



Solvay Vision of the Soda Ash Industry



Striving for Security of Supply
and Sustainability

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Solvay Soda Ash & Derivatives

IHS Markit World Soda Ash Conference Cannes | September 26th 2019





CHALLENGES OF THE SODA ASH INDUSTRY

THE STAKEHOLDERS OF THE SODA ASH INDUSTRY SET OUR CHALLENGES

Solvay
way



PLANET



CUSTOMERS



SUPPLIERS



INVESTORS



COMMUNITIES



EMPLOYEES



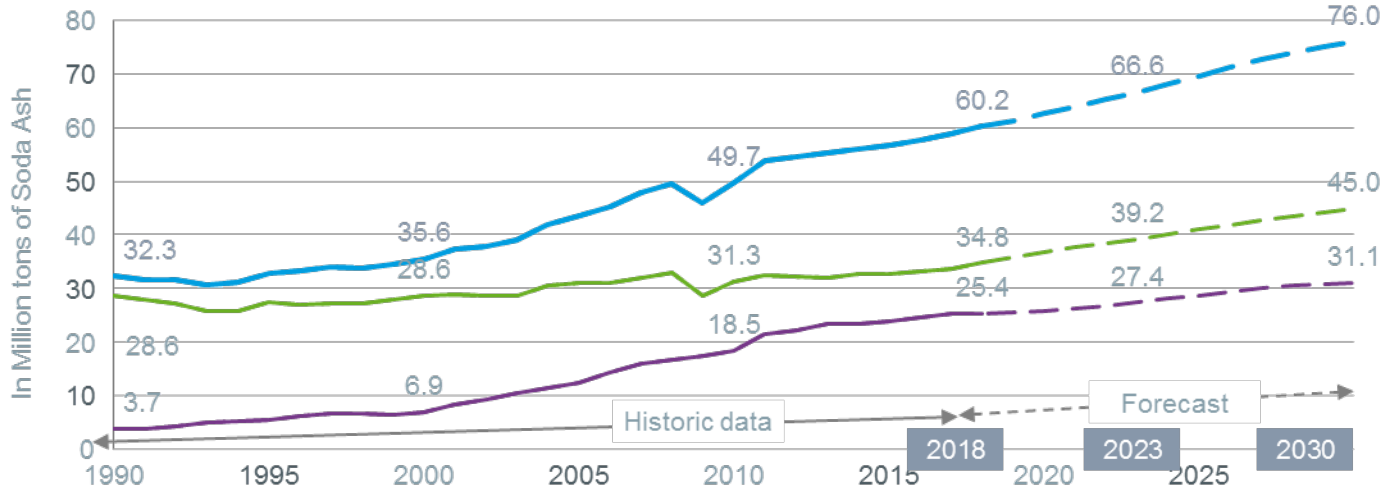
Stakeholders Expectations

- Safety
- Sustainability
- Security of Supply
- Value Creation along the whole value chain



STRIVING FOR SECURITY OF SUPPLY

+16 MT OF SODA ASH DEMAND BY 2030



World
CAGR **2.0%**
+15.8 Mt

World Excl. China
CAGR **2.2%**
+10.2 Mt

China
CAGR **1.7%**
+5.7 Mt



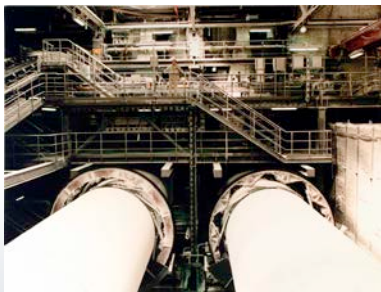
- China growth expected to slow down
- RoW expected to grow faster with APAC, LATAM and MEA being main growth drivers

- Soda Ash demand expected to increase by **+10,2 Mt** over 2018-30 excluding China

2018-2023
+4,4 Mt (CAGR 2,4%)

2024-2030
+5,8 Mt (CAGR 2%)

TIMELY INVESTMENTS SHOULD BE ENSURED TO PROVIDE SECURITY OF SUPPLY



2019-2021

+500 kt

Through excellence programs & digitalization



End 2021

+600 kt

Through capacity expansion in Green River



2019-2021

+100 kt

Through excellence programs & digitalization



2020

+200 kt

Through capacity expansion in Devnya

SOLVAY DEVELOPS
1.4 MT
CAPACITY TO MEET
CUSTOMER NEEDS

+1,1 Mt Soda Ash

+300 kt Sodium Bicarbonate

RETURN ON INVESTMENTS SHOULD BE DELIVERED TO ENSURE CONTINUOUS VALUE CREATION FOR ALL STAKEHOLDERS

GROWING GEOPOLITICAL UNCERTAINTIES IMPACT GLOBAL TRADE AND PRICE VOLATILITY

GEOPOLITICS



POLITICAL
INSTABILITY



TRADE WARS

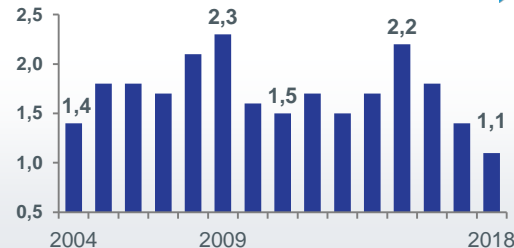


NEW ENVIRONMENTAL
REGULATIONS

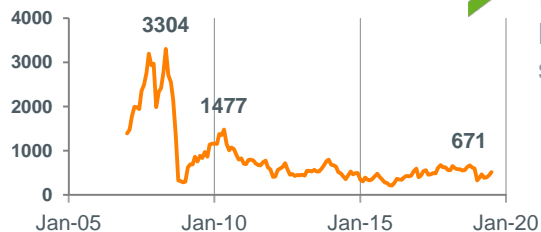
➤ **Currency
exchange**
EUR/USD



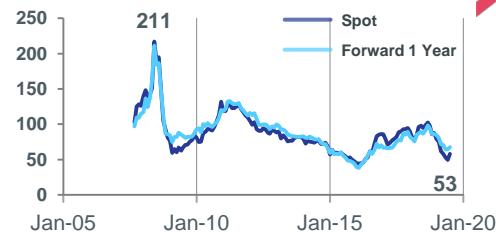
➤ **Chinese
net exports**
Soda Ash
Volumes (MT)



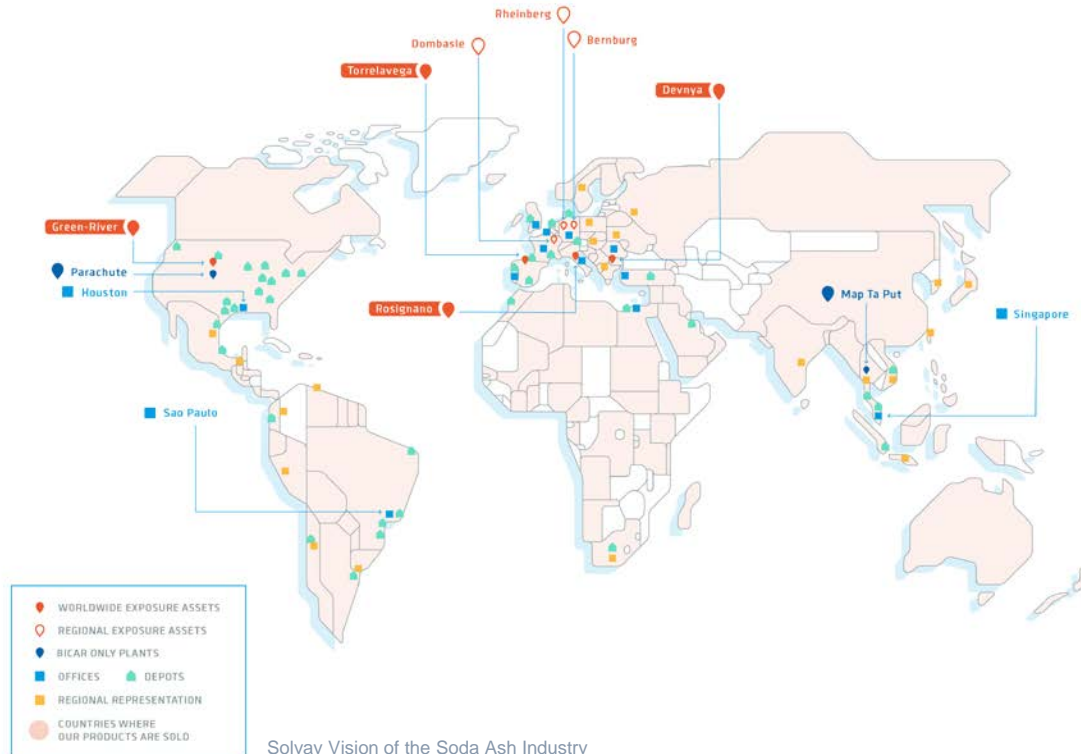
➤ **Freight**
Baltic Handy
size index



➤ **Energy**
API2 index



FOR 156 YEARS, SOLVAY HAS BUILT A UNIQUE & BALANCED GLOBAL FOOTPRINT TO SECURE THE STRATEGIC SUPPLY OF ITS CUSTOMERS WORLDWIDE



Solvay Vision of the Soda Ash Industry

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- Offering both natural and synthetic (dense and light) soda ash
- Providing safety of supply through our global network of plants and sales offices
- Having a unique global reach thanks to our logistics networks

€
€1.6 billion
Net sales 2018

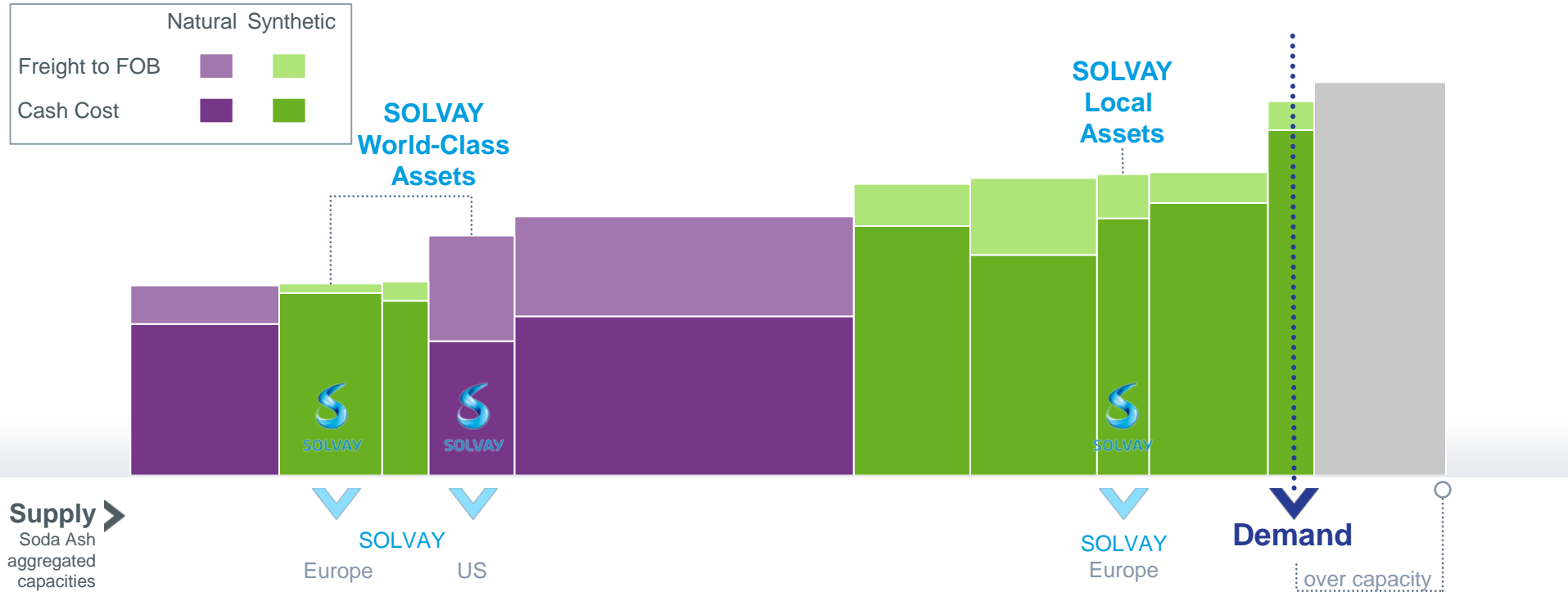
11
production sites

3 R&I centers
Brussels
Dombasle
Torrelavega

3,200
Employees

AND KEEPS FOCUSING ON COST-COMPETITIVENESS

2018 directional worldwide industry cost curve (\$/t) ¹



(1) Excluding Domestic China. Directional schematic representation of the global soda ash industry "cost curve". Each bar represents the aggregated capacity (x-axis) and average production and freight-to-FOB costs (y-axis) of plants sharing a similar cost profile. Relative competitiveness may vary locally
 Source: Solvay estimates based on public information.



STRIVING FOR SUSTAINABILITY

MAIN ENVIRONMENTAL CHALLENGES OF THE SODA ASH INDUSTRY

VALUE CHAIN OF SODA ASH



RAW MATERIALS



PRODUCTION

CO₂ (Energy, Limekilns)



TRANSPORT

Shipping emissions (SO_x, particles)

CO₂



USE

CO₂ (Energy)



WITH 60 MT SODA ASH PRODUCED PER YEAR, THE INDUSTRY EMITS 58 MT OF CO₂



60 Mt SA
58 Mt CO₂e

Natural Soda Ash is less CO₂ intensive and fulfills 30% of the demand.

Synthetic Soda Ash is needed and must reduce its CO₂ footprint.

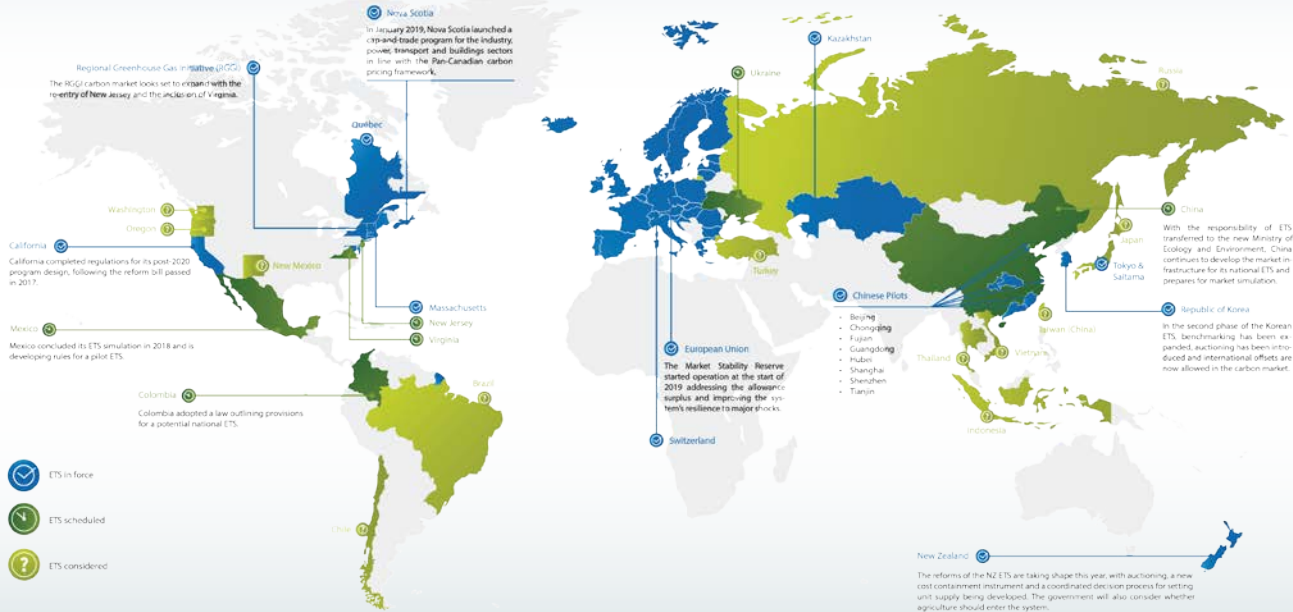
Source: Solvay internal estimate, ESAPA.



CO₂ IS NOW A TANGIBLE PART OF SODA ASH COST STRUCTURE

EMISSIONS TRADING WORLDWIDE

The state of play of cap-and-trade in 2019



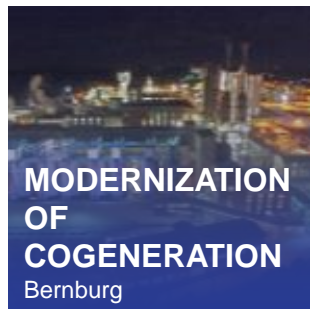
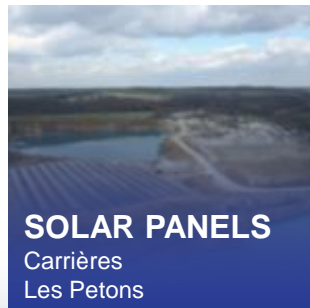
CO₂ regulation and markets are emerging and developing in multiple regions of the world

In European Union, CO₂ cost has increased from 5 €/t in 2017 to 25 €/t in 2019

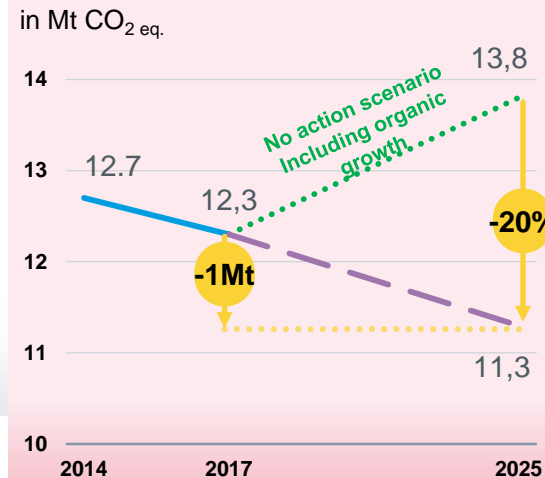
Beyond CO₂, other environmental challenges need to be answered (SO_x, etc)

SOLVAY REDUCES ITS CO₂ FOOTPRINT

ENERGY TRANSITION IS OUR TOP PRIORITY

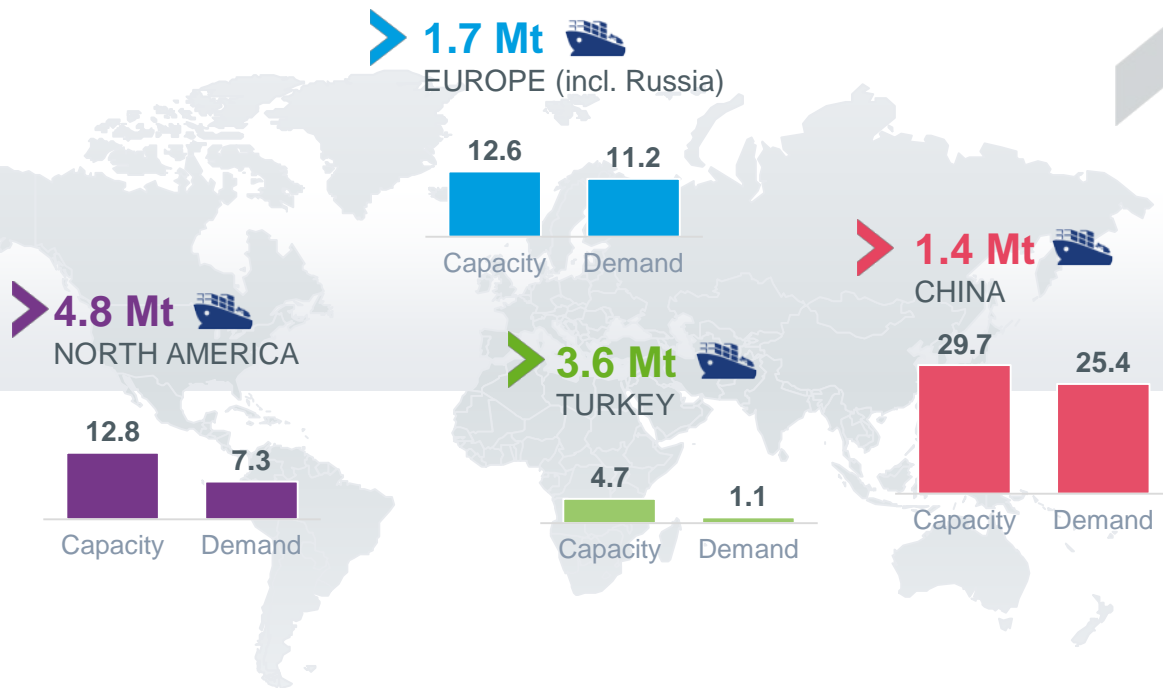


Solvay's Climate Strategy
-1 Mt CO₂ over 2017-2025
at constant scope

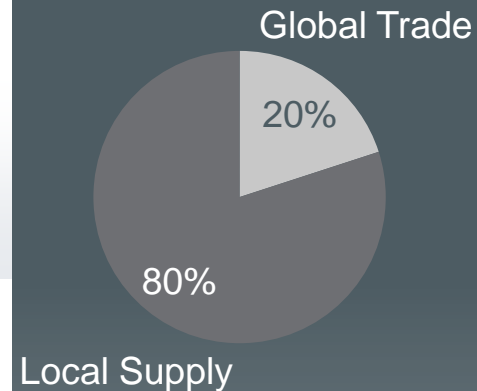


Decoupling CO₂ emissions from expected growth

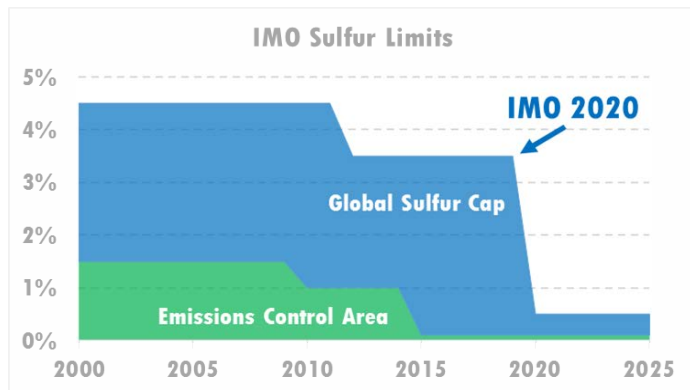
12 MT OF SODA ASH SHIPPED ON VESSELS YEARLY



20% Soda Ash globally traded in 2018



ENVIRONMENTAL STANDARDS ARE MORE AND MORE STRINGENT ON SEA FREIGHT



(*) IMO (International Maritime Organization) is the United Nations specialized agency with responsibility for the safety and security of shipping, including the prevention of marine and atmospheric pollution by ships
Source: Solvay internal estimate

New IMO* 2020 regulation to reduce Sulphur oxides (SO_x) emissions from ships

- Vessels operating within ECAs will be required to use fuel oil with a maximum sulfur content of 0.1%.
- All vessels that operate outside Emission Control Areas (ECAs) will be required to use fuel oil with a maximum sulfur content of 0.5% (3,5% today)

Solutions available to clean up shipping emissions

- Use low Sulphur bunkers that are expected to cost 50% more than current high Sulphur bunkers
- Install exhaust gas cleaning systems
- Use LNG. Only new vessels can be equipped.

Expect 15% increase of shipping cost

SOLVAY DEVELOPS SUSTAINABLE SOLUTIONS FOR THE MARINE INDUSTRY TO HELP COMPLY WITH NEW ENVIRONMENTAL REGULATIONS



Dry exhaust gas treatment system for SOx and particles removal

300 satisfied customers on land benefit from 30 years SOLVAir® experience

SOLVAir® and ANDRITZ developed a sodium-based solution and a filter system to clean exhaust gases from vessels running on High Sulphur Heavy fuel Oil (HFO) diesel engines

99% of Particles are captured

NO WASTE WATER is released back to the sea



SOLVAIR®
Marine Solutions

ANDRITZ



More information on <https://www.solvairsolutions.com/en>

LA MERIDIONALE FIRST VESSEL EQUIPPED WITH SOLVAY AND ANDRITZ TECHNOLOGIES



ANDRITZ

SOLVAir®
Marine Solutions

La Mériidionale
la traversée que vous méritez



From April 2019, SOLVAir® Marine solution is tested on the Piana, La Mériidionale's flagship. The trial campaign, in collaboration with ANDRITZ, is successful.

KEY TAKE-AWAYS

SODA ASH DEMAND IS EXPECTED TO GROW BY 16 MT OVER 2018-2030.

To reply to customer needs and avoid product shortage, **TIMELY INVESTMENTS** are needed.

AS A STRATEGIC PARTNER, SOLVAY COMMITS TO SERVE ITS SODA ASH AND BICAR CUSTOMERS BY:

- Developing 1.4 Mt capacity to meet customers needs worldwide
- Focusing on cost competitiveness to mitigate growing uncertainties
- Providing safety of supply through its unique network of plants

ENVIRONMENTAL IMPACT IS NOW A TANGIBLE PART OF THE SODA ASH COST STRUCTURE

Solvay decreases the CO₂ footprint of Soda Ash to fight climate change. Solvay develops new solutions to decrease maritime pollution and address IMO regulation.

RETURN ON INVESTMENTS SHOULD BE DELIVERED TO ENSURE SUSTAINABLE VALUE CREATION FOR ALL STAKEHOLDERS





SOLVAY

asking more from chemistry®

www.solvay.com

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SAFETY IS OUR VALUE

WE NEVER COMPROMISE ON SAFETY

People protection is an integral part of the way we conduct our business.

We are constantly reviewing our process and monitor it on a daily basis so that every person producing, delivering or using our products stay safe



Strong involvement of **contractors** in our safety culture



Life Saving Rules



Safety days on all sites



Leaders safety visits (LSV)



Clear and defined **safety policy and rules**



Life saving rules
Devnya



Safety day
Rosignano



Safety workshop
Dombasle

SOLVAY SODA ASH PLANTS HAVE BUILT OVER THE YEARS STRONG RELATIONSHIPS WITH COMMUNITIES

SOCIETAL ACTIONS

Contributing to society is part of Solvay's DNA. To develop **strong relationships** with communities around our sites, we are engaged in many societal actions that focus on **Science, Youth, Employability & Education, Environment and Solidarity**

Limestone quarry recovery with "SEO Birdlife"
Torrelavega



Fasten your Seatbelt on the Back Seat
Devnya



Christmas tree Project: Santa Claus for Children in Need
Rheinberg



Rayong Beaches cleaned by Solvay's employees
Map Ta Phut



Solvay volunteers give students a look at the future
Sao Paulo



Youth First Aid
Green River





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