37	44
Deferred tax impact of changes in the nominal tax rates	-2	-5
Deferred taxes related to prior years	3	-10
Changes in deferred tax assets O&G US (b)	15	-110
Deferred taxes on impairments (c)		45
Other deferred taxes (d)	-52	-68
Deferred taxes	**127**	**-132**
Income taxes recognized in the consolidated income statement	**-110**	**-248**
Income taxes on items recognized in other comprehensive income	**-77**	**-3**

The current taxes (net expense) related to the current year increased by € (121) million due to higher taxable profits in countries with high effective tax rates.

(a) Changes in unrecognized deferred tax assets:

In 2021, this change amounts to € 127 million resulting mainly from a revision of the forecasts of utilization of tax losses carried forward in the holding companies (€ 76 million), in China (€ 9 million), Belgium (€ 7 million) and from changes in deferred taxes (mainly on tangible assets) in the United States (€ 19 million).

In 2020, this change amounted to € (27) million resulting mainly from the reversal of deferred taxes in the United Kingdom (€ (23) million) (mainly on capital allowances deemed not to be utilized within the next five years).

(b) The deferred tax assets on the goodwill and other tangible and intangible assets for Oil & Gas in the United States were written-down in the US tax unit in 2020 for € (110) million based on Management's assessment of the recoverability of these deferred tax assets. In 2021, this write-down has been partially reversed for € 15 million based on a reassessment of recoverability of these deferred tax assets.

(c) In 2020, a deferred tax asset was recognized on the impairment excluding non-deductible goodwill related to Composite Materials, Technology Solutions, Oil & Gas (O&G) and other assets in the Solutions Segment (Spec Chem) for a total amount of € (1,400) million of which € (1,050) million was on non-deductible goodwill).

(d) Other deferred taxes:

In 2021, the other deferred income taxes (€ (52) million) included:
- The utilization of tax losses carried forward for € (29) million;
- The net tax impact of additional pension contributions in Belgium (€ (15) million);
- The utilization of deferred tax assets on temporary disallowed interests in the United States for € (10) million;
- The recognition of deferred taxes related to the Brazilian PIS/COFINs credits temporarily not taxable for € (16) million;
- Other net increases and reversals of other temporary differences for € 18 million.

In 2020, the other deferred income taxes (€ (68) million) included:
- The net impact of additional pension contributions (€ (60) million);
- The recognition of deferred tax assets on temporary disallowed interests in the United States for € 37 million;
- The outside basis differences for overseas investments held by the United States which would be realizable upon disposal with a tax effect for € (58) million;
- Other net increases and reversals of other temporary differences for € 12 million.

F7.B. Reconciliation of the income tax expense

The effective income tax expense has been reconciled with the theoretical tax expense obtained by applying to the pre-tax profit of each Group entity the nominal tax rate prevailing in the country in which it operates.

In € million	2021	2020
Profit/(Loss) for the year before taxes	1,094	-844
Earnings from associates and joint ventures	158	58
Profit/(Loss) for the year before taxes excluding earnings from associates and joint ventures	**936**	**-902**
Reconciliation of the tax income/(expense)		
Total tax income/(expense) of the Group entities computed on the basis of the respective local nominal rates	-284	143
Weighted average nominal rate	30%	16%
Tax effect of changes in nominal tax rates	-2	-5
Changes in unrecognized deferred tax assets	127	-27
Tax effect of permanent differences	37	28
Gain and losses with no tax expense and income	10	-9
US taxes disconnected from profit for the year before taxes	-9	0
Non-deductible impairment of the goodwill		-248
Changes in deferred tax assets O&G US	15	-110
Provisions for tax litigations	-1	1
Other tax effect of current and deferred tax adjustments related to prior years	3	-13
Tax effect on distribution of dividends	-6	-5
Effective tax income/(expense)	**-110**	**-248**
Effective tax rate	**10%**	**-29%**

The weighted average nominal rate increased from 2020 (16%) to 2021 (30%) mainly due to higher results in countries with higher nominal tax rates (e.g. Brazil) and from the impact of withholding taxes on dividends mainly from Rusvinyl.

F7.C. Deferred taxes in the consolidated statement of financial position

2021 - In € million	Opening balance	Recognized in income statement	Recognized in other comprehensive income	Exchange rate effect	Other acquisition / disposal	Transfer to assets held for sale	Closing balance
Temporary differences							
Employee benefits obligations	**403**	-12	-104	2	-5	5	**289**
Provisions other than employee benefits	**204**	-4		6	-1	2	**208**
Property, plant and equipment	**-262**	27	32	-19	2	-5	**-225**
Intangible assets	**-311**	65		-24	-4		**-274**
Right-of-use assets	**-74**	4		-3	1	-2	**-74**
Lease liabilities	**76**	-4		3	-1	1	**75**
Goodwill	**3**						**3**
Other temporary differences	**26**	-4	-4	2			**20**
Tax losses	**209**	50		5	-3	3	**263**
Tax credits	**27**	5		1			**33**
Total (net amount)	**301**	127	-77	-27	-10	3	**318**

2020 - In € million	Opening balance	Recognized in income statement	Recognized in other comprehensive income	Exchange rate effect	Other acquisition / disposal	Transfer to assets held for sale	Closing balance
Temporary differences							
Employee benefits obligations	**563**	-153	3	-14	9	-5	**403**
Provisions other than employee benefits	**243**	-11		-21	-5	-2	**204**
Property, plant and equipment	**-229**	-67		24	5	5	**-262**
Intangible assets	**-432**	85		30	5		**-311**
Right-of-use assets & Lease liabilities	**-1**	2				1	**2**
Goodwill	**91**	-87					**3**
Other temporary differences	**55**	5	-6	-5	-24		**26**
Tax losses	**214**	100		-9	-93	-3	**209**
Tax credits	**34**	-5		-2			**27**
Total (net amount)	**538**	**-132**	**-3**	**2**	**-103**	**-3**	**301**

The significant components of the deferred tax assets and deferred tax liabilities at the end of 2021 and 2020 are as follows:

In € million	2021				
	Deferred tax assets	Deferred tax liabilities	Net deferred taxes before impairment	Impairment	Net deferred taxes
Employee benefits obligations	413	-123	290	-1	289
Provisions other than employee benefits	244	-38	206	1	208
Property, plant and equipment	118	-314	-195	-30	-225
Intangible assets	107	-385	-277	3	-274
Right-of-use assets	0	-74	-74		-74
Lease liabilities	77	-1	75		75
Goodwill	3		3		3
Other	105	-78	27	-7	20
Temporary differences	**1,068**	**-1,012**	**56**	**-34**	**22**
Operational losses	1,566		1,566	-1,398	169
Non-operational losses	331		331	-237	95
Tax losses	**1,898**		**1,898**	**-1,635**	**263**
Tax credits carried forward	**78**		**78**	**-45**	**33**
Netting deferred taxes	-551	551			
Deferred taxes	**2,492**	**-461**	**2,031**	**-1,713**	**318**

In € million	2020				
	Deferred tax assets	Deferred tax liabilities	Net deferred taxes before impairment	Impairment	Net deferred taxes
Employee benefits obligations	491	-9	482	-79	**403**
Provisions other than employee benefits	249	-21	228	-24	**204**
Property, plant and equipment	73	-300	-228	-34	**-262**
Intangible assets	93	-402	-309	-2	**-311**
Right-of-use assets & Lease liabilities	75	-73	2		**2**
Goodwill	3		3		**3**
Other	89	-51	38	-13	**26**
Temporary differences	**1,073**	**-856**	**217**	**-151**	**66**
Operational losses	1,567		1,567	-1,429	**138**
Non-operational losses	335		335	-264	**71**
Tax losses	**1,902**		**1,902**	**-1,694**	**209**
Tax credits carried forward	**73**		**73**	**-46**	**27**
Netting deferred taxes	-620	620			
Deferred taxes	**2,428**	**-236**	**2,192**	**-1,891**	**301**

The total net deferred tax assets of € 318 million at year-end 2021 are € 17 million higher than in 2020. The main changes in 2021 are related to the following items:

- deferred tax assets on employee benefit obligations: € 289 million at year-end 2021 - € 114 million lower than in 2020, explained by the significant decrease in pension obligations in 2021 notably in the United Kingdom where the deferred tax liability on plan asset surplus have been recognized, offset by the reversal of the write-down on deferred taxes on capital allowances in the United Kingdom for € 32 million;
- deferred tax liabilities on Property, plant and equipment: € (225) million at year-end 2021 - € 37 million lower than in 2020 mainly due to the reversal of the write-down on deferred taxes on capital allowances in the United Kingdom for € 32 million;
- deferred tax liabilities on intangible assets: € (274) million at year-end 2021 - € 37 million lower than in 2020. The decrease in these liabilities in 2021 mainly reflects:
    - exchange rate impacts of € (24) million;
    - the tax impact of € 37 million of amortization in the consolidated income statement of the step-up of intangible assets resulting from Purchase Price Allocation;
    - the partial reversal of the write-off of the deferred taxes on tangible and intangible assets for Oil & Gas in the United States for € 15 million, corresponding to the portion of the deferred taxes that are considered to be utilized in 2022 without any changes in the deferred taxes impairment hypothesis for future years.
- deferred taxes on operational and non-operational tax losses: € 263 million at year-end 2021 - € 55 million higher than in 2020 mainly due to the (key) changes in unrecognized deferred tax assets on losses due to revised forecasts for € 92 million offset against the newly created or utilized deferred tax on tax losses for € (37) million.
- deferred tax assets on other temporary differences: € 20 million at year-end 2021 - € 6 million lower than in 2020 mainly due to the utilization of deferred tax assets on temporary disallowed interests in the United States for € (10) million and due to the recognition of deferred taxes related to the Brazilian PIS/COFINs credits for € (16) million.

At year-end 2021, € (53) million for deferred tax liabilities on unremitted earnings were recognized in the Other Temporary differences. An amount of € 29 million was not recognized because the Group controls the timing of the reversal of the temporary differences and it is probable that they will not reverse in the foreseeable future.

Recognized deferred tax assets for which utilization depends on future taxable profits in excess of the profit arising from the reversal of existing taxable temporary differences within entities that have suffered a tax loss in either current or preceding years in the related tax jurisdiction, amount to € 268 million. This recognition is supported by favorable expectations of future taxable profits.

F7.D. Other information

For the majority of the Group's tax loss carryforwards, no deferred tax assets have been recognized. The unrecognized tax losses are mainly located in countries where they can be carried forward indefinitely.

The tax losses carried forward generating deferred tax assets are given below by expiration date.

In € million	2021	2020
Within 1 year	15	
Within 2 years	16	
Within 3 years	2	20
Within 4 years	2	2
Within 5 or more years	28	44
No time limit	974	767
Total of losses carried forward which have generated recognized deferred tax assets	**1,037**	**833**
Tax losses carried forward for which no deferred tax assets were recognized	6,050	6,448
Total of tax losses carried forward	**7,087**	**7,281**

The tax losses carried forward of € 1,037 million (€ 833 million in 2020) have generated deferred tax assets for € 263 million (€ 209 million in 2020).

The increase of tax losses carried forward which have generated deferred tax assets, is largely due to the revised forecast for the holding companies in China and Belgium.

NOTE F8
DISCONTINUED OPERATIONS

Accounting policy

A discontinued operation is a component of the Group which the Group has disposed of or which is classified as held for sale (see note F27 Assets held for sale), and which:

- represents a separate major line of business or geographical area of operations;
- is part of a single coordinated plan to dispose of a separate major line of business or geographical area of operations; or
- is a subsidiary acquired exclusively with a view to resale.

A component of the Group consists of operations and cash flows, which can be clearly distinguished operationally and for financial reporting purposes, from the rest of the Group.

In the consolidated statement of comprehensive income, the consolidated statement of cash flows, and disclosures, discontinued operations are re-presented for prior periods presented.

In € million	2021		2020		
	Other	Total	Polyamides	Other	Total
Net sales			126		126
EBIT	2	2	359	3	362
Financial result	2	2	0	-3	-3
Tax			-196		-196
Profit from discontinued operations	**5**	**5**	**162**		**163**
attributable to Solvay share	5	5	162		163

In 2021 and 2020, the "Other" column includes post-closing warranties related to the disposal of the Pharma business.

In 2020, the Profit from discontinued operations for Polyamides includes the capital gain on disposal after tax of € 140 million and the results of the Polyamides business for the month of January 2020 (€ 21 million). The capital gain after taxes reflects the final agreement with DOMO, which took place in Q4 2020. The final agreement with BASF has been reached in 2021 without significant adjustments.

NOTE F9
EARNINGS PER SHARE

Accounting policy

The basic earnings per share are obtained by dividing profit for the year by the weighted average number of ordinary shares outstanding during the reporting period. The weighted average number of ordinary shares excludes the treasury shares held by the Group over the reporting period.

The diluted earnings per share are obtained by dividing profit for the year, adjusted for the effects of dilutive potential ordinary shares, by the weighted average number of ordinary shares, also adjusted by the number of dilutive potential ordinary shares attached to the issuance of share options.

The number of dilutive potential ordinary shares is calculated for the weighted average number of share options outstanding during the reporting period as the difference between the average market price of ordinary shares during the reporting period and the exercise price of the share option. Share options have a dilutive effect only when the average market price is above the exercise price (share options are "in the money").

For the purpose of calculating diluted earnings per share, there were no adjusting elements to the profit for the year (Solvay share).

Basic and diluted amounts per share for discontinued operations are presented in the consolidated income statement.

Number of shares (in units)	2021	2020
Weighted average number of ordinary shares (basic)	103,527,423	103,139,855
Dilution effect	260,419	30,187
Weighted average number of ordinary shares (diluted)	103,787,842	103,170,042

	2021		2020	
	Basic	Diluted	Basic	Diluted
Profit/(loss) for the year (Solvay share) including discontinued operations (in € thousands)	947,738	947,738	-961,627	-961,627
Profit/(loss) for the year (Solvay share) excluding discontinued operations (in € thousands)	943,177	943,177	-1,124,336	-1,124,336
Earnings per share (including discontinued operations) (in €)	9.15	9.13	-9.32	-9.32
Earnings per share (excluding discontinued operations) (in €)	9.11	9.09	-10.90	-10.90

Full data per share, including dividend per share, can be found in the Business Review section.

The average market price during 2021 was € 106.01 per share (2020: € 79.29 per share). The following share options were out of the money, and therefore antidilutive for the period presented, but could potentially dilute basic earnings per share in the future (see note F30 Share-based payments):

Antidilutive share options per plans	Date granted	Exercise price (in €)	Number of share options granted	Number of share options outstanding
2015	February 25, 2015	114.51	346,617	332,565
2017	February 23, 2017	111.27	316,935	308,450
2018 - 1	February 27, 2018	113.11	400,704	391,280
2018 - 2	July 30, 2018	108.38	72,078	72,078
Total			**1,136,334**	**1,104,373**

NOTES TO THE CONSOLIDATED STATEMENT OF COMPREHENSIVE INCOME

NOTE F10
CONSOLIDATED STATEMENT OF COMPREHENSIVE INCOME

Accounting policy

In accordance with IAS 1 Presentation of Financial Statements, the Group elected to present two statements, i.e. a consolidated income statement immediately followed by a consolidated statement of comprehensive income.

The components of other comprehensive income (OCI) are presented before related tax effects with one amount shown for the aggregate amount of income tax relating to those components. Tax impacts are further disclosed in this note.

Presentation of the tax effect relating to each item of other comprehensive income

Note: the below table presents the total other comprehensive income items for the aggregate of the shares of Solvay and the non-controlling interests.

	2021		
In € million	**Before-tax amount**	**Tax expense (-)/income**	**Net of tax amount**
Effective portion of gains and losses on hedging instruments in a cash flow hedge	*71*	*5*	*76*
Recycling to the income statement	*-87*		*-87*
Gains and losses on hedging instruments in a cash flow hedge (see note F32)	-17	5	-11
Currency translation differences arising during the year	*432*		*432*
Recycling of currency translations differences relating to foreign operations disposed of in the year	*47*		*47*
Other movement of currency translation differences (NCI) relating to foreign operations	8		8
Currency translation differences - Subsidiaries and joint operations	487		487
Share of other comprehensive income of associates and joint ventures	29		29
Recyclable components	***500***	***5***	***505***
Gains and losses on equity instruments measured at fair value through other comprehensive income	33	-8	25
Remeasurements of the net defined benefit liability (see notes F7 & F31)	562	-75	487
Non-recyclable components	***594***	***-83***	***512***
Other comprehensive income/(loss)	**1,094**	**-78**	**1,017**

The € 33 million gain on equity instruments measured at fair value through other comprehensive income mainly relates to a Solvay Ventures investment that was listed in Q4 of 2021.

	2020		
In € million	Before-tax amount	Tax expense (-)/income	Net of tax amount
Effective portion of gains and losses on hedging instruments in a cash flow hedge	*-24*	*-9*	*-33*
Recycling to the income statement	*68*		*68*
Gains and losses on hedging instruments in a cash flow hedge (see note F32)	44	-9	35
Currency translation differences arising during the year	*-579*		*-579*
Recycling of currency translations differences relating to foreign operations disposed of in the year	*-21*		*-21*
Other movement of currency translation differences (NCI) relating to foreign operations	-5		-5
Currency translation differences - Subsidiaries and joint operations	-605		-605
Share of other comprehensive income of associates and joint ventures	-99		-99
Recyclable components	***-661***	***-9***	***-670***
Gains and losses on equity instruments measured at fair value through other comprehensive income	2		2
Remeasurements of the net defined benefit liability (see note F31)	-174	7	-167
Share of comprehensive income of associates and joint ventures	-1		-1
Non-recyclable components	***-174***	***7***	***-167***
Other comprehensive income/(loss)	**-834**	**-3**	**-837**

The low tax credit (€ 7 million) on remeasurement of the net defined liabilities in 2020 was due to the non-recognition of deferred taxes on the remeasurement in the UK.

Currency translation differences

Accounting policy

For the purpose of presenting consolidated financial statements at the end of each reporting period, the assets and liabilities of the Group's foreign operations are expressed in euros using closing rates. Income and expense items are translated at the average exchange rates for the period except when the impact of applying the average rate is materially different from applying the spot rate at the respective transactions' dates, in which case the latter is applied. Exchange differences arising, if any, are recognized in other comprehensive income as "currency translation differences".

Currency translation differences are reclassified from equity to profit or loss, on:
- a disposal of the Group's entire interest in a foreign operation, or a partial disposal involving loss of control over a subsidiary that includes a foreign operation. In this case, all of the accumulated exchange differences in respect of that operation attributable to the Group are reclassified to profit or loss. Any exchange differences that have previously been attributed to non-controlling interests are derecognized, but they are not reclassified to profit or loss;
- a partial disposal of an interest in a joint arrangement or an associate that includes a foreign operation, when the retained interest is a financial asset. In this case, all of the accumulated exchange differences in respect of that operation attributable to the Group are reclassified to profit or loss;
- a partial disposal of an interest in a joint venture or an associate that includes a foreign operation and that continues to be accounted for as a joint venture or an associate. In this case, a proportionate share of the accumulated exchange differences is reclassified to profit or loss.

In case of a partial disposal of a subsidiary (i.e. No loss of control) that includes a foreign operation, the proportionate share of accumulated exchange differences is reattributed to non-controlling interests and is not recognized in profit or loss.

In case of (a) a capital decrease of a subsidiary without loss of control, or (b) a capital decrease of an equity method investee or a joint operation without modification of the share of equity interest held in that investee, then no accumulated exchange differences are reclassified from equity to profit or loss.

Goodwill and fair value adjustments arising on the acquisition of a foreign operation are treated as assets and liabilities of the foreign operation and translated into the Group's presentation currency at the closing rate.

The total currency translation gain amounts to € 508 million in 2021, and only relates to the Group's share (2020: loss of € (699) million). They are linked to the revaluation of the US dollar (€ 331 million) (2020: € (449) million), Chinese Renminbi (€ 83 million) (2020: € (21) million), the Brazilian Real (€ 11 million) (2020: € (99) million), the Russian ruble (€ 21 million) (2020: € (59) million), compared to the Euro.

NOTES TO THE CONSOLIDATED STATEMENT OF CASH FLOWS

(CONTINUING AND DISCONTINUED OPERATIONS)

NOTE F11

DEPRECIATION, AMORTIZATION AND IMPAIRMENTS

In 2021 total depreciation, amortization and impairment losses (reversal) amount to € 849 million (€ 2,416 million in 2020), of which:

Straight-line depreciation and amortization of € 906 million (€ 1,016 million in 2020) for continuing operations recorded in:
- Cost of goods sold € 564 million (€ 649 million in 2020),
- Administrative costs € 82 million (€ 97 million in 2020),
- Research and development costs € 100 million (€ 89 million in 2020),
- Other € 160 million (€ 181 million in 2020), including € 147 million (€ 166 million in 2020) for PPA amortization (see note F4 Other operating gains and losses);

In 2021, the impairments include the impairment reversal of the joint venture RusVinyl for € 66 million (see note F24 Impairment) and impairment losses of other non-performing assets for € (8) million.

In 2020, net impairment loss of € 1,400 million on Composite Materials, Technology Solutions and Novecare Oil & Gas business (€ 1,232 million) and on other small groups of assets, mainly in the Solutions Segment (€ 168 million); see note F24 Impairment.

NOTE F12

OTHER NON OPERATING AND NON CASH ITEMS

The other non-operating and non-cash items for 2021 of € (113) million relate mainly to non-cash capital gains and other results for M&A deals. In 2020, € (294) million mainly related to the Polyamide capital gain before taxes.

NOTE F13

INCOME TAXES IN THE STATEMENT OF CASH FLOWS

Income tax expense in 2021 amounts to € 110 million (€ 444 million in 2020), of which € 110 million (€ 248 million in 2020) was from continuing operations.

Income tax paid in 2021 amounts to € 233 million (€ 97 million in 2020), of which € 227 million (€ 96 million in 2020) was from continuing operations. The income tax paid for discontinuing operations in 2021 (€ 6 million) relates to a tax audit on the Pharma business in Germany that was closed in 2021. The income tax paid has increased compared to previous years due to increased profits mainly in Brazil and Italy and due to increased withholding taxes paid on dividends distributed, mainly by Rusvinyl.

The major components of Income taxes are discussed in note F7 Income taxes in income statement and statement of financial position.

NOTE F14

CHANGES IN WORKING CAPITAL

In € million	2021	2020
Inventories	-427	100
Trade receivables	-459	87
Trade payables	775	3
Other receivables/payables	20	59
Changes in working capital	**-92**	**249**
Of which discontinued operations	-5	-11

See comments in the Business Review section.

NOTE F15

ADDITIONS, REVERSALS AND USE OF PROVISIONS

Additions and reversals on provisions in 2021 amount to € 464 million (€ 186 million in 2020) and concern mainly employee benefits € 46 million (€ 58 million in 2020), restructuring € 184 million (€ 118 million in 2020) and environment for € 90 million (€ 15 million in 2020).

Use of provisions in 2021 amounts to € (303) million (€ (331) million in 2020) and concerns mainly employee benefits € (89) million (€ (125) million in 2020), environment € (61) million (€ (67) million in 2020) and restructuring € (118) million (€ (92) million in 2020).

In 2021, use of provisions for additional voluntary contributions in pension plans relates to € (134) million in the United Kingdom and to € (102) million in Belgium. In 2020, use of provisions for additional voluntary contributions in pension plans in France, USA and Germany amounted to € (552) million.

See note F31 Provisions for more information.

NOTE F16

CASH FLOWS FROM INVESTING ACTIVITIES – ACQUISITION/DISPOSAL OF ASSETS AND INVESTMENTS

2021 - In € million	Acquisitions	Disposals	Total
Investments	**-44**	**169**	**125**
Subsidiaries	-22	169	147
Other	-22		-22
Property, plant and equipment/Intangible assets	**-637**	**30**	**-606**
Total	**-681**	**200**	**-481**

2020 - In € million	Acquisitions	Disposals	Total
Total investments	**-58**	**1,297**	**1,239**
Subsidiaries	-12	1,297	1,285
Other	-46		-46
Property, plant and equipment/Intangible assets	**-535**	**8**	**-527**
Total	**-593**	**1,305**	**712**

2021

The acquisition of subsidiaries (€ (22) million) mainly relates to the acquisition of a seed coating business from Bayer.

Other acquisitions mainly relate to the investment in Shinsol Advanced Chemicals Corporation and in equity instruments measured at fair value.

The disposal of subsidiaries (€ 169 million) mainly relates to the proceeds after taxes from:
- the sodium chlorate business line and related assets in Povoa, Portugal;
- the fluorine chemicals assets in Onsan, South Korea;
- the sodium percarbonate business line and related assets in Bad Hönningen, Germany;
- the Barium Strontium business and the joint venture with Chemical Products Corporation (CPC);
- the Process Materials business;
- the amphoterics surfactants activities; and
- the surfactants and anti-oxidants business in Rasal, India.

The acquisition of property, plant and equipment and intangible assets (€ (636) million) relates to various projects:
- Soda Ash: coal energy phase-out in Green River (USA)
- Aroma performance: internalization of natural vanillin purification in Saint Fons (France)
- Specialty Polymers: water treatment in Spinetta (Italy)
- Specialty Polymers: Tecnoflon capacity expansion in Spinetta (Italy)
- Specialty Polymers: Polyvinylidene Fluoride (PVDF) capacity increase in Changshu (PRC)
- Composite Materials: new production unit dedicated to thermoplastic composites in Piedmont, South Carolina (USA)
- Soda Ash & Derivatives: new production unit dedicated to Bicarbonate in Devnya (Bulgaria)
- Specialty Polymers: Polyvinylidene Fluoride (PVDF) capacity increase in Tavaux (France)

2020

The acquisition of subsidiaries (€ (12) million) mainly relates to post-acquisition payments of Cytec and Aqua Pharma.

Other acquisitions mainly relate to the investment in the Strata Solvay Advanced Materials Joint Venture.

The disposal of subsidiaries (€ 1,297 million) mainly relates to the proceeds after taxes from the Polyamides divestment.

The acquisition of property, plant and equipment and intangible assets (€ (535) million) relates to various projects:

- Specialty Polymers: Tecnoflon capacity expansion in Spinetta (Italy)
- Specialty Polymers: Polyvinylidene Fluoride (PVDF) capacity increase in Changshu (PRC)
- Composite Materials: new production unit dedicated to thermoplastic composites in Piedmont, South Carolina (USA)
- Soda Ash & Derivatives: new production unit dedicated to Bicarbonate in Devnya (Bulgaria)
- Specialty Polymers: Polyvinylidene Fluoride (PVDF) capacity increase in Tavaux (France).

NOTE F17
OTHER CASH FLOWS FROM FINANCING ACTIVITIES

The € 50 million of other cash flows from financing activities in 2021 (€ (101) million in 2020) mainly relate to margin calls on hedging instruments as part of Energy Services' activities for € 108 million and to the payment of the EBRD option paid for € (52) million to purchase the EBRD shares in the Solvay holding of the Rusvinyl Joint Venture.

For trading in futures of different commodities (CO_2, power, gas, coal), Energy Services uses brokers. These deals are subject to margin calls. To cover the credit risk of the counterparty, brokers pay a margin call to Solvay in case the instrument is in the money for Solvay. If the instrument is out of the money for Solvay, Solvay pays a margin call to the brokers. The margin calls are presented as part of financial debt (see note F33 Net indebtedness). Cash flows from margin calls are recognized as financing cash flows that fluctuate with the fair value of the instrument. The actual settlement of these commodity derivatives is net of margin calls and the gross amount (including margin calls that are reclassified from financing cash flows) is recognized in operating cash flows.

NOTE F18
CASH FLOW FROM DISCONTINUED OPERATIONS

The 2021 cash flow from discontinued operations amounts to € (12) million related to the Pharma business and Polyamides. In 2020, the amount of € (17) million related to Polyamides.

NOTES TO THE CONSOLIDATED STATEMENT OF FINANCIAL POSITION

NOTE F19
INTANGIBLE ASSETS

Accounting policy

An intangible asset is an identifiable non-monetary asset without physical substance. It is identifiable when it is separable, i.e. Is capable of being separated or divided from the Group, or when it arises from contractual or other legal rights. An intangible asset shall be recognized if, and only if:

(a) it is probable that the expected future economic benefits that are attributable to the asset will flow to the Group; and

(b) the cost of the asset can be measured reliably.

Intangible assets acquired or developed internally are initially measured at cost. The cost of an acquired intangible asset comprises its purchase price, import duties and non-refundable purchase taxes, after deducting trade discounts and rebates, and any directly attributable cost of preparing the asset for its intended use. Subsequent expenditure on intangible assets is capitalized only if it is probable that it will increase the future economic benefits associated with the specific asset. Other expenditure is expensed as incurred.

After initial recognition, intangible assets are measured at cost less accumulated amortization and impairment losses, if any.

Intangible assets are amortized on a straight-line basis over their estimated useful lives, which do not exceed the contractual period, if any. The estimated useful lives, residual values and amortization methods are reviewed at each year-end, and any changes in estimates are accounted for prospectively.

Patents and trademarks	2-20	years
Software	3-5	years
Development expenditures	2-5	years
Customer relationships	5-29	years
Other intangible assets - Technologies	5-20	years

Amortization expense is included in the consolidated income statement within cost of goods sold, administrative costs, research and development costs and other operating gains and losses.

The asset is tested for impairment if (a) there is a trigger for impairment, and (b) annually for projects under development (see note F24 Impairment).

Intangible assets are derecognized from the consolidated statement of financial position on disposal or when no future economic benefits are expected from their use or disposal. The gain or loss arising from the derecognition of an intangible asset is recognized in profit or loss at the moment of derecognition.

Research and development costs

Research costs are expensed in the period in which they are incurred.

Development costs are capitalized if, and only if, all the following conditions are fulfilled:
- the cost of the asset can be reliably measured;
- the technical feasibility of the product has been demonstrated;
- the product or process will be placed on the market or used internally;
- the assets will generate future economic benefits (a potential market exists for the product or, where it is to be used internally, its future utility has been demonstrated);
- the technical, financial and other resources required to complete the project are available.

Development costs comprise employee expenses, the cost of materials and services directly attributable to the projects, and an appropriate share of directly attributable fixed costs including, and where applicable, borrowing costs. The intangible assets are amortized as from the moment they are available for use, i.e. When they are in the location and condition necessary for them to be capable of operating in the manner intended by management. Development costs, which do not satisfy the above conditions are expensed as incurred.

Patents, trademarks and customer relationships

Those intangible assets have mainly been acquired through business combinations. Customer relationships consist of customer lists.

Other intangible assets

Other intangible assets mainly include technology acquired separately or in a business combination.

In € million	Development costs	Patents and trademarks	Customer relationships	Other intangible assets	Total
Gross carrying amount					
December 31, 2019	**432**	**1,672**	**1,986**	**760**	**4,851**
Additions	57	8		16	81
Disposals and closures	-17	-12		-2	-31
Currency translation differences	-13	-99	-130	-46	-288
Other	6	57		-49	14
Transfer to assets held for sale	-1	-6		-19	-26
December 31, 2020	**464**	**1,620**	**1,856**	**661**	**4,601**
Additions	48	4		23	75
Disposals and closures	-9	-21		-4	-33
Increase through business combinations				7	7
Currency translation differences	12	79	117	49	257
Other	1	2		4	7
December 31, 2021	**517**	**1,686**	1,973	**739**	**4,914**
Accumulated amortization					
December 31, 2019	**-141**	**-865**	**-758**	**-443**	**-2,208**
Amortization	-50	-109	-91	-41	-291
Impairment	-3	-17	-12	-107	-139
Disposals and closures	17	12		2	31
Currency translation differences	4	44	25	46	119
Other		-1	12	-7	4
Transfer to assets held for sale		7		18	26
December 31, 2020	**-173**	**-930**	**-824**	**-531**	**-2,459**
Amortization	-65	-104	-82	-13	-264
Impairment		5		-5	
Disposals and closures	8	21		4	32
Currency translation differences	-3	-36	-36	-42	-116
Other	0	-3		-1	-5
December 31, 2021	**-233**	**-1,047**	-941	**-590**	**-2,811**
Net carrying amount					
December 31, 2019	291	807	1,228	318	**2,642**
December 31, 2020	291	690	1,032	129	**2,142**
December 31, 2021	**283**	**638**	**1,031**	**150**	**2,103**

Intangibles mainly relate to the intangibles acquired through the acquisitions of Rhodia and Cytec. The average remaining useful life of Cytec's assets is 11 years. The impairments recognized in 2020 mainly relate to the Novecare Oil & Gas business.

NOTE F20
GOODWILL AND BUSINESS COMBINATIONS

Accounting policy

General

Acquisitions of subsidiaries are accounted for using the acquisition method. The consideration for each acquisition is measured at the aggregate of the fair values (at the date of acquisition) of assets transferred and liabilities incurred or assumed, and equity instruments issued by the Group in exchange for control of the acquiree. Acquisition-related costs are recognized in profit or loss as incurred.

Where applicable, the consideration for the acquisition includes any asset or liability resulting from a contingent consideration arrangement, measured at its acquisition-date fair value. Subsequent changes in such fair values are adjusted against the cost of acquisition where they qualify as measurement period adjustments (see below). All other subsequent changes in the fair value of contingent consideration classified as an asset or liability are accounted for in accordance with relevant IFRSs, generally through profit or loss.

Where a business combination is achieved in stages, the Group's previously held interests in the acquired entity are remeasured to fair value at the acquisition date (i.e. The date the Group obtains control) and the resulting gain or loss, if any, is recognized in profit or loss. Amounts arising from interests in the acquiree prior to the acquisition date that have previously been recognized in other comprehensive income are reclassified to profit or loss, where such treatment would be appropriate if that interest were disposed of.

The acquiree's identifiable assets, liabilities and contingent liabilities that meet the conditions for recognition under IFRS 3 Business Combinations are recognized and measured at their fair value at the acquisition date, except that:

- deferred tax assets or liabilities, and liabilities or assets related to employee benefit arrangements are recognized and measured in accordance with IAS 12 Income Taxes, and IAS 19 Employee Benefits, respectively;
- liabilities or equity instruments related to the replacement by the Group of an acquiree's share-based payment awards are measured in accordance with IFRS 2 Share-based Payment; and
- assets (or disposal groups) that are classified as held for sale in accordance with IFRS 5 Non-current Assets Held for Sale and Discontinued Operations are measured in accordance with that Standard.

If the initial accounting for a business combination is incomplete by the end of the reporting period in which the combination occurs, the Group reports provisional amounts for the items for which the accounting is incomplete. Those provisional amounts are adjusted during the measurement period (see paragraph below), or additional assets or liabilities are recognized, to reflect new information obtained about facts and circumstances that existed as of the acquisition date that, if known, would have affected the amounts recognized as of that date.

The measurement period is the period from the date of acquisition to the date the Group obtains complete information about facts and circumstances that existed as of the acquisition date, and does not exceed twelve months.

Goodwill

Goodwill arising in a business combination is recognized as an asset at the date that control is obtained (the acquisition date). Goodwill is measured as the excess of the sum of:

(a) the consideration transferred;

(b) the amount of any non-controlling interests in the acquiree; and

(c) in a business combination achieved in stages, the acquisition date fair value of the previously held equity interest in the acquiree,

over the share acquired by the Group in the fair value of the entity's identifiable net assets at the acquisition date.

Goodwill is not amortized but is tested for impairment on an annual basis, and more frequently if there are any impairment triggers identified.

For the purpose of impairment testing, goodwill is allocated to each of the Group's cash-generating units (or groups of cash-generating units) in accordance with IAS 36 Impairment of Assets.

A cash-generating unit (CGU) is the smallest identifiable group of assets that generates cash inflows that are largely independent of the cash inflows from other group(s) of assets.

These tests consist of comparing the carrying amount of the assets or (groups of) CGUs with their recoverable amount. The recoverable amount of an asset or a (group of) CGU(s) is the higher of its fair value less costs to sell and its value in use. If the recoverable amount of the CGU is less than its carrying amount, the impairment loss is allocated first to reduce the carrying amount of any goodwill allocated to the unit and then to the other assets of the unit pro-rata on the basis of the carrying amount of each asset in the unit. An impairment loss recognized on goodwill shall not be reversed in a subsequent period.

Assets held for sale include their related goodwill.

On disposal of an operation within a CGU to which goodwill has been allocated, the goodwill associated with the operation disposed of is included in the determination of the profit or loss on disposal. It is measured on the basis of the relative values of the operation disposed of and the portion of the CGU retained, unless another method better reflects the goodwill associated with the operation disposed of.

Goodwill – overview

In € million	Total
December 31, 2019	**4,468**
Currency translation differences	-153
Impairment	-1,050
December 31, 2020	**3,265**
Currency translation differences	115
Disposals	-1
December 31, 2021	**3,379**

In 2020, the impairment mainly relates to Composite Materials (€ (761) million) and Technology Solutions (€ (265) million).

In 2021 and 2020, the currency translation differences mainly relate to goodwill expressed in US dollars.

Goodwill by (groups of) CGU(s)

Goodwill acquired in a business combination is allocated to the CGUs or groups of CGUs that are expected to benefit from that business combination.

	2021			
In € million	At beginning of the period	Disposals	Currency translation differences	At the end of the period
Operating segments - Groups of CGUs				
Materials	**341**			**341**
Chemicals	**121**			**121**
Solutions	**264**			**264**
(Groups of) CGUs				
Composite Materials	**509**		46	**555**
Novecare	**542**	-1	13	**553**
Technology Solutions	**636**		54	**690**
Special Chem	**210**			**210**
Specialty Polymers	**177**		2	**179**
Soda Ash and Derivatives	**162**			**162**
Coatis	**82**			**82**
Silica	**72**			**72**
Aroma Performance	**49**			**49**
Energy Services	**50**			**50**
Hydrogen Peroxide Europe	**21**			**21**
Hydrogen Peroxide Mercosul	**14**			**14**
Hydrogen Peroxide Nafta	**7**			**7**
Hydrogen Peroxide Asia	**11**			**11**
Total goodwill	**3,265**	**-1**	**115**	**3,379**

	2020				
In € million	At beginning of the period	Transfer	Impairment	Currency translation differences	At the end of the period
Operating segments - Groups of CGUs					
Materials		341			**341**
Chemicals		121			**121**
Solutions		266	-2		**264**
Advanced Materials	**493**	-493			
Advanced Formulations	**148**	-148			
Performance Chemicals	**86**	-86			
(Groups of) CGUs					
Composite Materials	**1,334**		-761	-64	**509**
Novecare	**569**		-7	-20	**542**
Technology Solutions	**966**		-265	-65	**636**
Special Chem	**226**		-15	-1	**210**
Specialty Polymers	**180**			-3	**177**
Soda Ash and Derivatives	**162**				**162**
Coatis	**82**				**82**
Silica	**72**				**72**
Aroma Performance	**49**				**49**
Energy Services	**50**				**50**
Hydrogen Peroxide Europe	**21**				**21**
Hydrogen Peroxide Mercosul	**14**				**14**
Hydrogen Peroxide Nafta	**7**				**7**
Hydrogen Peroxide Asia	**11**			-1	**11**
Total goodwill	**4,468**	**0**	**-1,050**	**-153**	**3,265**

See note *F24 Impairment*

NOTE F21
PROPERTY, PLANT AND EQUIPMENT

Accounting policy

General

Property, plant and equipment are tangible items that:

- are held for use in the production or supply of goods or services, for rental to others, or for administrative purposes; and
- are expected to be used during more than one period.

The items of property, plant and equipment owned by the Group are recognized as property, plant and equipment when the following conditions are satisfied:

- it is probable that the future economic benefits associated with the asset will flow to the Group;
- the cost of the asset can be measured reliably.

Items of property, plant and equipment are initially measured at cost. The cost of an item of property, plant and equipment comprises its purchase price and any costs directly attributable to bringing the asset to the location and condition necessary for it to be capable of operating in the manner intended by management. If applicable, the cost comprises borrowing costs during the construction period.

After initial recognition, items of property, plant and equipment are measured at cost less accumulated depreciation and impairment losses, if any.

Items of property, plant and equipment are depreciated on a straight-line basis over their estimated useful lives. The components of an item of property, plant and equipment with different useful lives are depreciated separately. Land is not depreciated. The estimated useful lives, residual values and depreciation methods are reviewed at each year end, also taking into account the potential impact of climate change including the execution of the Solvay One Plant Strategy (see Note Climate Change in the IFRS general accounting policies). Any changes in estimates are accounted for prospectively.

Buildings	30-40	years
IT equipment	3-5	years
Machinery and equipment	10-20	years
Transportation equipment	5-20	years

Depreciation expense is included in the consolidated income statement within cost of goods sold, administrative costs, and R&D costs.

The asset is tested for impairment if there is a trigger for impairment (see note F24 Impairment).

Items of property, plant and equipment are derecognized from the consolidated statement of financial position on disposal or when no future economic benefits are expected from their use or disposal. The gain or loss arising from the derecognition of an item of property, plant and equipment is recognized in profit or loss at the moment of derecognition.

Subsequent expenditure

Subsequent expenditure related to items of property, plant and equipment is capitalized only if it is probable that it will increase the future economic benefits associated with the specific asset. Other expenditure is expensed as incurred. Subsequent expenditure incurred for the replacement of a component of an item of property, plant and equipment is only recognized as an asset when it satisfies the recognition criteria mentioned above. The carrying amount of replaced items is derecognized.

Repair and maintenance costs are recognized in the consolidated income statement as incurred.

Regarding its industrial activity, Solvay incurs expenditure for major repairs over several years for most of its sites. The purpose of this expenditure is to maintain the proper working order of certain installations without altering their useful life. This expenditure is considered as a specific component of the item of property, plant and equipment and is depreciated over the period during which the economic benefits are expected to be obtained, i.e. the major repairs' intervals.

Dismantling and restoration costs

Dismantling and restoration costs are included in the cost of an item of property, plant and equipment if the Group has a legal or constructive obligation to dismantle or restore. They are depreciated over the useful life of the items to which they pertain.

Generally, Solvay's obligation to dismantle and/or restore its operating sites is only likely to arise upon the discontinuation of a site's activities. A provision for dismantling of discontinued sites or installations is recognized when there is a legal obligation (due to a request or injunction from the relevant authorities), or when there is no technical alternative than to dismantle, so to ensure the safety compliance of the discontinued sites or installations.

Borrowing costs

Borrowing costs directly attributable to the acquisition, construction or production of qualifying assets, which are assets that necessarily take a substantial period of time to get ready for their intended use or sale, are added to the cost of those assets, until such time as the assets are substantially ready for their intended use or sale.

Investment income earned on the temporary investment of specific borrowings pending their expenditure on qualifying assets is deducted from the borrowing costs eligible for capitalization.

All other borrowing costs are recognized in profit or loss in the period in which they are incurred.

In € million	Land and buildings	Fixtures and equipment	Other tangible assets	Property, plant and equipment under construction	Total
Gross carrying amount					
December 31, 2019	3,013	9,939	425	678	**14,056**
Additions	24	144	13	215	**395**
Disposals and closures	-17	-92	-10		**-119**
Currency translation differences	-126	-490	-20	-29	**-665**
Other	47	397	14	-455	**2**
Transfer to assets held for sale	-122	-199	-8	-3	**-331**
December 31, 2020	2,819	9,699	414	405	**13,337**
Additions	18	88	13	452	**571**
Disposals and closures	-16	-101	-29		**-146**
Increase through business combinations	4	2			**7**
Currency translation differences	101	348	13	24	**486**
Other	15	151	7	-193	**-20**
December 31, 2021	**2,941**	**10,187**	**418**	**688**	**14,235**
Accumulated depreciation					
December 31, 2019	-1,487	-6,770	-327		**-8,584**
Depreciation	-82	-501	-31		**-614**
Impairment	-67	-132	-8		**-207**
Disposals and closures	16	91	9		**116**
Currency translation differences	59	330	15		**405**
Other	11	-1	6		**16**
Transfer to assets held for sale	71	170	7		**248**
December 31, 2020	-1,478	-6,813	-329		**-8,620**
Depreciation	-73	-436	-27		**-535**
Impairment	-5	-4			**-9**
Reversal of impairment	1				**1**
Disposals and closures	12	101	29		**143**
Currency translation differences	-43	-226	-10		**-278**
Other	5	2			**7**
December 31, 2021	**-1,580**	**-7,375**	**-337**		**-9,291**
Net carrying amount					
December 31, 2019	1,527	3,169	98	678	**5,472**
December 31, 2020	1,342	2,886	85	405	**4,717**
December 31, 2021	**1,361**	**2,813**	**81**	**688**	**4,943**

The impairment in 2020 mainly relates to the assets of the Special Chem GBU (Fluor Gas – Solutions Segment), which were impacted by the COVID-19 crisis.

The line "Other" mainly includes changes following portfolio transactions and reclassification of property, plant and equipment under construction to the appropriate categories when they are ready for intended use.

Cash flows related to major investments are disclosed in note F16 Cash flows from investing activities – acquisition/disposal of assets and investments.

NOTE F22
RIGHT-OF-USE ASSETS AND LEASE OBLIGATIONS

Accounting policy

Definition of a lease

At inception of a contract, which generally coincides with the date the contract is signed, the Group assesses whether a contract is, or contains, a lease. A contract is, or contains, a lease if the contract conveys the right to control the use of an identified asset for a period of time in exchange for consideration.

An asset is typically identified by being explicitly specified in a contract. However, an asset can also be identified by being implicitly specified at the time that the asset is made available for use by the customer. If the supplier has a substantive substitution right, then the asset is not identified. A substantive substitution right means that (a) the supplier has the practical ability to substitute the asset throughout the period of use, and (b) would economically benefit from doing so.

To assess whether a contract conveys the right to control the use of an identified asset, the Group assesses whether, throughout the period of use, it has:

- the right to obtain substantially all of the economic benefits from use of the identified asset; and
- the right to direct the use of the identified asset. This is generally the case when the Group has the decision-making rights regarding how and for what purpose the asset is used.

The Group's leased assets relate mainly to buildings, transportation equipment, and industrial equipment.

Lease term

The Group determines the lease term as the non-cancellable period of a lease, together with both:

- periods covered by an option to extend the lease if the Group is reasonably certain to exercise that option; and
- periods covered by an option to terminate the lease if the Group is reasonably certain not to exercise that option.

In its assessment, the Group considers the impact of the following factors (non-exhaustive):

- contractual terms and conditions for the optional periods, compared with market rates;
- significant leasehold improvements undertaken (or expected to be undertaken) over the term of the contract;
- costs relating to the termination of the lease, including relocation costs, costs of identifying another underlying asset suitable for the Group's needs, costs of integrating a new asset into the Group's operations, and termination penalties;
- the importance of that underlying asset to the Group's operations, including the availability of suitable alternatives;
- conditionality associated with exercising the option (i.e. When the option can be exercised only if one or more conditions are met), and the likelihood that those conditions will exist; and
- past practice.

Right-of-use asset and lease liability

The Group recognizes a right-of-use asset and a lease liability at the lease commencement date, which is the date that the lessor makes the asset available for use by the Group except for short-term leases (defined as leases with a lease term of 12 months or less) and leases of low value assets. The right-of-use assets are presented separately in the consolidated statement of financial position, and the lease liabilities are presented as part of financial debt.

Right-of-use asset

The right-of-use asset is initially measured at cost, which comprises:

- the amount of the initial measurement of the lease liability;
- any lease payments made at or before the commencement date, less any lease incentive received; and
- any initial direct costs incurred by the Group.

After the commencement date, the right-of-use asset is measured at cost less any accumulated depreciation and any accumulated impairment losses. Right-of-use assets are depreciated using the straight-line depreciation method, from the commencement date to (a) the end of the useful life of the underlying asset, in case the lease transfers ownership of the underlying asset to the Group by the end of the lease term, or the lease contains a purchase option that the Group is reasonably certain to exercise, or (b) the earlier of the end of the useful life and the end of the lease term, in all other cases.

Lease liability

The lease liability is initially measured at the present value of the lease payments that are not paid at the commencement date, discounted using the interest rate implicit in the lease or, if that rate cannot be readily determined, the respective Group entity's incremental borrowing rate. Lease payments included in the measurement of the lease liability comprise the following:

- fixed payments, less any lease incentives receivable;
- variable lease payments that depend on an index or a rate, initially measured using the index or rate as at the commencement date;
- amounts expected to be payable by the Group under residual value guarantees;
- the exercise price of a purchase option if the Group is reasonably certain to exercise that option; and
- payments of penalties for early terminating the lease, if the Group is reasonably certain to exercise an option to early terminate the lease.

Service components (e.g. Utilities, maintenance, insurance, …) are excluded from the measurement of the lease liability.

After the commencement date, the lease liability is measured by:

- increasing the carrying amount to reflect interest on the lease liability;
- reducing the carrying amount to reflect the lease payments made; and
- remeasuring the carrying amount to reflect any reassessment or lease modifications, or to reflect the impact from a revised index or rate.

Leasing of Palladium

The Group uses palladium, a precious metal, for certain of its operations. Next to purchasing this palladium, the Group also enters into various "leasing" agreements with financial institutions that give the Group the right to use palladium for a certain period and then return it at the end of the "lease". Based on our analysis of these agreements, these contracts are not in the scope of IFRS 16 Leases or IFRS 9 Financial Instruments. Due to the lack of clear IFRS guidance, the Group applied judgment to determine whether these rights and obligations shall be accounted for on a gross or a net basis. Considering that the Group bears no price risk during the 'lease' term and is not in full control of the asset (in accordance with the IFRS Conceptual Framework), the Group believes a net presentation gives a better view on the economic substance of the transaction. As a result, only accruals are recorded for the production losses and regeneration costs and the "lease" fee is recognized within cost of sales. At the end of 2021, the total (gross) value of palladium leased still to be returned amounted to € 50 million (end of 2020: € 63 million) valued at the year-end closing rate.

In € million	Land	Buildings	Transportation equipment	Industrial equipment	Other tangible assets	Total
Gross carrying amount						
December 31, 2019	**18**	**209**	**185**	**153**	**7**	**571**
Additions		39	28	12	2	**82**
Disposals and closures		-7	-4			**-12**
Currency translation differences	-1	-12	-11	-8		**-32**
Other	1	7	11	2	1	**23**
Transfer to assets held for sale		-10	-1			**-12**
December 31, 2020	**18**	**227**	**207**	**159**	**9**	**620**
Additions		29	23	82	1	**134**
Disposals and closures		-1	-3			**-4**
Currency translation differences		9	11	7		**27**
Other		3	10	3	1	**17**
December 31, 2021	**19**	**266**	**248**	**251**	**11**	**795**

In € million	Land	Buildings	Transportation equipment	Industrial equipment	Other tangible assets	Total
Accumulated depreciation						
December 31, 2019	**-1**	**-47**	**-45**	**-28**	**-3**	**-124**
Depreciation	-1	-43	-45	-22	-3	**-114**
Impairment		-1				**-1**
Disposals and closures		7	4			**12**
Currency translation differences		4	4	2		**10**
Other		-3	-1			**-4**
Transfer to assets held for sale		7	1			**8**
December 31, 2020	**-2**	**-77**	**-83**	**-47**	**-6**	**-215**
Depreciation	-1	-36	-42	-26	-3	**-107**
Disposals and closures		1	3			**4**
Currency translation differences		-4	-5	-3		**-11**
December 31, 2021	**-4**	**-115**	**-127**	**-75**	**-8**	**-329**
Net carrying amount						
December 31, 2019	16	162	139	125	4	447
December 31, 2020	16	150	124	112	4	405
December 31, 2021	**15**	**151**	**121**	**176**	**3**	**466**

The Group primarily leases buildings that include office buildings, and warehouses. Those leases are generally long-term leases and may include extension options.

Next, the Group leases transportation equipment that mainly consists of railcars and containers to transport the Group's products.

Industrial equipment mainly relates to utility assets. In 2021, additions include € 68 million for the construction of a waste-wood boiler, steam turbine and auxiliaries in Germany.

Lease contracts generally are negotiated by the local teams, and contain a wide range of different terms and conditions. Many lease contracts contain extension options and/or early termination options to provide the Group with operational flexibility. Such options are taken into account when determining the lease term and the lease liability when it is reasonably certain that they will be exercised.

If the Group exercised its extension options not currently included in the lease liability, the present value of additional payments would amount to € 143 million at December 31, 2021 (€ 165 million at December 31, 2020).

Lease contracts signed not yet commenced amount to € 135 million at December 31, 2021 (€ 139 million for 2020) and mainly relate to a second waste wood boiler, steam turbine and auxiliaries in Germany, and industrial equipment in the United States.

Total cash outflows for leases amount to € 118 million for 2021, of which € 99 million related to payment of lease liabilities and € 19 million of interest expenses. Information on the corresponding lease liabilities (€ 505 million) can be found in the note F33 Net indebtedness. Information on the finance expense related to lease liabilities can be found in note F6 Net financial charges.

NOTE F23
INVESTMENTS IN ASSOCIATES AND JOINT VENTURES

The list of associates and joint ventures is available in the note F40 List of companies included in the consolidation scope.

The associates and joint ventures not classified as held for sale/discontinued operations are accounted for under the equity method of accounting.

In € million	December 31, 2021			December 31, 2020		
	Associates	Joint ventures	Total	Associates	Joint ventures	Total
Investments in associates and joint ventures	18	619	**637**	16	479	**495**
Earnings from associates and joint ventures	2	157	**159**	2	56	**58**

INVESTMENTS IN ASSOCIATES

In € million	2021	2020
January 1	**16**	**17**
Profit for the year	2	2
Dividends received	-2	-2
Currency translation differences	1	-1
December 31	**18**	**16**

The tables below present the summary of the statement of financial position and income statement of the associates as if they were proportionately consolidated.

In € million	December 31, 2021	December 31, 2020
Statement of financial position		
Non-current assets	**14**	**14**
Current assets	**16**	**13**
Cash and cash equivalents	3	3
Non-current liabilities	**2**	**1**
Non-current financial debt	1	1
Current liabilities	**10**	**9**
Current financial debt	2	2
Investments in associates	**18**	**16**
Income statement	2021	2020
Sales	33	31
Depreciation and amortization	-1	-1
Interest on loans and short term deposits		
Profit for the year from continuing operations	**2**	**2**
Profit for the year	**2**	**2**
Total comprehensive income	**3**	**2**
Dividends received	**1**	**1**

INVESTMENTS IN JOINT VENTURES

In € million	2021	2020
January 1	**479**	**538**
Additions	8	
Capital increase		28
Profit for the year	157	56
Dividends received	-127	-23
Currency translation differences	34	-100
Transfer to assets held for sale		-22
Impairment reversal	67	
Other	1	2
December 31	**619**	**479**

In 2021, the impairment reversal of € 67 million and the dividend received of € 127 million mainly concern the joint venture Rusvinyl.

In 2021 and 2020, the currency translation differences mainly relate to the evolution of the Russian ruble, of the Brazilian real and of the Indian rupee compared to the euro.

In 2020, the capital increase related to the investment in the Strata Solvay Advanced Materials Joint Venture. The transfer to assets held for sale in 2020 refers to the investment in the Solvay-CPC Barium Strontium Joint Venture.

The tables below present the summary of the statement of financial position and income statement of the material joint ventures as if they were proportionately consolidated.

December 31, 2021 In € million	Rusvinyl OOO	Peroxidos do Brasil Ltda	Strata - Solvay Advanced Material JV	Shandong Huatai Interox Chemical Co. Ltd	Hindustan Gum & Chemicals Ltd	Aqua Pharma Group	EECO Holding and subsidiaries	Shinsol Advanced Chemicals	Cogeneration Rosignano
Ownership interest	50%	69.40%	50%	50%	50%	50%	33.3%	51%	25.4%
Operating Segment	Chemicals	Chemicals	Materials	Chemicals	Solutions	Chemicals	Corporate & Business Services	Solutions	Corporate & Business Services
Statement of financial position									
Non-current assets	**324**	**61**	**29**	**4**	**5**	**16**	**10**		**5**
Current assets	**82**	**58**	**10**	**12**	**156**	**12**	**15**	**8**	**4**
Cash and cash equivalents	57	25	10	9	138	6	2	8	3
Non-current liabilities	**50**	**7**			**5**	**4**	**8**		**4**
Non-current financial debt	30	4					8		4
Current liabilities	**64**	**26**	**3**	**5**	**8**	**1**	**9**		**1**
Current financial debt	39	4					8		1
Investments in joint ventures	**292**	**87**	**36**	**11**	**149**	**23**	**8**	**8**	**4**
2021 income statement									
Sales	276	88	13	22	22	18	0		
Depreciation and amortization	-22	-4		-1	-1	-2	-1		-1
Cost of borrowings	-7						-1		
Interest on loans and short-term deposits	2	1			7		1		
Income taxes	-28	-11		-1	-2	-1			
Profit for the year from continuing operations	**111**	**26**	**9**	**2**	**5**	**1**	**1**		
Profit for the year	**111**	**26**	**9**	**2**	**5**	**1**	**1**		
Other comprehensive income	21	2		1	8	2			
Total comprehensive income	**132**	**28**	**9**	**3**	**14**	**3**			
Dividends received	**103**	**15**		**1**	**2**	**-1**			

Other comprehensive income mainly comprises the currency translation differences.

December 31, 2020 In € million	Rusvinyl OOO	Peroxidos do Brasil Ltda	Strata - Solvay Advanced Material JV	Shandong Huatai Interox Chemical Co. Ltd	Hindustan Gum & Chemicals Ltd	Aqua Pharma Group	EECO Holding and subsidiaries	Cogeneration Rosignano
Ownership interest	50%	69.40%	50%	50%	50%	50%	33.3%	25.4%
Operating Segment	Chemicals	Chemicals	Materials	Chemicals	Solutions	Chemicals	Corporate & Business Services	Corporate & Business Services
Statement of financial position								
Non-current assets	**264**	**56**	**28**	**5**	**6**	**18**	**11**	**8**
Current assets	**73**	**48**		**7**	**142**	**10**	**17**	**2**
Cash and cash equivalents	49	21		5	130	4	3	1
Non-current liabilities	**84**	**7**		**-**	**4**	**2**	**12**	**5**
Non-current financial debt	64	4				1	12	4
Current liabilities	**56**	**21**		**3**	**8**	**3**	**11**	**1**
Current financial debt	39	2					10	1
Investments in joint ventures	**196**	**76**	**28**	**9**	**137**	**23**	**6**	**4**
2020 income statement								
Sales	168	77		17	17	20		
Depreciation and amortization	-22	-4		-1		-3	-1	-1
Cost of borrowings	-11						-1	
Interest on loans and short-term deposits	1	1			11		1	
Income taxes	-4	-10			-2	-1		
Profit for the year from continuing operations	**16**	**23**		**2**	**5**	**2**	**1**	
Profit for the year	**16**	**23**		**2**	**5**	**2**	**1**	
Other comprehensive income	-58	-23			-15	1		
Total comprehensive income	**-41**			**1**	**-11**	**3**		
Dividends received	**6**	**9**		**2**	**1**			

Other comprehensive income mainly comprises the currency translation differences.

NOTE F24
IMPAIRMENT

Accounting policy

General

At the end of each reporting period, the Group reviews whether there is any indication that those assets have suffered an impairment loss. If any such indication exists, the recoverable amount of the asset is estimated in order to determine the extent of the impairment loss (if any). Where it is not possible to estimate the recoverable amount of an individual asset, the Group estimates the recoverable amount of the CGU to which the asset belongs. Where a reasonable and consistent basis of allocation can be identified, corporate assets are allocated to individual CGUs, or otherwise they are allocated to the smallest group of CGUs for which a reasonable and consistent allocation basis can be identified.

The recoverable amount is the higher of fair value less costs of disposal and value in use. In assessing value in use, the estimated future cash flows are discounted to their present value using a pre-tax discount rate. Future cash flows are adjusted for risks not incorporated into the discount rate.

If the recoverable amount of an asset (or CGU) is estimated to be less than its carrying amount, the carrying amount of the asset (or CGU) is reduced to its recoverable amount. An impairment loss is recognized immediately in profit or loss.

When an impairment loss subsequently reverses, the carrying amount of the asset (or CGU) is increased to the revised estimate of its recoverable amount, but so that the increased carrying amount does not exceed the carrying amount that would have been determined (net of amortization or depreciation) had no impairment loss been recognized for the asset (or CGU) in prior years. A reversal of an impairment loss is recognized immediately in profit or loss. An impairment loss recognized for goodwill shall not be reversed in a subsequent period.

Assets other than non-current assets held for sale

In accordance with IAS 36 Impairment of Assets, the recoverable amount of property, plant and equipment, intangible assets, right-of-use assets, CGUs or groups of CGUs, including goodwill, and equity method investees corresponds to the higher of their fair value less costs of disposal, and their value in use. The latter equals the present value of the future cash flows expected to be derived from each asset, CGU or group of CGUs, and equity method investees and is determined using the following inputs:

- business plan approved by management based on growth and profitability assumptions, taking into account past performances, forecast changes in the economic environment and expected market developments, including opportunity and risks resulting from climate change (taking into account the Solvay One Planet strategy - see note Climate change in the IFRS general accounting policies) and environmental regulations such as products phasing out. For further details, refer to the Risk Management Section. Such business plan generally covers five years, unless management is confident that projections over a longer period are reliable;
- consideration of a terminal value determined based on the cash flows obtained by extrapolating the cash flows of the last years of the business plan referred to above, affected by a long-term growth rate deemed appropriate for the activity and the location of the assets;
- discounting of expected cash flows at a rate determined using the weighted average cost of capital formula.

Discount rate

Weighted average cost of capital (WACC) was computed using the same methodology applied in previous years and after extensive benchmarking with peers.

- A short term WACC of 5.1% was utilized in 2021 (6.4% in 2020) to discount the expected cash flows of the initial four years, computed consistently with previous years based on prevailing discount rates;
- A long term WACC of 6.8% was utilized in 2021 (7.2% in 2020) to discount the expected cash flows of the fifth year and the Terminal Value, and is a rolling 8-year average of historical short term WACCs.

Long-term growth rates

The long-term growth rates used in 2021 are based:

- on the comprehensive review of the entire business portfolio performed in 2019 with the definition of the G.R.O.W Strategy when each CGU was assigned to one of three agile business segments that became effective as from 2020: Materials, Chemicals and Solutions, with different growth opportunities, consistent with the long term growth rates of the market they serve and the Group competitive position in those markets; and
- on the long term growth potential for Composite Materials and Technology Solutions assessed during the 2020 impairment test which remain very strong.

After reassessment of the long-term growth prospects the Group concluded that the prior year rates are still applicable and were thus set at:

- 2% for the Specialty Polymers CGU and 3% for the Composite Materials CGU
- 0% in the Segment Chemicals, except for Soda Ash and Peroxides, for which a 1% rate was set, and
- 1% for the other CGUs in the Segment Solutions (excluding Technology Solutions, for which 1.5% was used, and Oil & Gas).

Other key assumptions are specific to each CGU (utility price, volumes, margin, etc.).

Impairment Test 2021

The impairment tests performed at CGU level at December 31, 2021, were based on the budget 2022 approved by the Board and the Mid Term Plan 2023-2025 which reflect the economic rebound after last year crisis and the results of the structural cost saving measures adopted by the Group. They did not lead to any impairment of assets, as the recoverable amounts of the (groups of) CGUs were higher than their carrying amounts. More specifically, the difference between the (groups of) CGUs' value in use and their carrying amount (headroom) represented in all cases more than 10% of their carrying amount. As a result, for these (groups of) CGUs, a reasonable change in a key assumption relating to the recoverable amount for which the (groups of) CGUs is based, would not result in an impairment loss.

Fully consolidated CGUs

In 2020, the Oil & Gas market deteriorated significantly and the value pool for fracking chemicals further decreased with reduced volumes and prices. Consequently, an additional impairment loss of € (155) million was recorded on tangible and intangible fixed assets. In 2021 although the profitability has improved, the long-term prospects remain uncertain and the impairments recorded in prior years were not reversed.

Considering the impairment losses for Composite Materials and Technology Solutions recorded in 2020 and the consequently higher risk of impairment in case of changes in the Discount rate and Long term growth assumptions used for their test, the following sensitivity analyses are reported for these two groups of CGUs. A broader range of discount rates was used in the sensitivity analysis as compared to the prior year.

Composite Materials

In € billion	December 31, 2021	
	Assumptions: Discount rate = 6.8% Long term growth rate = 3%	
Sensitivity to:	**Impact on recoverable amount**	**Revised headroom**
Discount rate - 1%	1.3	2.4
Discount rate + 1%	-0.7	0.4
Long term growth rate - 1%	-0.6	0.5
Long term growth rate +1%	1.0	2.1

In € billion	December 31, 2020	
	Assumptions: Discount rate = 7.2% Long term growth rate = 3%	
	Impact on recoverable amount	**Revised headroom**
Discount rate - 0.5%	0.3	0.5
Discount rate + 0.5%	-0.3	-0.1
Long term growth rate - 1%	-0.4	-0.2
Long term growth rate +1%	0.6	0.8

The table below shows the break-even analysis for the headroom of Composite Materials:

	Discount rate		Long term growth rate	
	Base rate	**Break-even rate**	**Base rate**	**Break-even rate**
December 31, 2021	6.8%	8.6%	3.0%	0.6%
December 31, 2020	7.2%	7.5%	3.0%	2.6%

Technology Solutions

After the impairment, Technology Solutions has limited headroom at the end of Q4 2021 and is sensitive to changes in assumptions related to the discount rate and the long-term growth rate.

In € billion	December 31, 2021	
	Assumptions: Discount rate = 6.8% Long term growth rate = 1.5%	
Sensitivity to:	**Impact on recoverable amount**	**Revised headroom**
Discount rate - 1%	0.5	0.9
Discount rate + 1%	-0.3	0.1
Long term growth rate - 1%	-0.3	0.2
Long term growth rate +1%	0.4	0.8

In € billion	December 31, 2020	
	Assumptions: Discount rate = 7.2% Long term growth rate = 1.5%	
Sensitivity to:	**Impact on recoverable amount**	**Revised headroom**
Discount rate - 0,5%	0.2	0.2
Discount rate + 0,5%	-0.1	0.0
Long term growth rate - 1%	-0.2	-0.1
Long term growth rate +1%	0.3	0.3

The table below shows the break-even analysis for the headroom of Technology Solutions:

	Discount rate		Long term growth rate	
	Base rate	**Break-even rate**	**Base rate**	**Break-even rate**
December 31, 2021	6.8%	8.3%	1.5%	0.3%
December 31, 2020	7.2%	7.5%	1.5%	1.1%

Other small groups of assets (Solutions)

Several production sites, mainly in the Special Chem CGU for Fluor Gases, with independent cash inflows were impacted by the COVID-19 crisis. The impact resulted in 2020 in an impairment loss of € (169) million, of which € (24) million is related to the Goodwill, € (41) million is related to Intangible assets, and € (104) million for tangible assets. Even if the results of this CGU improved in 2021, the long-term prospects remain unchanged.

RusVinyl equity investment

RusVinyl is a Russian joint venture in chlorovinyls (included in the Chemicals Segment:) in which Solvay holds a 50% equity interest, together with Sibur who holds the remaining 50% equity interest.

In the fourth quarter of 2014, the Group accounted for a € 110 million impairment charge for the RusVinyl joint venture. The impairment was partially reversed in 2015 for € 19 million after the new business plan was prepared at that time for the company's refinancing.

In 2021, the recoverable amount of the investment has been estimated based on a dividend discount model taking into account the latest business plan, which reflects the improved profitability and the deleveraging of the euro denominated debt. At the average RUB/EUR rates used for the conversion, the impairment test in 2021 resulted in an impairment reversal of € 66 million reported in the Note 5 Results from Portfolio Management, Major Restructurings, Legacy Remediation and Major Litigations.

Impairment tests Q2 2020

A review was undertaken during Q2, 2020, to assess whether the consequences of COVID-19 indicate that some assets could be impaired. The review confirmed that there was an indication of impairment for the CGUs with the lowest impairment headroom at December 31, 2019 (see Note F27 in 2019 Annual report). The analysis resulted in impairments within the following CGUs:

- Composite Materials (Materials) - An impairment loss of € (0.8) billion which was fully allocated to Goodwill, except for the tangible assets related to two shutdown plants.
- Technology Solutions (Solutions) - An impairment loss of € (0.3) billion which was fully allocated to Goodwill, with the exception of € (15) million which was allocated to tangible assets.
- Oil & Gas (Solutions) - An impairment loss of € (155) million, of which € (61) million was allocated to tangible assets and € (94) million was allocated to intangible assets related to customer relationships.
- Other small groups of assets (Solutions) - an impairment loss of € (169) million, of which € (24) million is related to the Goodwill, € (41) million is related to Intangible assets, and € (104) million for tangible assets.

Q4 2020 update

An impairment test for Goodwill was performed at year-end based on the 2021 budget and the Mid Term Plan 2022-2024, and the test did not lead to any additional impairments.

Additional information on the impairment reviews undertaken in 2020 can be found in Note F27 of the 2020 Annual Report.

NOTE F25
INVENTORIES

Accounting policy

Cost of inventories includes the purchase, conversion and other costs incurred in bringing the inventories to their present location and condition. The cost of inventories is determined by using the weighted average cost method.

Inventories are measured at the lower of purchasing cost (raw materials and merchandise) or production cost (work in progress and finished goods) and net realizable value. Net realizable value represents the estimated selling price, less all estimated costs of completion and the estimated costs necessary to make the sale.

CO_2 emission rights

With respect to the mechanism set up by the European Union to encourage manufacturers to reduce their greenhouse gas emissions, carbon dioxide (CO_2) emission rights are granted to the Group for free. The Group is also involved in Clean Development Mechanism (CDM) under the Kyoto protocol. Under these projects, the Group has deployed facilities in order to reduce greenhouse gas emissions at the relevant sites in return for Certified Emission Reductions (CER).

In the absence of any IFRS regulating the accounting treatment of CO_2 emission rights, the Group applies the Trade/Production model, according to which CO_2 emission rights are presented as inventories if they will be consumed in the production process within the next 12 months, or as derivatives if they are held for trading. Energy Services is involved in CO_2 emission rights' trading, arbitrage and hedging activities. The net income or expense from these activities is recognized in "other operating gains and losses" (a) for the industrial component, where Energy Services sells the excess CO_2 emission rights generated by Solvay or where a Group deficit is recognized, as well as (b) for the trading component, where Energy Services acts as a trader/broker with respect to those CO_2 emission rights. In some cases, Energy Services rolls forward CO_2 credits, with continued own use exception, to match credits delivery and consumption in the production process.

In light of its centralized CO_2 emission rights' portfolio management, for emission rights that are substitutable between subsidiaries, the Group's financial statements reflect the Group's net position. If this net position is negative, a provision is recognized, measured based on the market price of the CO_2 emission rights at reporting date.

Energy savings certificates (ESCs)

Energy savings certificates are presented as inventory items in Finished goods. They are measured at weighted average cost. As their cost is not separately identifiable, and as they are a by-product, they are measured at their net realizable value upon initial recognition.

In € million	December 31, 2021	December 31, 2020
Finished goods	1,155	834
Raw materials and supplies	661	468
Work in progress	20	21
Total	**1,837**	**1,323**
Write-downs	-92	-82
Net total	**1,745**	**1,241**

In previous years the Group forward purchased EUA certificates (own use) to cover deficits. The acquired quotas to cover deficits after 2022 were reported for € 67 million under Other non-current assets.

NOTE F26
OTHER RECEIVABLES (CURRENT)

In € million	December 31, 2021	December 31, 2020
VAT and other taxes	321	196
Advances to suppliers	189	69
Financial instruments - operational	1,326	131
Insurance premiums	38	28
Loan receivables	28	36
Other	102	58
Other current receivables	**2,004**	**519**

Financial instruments – operational includes held for trading and cash flow hedge derivatives (see note F32.A. Overview of financial instruments).

NOTE F27
ASSETS HELD FOR SALE

Accounting policy

A disposal group is a group of assets to be disposed of, by sale or otherwise, together as a group in a single transaction, and liabilities directly associated with those assets that will be transferred in the transaction. The group includes goodwill acquired in a business combination if the group is a cash-generating unit to which goodwill has been allocated, or if it is an operation within such a cash-generating unit.

Non-current assets and disposal groups are classified as held for sale if their carrying amount will be recovered principally through a sale transaction rather than through continuing use. This condition is regarded as met only when the sale is highly probable and the asset (or disposal group) is available for immediate sale in its present condition. For a sale to be highly probable, management should be committed to a plan to sell the asset (or disposal group), an active program to locate a buyer and complete the plan should be initiated, the asset (or disposal group) should be actively marketed at a price which is reasonable in relation to its current fair value, the sale should be expected to be completed within one year from the date of classification, and actions required to complete the plan should indicate that it is unlikely that significant changes to the plan will be made or that the plan will be withdrawn.

When the Group is committed to a sale plan involving loss of control of a subsidiary, all of the assets and liabilities of that subsidiary are classified as held for sale when the criteria described above are met, regardless of whether the Group will retain a non-controlling interest in its former subsidiary after the sale.

Non-current assets (and disposal groups) classified as held for sale are measured at the lower of their previous carrying amount and fair value less costs to sell. Any excess of the carrying amount over the fair value less costs to sell is recognized as an impairment loss. Depreciation of such assets is discontinued as from their classification as held for sale. Prior period consolidated statements of financial position are not restated to reflect the new classification of a non-current asset (or disposal group) as held for sale.

At the end of 2021 there are no assets classified as held for sale.

In € million	December 31, 2020					
	Technical-grade barium and strontium	**Sodium percarbonate**	**Fluorine fine chemicals**	**Commodity amphoterics**	**Process materials**	**Sodium chlorate**
Operating Segment	Solutions	Solutions	Solutions	Solutions	Materials	Chemicals
Property, plant and equipment	7	5	27	37		7
Intangible assets				1		
Right-of-use assets			-1	1	4	
Investments	22					
Deferred tax assets	5	1	3	2	3	1
Inventories	2	5	5	13	13	1
Trade receivables	1	17	5	15	14	
Other assets	4		1		3	7
Assets held for sale	*41*	*28*	*39*	*69*	*36*	*16*
Provisions	28	8	1	4	3	8
Deferred tax liabilities	1		3	1	5	1
Other non-current liabilities					3	
Trade payables	1	1	1	12	7	2
Income tax payables		4				
Other liabilities	1		5	2	6	1
Liabilities associated with assets held for sale	*31*	*13*	*10*	*19*	*24*	*12*
Net carrying amount of the disposal group	10	15	29	50	12	4
Included in other comprehensive income						
Currency translation differences	-15		1		-4	-24
Defined benefit plans	-11	-3		-1		4
Other comprehensive income	-26	-3	1	-1	-4	-19

NOTE F28
EQUITY

Accounting policy

Share capital

Ordinary shares are classified as equity.

Incremental costs directly attributable to the issuance of new share capital are directly recognized in equity as a deduction, net of tax, from the equity issuance proceeds.

Reserves

The reserves include:
- treasury shares;
- perpetual hybrid bonds that qualify as equity absent any unavoidable contractual obligation to repay the principal and interest of the perpetual hybrid bonds (no maturity, interest is payable annually but can be deferred indefinitely at the issuer's discretion);
- retained earnings;
- currency translation differences from the consolidation process relating to the translation of the financial statements of foreign operations prepared in a non-euro functional currency to the euro presentation currency;
- the impacts of the fair value remeasurement of equity instruments measured at fair value through other comprehensive income;
- the impacts of the fair value remeasurement of financial instruments documented as hedging instruments in cash flow hedges;
- actuarial gains and losses related to defined benefit plans.

Non-controlling interests

Those represent the share of non-controlling interests in the net assets and comprehensive income of subsidiaries of the Group, and corresponds to the interests in subsidiaries that are not held by the Company or its subsidiaries.

NUMBER OF SHARES (IN UNITS)

	December 31, 2021	December 31, 2020
Shares issued and fully paid	105,876,416	105,876,416
Treasury shares held	2,236,739	2,718,122

The treasury shares held by the Group have been deducted from consolidated shareholders' equity.

Perpetual hybrid bonds

To strengthen its capital structure, Solvay issued undated deeply subordinated perpetual bonds ("perpetual hybrid bonds") of € 1.8 billion as per the following table:

In € million	Issuance date	Nominal value	%	Annual coupon	First call / reset date
Hybrid bond NC10	November 12, 2013	500	5.425%	27	November 12, 2023
Hybrid bond NC8.5	December 2, 2015	500	5.869%	29	June 3, 2024
Hybrid bond NC5.25*	December 4, 2018	300	4.250%	13	March 4, 2024
Hybrid bond NC5.5*	September 2, 2020	500	2.500%	13	March 2, 2026

** with 3 months call option at par*

In September 2020, Solvay issued a new perpetual hybrid bond for an aggregate principal amount of € 500 million (NC5.5 @ 2.5 %). The first coupon was paid in March 2021 (€ 6.2 million, and will continue to be paid annually (€ 12.5 million) until the first reset date in 2026).

This new issue was aimed at refinancing in advance the existing perpetual hybrid (NC5.5 @ 5.118%) with an initial first call in June 2021. The transaction took place as follows:
- the initial purchase of 91.58% of the € 500 million (€ 457 million net of issuance costs) through a cash tender offer at 103.75%; and
- the redemption of the remaining 8.42% of the € 500 million (the remaining € 43 million net of issuance costs) as per Solvay's right under the terms and conditions of this hybrid bond.

In addition to the € 500 million principal amount repaid, the transaction has generated a cash outflow of € 23.6 million (including the premium for the cash tender and the accrued coupon on the € 500 million until the relevant repurchase dates).

All perpetual hybrid bonds are classified as equity absent any unavoidable contractual obligation to repay the principal and interest of the perpetual hybrid bonds, specifically:
- No maturity, yet the issuer has a call option at every reset date to redeem the instrument;
- At the option of the issuer, interest payments can be deferred indefinitely.

The coupons related to the perpetual hybrid bonds are recognized as equity transactions and are deducted from equity upon declaration (see consolidated statement of changes in equity). These coupons amount to € 75 million in 2021 (€ 119 million in 2020).

Should Solvay have elected not to pay any interests to the perpetual hybrid bond holders, then any payment of dividends to the ordinary shareholders or repayment of ordinary shares would trigger a contractual obligation to pay previously unpaid interests to the perpetual hybrid bond holders.

Tax impacts related to the perpetual hybrid bonds are recognized in profit or loss.

NOTE F29
NON-CONTROLLING INTERESTS

The amounts disclosed below are fully consolidated amounts and do not reflect the impacts from elimination of intragroup transactions.

At the end of 2021, the following subsidiaries have non-controlling interests totaling € 93 million (out of a total of € 112 million).

In € million	Zhejiang Lansol	Solvay Special Chem Japan	Solvay Soda Ash	Solvay Hengchang Zhangjiagang Special Chem
Non-controlling ownership interest	45%	33%	20%	30%
Statement of financial position				
Non-current assets	28	17	285	18
Current assets	37	19	75	70
Non-current liabilities	2	1	19	0
Current liabilities	15	2	79	44
Income statement				
Sales	80	63	309	136
Profit for the year	5	3	135	21
Other comprehensive income	4	-1	-8	3
Total comprehensive income	**9**	**2**	**127**	**25**
Dividends paid to non-controlling interests	3	1	34	1
Share of non-controlling interest in the profit for the year	2	1	27	6
Accumulated non-controlling interests	21	11	49	12

At the end of 2020, the following subsidiaries have non-controlling interests totaling € 90 million (out of a total of € 106 million).

In € million	Zhejiang Lansol	Solvay Special Chem Japan	Solvay Soda Ash	Solvay Hengchang Zhangjiagang Special Chem
Non-controlling ownership interest	45%	33%	20%	30%
Statement of financial position				
Non-current assets	25	18	267	16
Current assets	33	20	26	24
Non-current liabilities	2	1	16	
Current liabilities	11	3	21	18
Income statement				
Sales	63	53	296	67
Profit for the year	3	4	116	4
Other comprehensive income		-1	18	
Total comprehensive income	**2**	**3**	**134**	**3**
Dividends paid to non-controlling interests	0	1	25	2
Share of non-controlling interest in the profit for the year	1	1	23	2
Accumulated non-controlling interests	20	11	52	7

NOTE F30
SHARE-BASED PAYMENTS

Accounting policy

Solvay has set up compensation plans, including equity-settled and cash-settled share-based compensation plans.

In its equity-settled plans, the Group receives services as consideration for its own equity instruments (namely through the issuance of share options). The fair value of services rendered by employees in consideration for the granting of equity-instruments represents an expense. This expense is recognized on a straight-line basis in the consolidated income statement over the vesting periods relating to these equity-instruments with the recognition of a corresponding adjustment in equity. The fair value of services rendered is measured based on the fair value of the equity-instruments on the grant date. It is not subsequently remeasured. At each reporting date, the Group re-estimates the number of share options likely to vest. The impact of the revised estimates is recognized in profit or loss against a corresponding adjustment in equity.

In its cash-settled plans, the Group acquires services by incurring a liability to transfer to its employees rendering those services amounts that are based on the price (or value) of equity instruments (including shares or share options) of the Group (namely through the issuance of performance share units). The fair value of services rendered by employees in consideration for the granting of share-based payments represents an expense. This expense is recognized on a straight-line basis in the consolidated income statement over the vesting periods relating to these share-based payments with the recognition of a corresponding adjustment in liabilities. At each reporting date, the Group re-estimates the number of options likely to vest, with the impact of the revised estimates recognized in profit or loss. The Group measures the services acquired and the liability incurred at the fair value of the liability. Until the liability is settled, the Group remeasures the fair value of the liability at the end of each reporting period and at the date of settlement, with any changes in fair value recognized in profit or loss for the period.

Stock Option Plan

In 2021, the Board of Directors offered to executive staff (47 beneficiaries) a share option plan with a view to involve them more closely in the long-term development of the Group. The plan is an equity-settled share-based plan. The majority of the managers involved subscribed to the options offered to them in 2021 with an exercise price of € 95.58 representing the average stock market price of the share for the 30 days prior to the offer.

Share option plans	2021	2020	2019	2018 - 2	2018 - 1	2017
Number of share options granted and still outstanding at December 31, 2020		405,670	438,107	72,078	400,704	316,935
Granted share options	265,433					
Forfeitures of rights and expiries		-10,506	-9,004		-9,424	-8,485
Share options exercised						
Number of share options at December 31, 2021	265,433	395,164	429,103	72,078	391,280	308,450
Share options exercisable at December 31, 2021						308,450
Exercise price (in €)	95.58	95.80	97.05	108.38	113.11	111.27
Fair value of options at measurement date (in €)	23.32	15.23	17.77	20.81	19.10	23.57

	2016	2015	2014	2013
Number of share options granted and still outstanding at December 31, 2020	696,144	346,617	351,482	367,171
Granted share options				
Forfeitures of rights and expiries		-6,526	-5,485	-102,973
Share options exercised	-175,049	-7,526	-141,210	-264,198
Number of share options at December 31, 2021	521,095	332,565	204,787	
Share options exercisable at December 31, 2021	521,095	332,565	204,787	
Exercise price (in €)	75.98	114.51	101.14	104.33
Fair value of options at measurement date (in €)	17.07	24.52	22.79	20.04

	2021		2020	
	Number of share options	Weighted average exercise price	Number of share options	Weighted average exercise price
January 1	**3,394,908**	**103.63**	**3,310,749**	**102.60**
Granted during the year	265,433	95.58	405,670	95.80
Forfeitures of rights and expiries during the year	-152,403	104.56	-149,456	83.57
Exercised during the year	-587,983	95.25	-172,055	82.81
December 31	**2,919,955**	**104.54**	**3,394,908**	**103.63**
Exercisable at December 31	**1,366,897**		**1,761,414**	

In 2021, the share options resulted in an expense of € 8 million, which was calculated by third parties according to the Black-Scholes model, and recognized in the consolidated income statement as part of administrative costs.

The valuation of the stock option plan of 2021 is based on:

- the price of the underlying asset (Solvay share): € 98.58 at February 23, 2021;
- the time outstanding until the option maturity: exercisable from January 1, 2025, until February 23, 2029, taking into account the fact that some of them will be exercised before the option maturity;
- the option exercise price: € 95.58;
- the risk-free return: (0.20)% (on average);
- the average volatility of the underlying yield, estimated based on the option price: 28.49%;
- an average dividend yield of 2.86%.

Weighted average remaining contractual life of the share option plans:

In years	2021	2020
2013		0.2
2014	0.2	1.2
2015	1.2	2.2
2016	2.2	3.2
2017	3.2	4.2
2018-1	4.2	5.2
2018-2	4.6	5.6
2019	5.2	6.2
2020	6.2	7.2
2021	7.1	

Performance Share Units Plan (PSU)

In 2021, the Board of Directors offered to executive staff a Performance Share Unit Plan, with the objective of involving them more closely in the development of the Group, making this part of the long-term incentive policy. All the managers involved subscribed to the PSU offered to them in 2021 with a grant price of € 95.58. The Performance Share Units is a cash-settled share-based plan through which beneficiaries will obtain a cash benefit based on the Solvay share price, as well as performance conditions and accrued dividends.

Each plan has a 3-year vesting period, after which a cash settlement will take place, if vesting conditions are met.

Performance share units	Plan 2021	Plan 2020
Number of PSUs	194,130	236,802
Grant date	23/02/2021	25/02/2020
Acquisition date	01/01/2024	01/01/2023
Vesting period	31/03/2021 to 31/12/2023	31/03/2020 to 31/12/2022
Performance conditions	40% of the initial granted PSUs are subject to the achievement of Year over Year Underlying EBITDA growth target for each of the 3 (2021, 2022, 2023) performance years ending on December 31, 2023	40% of the initial granted PSUs are subject to the achievement of Year over Year Underlying EBITDA growth target for each of the 3 (2020, 2021, 2022) performance years ending on December 31, 2022
	40% of the initial granted PSUs are subject to the sustained and /or improved ROCE % of the Company for each of the 3 (2021, 2022, 2023) performance years	40% of the initial granted PSUs are subject to the sustained and /or improved ROCE % of the Company for each of the 3 (2020, 2021, 2022) performance years
	20% of the initial granted PSUs are subject to the reduction of GHG absolute emissions during the same 3 years (2021, 2022, 2023)	20% of the initial granted PSUs are subject to the reduction of GHG absolute emissions during the same 3 years (2020, 2021, 2022)
	Achievement of the plan is measured for each separate performance year. The score achieved for each individual year is acquired definitively, whatever the achievement of the other years	Achievement of the plan is measured for each separate performance year. The score achieved for each individual year is acquired definitively, whatever the achievement of the other years
Validation of performance conditions	By the Board of Directors	By the Board of Directors

In 2021, the impact on the consolidated income statement regarding PSUs (net of hedging) amounts to a cost of € (17) million, compared to an income of € 8 million in 2020. The carrying amount of the PSU liability at the end of 2021 amounts to € 31 million, compared to € 17 million at the end of 2020.

NOTE F31
PROVISIONS

In € million	Employee benefits	Restructuring	Environment	Litigation	Other	Total
December 31, 2020	**2,209**	**120**	**615**	**61**	**84**	**3,088**
Additions	68	196	100	16	149	**528**
Reversals of unused amounts	-22	-12	-10	-9	-11	**-64**
Uses	-89	-118	-61	-7	-28	**-303**
Use of provisions for additional voluntary contributions (pension plans)	-236					**-236**
Increase through discounting	13		-13	1		**0**
Remeasurements	-576					**-576**
Currency translation differences	35	1	16	1	1	**54**
Acquisitions and changes in consolidation scope	2				1	**3**
Disposals	-1		4			**3**
Other	171	3	-2		-70	**102**
December 31, 2021	**1,574**	**191**	**648**	**62**	**126**	**2,600**
Of which current provisions		126	105	13	58	**302**

The provisions decreased by € (488) million in 2021, of which € (635) million for Employee benefits, partially offset by an increase of € 71 million for Restructuring and € 33 million for Environment.

New provisions for restructuring exceeded the payments by € 66 million.

For employee benefits, the deleveraging of € (635) million is explained as follows:

- payments (uses) for € (89) million, and voluntary contributions of € (236) million to pension funds to deleverage and de-risk;
- net new liabilities (additions and reversals) for € 46 million;
- remeasurements, resulting from the changes in assumptions related to the gross liability for € (422) million (mainly due to changes in discount rates);
- return on plan assets reducing the liability by € (207) million, of which € (53) million in deduction of "Increase through discounting" and € (154) million in deduction of "Remeasurements" for the assets return exceeding the discount rate, which excludes the impact of remeasurements on the plan assets surplus (€ 12 million);
- increase through discounting for € 66 million for the unwinding of the discount rate on the gross liability;
- other increases in net debt for € 206 million mainly due to the reclassification of the amounts recognized in asset surplus and currency translation differences.

Net additions of provisions for Environment (€ 90 million) resulted mainly from the revised assumptions of higher inflation rates, partially offset by the impact of higher discount rates reducing the present value of the liability by € (48) million. This effect, combined with the unwinding of the opening liabilities for € 34 million resulted in a net decrease of € (13) million related to discounting.

The movements in Other provisions mainly relate to post-closing adjustments resulting from M&A warranties as well as indemnities for environmental remediation.

Management expects provisions (other than employee benefits) to be used (cash outlays) as follows:

In € million	up to 5 years	between 5 and 10 years	beyond 10 years	Total
Total provisions for environment	302	90	256	**648**
Total provisions for litigation	57	5		**62**
Total provisions for restructuring and other	300	16		**316**
December 31, 2021	**660**	**110**	**256**	**1,026**

F31.A. Provisions for employee benefits

Accounting policy

General

The Group's employees are offered various post-employment benefits, other long-term employee benefits, and termination benefits as a result of legislation applicable in certain countries, and contractual agreements entered into by the Group with its employees or constructive obligations.

The post-employment benefits are classified as defined contribution or defined benefit plans.

Defined contribution plans

Defined contribution plans involve the payment of fixed contributions to a separate entity, and release the employer from any subsequent obligation, as this separate entity is solely responsible for paying the amounts due to the employee. The expense is recognized when an employee has rendered services to the Group during the period.

Defined benefit plans

Defined benefit plans concern all plans other than defined contribution plans, and include:
- post-employment benefits: pension plans, other post-employment obligations and supplemental benefits such as post-employment medical plans;
- other long-term employee benefits: long-service benefits granted to employees according to their seniority in the Group;
- termination benefits such as early pension plans.

Taking into account projected final salaries on an individual basis, post-employment benefits are measured by applying a method (projected unit credit method) using assumptions involving discount rate, life expectancy, turnover, wages, annuity revaluation and medical cost inflation. The assumptions specific to each plan take into account the local economic and demographic contexts.

The discount rates are interest rates of high-quality corporate bonds that are denominated in the currency in which the benefits will be paid, and that have terms to maturity approximating the terms of the related pension obligation.

The amount recognized under post-employment obligations corresponds to the difference between the present value of future obligations and the fair value of the plan assets funding the plan, if any. If this calculation gives rise to a deficit, an obligation is recognized in liabilities. Otherwise, a net asset limited to the lower of the surplus in the defined benefit plan and the present value of any future plan refunds or any reduction in future contributions to the plan is recognized. Therefore the amount at which such an asset is recognized in the statement of financial position may be subject to a ceiling.

The defined benefit cost consists of service cost and net interest expense (based on discount rate) on the net liability or asset, both recognized in profit or loss, and remeasurements of the net liability or asset, recognized in other comprehensive income.

Service cost consists of current service cost, past service cost resulting from plan amendments or curtailments and settlement gains or losses.

The interest expenses arising from the reverse discounting of the benefit obligations, the financial income on plan assets (determined by multiplying the fair value of the plan assets by the discount rate) as well as interest on the effect of the asset ceiling are recognized on a net basis in the net financial charges (cost of discounting of provisions).

Remeasurements of the net liability or asset consist of:
- actuarial gains and losses on the benefit obligations arising from experience adjustments and/or changes in actuarial assumptions (including the effect of changes in the discount rate) recognized in other comprehensive income;
- Changes as a consequence of plan amendments, recognized in profit or loss;
- the return on plan assets (excluding amounts in net interest) and changes in the limitation of the net asset recognized.

Other long-term and termination benefits are accounted for in the same way as post-employment benefits but remeasurements are fully recognized in the net financial charges during the period in which they occur.

The actuarial calculations of the main post-employment obligations and other long-term benefits are performed by independent actuaries.

OVERVIEW

In € million	December 31, 2021	December 31, 2020
Post-employment benefits	1,371	2,006
Other long-term benefits	153	148
Termination benefits	50	54
Total employee benefits	**1,574**	**2,209**

POST-EMPLOYMENT BENEFITS

A. Defined contribution plans

For defined contribution plans, Solvay pays contributions to publicly or privately administered pension funds or insurance companies. For 2021, the expense amounts to € 56 million compared to € 57 million for 2020.

B. Defined benefit plans

Defined benefit plans can be either funded via outside pension funds or insurance companies ("funded plans") or financed within the Group ("unfunded plans"). Unfunded plans have no plan assets dedicated to them.

The net liability results from the net of the provisions and the asset plan surplus.

In € million	December 31, 2021	December 31, 2020
Provisions	1,371	2,006
Asset plan surplus	-248	-31
Net liability	1,123	1,975

	2021	2020
Operational expense	**19**	**38**
Finance expense	**13**	**26**

The operating expense includes current service cost for € 43 million (€ 44 million in 2020) (see also B.3.).

B.1. Management of risks

Over recent years, the Group has reduced its exposure to defined benefit plan obligations stemming from future services by converting existing plans into pension plans with a lower risk profile (hybrid plans, cash balance plans and defined contribution plans) or by closing them to new entrants.

Solvay continuously monitors its risk exposure, focusing on the following risks:

Asset volatility

Equity instruments, even though expected to outperform corporate bonds in the long-term, create volatility and risk in the short-term. To mitigate this risk, the allocation to equity instruments is monitored using Assets and Liabilities Management techniques, to ensure it remains appropriate given the respective schemes' and Group's long term objectives.

Changes in bond yields

A decrease in corporate bond yields will increase the carrying amount of the plans' liabilities. For funded schemes this impact will be partially offset by an increase in the fair value of the plan assets.

Inflation risk

The defined benefit obligations are linked to inflation, and higher inflation will lead to higher liabilities (although, in most cases, caps on the level of inflationary increases are in place to protect against extreme inflation). A limited part of the assets is either unaffected by or only partially correlated with inflation, meaning that an increase in inflation will also increase the plans' net liabilities.

Life expectancy

The majority of the schemes' obligations are to provide benefits for the life of the member. Increases in life expectancy will therefore increase the plans' liabilities.

Regulatory risk

Especially with respect to funded plans, the Group is exposed to the risk of external funding following regulatory constraints. This should not impact the defined benefit obligation but could expose the Group to a potential significant cash outlay.

For more information about Solvay risk management, please refer to the "Management of risks" section of the present document.

B.2. Description of obligations

The provisions have been set up to cover post-employment benefits granted by most Group companies in line, either with local rules and /or with established practices, which generate constructive obligations.

The largest post-employment plans in 2021 are in the United Kingdom, the United States, France, Germany and Belgium. These five countries represent 95% of the total defined benefit obligations.

	December 31, 2021						
In € million	Defined benefit obligations	In %	Recognized plan assets	Net liability/ (asset)	In %	Ratio plan assets on defined benefit obligations	of which asset surplus recognized in the balance sheet
United Kingdom	1,618	32%	1,678	-60	-5%	104%	76
United States	1,315	26%	1,230	86	8%	93%	66
France	953	19%	372	582	52%	39%	50
Germany	516	10%	70	446	40%	14%	
Belgium	384	8%	405	-21	-2%	105%	51
Other countries	229	5%	139	90	8%	61%	5
Total	**5,016**	**100%**	**3,893**	**1,123**	**100%**	**78%**	**248**

	December 31, 2020						
In € million	Defined benefit obligations	In %	Recognized plan assets	Net liability/ (Asset)	In %	Ratio plan assets on defined benefit obligations	of which asset surplus recognized in the balance sheet
United Kingdom	1,731	32%	1,394	337	17%	81%	
United States	1,327	24%	1,175	152	8%	89%	28
France	1,101	20%	349	753	38%	32%	
Germany	583	11%	95	488	25%	16%	
Belgium	422	8%	294	128	6%	70%	
Other countries	273	5%	155	118	6%	57%	3
Total	**5,436**	**100%**	**3,461**	**1,975**	**100%**	**64%**	**31**

United Kingdom

Solvay sponsors a few defined benefit plans in the United Kingdom; the largest one is the Rhodia Pension Fund. This is a final salary funded pension plan, with entitlement to accrue a percentage of salary per year of service. It was closed to new entrants in 2003 and replaced by a defined contribution plan.

Broadly, about 9% of the liabilities are attributable to current employees, 29% to former employees and 62% to current pensioners.

The Fund functions and complies with UK legislation under a large regulatory framework. The Pensions Regulator has a risk based approach to regulation and a code of practice which provides practical guidance to trustees and employers of defined benefit schemes on how to comply with the scheme funding requirements. In accordance with UK legislation, the Fund is subject to Scheme Specific Funding which requires that pension plans are funded prudently.

The UK Rhodia Pension Fund is governed by a Board of Trustees. They manage the Fund with prudent and fair judgment. The Trustees determine the liabilities used for Statutory Funding Objectives based on prudent actuarial and economic assumptions. Any shortfall or deficit once these liabilities have been deducted from the Fund's assets must be reduced by additional contributions and in a time frame determined in accordance with the employer's ability to pay and the strength of covenant or contingent security being offered by the employer.

The Rhodia Pension Fund is subject to a triennial valuation cycle for funding purposes. This valuation is performed by the scheme actuary in line with UK regulations and is discussed between the Trustees and the sponsoring employer to agree the valuation assumptions and a funding plan. The last completed valuation was as of January 1, 2020, which established a fixed contribution rate of pensionable pay for active members plus a deficit recovery plan which aims to fully fund the scheme's technical provisions by the end of 2030 in accordance with local regulations. At the end of 2021 a voluntary contribution was paid (£ 115 million)). This contribution will significantly reduce the recovery contributions to be paid until 2027.

The guarantee provided by Solvay (£ 362million) is based on local regulations and exceeds the recognized liability – See note F36 Contingent assets, liabilities and financial guarantees for more information.

France

Solvay sponsors different defined benefit plans in France. The largest plans are the French compulsory retirement indemnity plan and three closed top hat plans. Indeed, as required by the "Loi Pacte", the open top hat plan (so called "ARS") has been closed at the end of 2019 and replaced by a defined contribution plan.

The main plan is for all former Rhodia current and retired employees who contributed to the plan prior to its closure in the 1970s. It offers a full benefit guarantee based on the end-of-career salary; more than 99% of the liabilities are attributable to current pensioners. This plan is partially funded.

In accordance with French legislation, adequate guarantees have been provided.

United States

Solvay sponsored five different defined benefit pension plans in the United States (two qualified plans and three non-qualified plans). A qualified plan is an employer-sponsored retirement plan that qualifies for special tax treatment under Section 401(a) of the Internal Revenue Code. At this moment all defined benefit plans are closed to new entrants where newly hired employees are eligible to participate in a defined contribution plan. Note that both qualified defined benefit pension plans are funded while the three non-qualified defined benefit pension plans are unfunded. The qualified plans make up the vast majority of the pension liabilities as of December 31, 2021.

Solvay's plans are in compliance with local laws regarding audited financial statements, governmental filings, and Pension Benefit Guaranty Corporation insurance premiums where applicable. The plans are reviewed and monitored locally by fiduciary committees for purposes of plan investments and administrative matters.

For the US qualified plans, Solvay's contributions take into account minimum (tax-deductible) funding requirements as well as maximum tax deductible contributions, both regulated by the tax authorities.

Certain eligible participants may elect to receive their pension in a single lump sum payment instead of a monthly payment.

Broadly, about 24% of the liabilities are attributable to current employees, 11% to former employees for whom benefit payments have not yet commenced and 65% to current pensioners.

In 2021, in the United States Solvay contributed to two multiemployer pension plans under collective bargaining agreements that cover certain of its union-represented employees. Each of the multiemployer plans is a defined benefit pension plan. None of the multiemployer plans provide an allocation of its assets, liabilities, or costs among contributing employers. None of the multiemployer plans provides sufficient information to permit Solvay, or other contributing employers, to account for the multiemployer plan as a defined benefit plan. Accordingly, the company accounts for its participation in each of the multiemployer plans as if they were a defined contribution plan. For multiemployer plans, during 2021 and 2020, the annual contributions paid are less than € 1 million.

Germany

Solvay sponsors various defined benefit plans in Germany. The largest plans are a closed final-pay plan and an open cash balance plan. Broadly, about 68% of the liabilities are attributable to current pensioners. These plans are partially funded; an additional voluntary contribution of € 155 million to the Contractual Trust Agreement will be paid during the first quarter of 2022.

Belgium

Solvay sponsors two defined benefit plans in Belgium. These are funded pension plans. The plan for executives has been closed since the end of 2006, and the plan for the White and Blue collars has been closed since 2004. The past service benefits provided under these plans continue to be adapted each year considering annual salary increase and inflation ("Dynamic management"). In accordance with market practice in Belgium, because of favorable retirement lump sum taxation, most benefits are paid as lump sum. In January 2021, a voluntary contribution of € 102 million was paid into the pension fund, the objective being to fully fund all Defined Benefit obligations (incl. Dynamic management).

Furthermore, Solvay sponsors two open defined contribution plans, classified as defined benefit plans for accounting purposes due to the minimum guarantees explained hereafter. These are funded pension plans which are open since the beginning of 2007 for the one in favor of the executives and since the beginning of 2005 for the one in favor of the White and Blue collars. Participants may choose to invest their contributions amongst four different investment funds (from "Prudent" to "Dynamic"). However, regardless of their choices, the Belgian law foresees that the employer must guarantee a return on employer contribution and on personal contribution, creating that way a potential liability for the Group. Since 2016 the return has been fixed at 1.75% for both types of contributions, at the minimum of the range provided by law since January 1, 2016 (1.75% to 3.75%). At the end of 2021, net liability recognized in the consolidated statement of financial position concerning these plans is not material.

Solvay's plans are administered through the Solvay Pension Fund that operates in compliance with local laws regarding minimum funding, investments principles, audited financial statements, governmental filings, and governance principles. The Pension Fund is managed through a General Assembly and a Board of Directors delegating day-to-day activities to an operational Committee.

Solvay sponsors a few other smaller pension plans. All these plans are insured.

Other Plans

The majority of the obligations relate to pension plans. In some countries (mainly the United States), there are also post-employment medical plans, which represent 4% (4% in 2020) of the total defined benefit obligation.

B.3. Financial impacts

Changes in net liability

In € million	2021	2020
Net amount recognized at beginning of period	1,975	2,475
Net expense recognized in P&L - Defined benefit plans	33	64
Actual employer contributions / direct actual benefits paid	-292	-654
Acquisitions and disposals	-1	-1
Remeasurements before impact of asset ceiling	-564	176
Change in the effect of the asset ceiling limit on remeasurements	2	-3
Reclassifications	-56	-1
Currency translation differences	25	-49
Transfer to (liabilities associated with) assets held for sale		-32
Net amount recognized at end of period	**1,123**	**1,975**

Remeasurements including the impact of asset ceiling € (562) million comprise:

- the favorable investment return on plan assets (excluding interests reported in the consolidated income statement) for € (140) million;
- increase in discount rates € (459) million mainly in the United States, United Kingdom, Brazil and Eurozone;
- increase in inflation rate (€ 102 million) for United Kingdom and Eurozone;
- other remeasurements due to changes in the other financial assumptions, demographic and experience effects € (57) million.
- The application of the April 2021 IFRIC agenda decision regarding the periods of service to which an entity attributes benefits for defined benefit plans and the caps on such benefits, resulted in a decrease to the defined benefit obligation of € 8 million, which was recognized in other comprehensive income. However, the Group is still assessing the impact of this agenda decision in the various local entities and these impacts will only be determined in future accounting periods when a globally consistent and locally supported methodology is reached.

Net expense

In € million	2021	2020
Current service costs	43	44
Past service costs (including curtailments and settlements)	-26	-11
Service costs	**17**	**33**
Interest cost	66	99
Interest income	-53	-73
Net interest	**13**	**26**
Administrative expenses paid	**3**	**4**
Net expense recognized in P&L - Defined benefit plans	**33**	**64**
Remeasurements recognized in other comprehensive income	**-562**	**174**

The service costs and administrative expenses of these benefit plans are recognized within cost of sales, administrative costs, research & development costs or operating gains and losses and results from legacy remediation, and the net interest is recognized as a finance expense.

In 2021 the Group's current service costs amount to € 43 million (€ 44 million in 2020), of which € 32 million (€ 33 million in 2020) related to funded plans and € 11 million (€ 11 million in 2020) related to unfunded plans.

Net liability

In € million	December 31, 2021	December 31, 2020
Defined benefit obligations - Funded plans	4,468	4,824
Fair value of plan assets at end of period	-3,896	-3,461
Deficit for funded plans	**573**	**1,363**
Defined benefit obligations - Unfunded plans	548	612
Deficit / surplus (-)	**1,120**	**1,975**
Amounts not recognized as asset due to asset ceiling (recognized in other comprehensive income)	2	
Net liability (asset)	**1,123**	**1,975**
Provision recognized	1,371	2,006
Asset recognized	-248	-31

Changes in defined benefit obligations

In € million	2021	2020
Defined benefit obligation at beginning of period	**5,436**	**5,511**
Current service costs	43	44
Past service costs (including curtailments)	-26	-15
Interest cost	66	99
Employee contributions	4	4
Settlements	-2	-3
Acquisitions and disposals (-)	-8	
Remeasurements in other comprehensive income	-422	386
Actuarial gains and losses due to changes in demographic assumptions	*-36*	*-2*
Actuarial gains and losses due to changes in financial assumptions	*-322*	*348*
Actuarial gains and losses due to experience	*-64*	*39*
Actual benefits paid	-302	-286
Currency translation differences	225	-270
Reclassification and other movements	1	-1
Transfer from/to (liabilities associated with) assets held for sale		-34
Defined benefit obligation at end of period	**5,016**	**5,436**
Defined benefit obligations - Funded plans	4,468	4,824
Defined benefit obligations - Unfunded plans	548	612

Changes in the fair value of plan assets

In € million	2021	2020
Fair value of plan assets at beginning of period	**3,461**	**3,040**
Interest income	53	73
Remeasurements in other comprehensive income	142	210
Return on plan assets (excluding amounts in net interests including on asset surplus)	*142*	*210*
Employer contributions	292	654
Employee contributions	4	4
Administrative expenses paid	-3	-4
Acquisitions / Disposals (-)	-7	
Settlements	-2	-7
Actual benefits paid	-302	-286
Currency translation differences	200	-220
Reclassification and other movements	57	
Transfer from/to (liabilities associated with) assets held for sale		-3
Fair value of plan assets at end of period	**3,896**	**3,461**
Actual return on plan assets (including on asset surplus)	195	283

In 2021, the total return on plan assets, i.e. including interest income, amounts to € 195 million against € 283 million in 2020.

In 2021, the Group's cash contributions amount to € 292 million (€ 654 million in 2020), of which € 29 million (€ 48 million in 2020) of mandatory contributions to funds, € 236 million (€ 552 million in 2020) of voluntary cash contributions, and € 27 million (€ 54 million in 2020) of direct benefits payments.

In 2020, the voluntary cash contributions were made to improve the funding level of the US pension plans (€ 78 million) and partially fund French (€ 379 million) and German (€ 95 million) unfunded pension plans and increase de-risking with plan assets.

In 2021, the voluntary cash contributions were made to improve the funding level of the Belgian pension plans (€ 102 million) and of the Rhodia UK pension plan (€ 134 million) and increase de-risking with the additional plans assets.

Except for any significant change in the regulatory environment (see "regulatory risk" above), the Group's mandatory cash contributions and direct benefits payments in 2022 are expected to decrease to approximately € 51 million due to the action plans undertaken by the Group on the management of pension funding, and a voluntary cash contribution of approximately € 155 million, which is expected in the 1st quarter 2022 for Germany.

Categories of plan assets

	December 31, 2021	December 31, 2020
Equities	23%	30%
Bonds	62%	53%
Properties and infrastructures	3%	4%
Cash and cash equivalents	5%	7%
Derivatives		2%
Others	6%	4%
Total	**100%**	**100%**

With respect to the invested assets, it should be noted that these assets do not contain any direct investment in Solvay shares or in property or other assets occupied or used by Solvay. This does not exclude Solvay shares being included in mutual investment fund type investments.

Changes in asset ceiling

In € million	2021	2020
Effect of the asset ceiling limit at beginning of period		**4**
Change in the effect of the asset ceiling limit on remeasurements	2	-4
Effect of the asset ceiling limit at end of period	**2**	

Actuarial assumptions used in determining the liability

Some of the retirement plans that Solvay has in place provide annuity payments that are adjusted on a regular basis to mitigate the effects for cost of living increases.

The salary growth assumption is used to determine what will be the salary at the end of the career of the individuals, as the defined benefit plans take into account the last salary of the individuals. This assumption includes impacts of both inflation and merit increases.

The pension growth assumption defines the expected future adjustments for these annuity payments. The plan defines how these annuity payments will be adjusted, and might be linked to inflation. Pension growth assumptions mainly apply for the defined benefit retirement plans in the United Kingdom, France and Germany.

The inflation assumption is presented separately as salary growth and pension growth assumptions encompass more variables than inflation.

	Eurozone		UK		USA	
	2021	2020	**2021**	2020	**2021**	2020
Discount rates	1.00%	0.25%	2.00%	1.25%	2.75%	2.25%
Expected rates of future salary increases	1,75% - 4,00%	1,75% - 3,75%	2,50% - 3,00%	2,00% - 2,75%	3,00% - 3,50%	3,00% - 3,75%
Inflation	1,75% - 2,00%	1,50% - 1,75%	3.00%	2.75%	2.50%	2.00%
Expected rates of pension growth	0,00% - 2.00%	0,00% - 1.75%	2.85%	2.60%	NA	NA

Actuarial assumptions used in determining the annual cost

	Eurozone		UK		USA	
	2021	2020	**2021**	2020	**2021**	2020
Discount rates	0.25%	0.75%	1.25%	2.00%	2.25%	3.00%
Expected rates of future salary increases	1,75% - 3,75%	1,75% - 3,75%	2,00% - 2,75%	1,90% - 3,00%	3,00% - 3,50%	3,00% - 3,75%
Inflation	1,50% - 1,75%	1.75%	2.75%	3.00%	2.00%	2.25%
Expected rates of pension growth	0,00% - 1.75%	0,00% - 1.75%	2.70%	2.85%	NA	NA

Actuarial assumptions regarding future mortality are based on recent country specific mortality tables. These assumptions translate at January 1, 2021 into an average remaining life expectancy in years for a pensioner retiring at age 65:

In years	Belgium	France	Germany	United Kingdom	United States
Retiring at the end of the reporting period					
Male	19	25	20	20	20
Female	22	28	24	23	22
Retiring 20 years after the end of the reporting period					
Male	20	28	23	21	22
Female	24	31	26	24	24

For most countries the mortality assumptions reflect actual scheme experience and/or Solvay's expectations in terms of future mortality improvements.

The actuarial assumptions used in determining the employee benefits obligation at December 31 are based on the following employee benefits liabilities durations:

	Eurozone	United Kingdom	United States
Duration in years	12.1	15.5	10.0

Sensitivities on the defined benefits obligation for the post-employment benefits

Each sensitivity amount is calculated assuming that all other assumptions are held constant. The economic factors and conditions often affect multiple assumptions simultaneously.

Sensitivity to a change of percentage in the discount rates:

In € million	0.25% increase	0.25% decrease
Eurozone	-53	55
United Kingdom	-60	62
United States	-32	32
Others	-4	4
Total	**-149**	**153**

Sensitivity to a change of percentage in the inflation rates:

In € million	0.25% increase	0.25% decrease
Eurozone	50	-49
United Kingdom	39	-38
United States		
Others	3	-3
Total	**92**	**-90**

Sensitivity to a change of percentage in salary growth rates:

In € million	0.25% increase	0.25% decrease
Eurozone	9	-8
United Kingdom	3	-3
United States		
Others	1	-1
Total	**13**	**-12**

Sensitivity to a change of one year on mortality tables – The table shows impacts when the age of all beneficiaries increases or decreases by one year:

In € million	Age correction +1 year	Age correction -1 year
Eurozone	-87	90
United Kingdom	-68	69
United States	-33	33
Others	-6	6
Total	**-194**	**198**

F31.B. Provisions other than for employee benefits

Accounting policy

General

Provisions are recognized when (a) the Group has a present obligation (legal or constructive) as a result of a past event, (b) it is probable that the Group will be required to settle the obligation, and (c) a reliable estimate can be made of the amount of the obligation.

The amount recognized as a provision is the best estimate of the consideration required to settle the present obligation at the end of the reporting period, taking into account the risks and uncertainties surrounding the obligation. Where the effect of the time value of money is material, the amount is the present value of expenditures required to settle the obligation. Impacts of changes in discount rates are generally recognized in the financial result.

When some or all of the economic benefits required to settle a provision are expected to be recovered from a third party, a receivable is recognized as an asset if it is virtually certain that reimbursement will be received when the Group settles the obligation.

Onerous contracts

An onerous contract is a contract in which the unavoidable costs of meeting the obligations under the contract exceed the economic benefits expected to be received under it. Present obligations arising from onerous contracts are recognized and measured as provisions.

Restructurings

A restructuring provision is recognized when the Group has developed a detailed formal plan for the restructuring and has raised a valid expectation in those affected that it will carry out the restructuring by starting to implement the plan or announcing its main features to those affected by it. The measurement of a restructuring provision includes only the direct expenditures arising from the restructuring, which are those amounts that are both necessarily entailed by the restructuring and not associated with the ongoing activities of the entity.

Environmental remediation costs

Environmental liabilities are mainly related to non-ongoing activities (shut-down sites, discontinued activities or divested activities for which Solvay keeps commitments) and, to a lower extent, to ongoing activities (see comments below).

An environmental provision is recognized, in accordance to IAS 37, when there is a current legal or constructive obligation resulting from past events which will result in a probable outflow of resources (expenses / cash outs) to settle it and for which a reliable estimate of such outflows and timing can be made.

The environmental expenses encompass, but are not limited, to the following key matters

- Sampling and analytical costs for soil and ground water monitoring
- Cost related to dismantling when required to meet a remediation or permit obligation
- Asbestos removal when obligated by regulation
- Environmental investigations and studies (Risk Assessments, Phase I and II soil and groundwater)

The closing amount of the environmental provisions is based on the net present value of the cash flows forecasts needed, for current and future years, to settle remediation obligations. Forecast expenditures are based on external consultant estimates, where appropriate and possible. Future expenditures are forecast and revised formally biannually and validated quarterly by Solvay financial and suitably qualified industrial experts led by the Group Environmental Rehabilitation Director and benefit from inputs of legal department staff for the evolution of Environmental Regulations.

In the absence of probable obligations, a contingent liability may be disclosed to represent the future possible liability. In some cases, contingent liabilities cannot be quantified. See Note F36

Restructuring provisions

In 2021, these provisions amount to € 191 million, compared with € 120 million at the end of 2020.

The provisions at the end of 2021 mainly relate to the restructuring charges for the simplification of all support functions in the frame of the Group's simplification and transformation program, including the strategic transformation measures announced on February 24, 2021 (€ 100 million).

Environmental provisions

These provisions amount to € 648 million at the end of 2021, compared with € 615 million at the end of 2020, and pertain to:

- mines and drilling operations to the extent that legislation and/or operating permits in relation to quarries, mines and drilling operations contain requirements to pay compensation to third parties. Most of these provisions, based on local expert advice, can be expected to be used over a 1-20 year horizon and amount to € 136 million;
- the dismantling of the last mercury electrolysis activities was completed in 2019. The remaining provisions related to those activities will be used for the management of contamination of soil and groundwater, mostly over the next 20 years.
- lime dikes (settling ponds related mainly to soda ash plant), dump at sites and third party dump sites (linked to several industrial activities). These provisions have an horizon of 1 to 20 years;
- various types of pollution (organic, inorganic) coming from miscellaneous chemical productions; these provisions mainly cover discontinued activities or closed plants. Most of these provisions have a horizon of 1 to 20 years.

The estimated amounts are discounted based on the probable date of settlement, and are periodically adjusted to reflect the passage of time.

The breakdown of the environmental provisions and related uses for the main Countries/Regions is reported here below:

	December 31, 2021				December 31, 2020			
In € million	Provisions	In %	Provisions ongoing activities	Use of provisions	Provisions	In %	Provisions ongoing activities	Use of provisions
France	152	24%		-13	136	22%		-12
Germany	117	18%	7	-4	119	19%	7	-5
Rest of Europe	161	25%	5	-14	155	25%	5	-13
North America	151	23%		-24	121	20%		-29
Rest of the world	66	10%		-6	83	14%	1	-10
Total	**648**	**100%**	**13**	**-61**	**614**	**100%**	**14**	**-68**

Provisions for litigation

Provisions for litigation refer to indirect tax and legal exposures. They amount to € 62 million in 2021 (€ 61 million in 2020). The balance at the end of 2021 relates to indirect tax risks (€ 13 million) and legal claims (€ 49 million).

Other provisions

Other provisions relate to the shutdown or disposal of activities and amount to € 126 million, compared with € 84 million at the end of 2020.

NOTE F32
FINANCIAL INSTRUMENTS AND FINANCIAL RISK MANAGEMENT

Accounting policy

General

Financial assets and liabilities are recognized when, and only when Solvay becomes a party to the contractual provisions of the instrument.

Amortized cost is the amount at which the financial asset or financial liability is measured at initial recognition minus the principal repayments, plus or minus the cumulative amortization using the effective interest method of any difference between that initial amount and the maturity amount and, for financial assets, adjusted for any loss allowance. The effective interest rate is the rate that exactly discounts estimated future cash payments or receipts through the expected life of the financial asset or financial liability to the gross carrying amount of a financial asset or to the amortized cost of a financial liability. When calculating the effective interest rate, the Group estimates the expected cash flows by considering all the contractual terms of the financial instrument (for example, prepayment, extension, call and similar options) but does not consider the expected credit losses. The calculation includes all fees and points paid or received between parties to the contract that are an integral part of the effective interest rate, transaction costs, and all other premiums or discounts.

Financial assets

Trade receivables are initially measured at their transaction price, if they do not contain a significant financing component, which is the case for substantially all trade receivables. Other financial assets are initially measured at fair value plus, in the case of a financial asset not at fair value through profit or loss, transaction costs that are directly attributable to the acquisition of the financial asset.

A financial asset is classified as current when the cash flows expected to flow from the instrument mature within one year.

All recognized financial assets will subsequently be measured at either amortized cost or fair value under IFRS 9 Financial Instruments. Specifically:

- a debt instrument that (i) is held within a business model whose objective is to collect the contractual cash flows and (ii) has contractual cash flows that are solely payments of principal and interest on the principal amount outstanding is measured at amortized cost (net of any write down for impairment), unless the asset is designated at fair value through profit or loss (FVTPL) under the fair value option;
- a debt instrument that (i) is held within a business model whose objective is achieved both by collecting contractual cash flows and selling financial assets and (ii) has contractual terms that give rise on specified dates to cash flows that are solely payments of principal and interest on the principal amount outstanding, is measured at fair value through other comprehensive income (FVTOCI), unless the asset is designated at FVTPL under the fair value option. Upon derecognition, the cumulative gains and losses previously recognized in other comprehensive income are reclassified to profit or loss;
- all other debt instruments are measured at FVTPL;
- all equity investments are measured in the consolidated statement of financial position at fair value, with gains and losses recognized in profit or loss except that if an equity investment is not held for trading, nor contingent consideration recognized by an acquirer in a business combination, an irrevocable election can be made at initial recognition to measure the investment at FVTOCI, with dividend income recognized in profit or loss. This classification is determined on an instrument-by-instrument basis. Upon derecognition, the cumulative gains or losses previously recognized in other comprehensive income are reclassified to retained earnings.
- Equity investments in partnerships of investment funds are measured in the consolidated statement of financial position at fair value with gains and losses recognized in profit or loss. Based on the analysis of the characteristics of these funds the Group determined that they were not eligible for the FVTOCI option and therefore are accounted for at FVTPL.

For instruments quoted in an active market, the fair value corresponds to a market price (level 1). For instruments that are not quoted in an active market, the fair value is determined using valuation techniques including reference to recent arm's length market transactions or transactions involving instruments which are substantially the same (level 2), or discounted cash flow analysis including, to the greatest possible extent, assumptions consistent with observable market data (level 3). However, in limited circumstances, cost of equity instruments may be an appropriate estimate of their fair value. That may be the case if insufficient more recent information is available to measure fair value, or if there is a wide range of possible fair value measurements and cost represents the best estimate of fair value within that range.

Impairment of financial assets

The impairment loss of a financial asset measured at amortized cost is calculated based on the expected loss model, representing the weighted average of credit losses with the respective risks of a default occurring as the weights. Expected credit losses are based on the difference between the contractual cash flows due in accordance with the contract and all the cash flows that the Group expects to receive, discounted at an approximation of the original effective interest rate.

For trade receivables that do not contain a significant financing component (i.e. substantially all trade receivables), the loss allowance is measured at an amount equal to lifetime expected credit losses. Those are the expected credit losses that result from all possible default events over the expected life of those trade receivables, using a provision matrix that takes into account historical information on defaults adjusted for the forward-looking information per customer. The Group considers a financial asset in default when contractual payments are 60 days past due. However, in certain cases, the Group may also consider a financial asset to be in default when internal or external information indicates that the Group is unlikely to receive the outstanding contractual amounts in full before taking into account any credit enhancements held by the Group. A financial asset is fully impaired when there is no reasonable expectation of recovering the contractual cash flows.

Impairment losses are recognized in the consolidated income statement, except for debt instruments measured at fair value through other comprehensive income. In this case, the allowance is recognized in other comprehensive income.

Financial liabilities

Financial liabilities are initially measured at fair value minus, in the case of a financial liability not at fair value through profit or loss, transaction costs that are directly attributable to the issue of the financial liability. Subsequently, they are measured at amortized cost, except for:

- financial liabilities at fair value through profit or loss. Such liabilities, including derivatives that are liabilities, are subsequently measured at fair value;
- financial guarantee contracts. After initial recognition, guarantees are subsequently measured at the higher of the expected losses and the amount initially recognized.

Derivative financial instruments

A derivative financial instrument is a financial instrument or other contract within the scope of IFRS 9 Financial Instruments with all three of the following characteristics:

- its value changes in response to the change in a specified interest rate, financial instrument price, commodity price, foreign exchange rate, index of prices or rates, credit rating or credit index, or other variable, provided in the case of a non-financial variable that the variable is not specific to a party to the contract (sometimes called the 'underlying');
- it requires no initial net investment or an initial net investment that is smaller than would be required for other types of contracts that would be expected to have a similar response to changes in market factors;
- it is settled at a future date.

The Group enters into a variety of derivative financial instruments (forward, future, option, collars and swap contracts) to manage its exposure to interest rate risk, foreign exchange rate risk, and commodity risk (mainly utility and CO_2 emission rights price risks).

As explained above, derivatives are initially recognized at fair value at the date a derivative contract is entered into and are subsequently remeasured to their fair value at the end of each reporting period. The resulting gain or loss is recognized in income or expense, unless the derivative is designated and effective as a hedging instrument. The Group designates certain derivatives as hedging instruments of the exposure to variability in cash flows with respect to a recognized asset or liability or a highly probable forecast transaction that could affect profit or loss (cash flow hedges).

A derivative with a positive fair value is recognized as a financial asset whereas a derivative with a negative fair value is recognized as a financial liability. Derivative instruments (or portions of them) are presented as non-current assets or non-current liabilities if the remaining maturity of the underlying settlements is more than twelve months after the reporting period. Other derivative instruments (or portions of them) are presented as current assets or current liabilities.

Hedge accounting

The Group designates certain derivatives and embedded derivatives, in respect of interest rate risk, foreign exchange rate risk, Solvay share price risk, and commodity risk (mainly utility and CO_2 emission rights price risks), as hedging instruments in a cash flow hedge relationship.

At the inception of the hedge relationship, there is a formal designation and documentation of the hedging relationship and the Group's risk management objective and strategy for undertaking the hedge. So to apply hedge accounting: (a) there is an economic relationship between the hedged item and the hedging instrument, (b) the effect of credit risk does not dominate the value changes that result from that economic relationship, and (c) the hedge ratio of the hedging relationship is the same as that resulting from the quantity of the hedged item that the Group actually hedges and the quantity of the hedging instrument that the Group actually uses to hedge that quantity of hedged item.

The requirement under (a) above that an economic relationship exists means that there is an expectation that the value of the hedging instrument and the value of the hedged item will systematically change in the opposite direction in response to movements in either the same underlying (or underlyings that are economically related in such a way that they respond in a similar way to the risk that is being hedged).

Cash flow hedges

The effective portion of changes in the fair value of hedging instruments that are designated in a cash flow hedge is recognized in other comprehensive income.

The gain or loss relating to the ineffective portion is recognized immediately in profit or loss.

As long as cash flow hedge qualifies, the hedging relationship is accounted for as follows:

a) the separate component of equity associated with the hedged item (cash flow hedge reserve) is adjusted to the lower of the following (in absolute amounts):

  (i) the cumulative gain or loss on the hedging instrument from inception of the hedge; and

  (ii) the cumulative change in fair value (present value) of the hedged item (i.e. The present value of the cumulative change in the hedged expected future cash flows) from inception of the hedge.

b) the portion of the gain or loss on the hedging instrument that is determined to be an effective hedge (i.e. The portion that is offset by the change in the cash flow hedge reserve calculated in accordance with (a)) is recognized in other comprehensive income.

c) any remaining gain or loss on the hedging instrument (or any gain or loss required to balance the change in the cash flow hedge reserve calculated in accordance with (a)) is hedge ineffectiveness that is recognized in profit or loss.

d) the amount that has been accumulated in the cash flow hedge reserve in accordance with (a) is accounted for as follows:

  (i) if a hedged forecast transaction subsequently results in the recognition of a non-financial asset or a non-financial liability, the Group removes that amount from the cash flow hedge reserve and includes it directly in the initial cost or other carrying amount of the asset or the liability. This is not a reclassification adjustment and hence it does not affect other comprehensive income.

  (ii) for cash flow hedges other than those covered by i), that amount is reclassified from the cash flow hedge reserve to profit or loss as a reclassification adjustment in the same period or periods during which the hedged expected future cash flows affect profit or loss (for example, in the periods that interest income or interest expense is recognized or when a forecast sale occurs).

  (iii) however, if that amount is a loss and the Group expects that all or a portion of that loss will not be recovered in one or more future periods, it immediately reclassifies the amount that is not expected to be recovered into profit or loss as a reclassification adjustment.

Most hedged items are transaction related. The time value of options, forward elements of forward contracts, and foreign currency basis spreads of financial instruments that are hedging the items affect profit or loss at the same time as those hedged items.

Hedge accounting is discontinued prospectively when the hedging relationship (or a part of a hedging relationship) ceases to meet the qualifying criteria (after taking into account any rebalancing of the hedging relationship, if applicable). This includes instances when the hedging instrument expires or is sold, terminated or exercised.

When the Group discontinues hedge accounting for a cash flow hedge it accounts for the amount that has been accumulated in the cash flow hedge reserve as follows:

- if the hedged future cash flows are still expected to occur, that amount remains in the cash flow hedge reserve until the future cash flows occur. However, if that amount is a loss and the Group expects that all or a portion of that loss will not be recovered in one or more future periods, it immediately reclassifies the amount that is not expected to be recovered into profit or loss as a reclassification adjustment.
- if the hedged future cash flows are no longer expected to occur, that amount is immediately reclassified from the cash flow hedge reserve to profit or loss as a reclassification adjustment. A hedged future cash flow that is no longer highly probable to occur may still be expected to occur.

The following table presents the financial assets and liabilities as current or non-current according to their classification under IFRS 9.

In € million	Classification	December 31, 2021 Carrying amount	December 31, 2020 Carrying amount
Non-current assets - Financial instruments		**553**	**346**
Equity instruments measured at fair value through other comprehensive income	Financial assets measured at fair value through other comprehensive income	51	66
Equity instruments measured at fair value through profit or loss	Financial assets measured at fair value through profit or loss	62	
Loans and other non-current assets (excluding pension fund surpluses and long-term inventory balance)	Financial assets measured at amortized cost	252	280
Financial instruments - Operational		**187**	
Held for trading	Held for trading	108	
Derivative financial instruments designated in a cash flow hedge relationship	Cash-flow hedge	79	
Current assets - Financial instruments		**4,300**	**2,517**
Trade receivables	Financial assets measured at amortized cost	1,805	1,264
Other financial instruments		229	119
Other marketable securities >3 months	Financial assets measured at amortized cost	70	42
Currency swaps	Held for trading	4	1
Other current financial assets	Financial assets measured at amortized cost	155	76
Financial instruments - Operational		**1,326**	**131**
Held for trading	Held for trading	1,101	99
Derivative financial instruments designated in a cash flow hedge relationship	Cash-flow hedge	225	32
Cash and cash equivalents	**Financial assets measured at amortized cost**	**941**	**1,002**
Total assets - Financial instruments		**4,853**	**2,863**
Non-current liabilities - Financial instruments		**2,907**	**3,328**
Financial debt		2,576	3,233
Bonds	Financial liabilities measured at amortized cost	2,112	2,776
Other non-current debts	Financial liabilities measured at amortized cost	55	116
Lease liabilities IFRS 16 - Non-current portion	Lease liabilities measured at amortized cost	408	341
Other liabilities	Financial liabilities measured at amortized cost	153	95
Financial instruments - Operational		**178**	
Held for trading	Held for trading	107	
Derivative financial instruments designated in a cash flow hedge relationship	Cash-flow hedge	71	
Current liabilities - Financial instruments		**4,414**	**1,743**
Financial debt		773	287
Short-term financial debt	Financial liabilities measured at amortized cost	673	185
Currency swaps	Held for trading	3	10
Lease liabilities IFRS 16 - Current portion	Lease liabilities measured at amortized cost	97	92
Trade payables	Financial liabilities measured at amortized cost	2,131	1,197
Financial instruments - Operational		1,350	101
Held for trading	Held for trading	1,118	86
Derivative financial instruments designated in a cash flow hedge relationship	Cash-flow hedge	232	15
Dividends payables	Financial liabilities measured at amortized cost	160	159
Total liabilities - Financial instruments		**7,320**	**5,072**

Long-term CO_2 inventory balances reported are not financial assets and hence are not included in the table above. They are presented as other non-current assets (see note F25 Inventories).

F32.A. Overview of financial instruments

The following table gives an overview of the carrying amount of all financial instruments by category as defined by IFRS 9

Financial Instruments.

	December 31, 2021	December 31, 2020
In € million	Carrying amount	Carrying amount
Fair value through profit or loss	***1,579***	***132***
Held for trading (financial instruments - operational - see note F26)	1,209	99
Held for trading (other financial instruments - see note F33, table Changes in financial debt)	4	1
Derivative financial instruments designated in a cash flow hedge relationship (see note F26)	304	32
Equity instruments measured at fair value through profit or loss	62	
Financial assets measured at amortized cost	***3,223***	***2,665***
Financial assets measured at amortized cost (including cash and cash equivalents, trade receivables, loans and other current/non-current assets except pension fund surpluses and long-term inventory balance)	3,223	2,665
Financial assets measured at fair value through other comprehensive income	***51***	***66***
Equity instruments measured at fair value through other comprehensive income	51	66
Total financial assets	**4,853**	**2,863**
Fair value through profit or loss	***-1,531***	***-111***
Held for trading (financial instruments - operational - see note F34)	-1,225	-86
Held for trading (financial debt - see note F33, table Changes in financial debt)	-3	-10
Derivative financial instruments designated in a cash flow hedge relationship (see note F34)	-304	-15
Financial liabilities measured at amortized cost	***-5,284***	***-4,528***
Financial liabilities measured at amortized cost (excluding dividends payable and IFRS 16 lease liabilities)	-5,124	-4,369
Dividends payables	-160	-159
Lease liabilities measured at amortized cost	***-505***	***-433***
Lease liabilities IFRS16 measured at amortized cost	-505	-433
Total financial and lease liabilities	**-7,320**	**-5,072**

The category "Held for trading" only contains derivative financial instruments that are used for management of foreign currency risk, interest rate risk, utility and CO_2 emission rights price risks, index and Solvay share price. Contracts which have been documented as hedging instruments (hedge accounting under IFRS 9 *Financial Instruments*) or which meet the exemption criteria for own use are not included in the category "Held for trading". Equity instruments measured at fair value through OCI and through profit or loss pertain to Solvay's New Business Development (NBD) activity: the Group has built a Corporate Venturing portfolio, which consists of direct investments in start-up companies and of investments in venture capital funds. If the Group does not have significant influence or joint control, the investments are measured at fair value according to the valuation guidelines published by the European Private Equity and Venture Capital Association. The impacts of the direct investments are recognized in other comprehensive income while the venture capital funds are generally recognized through the profit and loss.

F32.B. Fair value of financial instruments

Valuation techniques and assumptions used for measuring fair value

Accounting policy

Quoted market prices are available for financial assets and financial liabilities with standard terms and conditions that are traded on active markets. The fair values of derivative financial instruments are equal to their quoted prices, if available. In case such quoted prices are not available, the fair value of the financial instruments is determined based on a discounted cash flow analysis using the applicable yield curve derived from quoted interest rates matching maturities of the contracts for non-optional derivatives. Optional derivatives are fair valued based on option pricing models, taking into account the present value of probability weighted expected future payoffs, using market reference formulas.

The fair values of other financial assets and financial liabilities are determined in accordance with generally accepted pricing models based on discounted cash flow analysis.

Fair value of financial instruments measured at amortized cost (excluding IFRS 16 lease liabilities)

In € million	December 31, 2021		December 31, 2020	
	Carrying amount	Fair value	Carrying amount	Fair value
Non-current assets - Financial instruments	**252**	**252**	**280**	**280**
Loans and other non-current assets (except pension fund surpluses and long-term inventory balance)	252	252	280	280
Non-current liabilities - Financial instruments	**-2,321**	**-2,465**	**-2,988**	**-3,234**
Bonds	-2,112	-2,256	-2,776	-3,022
Other non-current debts	-55	-55	-116	-116
Other liabilities	-153	-153	-95	-95

The carrying amounts of current financial assets and liabilities are estimated to reasonably approximate their fair values, such in light of short terms to maturity.

Financial instruments measured at fair value in the consolidated statement of financial position

The table “Financial instruments measured at fair value in the consolidated statement of financial position” provides an analysis of financial instruments that, subsequent to their initial recognition, are measured at fair value, grouped into Levels 1 to 3 based on the degree to which the fair value is observable. Financial instruments, classified as held for trading and as hedging instruments in cash flow hedges are mainly grouped into Levels 1 and 2. They are fair valued based on forward pricing and swap models using present value calculations. The models incorporate various inputs including foreign exchange spot and interest rates of the respective currencies, currency basis spreads between the respective currencies, interest rate curves and forward rate curves of the underlying commodity. The equity instruments measured at fair value through OCI and through profit and loss are presented within Level 1 and 3. The fair value of the instruments presented under Level 3 is measured based on the guidelines recommended by The International Private Equity and Venture Capital Valuation (IPEV).

In accordance with the Group internal rules, the responsibility for measuring the fair value level resides with (a) the Treasury department for the non-utility derivative financial instruments, and the non-derivative financial liabilities, (b) the Sustainable Development and Energy department for the utility derivative financial instruments and (c) the Finance department for non-derivative financial assets.

Financial instruments measured at fair value in the consolidated statement of financial position

	December 31, 2021			
In € million	Level 1	Level 2	Level 3	Total
Held for trading	**773**	**439**		**1,212**
Foreign currency risk		7		7
Utility risk	769	429		1,198
CO_2 risk	4			4
Solvay share price		2		2
Index		2		2
Equity instruments measured at fair value through profit or loss			**62**	**62**
New Business Development			62	62
Cash flow hedges	**38**	**266**		**304**
Foreign currency risk		5		5
Utility risk	38	260		298
Solvay share price		1		1
Equity instruments measured at fair value through other comprehensive income	**35**		**17**	**51**
New Business Development	35		17	51
Total assets	**846**	**705**	**79**	**1,630**
Held for trading	**-620**	**-608**		**-1,228**
Foreign currency risk		-4		-4
Utility risk	-620	-598		-1,217
CO_2 risk	0	-4		-5
Index		-2		-2
Cash flow hedges	**-232**	**-72**		**-304**
Foreign currency risk		-13		-13
Utility risk	-232	-59		-291
Total liabilities	**-852**	**-679**		**-1,531**

In 2021, the fair value of the financial instruments to manage the utility risk significantly increased after an unprecedented rise in the prices of power and gas.

Derivatives for utilities, CO_2 and commodities

2021	Amounts recognized in the statement of financial position			Amounts by counterparty			
€ in million	Non-current	Current	Total	Market cleared	Negotiated with EFET/ISDA counterparties	Other	Total
Cash flow hedges	79	218	298				
Held for trading	108	1,093	1,201				
Total assets	**187**	**1,312**	**1,499**	**891**	**390**	**218**	**1,499**
Cash flow hedges	-71	-219	-291				
Held for trading	-107	-1,116	-1,222				
Total liabilities	**-178**	**-1,335**	**-1,513**	**-931**	**-143**	**-439**	**-1,513**

EFET = European Federation of Energy Traders (EFET), ISDA = International Swaps and Derivatives Association

The amounts of these financial instruments are significant as they are presented gross in accordance with IAS 32. However, the credit risk remains limited considering that:

- Most instruments are negotiated with market cleared counterparties;
- Very low risk is associated with counterparty members of the European Federation of Energy Traders or of the International Swaps and Derivatives Association, with high credit ratings (A-1/A+).
- The amount of "Other" assets of € 218 million would reduce to € 87 million when considering offsetting clauses (close-out netting…) that do not meet the offsetting criteria set out in IAS 32.

No significant credit value adjustment is reflected in these derivatives' fair market value.

	December 31, 2020			
In € million	Level 1	Level 2	Level 3	Total
Held for trading	**48**	**52**		**100**
Foreign currency risk		6		6
Utility risk	47	44		92
CO_2 risk	1			1
CO_2 certificates futures and forward contracts	1			1
Solvay share price		1		1
Index		1		1
Cash flow hedges	**1**	**31**		**32**
Foreign currency risk		16		16
Utility risk	1	13		14
Solvay share price		2		2
Equity instruments measured at fair value through other comprehensive income			**66**	**66**
New Business Development			66	66
Total assets	**49**	**83**	**66**	**198**
Held for trading	**-39**	**-57**		**-96**
Foreign currency risk		-10		-10
Interest rate risk		-1		-1
Utility risk	-39	-44		-82
CO_2 risk		-1		-2
CO_2 certificates futures and forward contracts		-1		-2
Index		-1		-1
Cash flow hedges	**-7**	**-8**		**-15**
Foreign currency risk		-1		-1
Utility risk	-7	-7		-14
Total liabilities	**-46**	**-65**		**-111**

Movements of the period

Reconciliation of level 3 fair value measurements of financial assets and liabilities

	December 31, 2021		
	At fair value through profit or loss	At fair value through other comprehensive income	Total
In € million	Equity instruments	Equity instruments	
January 1	**55**	**11**	**66**
Total gains or losses			
- Recognized in profit or loss	1		
- Recognized in other comprehensive income		1	1
Acquisitions	6	7	13
Capital decreases	0	0	-1
Transfers out of level 3		-2	-2
December 31	**62**	**17**	**79**

	December 31, 2020		
	At fair value through profit or loss	At fair value through other comprehensive income	Total
In € million	Derivatives	Equity instruments	
January 1		**56**	**56**
Total gains or losses			
- Recognized in other comprehensive income		4	4
Acquisitions		7	7
Capital decreases		-1	-1
December 31		**66**	**66**

Income and expenses of financial instruments recognized in the consolidated income statement and in other comprehensive income

In € million	2021	2020
Recognized in the consolidated income statement		
Recycling from OCI of derivative financial instruments designated in a cash flow hedge relationship		
Foreign currency risk	9	-25
Utility risk	78	-35
Changes in the fair value of financial instruments held for trading		
Utility risk	88	-7
CO_2 risk	-4	-19
Recognized in the gross margin	**170**	**-86**
Recycling from OCI of derivative financial instruments designated in a cash flow hedge relationship		
Foreign currency risk		-6
Solvay share price		-2
Changes in the fair value of financial instruments held for trading		
Solvay share price	2	-9
Gains and losses (time value) on derivative financial instruments designated in a cash flow hedge relationship		
Foreign currency risk		1
Foreign operating exchange gains and losses	1	-1
Recognized in other operating gains and losses	**3**	**-18**
Recycling from OCI of derivative financial instruments designated in a cash flow hedge relationship		
Foreign currency risk	1	
Recognized in results from portfolio management and reassessments	**1**	
Net interest expense	-80	-85
Financial charge on lease liabilities	-19	-21
Other gains and losses on net indebtedness (excluding gains and losses on items not related to financial instruments)		
Foreign currency risk	-1	-2
Interest element of financial instruments	8	2
Others	-7	-1
Recognized in charges on net indebtedness (*)	**-100**	**-107**
Dividends from equity instruments measured at fair value through other comprehensive income	6	3
Total recognized in the consolidated income statement	**80**	**-207**

(*) The note F6 Net Financial Charges shows an amount of € (103) million for 2021 (€ (107) million for 2020) reported under "Net cost of borrowings". This amount includes € (3) million for 2021 (€ (6) million for 2020) of financial expenses not related to financial instruments that are excluded in this table from the line item "Recognized in charges on net indebtedness".

The gain on highly probable sales in foreign currency recognized in gross margin for € 9 million and on utility instruments for € 78 million is the result of the recycling of gains and losses of derivative financial instruments designated in a cash flow hedge relationship. The gain on utility for € 78 million is mainly related to gas procurement for € 171 million, benzene for € 5 million and coal for € 13 million, partially offset by a loss on power procurement for € 113 million.

The change in fair value of financial instruments held for trading recognized in gross margin is explained by:
- a gain of € 88 million (€ (7) million in 2020) mainly due to the price increase of gas and electricity;
- a loss of € (4) million (a loss of € (19) million in 2020) mainly due to the price variation of CO_2;
- a gain of € 2 million (a loss of € (9) million in 2020) recognized in other operating gains and losses is the result of the change in fair value of equity swaps for long-term incentives.

In the caption other gains and losses on net indebtedness, the gain of € 8 million (€ 2 million for 2020) is related to the interest element of financial derivatives (forward points). This gain is partially offset by the other costs that include a one-off for € (6) million related to the early repayment of € 372.5

million on the € 750 million senior bond in December 2021.

Income and expenses on financial instruments recognized in other comprehensive income include the following:

In € million	Cash flow hedges									
	Foreign currency risk		Interest rate risk		Commodity risk		Risk on Solvay share price		Total	
	2021	2020	**2021**	2020	**2021**	2020	**2021**	2020	**2021**	2020
January 1	**16**	**1**				**-28**	**2**		**17**	**-27**
Recycling from other comprehensive income of derivative financial instruments designated in a cash flow hedge relationship	-9	31			-78	35		2	-87	68
Effective portion of changes in fair value of cash flow hedge	-14	-17			85	-7			71	-24
December 31	**-7**	**16**			**7**		**2**	**2**	**1**	**17**

Conventionally, (+) indicates an increase and (-) a reduction in equity.

F32.C. Capital management

See 2 Capital, shares and shareholders in respect of capital in the Corporate governance statement chapter of this annual report.

The Group manages its funding structure with the objective of safeguarding its ability to continue as a going concern, optimizing the return for shareholders, maintaining an investment-grade rating, and minimizing the cost of debt.

The capital structure of the Group consists of equity (including perpetual hybrid bonds (see note F28 Equity) and of net debt (see note F33 Net indebtedness). Perpetual hybrid bonds are nevertheless considered as debt in the Group's Underlying metrics.

Besides the statutory minimum equity funding requirements that apply to the Company's subsidiaries in the different countries, Solvay is not subject to any additional legal capital requirements.

The Treasury department reviews the capital structure on an ongoing basis under the authority and the supervision of the Chief Financial Officer. As appropriate, the Legal department is involved to ensure compliance with legal and contractual requirements.

F32.D. Financial risk management

The Group is exposed to market risk from movements in foreign exchange rates, interest rates and other market prices (utility prices, CO_2 emission rights prices and equity prices). The Group's senior management oversees the management of these risks and is supported by the Treasury department (non-commodity risks) and Solvay Sustainable Development and Energy department that advise on financial risks and the appropriate financial risk governance framework for the Group. Both departments provide assurance to the Group's senior management that the Group's financial risk activities are governed by appropriate policies and procedures and that financial risks are identified, measured and managed in accordance with the Group's policies and risk objectives. Solvay uses derivative financial instruments to hedge clearly identified foreign exchange, interest rate, index, utility price and CO_2 emission rights price risks (hedging instruments). All derivative activities for risk management purposes are carried out by specialist teams that have the appropriate skills, experience and supervision. However, the required criteria to apply hedge accounting are not met in all cases.

Furthermore, the Group is also exposed to liquidity risks and credit risks.

Foreign currency risks

The Group is a multi-specialty chemical company with operations worldwide, and hence undertakes transactions denominated in foreign currencies. Consequently, the Group is exposed to exchange rate fluctuations. In 2021, the Group was mainly exposed to US dollar, Chinese yuan, Brazilian real and Japanese yen.

To mitigate its foreign currency risk, the Group has defined a hedging policy that is essentially based on the principles of financing its activities in local currency and hedges the transactional exchange risk at the time of invoicing (risk which is certain). The Group constantly monitors its activities in foreign currencies and hedges, where appropriate, the exchange rate exposures on expected cash flows (risk which is highly probable).

Exchange rate exposures are managed within approved policy parameters utilizing forward foreign exchange contracts or, when appropriate, other derivatives like currency options.

In the course of 2021, the EUR/USD exchange rate moved from 1.2270 at the start of January to 1.1326 at the end of December (from 1.1231 to 1.2270 in 2020).

A fluctuation of (0.10) to the US$/€ exchange rate, would generate in 2021 about € 120 million (€ 100 million for 2020) variation to the EBITDA. 58% of this variation is at conversion level and 42% at transaction level, the latter being mostly hedged. EBITDA is the key non-IFRS metric for operational performance as defined in the glossary.

At the end of 2021, a strengthening of the US dollar vs EUR would increase the net debt by approximately € 79 million (€ 56 million in 2020) per 0.10

US$/€ fluctuation. Conversely, a weakening of the US dollar vs EUR would decrease the net debt by approximately € 66 million (€ 47 million in 2020) per 0.10 US$/€ fluctuation.

The Group's currency risk can be split into two categories: translation and transactional risk.

Translation risk

The translation exchange risk is the risk affecting the Group's consolidated financial statements related to investees operating in a currency other than the EUR (the Group's presentation currency).

During 2021 and 2020, the Group did not hedge the currency risk of foreign operations.

Transactional risk

The transactional risk is the exchange risk linked to a specific transaction, such as a Group entity buying or selling in a currency other than its functional currency.

To the largest extent possible, the Group manages the transactional risk on receivables and borrowings centrally and locally when centralization is not possible.

The choice of borrowing currency depends mainly on the opportunities offered by the various markets. This means that the selected currency is not necessarily that of the country in which the funds will be invested. Nonetheless, operating entities are financed essentially in their functional currencies.

In emerging countries, it is not always possible to borrow in local currency, either because funds are not available in local financial markets, or because the financial conditions are too onerous. In such a situation, the Group has to borrow in a different currency. Nonetheless, the Group considers opportunities to refinance its borrowings in emerging countries with local currency debt.

Derivatives are initially recognized at fair value at the date a derivative contract is entered into and are classified into the two categories described below:

Held for trading

The transactional risk is managed either by spot or forward contracts. Unless documented as hedging instruments (see above), derivative financial instruments are classified as held for trading.

In 2021, the notional amounts transacted to manage the transactional risk are:
- a short position of € (660) million (compared to € (760) million in 2020);
- a long position of € 605 million (compared to € 263 million in 2020).

This evolution is mainly explained by a significant reduction of foreign exchange risk exposure (US dollar) and internal restructuring optimization activity (mainly Sterling pound).

The following table details the notional amounts of the Group's derivatives contracts outstanding at the end of the period:

In € million

	Notional amount [1]		Fair value assets		Fair value liabilities	
December 31	**2021**	2020	**2021**	2020	**2021**	2020
Held for trading long position	605	263	3	1	-2	-2
Held for trading short position	-660	-760	4	5	-2	-8
Total			**7**	**6**	**-4**	**-10**

(1) Long/(short) positions (if the foreign exchange transaction does not involve the functional currency, both notional amounts are considered).

Cash flow hedge

The Group uses derivatives to hedge identified foreign exchange rate risks. It documents those as hedging instruments unless it hedges a recognized financial asset or liability when generally no cash flow hedge relationship is documented. Most hedges are transaction related.

At the end of 2021, the Group had mainly hedged highly probable sales in foreign currencies (short position) in a nominal amount of US$ 727 million (€ 642 million) and JP¥ 9,948 million (€ 76 million). All cash flow hedge contracts that exist at the end of December 2021 will be settled within the next 12 months, and will impact profit or loss during that period.

The following table details the notional amounts of Solvay's derivatives contracts outstanding at the end of the period:

NOTIONAL AMOUNTS

December 31, 2021

In € million	Notional amount of the instrument (1)	Notional amount of the risk exposure (1)	Percentage of exposure hedged		Average hedge exchange rate per risk category	Cash flow hedge reserve	Fair value of the hedging instrument	
						Equity	Assets	Liabilities
Cash flow hedges - Forecasted sales and purchases (3)								
JPY/EUR	-45	-110	41%		130.80	1		
JPY/USD	-31	-64	48%	(2)	111.66	1	1	
Total JPY	**-76**	**-174**				**1**	**1**	
USD/BRL	-146	-194	75%	(2)	5.26			
USD/CNY	-122	-225	54%	(2)	6.58	3	3	
USD/EUR	-314	-634	50%		1.18	12		12
USD/MXN	-40	-89	45%	(2)	21.73	2	2	
USD/THB	-20	-44	45%		32.51	1		1
Total USD	**-642**	**-1,187**				**17**	**4**	**13**
Total	**-718**	**-1,361**				**18**	**5**	**13**

(1) Long/(short) positions

(2) In compliance with Group Treasury Policy the percentage of hedged exposure will reach the progressive minimum compliance level of 60% in 2022

(3) The Hedging instruments are located in the line item: "Other Receivables" and "Other Liabilities" in the statement of financial position.

December 31, 2020

In € million	Notional amount of the instrument (1)	Notional amount of the risk exposure (1)	Percentage of exposure hedged		Average hedge exchange rate per risk category	Cash flow hedge reserve	Fair value of the hedging instrument	
						Equity	Assets	Liabilities
Cash flow hedges - Forecasted sales and purchases (3)								
JPY/EUR	-43	-91	47%		123.83	1	1	0
JPY/USD	-22	-46	47%	(2)	105.24	0	0	0
Total JPY	**-64**	**-138**				**1**	**1**	**0**
USD/BRL	-98	-130	75%	(2)	5.02	0	0	0
USD/CNY	-90	-185	49%	(2)	6.72	3	3	0
USD/EUR	-205	-454	45%		1.16	11	11	0
USD/MXN	-4	-44	10%	(2)	22.99	1	1	0
USD/THB	-13	-29	45%		30.71	0	0	0
Total USD	**-410**	**-843**				**15**	**15**	**0**
KRW/EUR	-42	-42	100%		1,313.80	1	1	0
Total KRW	**-42**	**-42**				**1**	**1**	**0**
Total	**-517**	**-1,023**				**16**	**16**	**-1**

(1) Long/(short) positions

(2) In compliance with Group Treasury Policy the percentage of hedged exposure will reach the progressive minimum compliance level of 60% in 2021

(3) The Hedging instruments are located in the line item: "Other Receivables" and "Other Liabilities" in the statement of financial position.

Interest rate risks

See the Financial risk in the Management of risks section of this annual report for additional information on the interest rate risks management.

Interest rate risk is managed at Group level.

The Group is exposed to interest rate risk because entities in the Group borrow funds at both fixed and floating interest rates. Interest rate risk is managed at Group level by maintaining an appropriate mix between fixed and floating rate borrowings.

Interest rate exposure by currency is summarized below:

In € million	December 31, 2021			December 31, 2020		
Currency	Fixed rate	Floating rate	Total	Fixed rate	Floating rate	Total
Financial debt						
EUR	-1,923	-18	**-1,941**	-2,119	-56	**-2,175**
USD	-1,246	-23	**-1,269**	-1,157	-7	**-1,164**
SAR		-18	**-18**		-54	**-54**
INR	-39		**-39**	-26	-1	**-27**
KRW	-21	-1	**-22**	-24	-2	**-26**
THB	-11		**-11**	-17	-5	**-22**
BRL	-9	-2	**-11**	-13		**-13**
Other	-28	-8	**-37**	-32	-7	**-39**
Total	**-3,277**	**-71**	**-3,349**	**-3,387**	**-132**	**-3,520**
Cash and cash equivalents						
EUR		206	**206**		215	**215**
USD		458	**458**		534	**534**
CAD		5	**5**		3	**3**
THB		36	**36**		34	**34**
SAR		15	**15**		7	**7**
BRL		53	**53**		73	**73**
CNY		35	**35**		43	**43**
KRW		7	**7**		27	**27**
JPY		33	**33**		20	**20**
Other		93	**93**		48	**48**
Total		**941**	**941**		**1,002**	**1,002**
Other financial instruments						
CNY		70	**70**		42	**42**
EUR		160	**160**		55	**55**
SAR		21	**21**		16	**16**
Other		8	**8**		6	**6**
Total		**259**	**259**		**119**	**119**
Total	**-3,277**	**1,128**	**-2,149**	**-3,387**	**989**	**-2,398**

At the end of 2021, approximately € 3.3 billion of the Group's gross debt was at fixed-rate, and is largely comprised of:

- Senior EUR Bonds for a total of € 1,478 million maturing in 2022, 2027 and 2029 (carrying amount of € 1,470 million);
- Remaining part (US$ 196 million) of the US$ Senior Bonds 2023 of US$ 400 million (carrying amount of € 172 million);
- Remaining part (US$ 163 million) of the US$ Senior Bonds 2025 of US$ 250 million (carrying amount of € 143 million);
- Senior US$ Bonds for a total of US$ 800 million (carrying amount of € 704 million);
- IFRS 16 lease liability for a total of € 505 million (carrying amount of € 505 million).

The floating rate debts that are subject to interest rate swaps are discussed below.

The impact of interest rate volatility at the end of 2021 compared to 2020 is the following:

	Sensitivity to a + 100bp movement in EUR market interest rates		Sensitivity to a - 100bp movement in EUR market interest rates	
In € million	**2021**	2020	**2021**	2020
Profit or loss		-1		1

The sensitivity to interest rates' volatility remains stable at the end of 2021 compared to 2020. The floating rate debt is very limited and part of it is hedged by interest rate swaps and cross-currency interest rate swaps reducing even more its volatility.

Interest rate risk hedged by instrument accounted for as held for trading

In € million	Notional amount		Fair value assets		Fair value liabilities	
December 31	**2021**	2020	**2021**	2020	**2021**	2020
Held for trading	18	48				-1
Total	**18**	**48**				**-1**

The fair value reported under "held for trading" is mainly explained by a cross currency swap contracted in May 2017 to mitigate the volatility (forex and interest rate) of the external financing set up for our HPPO joint operation (Saudi Hydrogen Peroxide Company) 50/50 with Sadara in Saudi Arabia (notional amount € 18 million corresponding to 50%).

Interest rate risk hedged by instrument accounted for as a hedging instrument in a cash flow hedge

In 2021, there are no outstanding interest rate instruments accounted for under cash flow hedges. The hedged item (floating rate debt) presented in 2020 and the dedicated hedging instruments were all settled in the course of 2021.

	December 31, 2020				
	Notional amount of the instrument (1)	**Notional amount of the risk exposure** (2)	**Hedge interest rate per risk category**	**Fair value of the hedging instrument**	
In € million				**Assets**	**Liabilities**
Cash flow hedges - Floating rate debt	-5	-9	Pay Fix 3.125% Receive THBFIX6M		
Total	**-5**	**-9**			

(1) The hedging instruments are located in the line item: "Other Receivables" and "Other Liabilities" in the consolidated statement of financial position.
(2) The hedging item is located in the line item: "Current financial debt" in the consolidated statement of financial position.

Other market risks

— Utility and CO_2 price risks

The Group purchases a large portion of its coal, gas and electricity needs in Europe and the United States based on fluctuating liquid market indices. Moreover, the Group purchases raw materials with a price formula referring to market indices (e.g. benzene). In order to reduce the cost volatility, the Group has developed a policy for exchanging variable price against fixed price through derivative financial instruments. Most of these hedging instruments can be documented as hedging instruments of the underlying purchase contracts. Utility purchase contracts at fixed price with a physical delivery for use in the Group's operations are qualified as own use contracts (not derivatives) and constitute a natural hedge. Those have not been included in this note.

Similarly, the Group's exposure to CO_2 price is partially hedged by forward purchases of European Union Allowances (EUA). Forward purchases with physical delivery for use in the Group's operations are qualified as own use contracts (not derivatives).

Finally, some exposure to gas, coal and electricity prices may arise from the production of electricity on Solvay sites (mostly from cogeneration units in Europe), which can be hedged by means of forward purchases and forward sales or optional schemes. In this case, cash flow hedge accounting is applied.

Financial hedging of utility and CO_2 emission rights price risks is managed centrally by Energy Services on behalf of the Group entities.

Energy Services also carries out trading transactions with respect to utility and CO_2 (see Business Review).

The following tables detail the notional principal amounts and fair values of utility and CO_2 derivative financial instruments outstanding at the end of the reporting period:

Held for trading	Notional amount of the instrument [(1)]		Notional amount of the instrument (in units)			Fair value of the instrument - Asset		Fair value of the instrument - Liability	
December 31	**2021**	2020	**2021**	2020		**2021**	2020	**2021**	2020
In € million (except where indicated)									
Coal		1		24,008	Tons				
Power	1,189	619	21,005,859	19,565,300	MWh	764	54	-781	-51
Standard Quality Gas	613	317	27,701,363	22,730,352	MWh	434	34	-437	-31
CO_2	11	12	206,294	421,395	Tons	4	4	-5	-2
Total	**1,813**	**949**				**1,202**	**92**	**-1,223**	**-84**

(1) The hedging instruments are located in the line item: "Other Receivables" and "Other Liabilities" in the consolidated statement of financial position.

The amounts presented in the tables hereafter include hedging needs of the GBUs of the Group that sourced through Energy Services, and not the full Group utility hedging needs.

December 31, 2021

Cash flow hedge	Notional amount of the instrument [(1)]	Notional amount of the instrument (in units)		Notional amount of the risk exposure	Notional amount of the risk exposure (in units)		Percentage of exposure hedged	Average hedge price per risk category		Cash flow hedge reserve	Fair value of the instrument - Asset	Fair value of the instrument - Liability
In € million (except where indicated)												
Benzene	1	1,477	Tons	1	1,479	Tons	100%	556	EUR/ton			
Coal	17	243,000	Tons	62	702,041	Tons	35%	77	USD/ton	5	6	-1
Power	154	2,506,335	MWh	607	3,591,600	MWh	70%	62	EUR/MWh	-270	1	-271
Standard Quality Gas	254	13,648,389	MWh	954	24,096,508	MWh	57%	19	EUR/MWh	273	291	-18
Total	**426**			**1,625**						**8**	**298**	**-290**

(1) The hedging instruments are located in the line item: "Other Receivables" and "Other Liabilities" in the consolidated statement of financial position.

December 31, 2020

Cash flow hedge	Notional amount of the instrument [(1)]	Notional amount of the instrument (in units)		Notional amount of the risk exposure	Notional amount of the risk exposure (in units)		Percentage of exposure hedged	Average hedge price per risk category		Cash flow hedge reserve	Fair value of the instrument - Asset	Fair value of the instrument - Liability
In € million (except where indicated)												
Benzene	9	18,495	Tons	39	73,728	Tons	25%	509	EUR/ton	1	1	
Coal	28	499,992	Tons	53	917,127	Tons	55%	68	USD/ton	1	1	
Power	108	2,125,309	MWh	180	3,246,896	MWh	65%	50	EUR/MWh	-7	1	-8
Standard Quality Gas	158	12,343,308	MWh	335	24,601,786	MWh	50%	15	EUR/MWh	5	11	-6
Total	**303**			**607**							**14**	**-14**

(1) The hedging instruments are located in the line item: "Other Receivables" and "Other Liabilities" in the consolidated statement of financial position.

Performance Share Units Plan (PSU) risk on Solvay share price

In order to neutralize the volatility of the Solvay share price, which will impact the liability valuation relating to the PSUs (with related employer charges), the Group entered into equity swaps covering approximately 90% of the risk. In 2021, a liability of € 24 million recognized for 2020 and 2021 PSU plans (in 2020, € 8 million for the 2020 PSU plan) corresponds to the best estimate of the amount due at maturity.

Credit risk

See the Financial risk in the Management of risks section of this annual report for additional information on the credit risk management.

The Group continuously monitors the credit risk of important business partners.

The Group engages in transactions only with financial institutions with a good credit rating. The Group monitors and manages exposures to financial institutions within approved counterparty credit limits and credit risk parameters in order to mitigate the risk of default. For financial guarantees, see note F36 Contingent assets, liabilities and financial guarantees.

The Group recognizes expected credit losses on all of its trade receivables: it applies the simplified approach and recognizes lifetime expected losses on all trade receivables, using a provision matrix in order to calculate the lifetime expected credit losses for trade receivables, using historical information on defaults adjusted for the forward-looking information.

The Group classifies the customers and their related receivables in various rating classes, based on the risks' grading attributed to the customers and on the ageing balance of receivables. As such, for all receivables overdue below 6 months, the Group considers percentages within a range between 0.005% and 4.419%, depending on the rating class. For all receivables overdue in excess of 6 months, the Group considers a rate of 50% or of 100%, depending on the rating class. The customer's grading is reviewed annually for customers assessed as low risk profile, and every six months for customers assessed as higher risk profile.

There is no significant concentration of credit risk at Group level because the receivables' credit risk is spread over a large number of customers and markets.

The ageing of trade receivables, financial instruments - operational, loans and other non-current assets is as follows:

December 31, 2021				With expected loss allowance, not credit-impaired			
In € million	**Total**	**Credit-impaired**	**not past due**	**less than 30 days past due**	**between 30 and 60 days past due**	**between 60 and 90 days past due**	**more than 90 days past due**
Trade receivables	**1,857**	50	1,765	36	2	1	3
Trade receivables - allowance	**-51**	-49	-2				-1
Trade receivables - net	**1,805**	**2**	**1,763**	**36**	**2**	**1**	**2**
Financial instruments - operational	**1,513**		**1,513**				
Loans and other non-current assets	**511**	11	500				
Loans and other non-current assets - allowance	**-11**	-11					
Loans and other non-current assets - net	**500**		**500**				
Total	**3,818**	**2**	**3,776**	**36**	**2**	**1**	**2**

The Loans and other non-currents assets do not include the long-term inventory balance.

December 31, 2020				With expected loss allowance, not credit-impaired			
In € million	**Total**	**Credit-impaired**	**not past due**	**less than 30 days past due**	**between 30 and 60 days past due**	**between 60 and 90 days past due**	**more than 90 days past due**
Trade receivables	**1,304**	39	1,222	38	3	1	1
Trade receivables - allowance	**-39**	-36	-2				-2
Trade receivables - net	**1,264**	**4**	**1,220**	**38**	**3**	**1**	**-1**
Financial instruments - operational	**131**		**131**				
Loans and other non-current assets	**368**	124	243				
Loans and other non-current assets - allowance	**-57**	-57					
Loans and other non-current assets - net	**311**	**68**	**243**				
Total	**1,706**	**71**	**1,594**	**38**	**3**	**1**	**-1**

The table below presents the allowances on trade receivables:

In € million	2021	2020
January 1	**-39**	**-46**
Additions	-19	-8
Uses	5	4
Reversal	2	3
Currency translation differences		5
Transfer to assets held for sale		2
Other		1
December 31	**-51**	**-39**

Liquidity risk

See the Financial risk in the Management of risks section of this annual report for additional information on the liquidity risk management.

Liquidity risk relates to Solvay's ability to service and refinance its debt (including notes issued) and to fund its operations.

This depends on its ability to generate cash from operations and not to overpay for acquisitions.

The Finance Committee gives its opinion on the appropriate liquidity risk management for the Group's short, medium and long term funding and liquidity management requirements.

The Group manages liquidity risk by maintaining adequate reserves, banking facilities and reserve borrowing facilities, by continuously monitoring forecasts and actual cash flows, and by matching the maturity profiles of financial assets and liabilities.

The Group staggers the maturities of its financing sources over time in order to limit amounts to be refinanced each year.

The following tables detail the Group's remaining contractual maturity for its financial liabilities with contractual repayment periods.

The tables have been prepared using the discounted cash flows of financial liabilities, based on the earliest date on which the Group can be required to pay.

The following tables present discounted amounts (carrying amounts):

In € million	December 31, 2021				
Outflows of cash :	**Total**	**Within one year**	**In year two**	**In years three to five**	**Beyond five years**
Trade liabilities	**2,131**	2,131			
Dividends payables	**160**	160			
Financial instruments - operational	**1,528**	1,350	10	168	
Other non-current liabilities	**153**		25	78	49
Financial debt	**2,844**	676	187	873	1,108
Leasing debt	**505**	97	70	159	179
Total	**7,320**	**4,413**	**292**	**1,278**	**1,336**

In € million	December 31, 2020				
Outflows of cash :	**Total**	**Within one year**	**In year two**	**In years three to five**	**Beyond five years**
Trade liabilities	**1,197**	1,197			
Dividends payables	**159**	159			
Financial instruments - operational	**101**	101			
Other non-current liabilities	**95**		36	22	38
Financial debt	**3,086**	194	809	966	1,117
Leasing debt	**433**	92	70	134	138
Total	**5,072**	**1,743**	**914**	**1,122**	**1,292**

The following tables present undiscounted amounts (nominal value):

In € million	December 31, 2021				
Outflows of cash :	**Total**	**Within one year**	**In year two**	**In years three to five**	**Beyond five years**
Trade liabilities	**2,131**	2,131			
Dividends payables	**160**	160			
Financial instruments - operational	**1,528**	1,350	10	168	
Other non-current liabilities	**153**		25	78	49
Financial debt	**2,856**	677	188	877	1,115
Leasing debt	**505**	97	70	159	179
Total	**7,333**	**4,414**	**293**	**1,282**	**1,343**
Interests on financial debt and lease liabilities	**379**	86	74	158	62
Total outflows of cash	**7,712**	**4,500**	**367**	**1,439**	**1,405**

In € million	December 31, 2020				
Outflows of cash :	**Total**	**Within one year**	**In year two**	**In years three to five**	**Beyond five years**
Trade liabilities	**1,197**	1,197			
Dividends payables	**159**	159			
Financial instruments - operational	**101**	101			
Other non-current liabilities	**95**		36	22	38
Financial debt	**3,107**	194	812	976	1,125
Leasing debt	**433**	92	69	134	138
Total	**5,092**	**1,743**	**917**	**1,131**	**1,301**
Interests on financial debt and lease liabilities	**447**	89	88	190	81
Total outflows of cash	**5,539**	**1,832**	**1,005**	**1,321**	**1,381**

Solvay's liquidity exceeds € 4 billion including € 941 million of cash and cash equivalents on the statement of financial position and € 2.9 billion of committed fully undrawn credit facilities (€ 2 billion multilateral RCF due 2024, and € 0.9 billion bilateral RCF, largely multi-year) unused at the end of December 2021.

In addition, Solvay has access to a Belgian Treasury Bill program for € 1.5 billion and, alternatively, to a US commercial paper for $ 500 million (no outstanding balance for both on December 31, 2021). The two programs are covered by back-up credit lines.

NOTE F33
NET INDEBTEDNESS

The Group's net indebtedness is the balance between its financial debts and other financial instruments, and cash and cash equivalents.

In € million	December 31, 2021	December 31, 2020
Financial debt	3,349	3,519
Cash and cash equivalents	-941	-1,002
Other financial instruments	-259	-119
Net indebtedness	**2,149**	**2,398**

The decrease in the net indebtedness is mainly due to the strong free cash flow generation.

Solvay Investment Grade rating is Baa2/P2 (stable outlook) with Moody's and BBB/A2 (stable outlook) with Standard & Poor's.

Financial debt: main borrowings

In € million (except where indicated)	December 31, 2021 Nominal amount	Coupon	Maturity	Secured	Amount at amortized cost	Fair value	December 31, 2020 Amount at amortized cost	Fair value
Senior € notes	378	1.625%	2022	No	377	382	747	773
Senior US$ note Cytec Industries Inc (issuance US$ 400 million)	173	3.5%	2023	No	172	177	156	165
Senior US$ note Cytec Industries Inc (issuance US$ 250 million)	144	3.95%	2025	No	143	153	131	141
Senior US$ notes (144A;US$ 800 million)	706	4.45%	2025	No	704	769	650	745
Senior € notes	500	2.75%	2027	No	497	564	497	587
Senior € notes	600	0.500%	2029	No	596	593	596	611
Total					**2,489**	**2,638**	**2,776**	**3,022**

There are no instances of default on the above-mentioned financial debts. There are no financial covenants, neither on Solvay SA, nor on any of the Group's holding companies.

Other financial instruments

In € million	December 31, 2021	December 31, 2020
Non-current other financial instruments	**30**	
Current other financial instruments	**229**	**119**
Currency swaps	4	1
Other marketable securities > 3 months	70	42
Other current financial assets	155	76
Other financial instruments	**259**	**119**

The other marketable securities > 3 months include the bank drafts position.

The other current financial assets mainly include margin calls of Energy Services for instruments with a negative fair value, and represent collateral for the obligations.

Cash and cash equivalents

In € million	December 31, 2021	December 31, 2020
Cash	620	547
Term deposits	320	455
Cash and cash equivalents	**941**	**1,002**

By their nature, the carrying amount of cash and cash equivalents is equal to, or a very good proxy of, its fair value.

Changes in financial debt and in other financial instruments arising from financing activities

In € million	2020 Total	2021 Cash flows from increase of borrowings	Cash flows from repayment of borrowings	Changes in foreign exchange rates	Changes in other current financial assets	Other in financing cash flows	Transfer from non-current to current	Payment of lease liabilities	Other	Total
Bonds	2,776		-372	78			-377		7	2,112
Other non-current debts	116	21	-25	2			-58			55
Long term leasing debt	341			15			-101		154	409
Non-current financial debt	**3,233**	**21**	**-397**	**95**			**-536**		**161**	**2,576**
Current financial debt	**287**	**227**	**-217**	**5**		**108**	**536**	**-99**	**-74**	**773**
Total financial debt	**3,520**	**248**	**-614**	**100**		**108**		**-99**	**87**	**3,350**
Other non-current financial instruments					**-30**					**-30**
Currency swaps	-1			0					-3	-4
Other marketable securities > 3 months	-42			-6	-21					-70
Other current financial assets	-76			-1	-78					-155
Other financial instruments	**-119**			**-7**	**-100**				**-2**	**-229**
Total cash flow		**248**	**-614**	**92**	**-130**	**108**		**-99**	**85**	**-310**

The financial debt decreased from € 3,519 million at the end of 2020 to € 3,350 million at the end of 2021.

The non-current financial debt decreased by € (657) million, mainly resulting from:
- the repayment in December 2021 of € (372.5) million of the € 750 million bonds maturing initially in 2022;
- the transfer to current financial debt for € (536) million (mainly explained by the remaining portion of the € 750 million bond maturing in December 2022 for € 377 million and IFRS 16 leases for € 101 million);
- the change in foreign exchange rates for € 95 million (major impact of € 78 million on senior bonds in USD);
- the € 154 million in "Other" mainly relates to leases that commenced during the year, as well as lease modifications.

The current financial debt increased by € 487 million, mainly in short term financial debt:
- the transfer from non-current financial debt to current for € (536) million (mainly explained by the remaining portion of the € 750 million bond maturing in December 2022 for € 377 million and IFRS 16 leases for € 101 million);
- the increase and decrease of borrowings is mainly explained by the drawdown on a 6-month term loan for € 150 million, fully repaid in September 2021;
- the increase of € 108 million of margin calls on hedging instruments as part of Energy Services' activities;
- the repayment of short term finance lease obligations under IFRS 16 of € (99) million.

The other financial instruments increased by € 110 million, mainly for the collateral related to the margins call on energy services (see note F33 Net indebtedness), following in the increase in the energy and gas prices.

NOTE F34
OTHER LIABILITIES (CURRENT)

In € million	December 31, 2021	December 31, 2020
Wages and benefits debts	303	275
VAT and other taxes	153	104
Social security	58	60
Financial instruments - operational	1,350	101
Insurance premiums	19	12
Advances from customers	91	42
Other	76	126
Other current liabilities	**2,051**	**720**

The Other current liabilities at the end of 2020 include an amount of € 52 million due to EBRD for which a Call Option Notice was sent early 2021.

Financial instruments – operational include held for trading and cash flow hedge derivatives (see note F32.A. Overview of financial instruments).

MISCELLANEOUS NOTES

NOTE F35
COMMITMENTS TO ACQUIRE PROPERTY, PLANT AND EQUIPMENT AND INTANGIBLE ASSETS

In € million	December 31, 2021	December 31, 2020
Commitments to acquire property, plant and equipment and intangible assets	301	169

The amount mainly relates to commitments for the acquisition of property, plant and equipment. The increase in 2021 over the prior year is primarily driven by the planned € 84 million purchase of railcars in the US over the next several years.

NOTE F36
CONTINGENT ASSETS, LIABILITIES AND FINANCIAL GUARANTEES

Accounting policy

A contingent asset is a possible asset that arises from past events and whose existence will be confirmed only by the occurrence or nonoccurrence of one or more uncertain future events not wholly within the control of the Group.

Contingent assets are not recognized in the consolidated financial statements since this may result in the recognition of income that may never be realized. However, when the realization of income is virtually certain, then the related asset is not a contingent asset and its recognition is appropriate.

Contingent assets are assessed continually to ensure that developments are appropriately reflected in the consolidated financial statements. If it has become virtually certain that an inflow of economic benefits will arise, the asset and the related income are recognized in the consolidated financial statements of the period in which the change occurs. If an inflow of economic benefits has become probable, the Group discloses the contingent asset.

A contingent liability is:

(a) a possible obligation that arises from past events and whose existence will be confirmed only by the occurrence or non-occurrence of one or more uncertain future events not wholly within the control of the Group; or

(b) a present obligation that arises from past events but is not recognized because:

(i) it is not probable that an outflow of resources embodying economic benefits will be required to settle the obligation; or

(ii) the amount of the obligation cannot be measured with sufficient reliability

Contingent liabilities are not recognized in the consolidated financial statements, except if they arise from a business combination. They are disclosed unless the possibility of an outflow of economic benefits is remote.

Financial guarantees are contracts that require the Group to make specified payments to reimburse the holder for a loss it incurs because a specified debtor fails to make payment when due in accordance with the original or modified terms of a debt instrument.

In order to avoid double counting, only guarantees in excess of liabilities recognized or disclosures made elsewhere in the Group's consolidated financial statements are disclosed in this note. Regarding financial guarantees, all financial guarantees of the Group are presented in this note.

In € million	December 31, 2021	December 31, 2020
Contingent assets	**91**	
Financial guarantees Rusvinyl	83	84
Guarantees for pensions	348	335
Environmental contingent liabilities	301	301
Contingent liabilities	**733**	**720**

Contingent Asset

Following a legal proceeding started in 2012, the Arbitration Court of Geneva issued on June 22, 2021, a decision award in favor of Solvay, ordering Edison S.p.A. to pay approximately € 91 million for the losses and damages incurred up to the end of 2016 in relation to the environmental issues of the Spinetta Marengo and Bussi sites, previously owned and operated by Edison (Ausimont) SpA. A further phase of the arbitration proceeding or an amicable settlement will define the compensation for the additional losses and damages from 2017 onwards, as well as the interests applicable to the amount awarded and the costs of litigation. No income was recognized during 2021 in relation to the award, pending the enforcement procedures of the arbitration, to which Edison appealed.

Contingent Liabilities

Financial guarantees related to Rusvinyl, the joint venture with SIBUR for the operation of a PVC plant in Russia, amount to € 83 million at December 31, 2021 (€ 84 million at the end of 2020). Those guarantees have been given on the basis of several liability by both shareholders, Solvin/Solvay and SIBUR, proportionate to their equity interest (50/50). In light of Rusvinyl's demonstrated capacity to honor its debt obligations, the probability of the guarantees being called is considered to be highly remote.

The guarantees for pensions are related to the main UK Pension Funds (€ 348 million) – See note F31.B.2. Description of obligations. Such corresponds to the amount by which the guarantee exceeds the recognized pension liability (as at December 31, 2020) or the recognized plan assets surplus (€ 68 million as per December 31, 2021). This guarantee applies to the pension liability measured based on a local UK regulatory basis (prudential basis) plus an allocation for market risk, which is higher when compared to the IAS 19 methodology. The probability of the guarantees being called is considered to be highly remote.

Contingent liabilities of € 301 million above relate to environmental remediation matters that can be estimated with sufficient reliability.

Generally, in line with good business practice, we are not reporting any pending proceeding, which has not matured, and where the probability of existing or future exposure is unlikely or uncertain, where financial impact is not estimable and for which no contingent liabilities are able to be quantified. Additional information about litigation matters can be found in the Risk Report.

In the United States, Solvay Specialty Polymers USA, LLC (SpP) is a defendant in several litigation matters relating to per- and polyfluoroalkyl substances (PFAS) commenced by governmental entities or private plaintiffs, including claims sounding in products liability, putative class action, environmental cleanup, natural resource damages, civil penalties, and/or medical monitoring.

One of the litigation cases involves claims by the New Jersey Department of Environmental Protection seeking, among other things, natural resource damages, civil penalties and environmental cleanup arising out of SpP's facility in West Deptford, New Jersey.

The company is vigorously defending all such matters, which are in their early stages.

In Italy, criminal preliminary investigations are pending before the Criminal Court of Livorno and Alessandria, regarding the contamination of certain areas outside the industrial sites of Rosignano and Spinetta, respectively. An administrative litigation is pending related to the identification of the polluter of the industrial site of Bussi and related external areas, sold by Solvay in 2016 and 2017.

Based on the overall assessment, including compliance with applicable laws and regulations and the unlikely or uncertain probability of existing or future exposure, as well as undefined financial impact, which is not estimable at this time, no additional provisions have been recorded in association with these litigations and contingent liabilities cannot be quantified.

NOTE F37
RELATED PARTIES

Balances and transactions between Solvay SA and (a) its subsidiaries and (b) its joint operations for the Group's share of the respective joint operations, which are related parties of Solvay SA, have been eliminated in consolidation and are not disclosed in this note. Details of transactions between the Group and other related parties are disclosed below.

Sale and purchase transactions

In € million	Sale of goods		Purchase of goods	
	2021	2020	**2021**	2020
Associates	13	9	-34	-18
Joint ventures	22	37	-16	-14
Other related parties	70	34	-56	-68
Total	**106**	**81**	**-107**	**-100**

In € million	Amounts owed by related parties		Amounts owed to related parties	
December 31	**2021**	2020	**2021**	2020
Associates	1		5	
Joint ventures		1	1	1
Other related parties	16	13	8	5
Total	**16**	**15**	**14**	**6**

Loans to related parties

In € million	December 31, 2021	December 31, 2020
Loans to joint ventures		5
Loans to other related parties	24	29
Total	**24**	**34**

Compensation of key management personnel

Key management personnel is composed of all members of the Board of Directors and members of the Executive Leadership Team.

Amounts due in respect of the year (compensation) and obligations existing at the end of the year in the consolidated statement of financial position:

In € million	December 31, 2021	December 31, 2020
Wages, charges and short-term benefits	3	3
Long-term benefits	1	1
Cash-settled share-based payments liability	3	2
Total	**7**	**6**

Expenses of the year:

In € million	2021	2020
Wages, charges and short-term benefits	-10	-9
Termination benefit	-5	
Long-term benefits	-2	-2
Share-based payments expenses	-4	-1
Total	**-21**	**-11**

Excluding employer social charges and taxes

Please refer to the Compensation Report for further details

NOTE F38
DIVIDENDS PROPOSED FOR DISTRIBUTION

The Board of Directors will propose to the "General Shareholders' Meeting" a gross dividend of € 3.85 per share.

Taking into account the dividend advance payment distributed in January 2022 of € 1.50 per share, the dividends proposed for distribution, but not yet recognized as a distribution to equity holders amount to € 249 million.

NOTE F39
EVENTS AFTER THE REPORTING PERIOD

Accounting policy

Events after the reporting period which provide evidence of conditions that existed at the end of the reporting period (adjusting events) are recognized in the consolidated financial statements. Events indicative of conditions that arose after the reporting period are non-adjusting events and are disclosed in the notes if material.

On February 1, 2022, the Group announced a € 300 million investment to support a fully integrated and digitalized PVDF operation, which will increase capacity at Solvay's site in Tavaux, France to 35 kilotons – making it the largest PVDF production site in Europe. This investment will be completed by December 2023 and reinforces Solvay's global leadership in this field, positioning it to capitalize on the growing demand for electric and hybrid vehicles.

NOTE F40
LIST OF COMPANIES INCLUDED IN THE CONSOLIDATION SCOPE

The Group consists of Solvay SA and a total of 297 investees.

Of these 298 investees, 151 are fully consolidated, 7 are proportionately consolidated and 24 are accounted for under the equity method, whilst the other 116 do not meet the criteria of significance.

In accordance with the concept of materiality, certain companies (Other Investments), which are insignificant, have not been included in the consolidation scope. They are measured at cost and tested for impairment on an annual basis, which is considered a good proxy of their fair value. For more information, refer to Principles of consolidation.

List of companies entering or leaving the consolidation scope

Companies entering the consolidation scope

Country	Company	Comments
UNITED ARAB EMIRATES	Cytec Nibras LLC, Al Ain	Meets the consolidation criteria
	Strata - Solvay Advanced Materials Joint-Venture LLC, Al Ain	Meets the consolidation criteria
UNITED STATES	American Soda LLC, Houston, TX	New company
TAIWAN	Shinsol Advanced Chemicals Corporation, New Taipei	New company

Companies leaving the consolidation scope

Country	Company	Comments
FRANCE	Solvay - Fluorés - France S.A.S., Paris	Merged into Solvay France S.A.
	Solvin France S.A., Paris	Merged into Solvay France S.A.
	Solvay Specialty Polymers France S.A.S., Paris	Merged into Solvay France S.A.
	Cytec Process Materials Sarl, Toulouse	Sold to Composites One LLC
GERMANY	Solvay Infra Bad Hoenningen GmbH, Hannover	Sold to Latour Capital
	Solvay Persalze Gmbh, Hannover	Sold to Latour Capital
	Solvay P&S GmbH	Sold to Opengate Capital
	Solvay & CPC Barium Strontium GmbH & Co KG, Hannover	Sold to Latour Capital
	Solvay & CPC Barium Strontium International GmbH, Hannover	Sold to Latour Capital
INDIA	Sunshield Chemicals Limited, Mumbai	Sold to Indus Petrochem Ltd
ITALY	Cytec Process Materials S.r.l., Mondovi	Sold to Composites One LLC
MEXICO	Solvay & CPC Barium Strontium Monterrey S. de R.L. de C.V., Monterrey	Sold to Latour Capital
PORTUGAL	Solvay Portugal - Produtos Quimicos S.A., Povoa	Sold to Algora
SOUTH KOREA	Daehan Solvay Special Chemicals Co., Ltd, Seoul	Sold to KNW Co
	Solvay Korea Co. Ltd, Seoul	Sold to KNW Co
	Solvay Energy Services Korea Co. Ltd , Seoul	Liquidated
UNITED KINGDOM	Cytec Med-Lab Ltd, Heanor	Sold to Composites One LLC
	Cytec Process Materials (Keighley) Ltd, Keighley	Sold to Composites One LLC
UNITED STATES	Cytec Aerospace Materials (ca) Inc., Sacramento California	Merged into Cytec Industries Inc.
	Cytec Process Materials (ca) Inc., Santa Fe Springs California	Sold to Composites One LLC

List of subsidiaries

Indicating the percentage holding.

The percentage of voting rights is very close to the percentage holding.

ARGENTINA	
Solvay Argentina SA, Buenos Aires	100
Solvay Quimica SA, Buenos Aires	100
AUSTRALIA	
Cytec Asia Pacific Holdings Pty Ltd, Baulkham Hills	100
Cytec Australia Holdings Pty Ltd, Baulkham Hills	100
Solvay Interox Pty Ltd, Banksmeadow	100
AUSTRIA	
Solvay Österreich GmbH, Wien	100
BELGIUM	
Carrières les Petons S.P.R.L., Walcourt	100
Solvay Chemicals International S.A., Brussels	100
Solvay Chimie S.A., Brussels	100
Solvay Participations Belgique S.A., Brussels	100
Solvay Pharmaceuticals S.A. - Management Services, Brussels	100
Solvay Specialty Polymers Belgium SA / NV, Brussels	100
Solvay Stock Option Management S.P.R.L., Brussels	100
BRAZIL	
Cogeracao de Energia Electricica Paraiso SA, Brotas	100
Rhodia Brasil SA, Sao Paolo	100
Rhodia Poliamida Brasil Ltda , Sao Paolo	100
Rhopart-Participacoes Servidos e Comercio Ltda, Sao Paolo	100
BULGARIA	
Solvay Bulgaria EAD, Devnya	100
CANADA	
Cytec Canada Inc, Niagara Falls Welland	100
Solvay Canada Inc, Toronto	100
CHINA	
Cytec Industries Co. Ltd, Shanghai	100
Cytec Engineered Materials Co. Ltd, Shanghai	100
Liyang Solvay Rare Earth New Material Co., Ltd, Liyang City	96.3
Rhodia Hong Kong Ltd , Hong Kong	100
Solvay (Shanghai) International Trading Co., Ltd, Shanghai	100
Solvay (Shanghai) Ltd, Shanghai	100
Solvay (Zhangjiangang) Specialty Chemicals Co. Ltd, Suzhou	100
Solvay (Zhenjiang) Chemicals Co., Ltd, Zhenjiang New area	100
Solvay Chemicals (Shanghai) Co. Ltd, Shanghai	100
Solvay China Co., Ltd , Shanghai	100
Solvay Fine Chemical Additives (Qingdao) Co., Ltd, Qingdao	100
Solvay Hengchang (Zhangjiagang) Specialty Chemical Co., Ltd, Zhangjiagang City	70
Solvay Lantian (Quzhou) Chemicals Co., Ltd, Zhejiang	55
Solvay Specialty Polymers (Changshu) Co. Ltd, Changshu	100

Zhuhai Solvay Specialty Chemicals Co Ltd, Zhuhai City	100
CHILE	
Cytec Chile Ltda, Santiago	100
FINLAND	
Solvay Chemicals Finland Oy, Voikkaa	100
FRANCE	
Cogénération Tavaux SAS, Paris	33.3
Rhodia Chimie S.A.S. , Aubervilliers	100
Rhodia Energy GHG S.A.S. , Puteaux	100
Rhodia Laboratoire du Futur S.A.S. , Pessac	100
Rhodia Operations S.A.S. , Aubervilliers	100
Rhodia Participations S.N.C. , Courbevoie	100
Rhodianyl S.A.S. , Saint-Fons	100
Solvay - Opérations - France S.A.S., Paris	100
Solvay Energie France S.A.S., Paris	100
Solvay Energy Services S.A.S. , Puteaux	100
Solvay Finance S.A., Paris	100
Solvay France S.A. , Courbevoie	100
GERMANY	
Cavity GmbH, Hannover	100
Cytec Engineered Materials GmbH, Oestringen	100
European Carbon Fiber GmbH , Kelheim	100
Horizon Immobilien AG, Hannover	100
Salzgewinnungsgesellschaft Westfalen GmbH & Co KG, Hannover	65
German limited partnership, which makes use of the exemptions offered by Section 264(b) of the German Commercial Code, not to publish their annual financial statements.	
Solvay Chemicals GmbH, Hannover	100
Solvay Fluor GmbH, Hannover	100
Solvay Flux GmbH, Hannover	100
Solvay GmbH, Hannover	100
Solvay Specialty Polymers Germany GmbH, Hannover	100
Solvin GmbH & Co. KG - PVDC, Rheinberg	100
Solvin Holding GmbH, Hannover	100
INDIA	
Solvay Specialities India Private Limited, Mumbai	100
INDONESIA	
PT. Cytec Indonesia, Jakarta	100
IRELAND	
Solvay Finance Ireland Unlimited , Dublin	100
ITALY	
Solvay Chimica Italia S.p.A., Milano	100
Solvay Energy Services Italia S.r.l., Bollate	100
Solvay Solutions Italia S.p.A. , Milano	100
Solvay Specialty Polymers Italy S.p.A., Milano	100

JAPAN	
Nippon Solvay KK, Tokyo	100
Solvay Japan K.K., Tokyo	100
Solvay Nicca Ltd, Tokyo	60
Solvay Special Chem Japan Ltd, Anan City	67
Solvay Specialty Polymers Japan KK, Minato Ku-Tokyo	100
LATVIA	
Solvay Business Services Latvia SIA, Riga	100
LUXEMBOURG	
Cytec Luxembourg International Holdings Sarl, Strassen	100
Solvay Chlorovinyls Holding S.a.r.l., Luxembourg	100
Solvay Finance (Luxembourg) SA, Luxembourg	100
Solvay Hortensia S.A., Luxembourg	100
Solvay Luxembourg S.a.r.l., Luxembourg	100
MEXICO	
Cytec de Mexico S.A. de C.V., Jalisco	100
Solvay Fluor Mexico S.A. de C.V., Ciudad Juarez	100
Solvay Mexicana S. de R.L. de C.V., Monterrey	100
NETHERLANDS	
Cytec Industries B.V., Vlaardingen	100
Rhodia International Holdings B.V., Den Haag	100
Solvay Chemicals and Plastics Holding B.V., Linne-Herten	100
Solvay Chemie B.V., Linne-Herten	100
Solvay Solutions Nederland B.V., Klundert	100
Solvin Holding Nederland B.V., Linne-Herten	100
NEW ZEALAND	
Solvay New Zealand Ltd, Auckland	100
PERU	
Cytec Peru S.A.C., Lima	100
POLAND	
Solvay Poland Sp. z o.o. , Gorzow Wielkopolski	100
PORTUGAL	
Solvay Business Services Portugal Unipessoal Lda, Carnaxide	100
Solvay Peroxidos Portugal Unipessoal LDA , Povoa	100
RUSSIA	
Solvay Vostok OOO, Moscow	100
SINGAPORE	
Rhodia Amines Chemicals Pte Ltd , Singapore	100
Solvay Fluor Holding (Asia-Pacific) Pte. Ltd., Singapore	100
Solvay Specialty Chemicals Asia Pacific Pte. Ltd., Singapore	100
SOUTH KOREA	
Cytec Korea Inc, Seoul	100
Solvay Chemical Services Korea Co. Ltd, Seoul	100
Solvay Silica Korea Co. Ltd , Incheon	100
Solvay Specialty Polymers Korea Company Ltd, Seoul	100

SPAIN	
Solvay Quimica S.L., Barcelona	100
SWITZERLAND	
Solvay Vinyls Holding AG, Bad Zurzach	100
THAILAND	
Solvay Asia Pacific Company Ltd, Bangkok	100
Solvay (Bangpoo) Specialty Chemicals Ltd, Bangkok	100
Solvay (Thailand) Ltd, Bangkok	100
Solvay Peroxythai Ltd, Bangkok	100
TURKEY	
Solvay Istanbul Kimya Limited Sirketi, Istanbul	100
UNITED ARAB EMIRATES	
Cytec Nibras llc, Al Ain	100
UNITED KINGDOM	
Advanced Composites Group Investments Ltd, Heanor	100
Cytec Engineered Materials Ltd, Wrexham	100
Cytec Industrial Materials (Derby) Ltd, Heanor	100
Cytec Industrial Materials (Manchester) Ltd, Heanor	100
Cytec Industries UK Holdings Ltd, Wrexham	100
McIntyre Group Ltd , Watford	100
Rhodia Holdings Ltd , Watford	100
Rhodia International Holdings Ltd , Oldbury	100
Rhodia Limited , Watford	100
Rhodia Organique Fine Ltd , Watford	100
Rhodia Overseas Ltd , Watford	100
Rhodia Pharma Solutions Holdings Ltd, Cramlington	100
Rhodia Pharma Solutions Ltd, Cramlington	100
Rhodia Reorganisation, Watford	100
Solvay Interox Ltd, Warrington	100
Solvay Solutions UK Ltd, Watford	100
Solvay UK Holding Company Ltd, Warrington	100
Umeco Composites Ltd, Heanor	100
Umeco Ltd, Heanor	100
UNITED STATES	
American Soda LLC, Houston, Texas	100
Ausimont Industries, Inc., Wilmington, Delaware	100
CEM Defense Materials LLC, Tempe Arizona	100
Cytec Engineered Materials Inc., Princeton New Jersey	100
Cytec Global Holdings Inc., Princeton New Jersey	100
Cytec Industrial Materials (ok) Inc., Tulsa Oklahoma	100
Cytec Industries Inc, Princeton New Jersey	100
Cytec Korea Inc., Princeton New Jersey	100
Cytec Technology Corp., Princeton New Jersey	100
Garret Mountain Insurance Co., Burlington Vermont	100
Rocky Mountain Coal Company, LLC, Houston, Texas	100

Solvay America Holdings, Inc., Houston, Texas	100
Solvay America Inc., Houston, Texas	100
Solvay Chemicals, Inc., Houston, Texas	100
Solvay Finance (America) LLC, Houston, Texas	100
Solvay Fluorides, LLC., Greenwich, Connecticut	100
Solvay Holding Inc., Princeton, New Jersey	100
Solvay India Holding Inc., Princeton, New Jersey	100
Solvay Soda Ash Expansion JV, Houston, Texas	80
Solvay Soda Ash Joint Venture, Houston, Texas	80
Solvay Specialty Polymers USA, LLC, Alpharetta, Georgia	100
Solvay USA INC., Princeton, New Jersey	100
URUGUAY	
Zamin Company S/A, Montevideo	100

List of joint operations

Indicating the percentage holding.

AUSTRIA	
Solvay Sisecam Holding AG, Wien	75
BELGIUM	
BASF Interox H2O2 Production N.V., Brussels	50
BULGARIA	
Solvay Sodi AD, Devnya	73.5
NETHERLANDS	
MTP HP JV C.V., Weesp	50
MTP HP JV Management bv, Weesp	50
SAUDI ARABIA	
Saudi Hydrogen Peroxide Co, Jubail	50
THAILAND	
MTP HP JV (Thailand) Ltd, Bangkok	50

List of companies consolidated by applying the equity method of accounting

Indicating the percentage holding.

Joint ventures

AUSTRALIA	
Aqua Pharma Australia Pty Ltd, Armidale	50
BELGIUM	
EECO Holding SA, Brussels	33.3
BRAZIL	
Peroxidos do Brasil Ltda, Sao Paulo	69.4
CANADA	
Aqua Pharma Inc, Saint John	50
CHILE	
Aqua Pharma Chile Spa, Puerto Montt	50
CHINA	
Shandong Huatai Interox Chemical Co. Ltd, Dongying	50
INDIA	
Hindustan Gum & Chemicals Ltd, New Delhi	50
IRELAND	
Aqua Pharma Ireland Ltd, Dublin	50
ITALY	
Cogeneration Rosignano S.r.l., Rosignano	25.4
Cogeneration Spinetta S.p.a., Bollate	33.3
NORWAY	
Aqua Pharma Group A.S., Lillehammer	50
Aqua Pharma A.S., Lillehammer	50
Haugaland Shipping A.S., Haugesund	50
RUSSIA	
Rusvinyl OOO, Moscow	50
TAIWAN	
Shinsol Advanced Chemicals Corporation, New Taipei	51
UNITED ARAB EMIRATES	
Strata - Solvay Advanced Materials Joint-Venture LLC, Al Ain	50
UNITED KINGDOM	
Aqua Pharma Technical Ltd, Inverness	50
Aqua Pharma Ltd, Inverness	50
UNITED STATES	
Aqua Pharma U.S. Inc, Kirkland	25

Associates

CHINA	
Qingdao Hiwin Solvay Chemicals Co. Ltd, Qingdao	30
FRANCE	
GIE Chime Salindres, Salindres	50
INDONESIA	
Solvay Manyar P.T., Gresik	50
MEXICO	
Silicatos y Derivados S.A. DE C.V., Estado de Mexico	20
UNITED KINGDOM	
Penso Holdings Ltd, Coventry	20

3. SUMMARY FINANCIAL STATEMENTS OF SOLVAY SA

The annual financial statements of Solvay SA are presented in summary format below. In accordance with the Belgian Companies Code, the annual financial statements of Solvay SA, the management report and the statutory auditor's report will be filed with the National Bank of Belgium.

These documents are also available free of charge on the internet or upon request sent to:

Solvay SA

Rue de Ransbeek 310

B – 1120 Brussels

The balance sheet of Solvay SA at the end of the year 2021 presented below is based on a dividend distribution of € 3.85 per share.

At the end of 2021, Solvay SA has still one Branch, Solvay S.A. Italia (Viale Lombardia 20, 20021 Bollate, Italy).

The accounts of Solvay SA are prepared in accordance with Belgian generally accepted accounting principles.

The main activities of Solvay SA consist of holding and managing a number of investments in Group companies and of financing the Group's activities from the bank and bond markets. Solvay SA also has a Group internal factoring activity without recourse. As a result, Solvay SA owns and manages Group's trade receivables from customers based in Europe and in Asia. It manages the research center at Neder-Over-Heembeek (Brussels, Belgium) and a very limited number of commercial activities not undertaken through subsidiaries.

BALANCE SHEET OF SOLVAY SA (SUMMARY)

In € million	December 31, 2021	December 31, 2020
ASSETS		
Fixed assets	**11,309**	**11,235**
Start-up expenses and intangible assets	123	137
Tangible assets	70	64
Financial assets	11,116	11,034
Current assets	**4,074**	**4,356**
Inventories	11	0
Trade receivables	830	639
Other receivables	2,538	3,029
Short-term investments and cash equivalents	680	655
Accrued income and deferred charges	15	33
Total assets	**15,383**	**15,591**
SHAREHOLDERS' EQUITY AND LIABILITIES		
Shareholders' equity	**8,995**	**8,872**
Capital	1,588	1,588
Share premiums	1,200	1,200
Reserves	1,982	1,982
Net income carried forward	4,225	4,101
Provisions and deferred taxes	**188**	**578**
Financial debt	**2,803**	**3,153**
- due in more than one year	2,421	3,152
- due within one year	382	1
Trade liabilities	**128**	**100**
Other liabilities	**3,239**	**2,845**
Accrued charges and deferred income	**29**	**43**
Total shareholders' equity and liabilities	**15,383**	**15,591**

The decrease of the total assets (€ (208) million) is the combination of:

- An increase of financial assets by € 82 million, resulting mainly from the impact of:
  - The intragroup purchase of 49% of the Solvay Solutions Italia shares (€ 50 million);
  - The capital increase of UK entities for € 410 million in order to cover pensions deficits;
  - The impairment movements on the shares held in different companies (€ (345) million) including € (410) million regarding the capital injection in UK entities.
- A decrease of current assets by € (282) million, resulting mainly from:
  - The increase of trade receivables (€ 191 million), mainly as a consequence of the Group's strong recovery in 2021;
  - The decrease of other receivables (€ (491) million) represented by current accounts with subsidiaries.

Shareholders' equity increased by € 123 million due to the results of the year (€ 532 million) and the dividend to be distributed in 2022 (€ (408) million).

The provisions decrease (€ (390 million) in 2021 is linked to the use of a specific € 350 million provision set up in 2020 to cover risks related to UK subsidiaries. As described in the financial assets section, an impairment of € 410 million has been performed and has been partly offset by this provision movement. In addition, the provisions for pensions have been reduced by € 102 million linked to a contribution to the Belgian Pension Fund. Other adjustments for provisions are related to intercompany recharges and restructuring provisions.

The financial debt totals € 2,803 million (compared to € 3,153 million at the end of 2020). The decrease of € (351) million is essentially linked to the partial reimbursement (€ (372) million) of a senior bond initially due in 2022. The residual part (€ 378 million) will be reimbursed in 2022.

Other liabilities increased by € 394 million in relation with the increase of current accounts vis-à-vis affiliates. Payable for dividend is € 11 million higher compared to last year.

INCOME STATEMENT OF SOLVAY SA (SUMMARY)

In € million	2021	2020
Sales	51	11
Other operating income	1,368	857
Operating expenses	-991	-1,122
Operating profit / (loss)	**428**	**-255**
Financial income and expenses	105	-1,815
Profit / (loss) for the year before taxes	**533**	**-2,070**
Income taxes	-1	2
Profit / (loss) for the year	**532**	**-2,068**
Profit / (loss) for the year available for distribution	**532**	**-2,068**

In 2021 the net result for the year of Solvay SA is a profit of € 532 million, compared with a loss of (€ 2,068) million in 2020 and a profit of € 527 million in 2019.

This result includes:

- The operating result amounting to € 428 million, compared with a loss of € (255) million in 2020, largely attributable to the reversal in 2021 of the provision of € 350 million recognized in 2020 to cover risks on UK subsidiaries and by additional intercompany recharges;
- Financial gains and losses (€ 105 million) related to dividends received from affiliates (€ 470 million), the capital gain on the intragroup sale of Solvay Specialty Korea (€ 47 million) partly offset by net Impairment losses/reversals on shares (€ (345) million) and net interest charges of € (73) million.

In 2020, the net result has been largely impacted by :

- An impairment on shares (€ (2.065) million), including impairment on shares of Solvay Holding Inc (€ (1.880) million) and on shares of Solvay Finance Luxembourg (€ (185) million) partly offset by dividends received (€290 million)
- a provision of 350 million to cover the solvency risk of UK subsidiaries

In addition to the available reserves (€ 1,056 million), an amount of € 4,633 million including the net profit of the year is available for distribution as follows:

PROFIT AVAILABLE FOR DISTRIBUTION

In € million	2021	2020
Profit / (loss) for the year available for distribution	532	-2,068
Carried forward	4,101	6,566
Total available to the General Shareholders' Meeting	**4,633**	**4,498**
Appropriation		
Gross dividend	408	397
Carried forward	4,225	4,101
Total	**4,633**	**4,498**

DECLARATIONS

Declarations: Auditor's reports and Declaration by the persons responsible

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Solvay SA/NV

Assurance report of the statutory auditor on a selection of social, environmental and other sustainable development information for the year ended 31 December 2021

Assurance report of the statutory auditor on a selection of social, environmental and other sustainable development information for the year ended 31 December 2021

Pursuant to your request and in our capacity of statutory auditor of Solvay SA / NV ("the Company"), we hereby present you our assurance report on a selection of social, environmental and other sustainable development information disclosed in the Solvay Group Annual Integrated Report for the year ended 31 December 2021 (the "2021 Annual Integrated Report"), in the section "Extra-financial statements", and identified by the symbol 'L' and 'R'.

Responsibility of the Company

This selection of information (the "Information") extracted from the 2021 Annual Integrated Report has been prepared under the responsibility of Solvay Group management, in accordance with internal measurement and reporting principles used by Solvay Group (the "Reporting Framework"). The Reporting Framework consists of specific definitions and assumptions that are summarized in section "Extra-financial statements" of the 2021 Annual Integrated Report.

Responsibility of the Statutory Auditor

It is our responsibility, based on the procedures performed by us, to express:

- *"Limited assurance" for the Information identified by the symbol 'L' as included in the 2021 Annual Integrated Report;*
- *"Reasonable assurance" for the Information identified by the symbol 'R' as included in the 2021 Annual Integrated Report.*

The complete list of Information in scope of our assurance engagement together with the type of assurance has been included in appendix A of this report.

We conducted our procedures in accordance with the international standard as defined in ISAE (International Standard on Assurance Engagements) 3000. With respect to independence rules, these are defined by the respective legal and regulatory texts as well as by the professional Code of Ethics, issued by the International Federation of Accountants ("IFAC").

Nature and scope of procedures

We have carried out the following procedures:

- *General procedures:*
  - We assessed the appropriateness of the Reporting Framework with respect to its relevance, completeness, neutrality, clarity and reliability, by taking into consideration, when relevant, the sector reporting practices.
  - We have verified the set-up within Solvay Group of the process to obtain, consolidate and check the selected Information with regard to its completeness and consistency. We have familiarized ourselves with the internal control and risk management procedures relating to the compilation of the information. We have conducted interviews with individuals responsible for social, environmental and other sustainable development reporting.
  - At the sites that we have selected based on their activity, their contribution to the consolidated data, their location and a risk analysis, we have:
    - Conducted interviews to verify the proper application of procedures and obtained information to perform our verifications;
    - Conducted substantive tests, using sampling techniques, to verify the calculations performed and reconcile data with supporting evidence.
  - Scope 3 emissions – all categories: There are limits inherent to the preparation of information. The indicators linked to greenhouse gas emissions, in particular scope 3 may be subject to uncertainty inherent to the state of scientific or economic knowledge and the quality of the external data used. Some data are sensitive to the methodological choices, assumptions and/or estimates used for their establishment.
  - All the audited sites and perimeters are listed in appendix B of this document.

- *"Limited assurance" for the Information identified by the symbol 'L' as included in the 2021 Annual Integrated Report:*
  - For the entity in charge of consolidation ("the Company"), as well as for the controlled entities, we have designed analytical procedures and verified, using sampling techniques, the calculations as well as the consolidation of this information in order to obtain limited assurance that the selected information does not contain any material errors that would question its preparation, in all material respects, in accordance with the Reporting Framework. A higher level of assurance would have required more extensive procedures.

- *"Reasonable assurance" for the Information identified by the symbol 'R' as included in the 2021 Annual Integrated Report:*
  - We conducted work of the same nature as the work described in section above (limited assurance) but in further detail, in particular performing an increased number of tests. In these cases, the selected sample represents between 19% and 50% of the published data.

Conclusion

- *For the indicators in scope of "limited assurance" (identified by the symbol 'L')*

  On the basis of the procedures performed by us, nothing came to our attention that causes us to believe that the Information identified by the symbol *'L'* as included in the 2021 Annual Integrated Report, is not prepared, in all material respects, in accordance with the Reporting Framework.

- *For the indicators in scope of "reasonable assurance" (identified by the symbol 'R')*

  In our opinion, based on the procedures performed, the Information identified by the symbol *'R'* as included in the 2021 Annual Integrated Report, has been prepared in all material respects in accordance with the Reporting Framework.

Signed at Zaventem on 18 March 2022

The statutory auditor

Deloitte Bedrijfsrevisoren/Réviseurs d'Entreprises BV/SRL
Represented by Michel Denayer

Deloitte Bedrijfsrevisoren/Réviseurs d'Entreprises BV/SRL
Represented by Corine Magnin

Appendices:
Appendix A – Overview of indicators reviewed
Appendix B – Overview of audited sites

Deloitte.

Deloitte Bedrijfsrevisoren/Réviseurs d'Entreprises BV/SRL
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VAT BE 0429.053.863 - RPR Brussel/RPM Bruxelles - IBAN BE86 5523 2431 0050 - BIC GKCCBEBB

Member of Deloitte Touche Tohmatsu Limited

Appendix A - Overview of indicators reviewed for the year ended 31 December 2021

Indicators in **bold** are selected for reasonable assurance.

Reporting scope	Information	Audit Procedure	Audit scope
Sustainable business solutions	**Product portfolio assessed**	**Reasonable Assurance**	Group level
	Sustainable business solutions	**Reasonable Assurance**	Group level
Circular economy	Percentage of turnover of products based on circular sourcing	Limited Assurance	Group level
Greenhouse gas emissions	**Greenhouse gas emissions intensity**	**Reasonable Assurance**	Group level
	GHG reductions achieved compared to last year (at constant scope and constant GHG accounting methodology)	**Reasonable Assurance**	Group level
	Direct emissions (Scope 1)	**Reasonable Assurance**	Site level
	Indirect emissions (Scope 2)	**Reasonable Assurance**	Site level
	Total direct and indirect emissions (Scope 1+2)	**Reasonable Assurance**	Site level
	Other greenhouse gas emissions not in accordance with the Kyoto Protocol (scope 1)	**Reasonable Assurance**	Site level
	Other greenhouse gas emissions in accordance with the Kyoto Protocol (scope 1)	**Reasonable Assurance**	Site level
	Scope 3 emissions – all categories	**Reasonable Assurance**	Group level
Energy	Primary energy consumption	Limited Assurance	Site level
	Energy efficiency index	Limited Assurance	Site level
	Phase-out of coal use in energy production	**Reasonable Assurance**	Group level
Air quality	Nitrogen oxides emissions – NO_x	Limited Assurance	Site level
	Sulphur oxides emissions – SO_x	Limited Assurance	Site level
	Non-methane volatile organic compounds emissions – NMVOC	Limited Assurance	Site level
Water and wastewater	**Freshwater withdrawal**	**Reasonable Assurance**	Site level
	Chemical oxygen demand (COD)	Limited Assurance	Site level

Reporting scope	Information	Audit Procedure	Audit scope
Waste and hazardous materials	**Non-hazardous industrial waste**	**Reasonable Assurance**	Site level
	Hazardous industrial waste	**Reasonable Assurance**	Site level
	Total industrial waste	**Reasonable Assurance**	Site level
	Non-hazardous industrial waste not treated in a sustainable way	**Reasonable Assurance**	Site level
	Hazardous industrial waste not treated in a sustainable way	**Reasonable Assurance**	Site level
	Total industrial waste not treated in a sustainable way	**Reasonable Assurance**	Site level
	Mining waste	**Reasonable Assurance**	Site level
	Substance of very high concern (SVHC) according to REACH criteria present in products sold	Limited Assurance	Group level
	Percentage of completion of Analysis of Safer Alternatives program for marketed substances	Limited Assurance	Group level
Employee health and safety	**RIIR – Reportable Illnesses and Injuries**	**Reasonable Assurance**	Site level
	LTIIR – Lost time accidents	**Reasonable Assurance**	Site level
	Fatal accidents of Solvay employees and contractors	**Reasonable Assurance**	Site level
Employee engagement and wellbeing	Coverage by collective agreement	Limited Assurance	Group level
	Solvay Engagement Index	Limited Assurance	Group level
Diversity and inclusion	**Total headcount**	**Reasonable Assurance**	Group level
	Percentage of women in the Group	**Reasonable Assurance**	Group level
	Headcount by employee category (senior manager, middle manager, junior manager, non-manager)	Limited Assurance	Group level
Process accident and safety	Process safety incident rate	Limited Assurance	Group level
	Process Safety Incidents with High or Catastrophic severity	Limited Assurance	Site level
	Process Safety Incidents with environmental consequences	Limited Assurance	Site level
	Process Safety Incidents with environmental consequences in which the limits of the operating permit were exceeded	Limited Assurance	Site level
Customer welfare	Solvay's Net Promoter Score (NPS)	Limited Assurance	Group level
Biodiversity	**Pressure of Solvay products on biodiversity**	**Reasonable Assurance**	Group level

Reporting scope	Information	Audit Procedure	Audit scope
Management of the legal, ethics and regulatory framework	Total claims made	Limited Assurance	Group level
	Total claims closed including cases for which there was insufficient information or cases that were misdirected or referred	Limited Assurance	Group level
	Unsubstantiated claims among resolved cases	Limited Assurance	Group level
	Substantiated claims among resolved cases	Limited Assurance	Group level

Appendix B - Overview of audited sites

Site audité	Pays	Indicateurs							
		Greenhouse gas emissions	Energy	Air quality	Water and waste water	Waste and hazardous substances	Mining waste	Employee health and safety	Accident and safety management
Santo Andre	Brazil	●	●	●	●	●		●	●
Paulinia				○				●	●
Zhenjiang Songl	China							●	●
Collonges	France								●
Dombasle					●				
Pont De Claix		●	●						
Tavaux						●			
Ospiate	Italy	●	●	●	●	●		●	●
Rosignano		●	●			●			
Spinetta				○	●	●		●	●
Ciudad Juarez	Mexico					●			
Wloclawek	Poland	●	●	●	●	●		●	●
Torrelavega	Spain	●	●	●	●	●		●	●
Asia Ind Estate	Thailand					●			
Map Ta Phut				●	●	●			
Alpharetta, GA	United States							●	●
Anaheim, CA								●	●
Cincinatti, OH		●	●						
Green River, WY						●	●		
Havre de Grace, MD		●	●	●	●	●		●	●
West Deptford, NJ				●	●	●			

A selection of indicators audited ○

All relevant indicators audited ●

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Solvay SA

Statutory auditor's report to the shareholders' meeting for the year ended 31 December 2021 - Consolidated financial statements

Statutory auditor's report to the shareholders' meeting of Solvay SA for the year ended 31 December 2021 - Consolidated financial statements

In the context of the statutory audit of the consolidated financial statements of Solvay SA ("the company") and its subsidiaries (jointly "the group"), we hereby submit our statutory audit report. This report includes our report on the consolidated financial statements and the other legal and regulatory requirements. These parts should be considered as integral to the report.

We were appointed in our capacity as statutory auditor by the shareholders' meeting of 14 May 2019, in accordance with the proposal of the board of directors issued upon recommendation of the audit committee and presentation of the works council. Our mandate will expire on the date of the shareholders' meeting deliberating on the financial statements for the year ending 31 December 2021. We have performed the statutory audit of the consolidated financial statements of Solvay SA for 21 consecutive periods.

Report on the consolidated financial statements

Unqualified opinion

We have audited the consolidated financial statements of the group, which comprise the consolidated statement of financial position as at 31 December 2021, the consolidated income statement, the consolidated statement of comprehensive income, the consolidated statement of changes in equity and the consolidated statement of cash flows for the year then ended, as well as the summary of significant accounting policies and other explanatory notes. The consolidated statement of financial position shows total assets of 20 049 million EUR and the consolidated income statement shows a profit for the year then ended of 989 million EUR.

In our opinion, the consolidated financial statements give a true and fair view of the group's net equity and financial position as of 31 December 2021 and of its consolidated results and its consolidated cash flow for the year then ended, in accordance with International Financial Reporting Standards (IFRS) as adopted by the European Union and with the legal and regulatory requirements applicable in Belgium.

Basis for the unqualified opinion

We conducted our audit in accordance with International Standards on Auditing (ISA), as applicable in Belgium. In addition, we have applied the International Standards on Auditing approved by the IAASB applicable to the current financial year, but not yet approved at national level. Our responsibilities under those standards are further described in the "Responsibilities of the statutory auditor for the audit of the consolidated financial statements" section of our report. We have complied with all ethical requirements relevant to the statutory audit of consolidated financial statements in Belgium, including those regarding independence.

We have obtained from the board of directors and the company's officials the explanations and information necessary for performing our audit.

We believe that the audit evidence obtained is sufficient and appropriate to provide a basis for our opinion.

Key audit matters

Key audit matters are those matters that, in our professional judgment, were of most significance in our audit of the consolidated financial statements of the current period. These matters were addressed in the context of our audit of the consolidated financial statements as a whole and in forming our opinion thereon, and we do not provide a separate opinion on these matters.

Key audit matters	How our audit addressed the key audit matters
1. Impairment test on goodwill and non-current assets • In the context of Solvay's transition into a multi-specialty chemicals company, significant goodwills have arisen from acquisitions. At 31 December 2021 goodwill amount to 3 379 million EUR and represent 17% of the consolidated total assets. • In accordance with IFRS requirements, the carrying value of goodwill is tested annually for impairment by comparing the carrying amount of each cash-generating unit ("CGU") or Group of CGUs to its value in use. The COVID-19 context had triggered some additional impairment tests at 30 June 2020 which resulted in an impairment of goodwill in 2020 amounting to 1 050 million EUR. The COVID-19 pandemic and its recovery, the increase of raw material and energy prices and the impacts of climate change / sustainability measures still requires significant judgements and estimates needed in determining the key assumptions in the projection of future cash flows. • Based on the headroom that exists per CGU or Group of CGUs as well as sensitivity analyses performed on the valuation and cash flow assumptions used in the impairment test, we have determined the **cash flow assumptions** of the following CGUs or Group of CGUs as focus area in our audit: **Composite Materials** and **Technology Solutions**. The goodwill balances for these CGUs or Group of CGUs respectively amount to 555 and 690 million EUR at 31 December 2021. • For **Oil & Gas**, a potential reversal of impairment exists considering the impairment on property, plant and equipment and intangible assets in the past – in the context of the increased economic activity and energy prices. • We have also focused on the **valuation assumptions** (discount rate and long-term growth rate) considering the important sensitivity to said assumptions, and the fact that management applied the same discount rate for all the CGUs. • As a consequence, we consider impairment test for the 3 CGUs or Group of CGUs mentioned above to be a key audit matter. • Management's disclosure on the impairment tests is included in Notes F20 and F24 of the consolidated financial statements.	• We obtained an understanding and performed walkthroughs of the impairment and the budgeting/forecasting processes through which we identified relevant controls; • We evaluated and challenged management's determination of CGUs or Group of CGUs for the purpose of impairment testing; • We tested the carrying amounts of the CGUs or Group of CGUs used in the impairment test for reconciliation with the financial reporting system; • We evaluated whether the valuation methodology is appropriate in the circumstances and whether the methodology used for determining the value in use is applied consistently with the preceding periods; • We assessed and challenged the reasonableness of the valuation assumptions (discount rate and long-term growth rate); • We assessed and challenged the reasonableness of the cash flow assumptions, both in the projection period as in the terminal period; • We assessed if the potential impact of climate change in estimating future cash flows was taken into consideration by Management and aligned with Solvay One Planet objectives; • We performed benchmarking and sensitivity analyses with peers and analyst reports, on valuation and cash flow assumptions; • We tested the mathematical accuracy of the valuation model; • We recalculated the impairments recorded and evaluated the allocation over the different asset categories; • We reviewed and tested the management's reconciliation of the valuations, used for impairment testing purposes, to the entity's market capitalization; • We involved our valuation specialists to assist us in performing certain of the above procedures; • We assessed and reviewed the completeness and accuracy of the disclosures in the notes in accordance with IAS 36.

Key audit matters	How our audit addressed the key audit matters
2. Defined benefit obligations	
• The defined benefit net liability, amounting to 1 123 million EUR, consists of defined benefit obligations (5 016 million EUR) offset partially by (recognized) plan assets (3 893 million EUR). The largest post-employment plans in 2021 are in the United Kingdom, France, the United States, Germany and Belgium. These five countries represent 95% of the total defined benefit obligations. • Defined benefit obligations is a key audit matter mainly as the amounts are significant, the assessment process is complex and it requires key management estimates to determine the actuarial assumptions and fair value of assets. The actuarial assumptions used in the measurement of the group's pension commitments involve judgements in relation to mortality, price inflation, discount rates, and rates of pension and salary increases, around which there are inherent uncertainties. • Management's disclosure on defined benefit obligations is included in Note F31A of the consolidated financial statements.	• We assessed and challenged management's assumptions (actuarial and other assumptions), the numerical data, the actuarial parameters, the calculation of the provisions as well as the presentation in the consolidated statement of financial position based on the actuarial reports; • Our audit of the fair value of the plan assets was carried out on the basis of respective bank and fund confirmations; • We assessed and reviewed the completeness and accuracy of the disclosures in the notes in accordance with IAS 19; • We involved in this review our actuaries. We also reviewed the internal controls, mainly around database maintenance and update of assumptions.

Responsibilities of the board of directors for the preparation of the consolidated financial statements

The board of directors is responsible for the preparation and fair presentation of the consolidated financial statements in accordance with International Financial Reporting Standards (IFRS) as adopted by the European Union and with the legal and regulatory requirements applicable in Belgium and for such internal control as the board of directors determines is necessary to enable the preparation of consolidated financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the consolidated financial statements, the board of directors is responsible for assessing the group's ability to continue as a going concern, disclosing, as applicable, matters to be considered for going concern and using the going concern basis of accounting unless the board of directors either intends to liquidate the group or to cease operations, or has no other realistic alternative but to do so.

Responsibilities of the statutory auditor for the audit of the consolidated financial statements

Our objectives are to obtain reasonable assurance about whether the consolidated financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue a statutory auditor's report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with ISA will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these consolidated financial statements.

During the performance of our audit, we comply with the legal, regulatory and normative framework as applicable to the audit of consolidated financial statements in Belgium. The scope of the audit does not comprise any assurance regarding the future viability of the company nor regarding the efficiency or effectiveness demonstrated by the board of directors in the way that the company's business has been conducted or will be conducted.

As part of an audit in accordance with ISA, we exercise professional judgment and maintain professional skepticism throughout the audit. We also:

- identify and assess the risks of material misstatement of the consolidated financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from an error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control;
- obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the group's internal control;
- evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by the board of directors;
- conclude on the appropriateness of the use of the going concern basis of accounting by the board of directors and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the group's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our statutory auditor's report to the related disclosures in the consolidated financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our statutory auditor's report. However, future events or conditions may cause the group to cease to continue as a going concern;
- evaluate the overall presentation, structure and content of the consolidated financial statements, and whether the consolidated financial statements represent the underlying transactions and events in a manner that achieves fair presentation;
- obtain sufficient appropriate audit evidence regarding the financial information of the entities and business activities within the group to express an opinion on the consolidated financial statements. We are responsible for the direction, supervision and performance of the group audit. We remain solely responsible for our audit opinion.

We communicate with the audit committee regarding, amongst other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

We also provide the audit committee with a statement that we have complied with relevant ethical requirements regarding independence, and we communicate with them about all relationships and other matters that may reasonably be thought to bear on our independence, and where applicable, related safeguards.

From the matters communicated to the audit committee, we determine those matters that were of most significance in the audit of the consolidated financial statements of the current period and are therefore the key audit matters. We describe these matters in our report unless law or regulation precludes any public disclosure about the matter.

Other legal and regulatory requirements

Responsibilities of the board of directors

The board of directors is responsible for the preparation and the content of the directors' report on the consolidated financial statements, the statement of non-financial information attached to the directors' report on the consolidated financial statements and other matters disclosed in the annual report on the consolidated financial statements.

Responsibilities of the statutory auditor

As part of our mandate and in accordance with the Belgian standard complementary to the International Standards on Auditing (ISA) as applicable in Belgium, our responsibility is to verify, in all material respects, the director's report on the consolidated financial statements, the statement of non-financial information attached to the directors' report on the consolidated financial statements and other matters disclosed in the annual report on the consolidated financial statements, as well as to report on these matters.

Aspects regarding the directors' report on the consolidated financial statements and other information disclosed in the annual report on the consolidated financial statements

In our opinion, after performing the specific procedures on the directors' report on the consolidated financial statements, this report is consistent with the consolidated financial statements for that same year and has been established in accordance with the requirements of article 3:32 of the Code of companies and associations.

In the context of our statutory audit of the consolidated financial statements we are responsible to consider, in particular based on information that we became aware of during the audit, if the directors' report on the consolidated financial statements and other information disclosed in the annual report on the consolidated financial statements, are free of material misstatements, either by information that is incorrectly stated or otherwise misleading. In the context of the procedures performed, we are not aware of such a material misstatement.

The non-financial information as required by article 3:32, § 2 of the Code of companies and associations, has been disclosed in the the directors' report on the consolidated financial statements that is part of the annual report. This non-financial information has been established by the company in accordance with the Global Reporting Initiative (GRI) framework. As requested by Solvay management, we have issued a separate limited and reasonable assurance report on a selection of social, environmental and other sustainable development information in accordance with the International Standard on Assurance Engagements ISAE 3000. In accordance with article 3:80 § 1, 5° of the Code of companies and associations we do not express any opinion on the question whether this non-financial information has been established in accordance with this GRI framework. For information not included in our specific assurance report on non-financial information, we do not express any assurance on individual elements that have been disclosed in this non-financial information.

Statements regarding independence

- Our audit firm and our network have not performed any prohibited services and our audit firm has remained independent from the group during the performance of our mandate.
- The fees for the additional non-audit services compatible with the statutory audit, as defined in article 3:65 of the Code of companies and associations, have been properly disclosed and disaggregated in the notes to the consolidated financial statements (chapter corporate governance).

Single European Electronic Format (ESEF)

In accordance with the draft standard on the audit of the compliance of the financial statements with the Single European Electronic Format ("ESEF"), we have also performed the audit of the compliance of the ESEF format and of the tagging with the technical regulatory standards as defined by the European Delegated Regulation No. 2019/815 of 17 December 2018 ("Delegated Regulation").

The board of directors is responsible for the preparation, in accordance with the ESEF requirements, of the consolidated financial statements in the form of an electronic file in ESEF format ("digital consolidated financial statements") included in the annual financial report.

Our responsibility is to obtain sufficient and appropriate evidence to conclude that the format and the tagging of the digital consolidated financial statements comply, in all material respects, with the ESEF requirements as stipulated by the Delegated Regulation.

Based on our work, in our opinion, the format and the tagging of information in the English version of the digital consolidated financial statements included in the annual financial report of Solvay SA as of 31 December 2021 are, in all material respects, prepared in accordance with the ESEF requirements as stipulated by the Delegated Regulation.

Other statements

- This report is consistent with our additional report to the audit committee referred to in article 11 of Regulation (EU) No 537/2014.

Signed at Zaventem, 18 March 2022

The statutory auditor

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Deloitte Bedrijfsrevisoren/Réviseurs d'Entreprises BV/SRL
Represented by Michel Denayer

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Deloitte Bedrijfsrevisoren/Réviseurs d'Entreprises BV/SRL
Represented by Corine Magnin

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Member of Deloitte Touche Tohmatsu Limited

Declaration by the persons responsible

The Board of Directors hereby declares that, to the best of its knowledge:

- The financial statements, prepared in accordance with International Financial Reporting Standards ("IFRS"), give a true and fair view of the assets, liabilities, financial position, and earnings of the issuer and of the entities included in the consolidation,
- The extra-financial statements are prepared in accordance with the GRI standards,
- The management report includes an accurate review of the business developments, earnings, and financial position of the issuer and of the entities included in the consolidation, as well as a description of the main risks and uncertainties that these entities face.

Nicolas Boël
Chairman of the Board of Directors

Nicolas Boël

Ilham Kadri
Chairwoman of the Leadership Executive Committee and CEO, Director

Ilham Kadri

Glossary

Additional voluntary contributions related to employee benefits plan

Contributions to plan assets in excess of Mandatory Contributions to employee benefits plans. These payments are discretionary and are driven by the objective of value creation. These voluntary contributions are excluded from free cash flow as they are deleveraging in nature as a reimbursement of debt.

Adjustments

Each of these adjustments made to the IFRS results is considered to be significant in nature and/or value. Excluding these items from the profit metrics provides readers with relevant additional information on the Group's underlying performance over time because it is consistent with how the business' performance is reported to the Board of Directors and the Executive Committee. These adjustments consist of:

- Results from portfolio management and major restructurings,
- Results from legacy remediation and major litigations,
- Amortization of intangible assets resulting from Purchase Price Allocation (PPA) and inventory step-up in gross margin,
- Net financial results related to changes in discount rates, coupons of hybrid bonds deducted from equity under IFRS and debt management impacts (mainly including gains/(losses) related to the early repayment of debt,
- Adjustments of equity earnings for impairment gains or losses and unrealized foreign exchange gains or losses on debt,
- Results from equity instruments measured at fair value,
- Tax effects related to the items listed above and tax expense or income of prior years
- All adjustments listed above apply to both continuing and discontinuing operations, and include the impacts on non-controlling interests

Basic earnings per share

Net income (Solvay's share) divided by the weighted average number of shares, after deducting own shares purchased to cover stock option programs.

Capital expenditure (capex)

Cash paid for the acquisition of tangible and intangible assets presented in cash flows from investing activities, and cash paid on the lease liabilities (excluding interests paid), presented in cash flows from financing activities. This indicator is used to manage capital employed in the Group.

Cash conversion

Is a ratio used to measure the conversion of EBITDA into cash. It is defined as (Underlying EBITDA + Capex from continuing operations) / Underlying EBITDA.

CARECHEM

Carechem 24 is a multilingual telephone advice service providing access to a team of trained responders 24 hours a day, 365 days a year. Carechem 24 provides companies all over the world with emergency product support during a hazardous materials incident.

CFROI

Cash Flow Return On Investment measures the cash returns of Solvay's business activities. Movements in CFROI levels are relevant indicators for showing whether economic value is being added, though it is accepted that this measure cannot be benchmarked or compared with industry peers. The definition uses a reasonable estimate (management estimate) of the replacement cost of assets and avoids accounting distortions, e.g. for impairments. It is calculated as the ratio between recurring cash flow and invested capital, where:

- Recurring cash flow = Underlying EBITDA + (Dividends from associates and joint ventures – Underlying Earnings from associates and joint ventures) + Recurring capex + Recurring income taxes;
- Invested capital = Replacement value of goodwill & fixed assets + Net working capital + Carrying amount of associates and joint ventures;
- Recurring capex is normalized at 2,3% of the Replacement value of fixed assets net of Goodwill;
- Recurring income taxes are normalized at 27% of (Underlying EBIT – Underlying Earnings from associates and joint ventures) in 2021 (was 28% in 2020);

CGU

Cash-generating unit

Code of conduct

Solvay is committed to responsible behavior and integrity, taking into account the sustainable growth of its business and its good reputation in the communities in which it operates.

CTA

Currency Translation Adjustment

Diluted earnings per share

Net income (Solvay's share) divided by the weighted average number of shares adjusted for effects of dilution.

Discontinued operations

Component of the Group which the Group has disposed of or which is classified as held for sale, and:
- Represents a separate major line of business or geographical area of operations;
- Is part of a single coordinated plan to dispose of a separate major line of business or geographical area of operations;
- Is a subsidiary acquired exclusively with a view to resale

Dividend yield (net)

Net dividend divided by the closing share price on December 31.

Dividend yield (gross)

Gross dividend divided by the closing share price on December 31.

DJ STOXX

Dow Jones Stoxx is a European stock index composed of the 665 most important European shares.

DJ EURO STOXX

Dow Jones Euro Stoxx is a pan-European stock index which includes the 326 most important shares of the general Dow Jones index, belonging to eleven countries of the Eurozone.

EBIT

Earnings before interest and taxes. Performance indicator that is a measure of the Group's operating profitability irrespective of the funding's structure.

EBITDA

Earnings before interest and taxes, depreciation and amortization. The Group has included EBITDA as an alternative performance indicator because management believes that the measure provides useful information to assess the Group's operating profitability as well as the Group's ability to generate operating cash flows.

Eco-profile

A description of the magnitude and significance of the environmentally relevant inputs and outputs (including, as appropriate, raw materials, intermediate products, emissions and waste) associated with a product throughout its lifecycle.

Environmental protection agency

The U.S. Environmental Protection Agency (EPA or USEPA) is an agency of the United States federal government which was created for the purpose of protecting human health and the environment by writing and enforcing regulations based on laws passed by Congress.

Equity per share

Equity (Solvay share) divided by the number of outstanding shares at year end (issued shares – treasury shares).

EURONEXT

Global operator of financial markets and provider of trading technologies.

Free cash flow

Cash flows from operating activities (excluding cash flows linked to acquisitions or disposals of subsidiaries, cash outflows of Voluntary Pension Contributions, as they are deleveraging in nature as a reimbursement of debt and cash flows related to internal management of portfolio such as one-off external costs of internal carve-out and related taxes...), cash flows from investing activities (excluding cash flows from or related to the acquisitions and disposals of subsidiaries), and other investments, and excluding loans to associates and non-consolidated investments, and recognition of factored receivables), payment of lease liabilities, and increase/decrease of borrowings related to environmental remediation. Prior to the adoption of IFRS 16, operating lease payments were included within free cash flow. Following the application of IFRS 16, because leases are generally considered to be operating in nature, free cash flow incorporates the payment of the lease liability (excluding the interest expense). Excluding this item in the free cash flow would result in a significant improvement of free cash flow compared to prior periods, whereas the operations themselves have not been affected by the implementation of IFRS 16. It is a measure of cash generation, working capital efficiency and capital discipline of the Group.

Free cash flow to solvay shareholders

Free cash flow after payment of net interests, coupons of perpetual hybrid bonds and dividends to non-controlling interests. This represents the cash flow available to Solvay shareholders, to pay their dividend and/or to reduce the net financial debt.

Free cash flow conversion

Calculated as the ratio between the free cash flow to Solvay shareholders of the last rolling 12 months (before netting of dividends paid to non-controlling interest) and underlying EBITDA of the last rolling 12 months.

FTSEUROFIRST 300

The FTSEurofirst 300 Index tracks the equity performance across the region of the 300 largest companies ranked by market capitalization in the FTSE Developed Europe Index.

GBU

Global business unit.

Gearing ratio

Underlying net debt / total equity

GRI

GRI (Global Reporting Initiative) is the independent, international organization that helps businesses and other organizations take responsibility for their impacts, by providing them with the global common language to communicate those impacts. GRI provides the world's most widely used standards for sustainability reporting – the GRI Standards.

HPPO

Hydrogen peroxide propylene oxide, a new technology to produce propylene oxide using hydrogen peroxide.

ICCA

International Council of Chemistry Associations

IFRS

International Financial Reporting Standards.

Integrated reporting

This is a process founded on integrated thinking, which results in a periodic integrated report by an organization about value creation over time and related communications regarding aspects of value creation.

ISO 9001

The ISO 9001 standard defines a set of requirements for the establishment of a system of quality management in an organization, whatever its size and activity.

ISO 14001

The ISO 14001 family addresses various aspects of environmental management. It provides practical tools for companies and organizations looking to identify and control their environmental impact and constantly improve their environmental performance.

ISO 14040

The ISO 14040 standard covers life cycle assessment (LCA) studies and life cycle inventory (LCI) studies.

ISO 26000

The ISO 26000 is a global standard which provides guidelines for organizations that wish to operate in a socially responsible manner. The standard was published in 2010 after five years of negotiations among a large number of stakeholders worldwide. Representatives of governments, NGOs, industry, consumer groups, and the world of work were involved in its development. It therefore represents an international consensus.

LCA

Life Cycle Assessment

Leverage ratio

Net debt / underlying EBITDA of the last 12 months. Underlying leverage ratio = underlying net debt / underlying EBITDA of the last 12 months.

Loss prevention process

Loss prevention aims at maintaining production flow and profitability of the plants by providing risk mitigation. It also contributes to increasing the protection of people and the environment.

LTII

Lost Time Injury or Illness: A Work Related Injury or Illness that results in a work interruption of one or more days, not including the day of the accident.

LTIIR

Lost Time Injury and Illness Rate): number of Lost Time Injury and Illnesses resulting from accident per 200,000 work hours

Mandatory contributions to employee benefits plans

For funded plans, contributions to plan assets corresponding to amounts required to be paid during the respective period, in accordance with agreements with trustees or regulation, as well as, for unfunded plans, benefits paid to beneficiaries.

Materiality

Organizations are faced with a wide range of topics on which they could report. The relevant topics are those that may reasonably be considered important for reflecting the organization's economic, environmental, and social impacts, or influencing the decisions of stakeholders, and therefore potentially merit inclusion in an annual report. Materiality is the threshold at which aspects become sufficiently important that they should be reported.

Natural currency hedge

A natural currency hedge is an investment that reduces the undesired risk by matching cash in and outflows.

Near miss

accident or collision narrowly avoided

Net cost of borrowings

Cost of borrowings netted with interest on loans and short-term deposits, as well as other gains (losses) on net indebtedness.

Net financial debt (IFRS)

(IFRS) net debt = Non-current financial debt + current financial debt – cash & cash equivalents – other financial instruments (current and non-current). Underlying net debt reclassifies as debt 100% of the hybrid perpetual bonds, considered as equity under IFRS. It is a key measure of the strength of the Group's financial position and is widely used by credit rating agencies.

Net financial charges

Net cost of borrowings, and costs of discounting provisions (namely, related to post-employment benefits and Health Safety and Environmental liabilities).

Net pricing

The difference between the change in sales prices versus the change in variable costs.

Net sales

Sales of goods and value added services corresponding to Solvay's know-how and core business. Net sales exclude Revenue from non- core activities.

Net working capital

Includes inventories, trade receivables and other current receivables, netted with trade payables and other current liabilities.

Occupational accident

Accident which occurred during the execution of a work contract with Solvay. Accidents on the way to/from home are not considered as work related except if at the time of the accident, the worker was travelling for Solvay.

OCI

Other Comprehensive Income.

OECD

Organisation for Economic Co-operation and Development.

OHSAS 18001

OHSAS 18001 is an international occupational health and safety management system specification.

Open innovation

Innovation that is enriched with outside expertise, through partnerships with the academic world and by shareholdings in start-ups, either directly or via investment funds.

Operational deleveraging

Reduction of liabilities (net debt or provisions) through operational performance only, i.e. excluding impacts from acquisitions and divestitures, as well as remeasurement impacts (changes of foreign exchange, inflation, mortality and discount rates).

Organic growth

Growth of Net sales or underlying EBITDA excluding scope changes (related to small M&A not leading to restatements) and forex conversion effects. The calculation is made by rebasing the prior period at the business scope and forex conversion rate of the current period.

OSHA

United States Occupational Safety and Health Administration

PA

Polyamide, Polymer type.

PP

Unit of percentage points, used to express the evolution of ratios.

PPA

Purchase Price Allocation (PPA) accounting impacts related to acquisitions, primarily for Rhodia and Cytec.

Pricing power

The ability to create positive net pricing.

PSM

Process safety management

PSU

Performance Share Unit

Product stewardship

A responsible approach in managing risks throughout the entire life cycle of a product, from the design stage to the end of life.

Research & innovation

Research & development costs recognized in the income statement and as capital expenditure before deduction of related subsidies, royalties and depreciation and amortization expense. It measures the total cash effort in research & innovation, regardless of whether the costs were expensed or capitalized.

Research & innovation intensity

Ratio of research & innovation / net sales.

PVC

Polyvinyl chloride, Polymer type.

REACH

REACH is the European Community Regulation on chemicals and their safe use (EC 1907/2006). It deals with the registration, evaluation, authorization, and restriction of chemical substances. The law entered into force on June 1, 2007.

Responsible care®

Responsible Care® is the global chemical industry's unique initiative to improve health, environmental performance, enhance security, and to communicate with stakeholders about products and processes.

Result from legacy remediation and major litigations

It includes:

- The remediation costs not generated by on-going production facilities (shut-down of sites, discontinued productions, previous years' pollution), and
- The impact of significant litigations.

Results from portfolio management and major restructuring

It includes:

- Gains and losses on the sale of subsidiaries, joint operations, joint ventures, and associates that do not qualify as discontinued operations;
- Acquisition costs of new businesses;
- One-off operating external costs related to internal management of portfolio (carve-out of major lines of businesses)
- Gains and losses on the sale of real estate not directly linked to an operating activity;
- Restructuring charges driven by portfolio management and by major reorganization of business activities, including impairment losses resulting from the shutdown of an activity or a plant;
- Impairment losses resulting from testing of Cash Generating Units (CGUs);
- It excludes non-cash accounting impact from amortization and depreciation resulting from the purchase price allocation (PPA) from acquisitions

Revenue from non-core activities

Revenues primarily comprising commodity and utility trading transactions and other revenue, considered to not correspond to Solvay's know-how and core business.

RII

Reportable Injury & Illness: work related injury or illness resulting from an accident with severity above first aid, according to US OSHA 29 CFR 1904.

RIIR

Reportable Injury & Illness rate): number of reportable injury or illness per 200,000 work hours.

ROCE

Return on Capital Employed, calculated as the ratio between underlying EBIT (before adjustment for the amortization of PPA) and capital employed. Capital employed consists of net working capital, tangible and intangible assets, goodwill, rights-of-use assets, investments in associates & joint ventures and other investments, and is taken as the average of the situation at the end of the last 4 quarters.

ROE

Return on equity

Safety data sheets

Safety Data Sheets are the main tool for ensuring that manufacturers and importers communicate enough information along the supply chain to allow safe use of their substances and mixtures.

SAELs

Solvay Acceptable Exposure Limits

SBTI

Science Based target initiative

SDG

United Nations Sustainable Development Goals

Seveso regulations

The Control of Major Accident Hazards Involving Dangerous Substances Regulations. These regulations (often referred to as "COMAH Regulations" or "Seveso Regulations") give effect to European Directive 96/82/EC. They apply only to locations where significant quantities of dangerous substances are stored.

SOCRATES

Global tool for industrial hygiene management

SOLVAY WAY

Launched in 2013 and aligned with ISO 26000, Solvay Way is the sustainability approach of the Group. It integrates social, societal, environmental, and economic aspects into the Company's management and strategy, with the objective of creating value shared by all of its stakeholders. Solvay Way is based on an ambitious and pragmatic framework serving as a tool of both measurement and progress. Solvay Way lists 49 practices – practices that reflect the Solvay Way's 22 commitments and are structured on a four-level scale (launch, deployment, maturity, performance).

SOP

Stock Option Plan.

SPM

The Sustainable Portfolio Management tool is integrated into the Solvay Way framework (linked to five practices). It serves as a strategic tool for developing information on our portfolio and analyzing the impacts of sustainability megatrends on our businesses.

SVHC

Substance of Very High Concern (SVHC) is a chemical substance, the utilization of which within the European Union has been proposed to become subject to legal authorization under the REACH regulation.

TCFD

Task Force on Climate-related Financial Disclosure

Un global compact

Voluntary corporate sustainability initiative to support companies to align strategies and operations with universal principles on human rights, labor, environment, and anti-corruption, and take actions that advance broader societal goals.

Underlying

Underlying results are deemed to provide a more comparable indication of Solvay's fundamental performance over the reference periods. They are defined as the IFRS figures adjusted for the "Adjustments" as defined above. They provide readers with additional information on the Group's underlying performance over time as well as the financial position and they are consistent with how the business' performance and financial position are reported to the Board of Directors and the Executive Committee.

Underlying net debt

Underlying net debt reclassifies as debt 100% of the perpetual hybrid bonds, considered as equity under IFRS.

Underlying tax rate

Income taxes / (Result before taxes – Earnings from associates & joint ventures – interests & realized foreign exchange results on RusVinyl joint venture) – all determined on an Underlying basis. The adjustment of the denominator regarding associates and joint ventures is made as these contributions are already net of income taxes. This provides an indication of the tax rate across the Group.

WACC

Weighted Average Cost of Capital

Velocity

Total number of shares traded during the year divided by the total number of listed shares, using the Euronext definition.

Velocity adjusted by free float

Velocity adjusted as a function of the percentage of the listed shares held by the public, using the Euronext definition.

WBCSD

World Business Council for Sustainable Development.

YOY

Year on year comparison.

Shareholders' diary

MAY 4, 2022

First quarter 2022 results

MAY 10, 2022

Ordinary General Shareholders' meeting

MAY 16, 2022

Ex-coupon date

MAY 19, 2022

Final dividend: payment date

JULY 28, 2022

First half 2022 results

NOVEMBER 3, 2022

Nine months 2022 results

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Ce rapport est également disponible en français. Dit jaarverslag is ook beschikbaar in het Nederlands.

Printed on FSC paper.

Progress beyond

Using street art to promote biodiversity

Solvay partnered with the United Nations Decade for the Restoration of Ecosystems and the non-profit Street Art for Mankind to produce the 40-meter-high mural in Brussels pictured on the front of this report. *The Alchemist* depicts Mother Nature watching us as she tries to protect the natural world. It is the first of 50 murals to be created worldwide over the next ten years to raise awareness about taking urgent action to restore biodiversity. It was painted by Spanish contemporary urban artist Lula Goce, who is known for her huge, dark-colored portraits with vibrant flowers and whose spectacular works of art can be found on walls, at art festivals and in prominent art centers around the world.

"I see street art as a powerful and unique vehicle to connect with every citizen, every heart and mind, to embrace change and convey the message that we must link people, ideas and elements to reinvent progress to have a greater impact on the world."

Ilham Kadri, Solvay CEO

Solvay is playing an active part in the creation of these #SDGMurals, both as a sponsor promoting the UN's Sustainable Development Goals and as an actor committed to building a better future. As part of our Solvay One Planet program, we have committed to reducing our pressure on biodiversity by 30% by 2030. In 2021, we made biodiversity the theme of our annual Citizen Day, asking each of our employees to contribute personally to protecting biodiversity at all our sites and in our communities.

The mural was inaugurated on September 29, 2021.

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