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# MORE SUSTAINABLE FORMULATIONS ADVANCED FORMULATIONS

September 29, 2016  
London

**CAPITAL  
MARKETS  
DAY 2016**



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**MORE  
SUSTAINABLE  
FORMULATIONS**

**ADVANCED  
FORMULATIONS**

**Vincent De Cuyper**

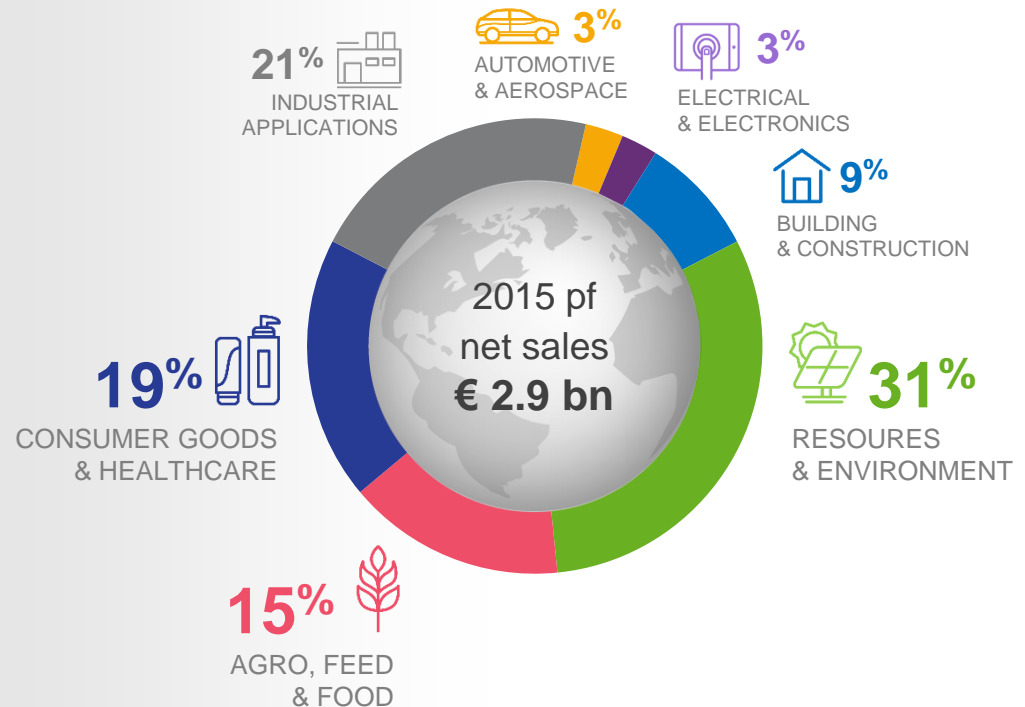
Member of the Executive Committee

# GLOBAL LEADER IN SURFACE CHEMISTRY

Customer partnership →

Application knowledge →

Broad technology & innovation base →



## FOCUS ON SPECIFIC MARKETS

EBITDA  
€ 552 m

EBITDA  
margin 18%

R&I / sales  
3%

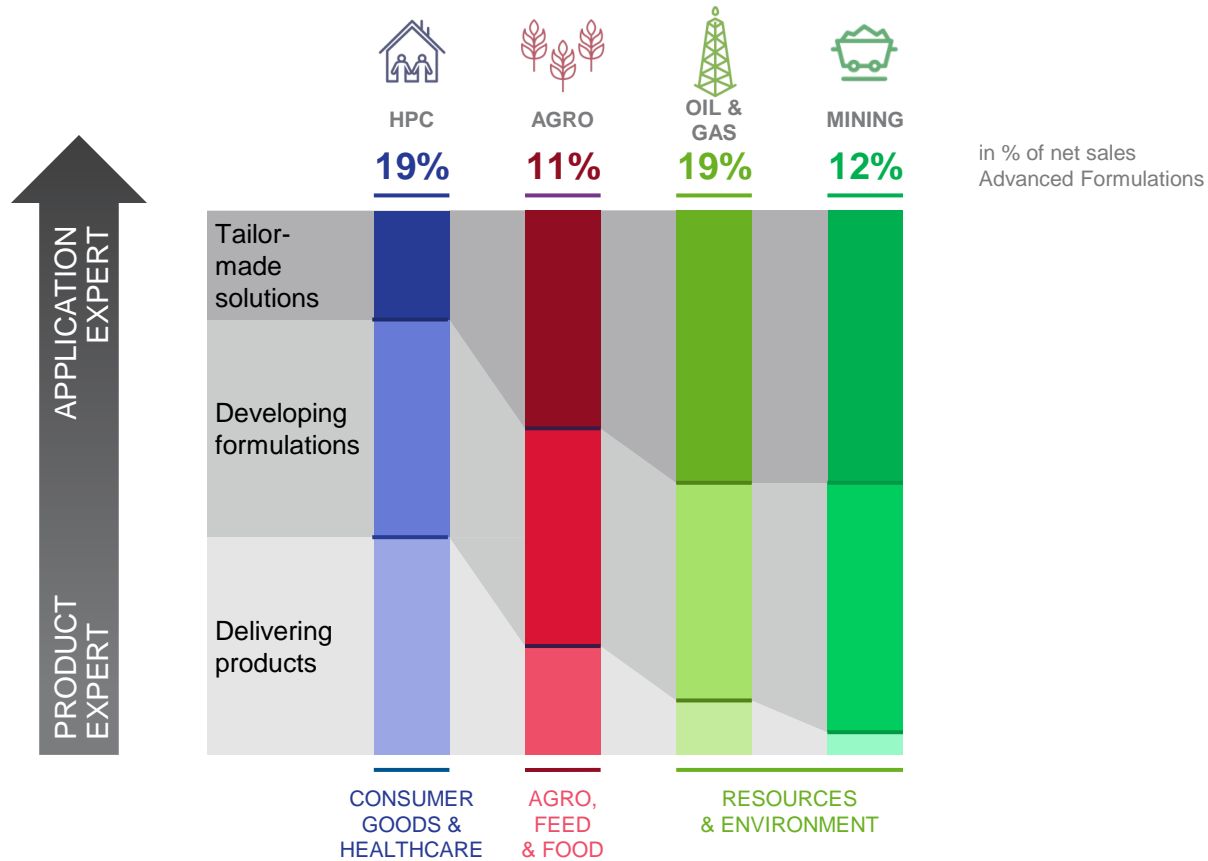
Headcount  
~ 5,700



Surface chemistry & fluid behaviors →

Maximizing yield & efficiency  
Reducing environmental footprint

# BUSINESS ORGANIZATION RE-ALIGNED TO BETTER MEET CUSTOMER NEEDS

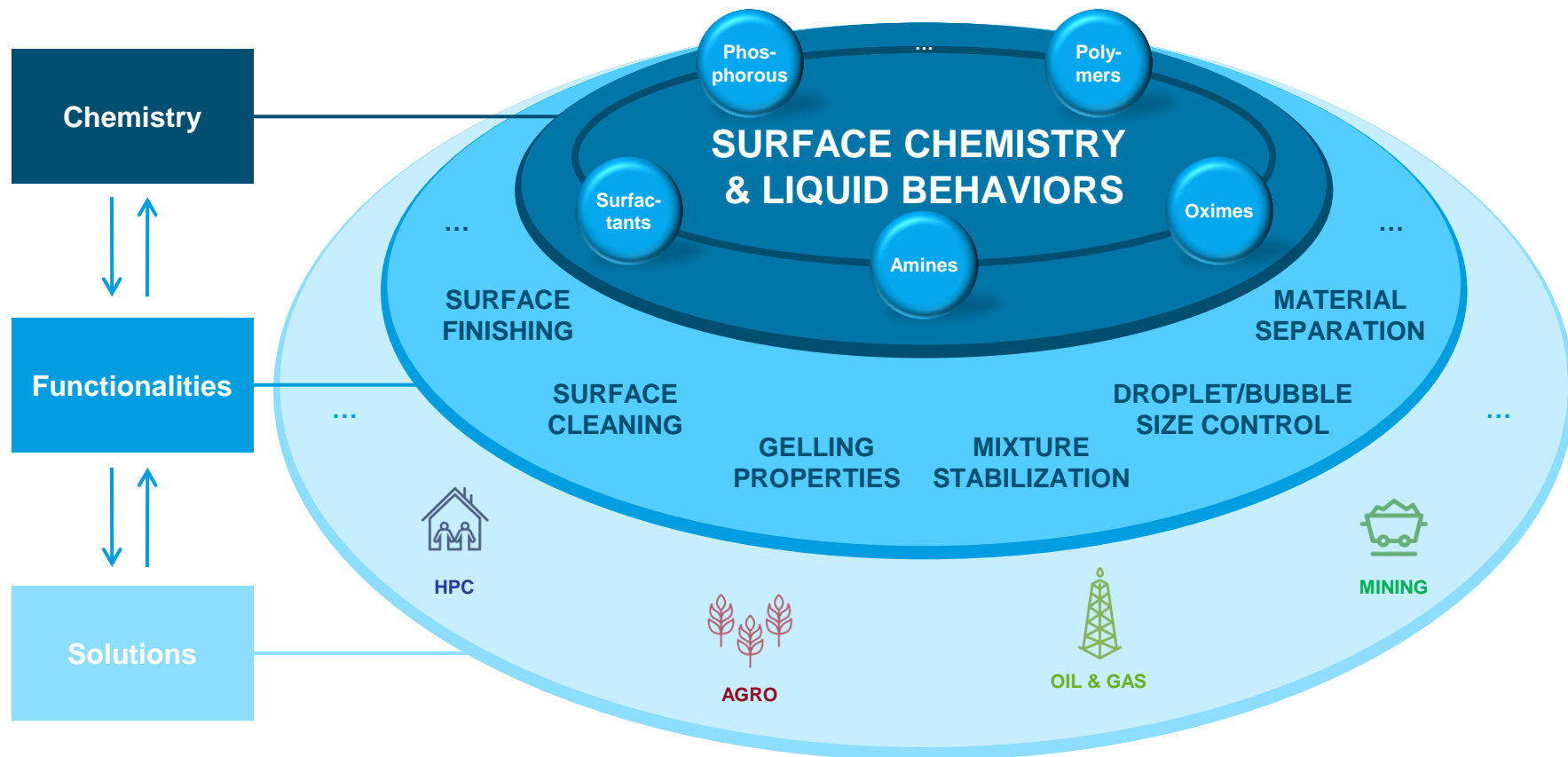


**Customer partnership  
& Application knowledge**



**Enhanced  
Value proposition**

# BROAD TECHNOLOGY BASE & APPLICATION KNOWLEDGE



Providing **innovative solutions**

# STRONG INNOVATION PORTFOLIO

Aligned with mega-trends



~ 10%

Evolving demography  
& consumer behaviors



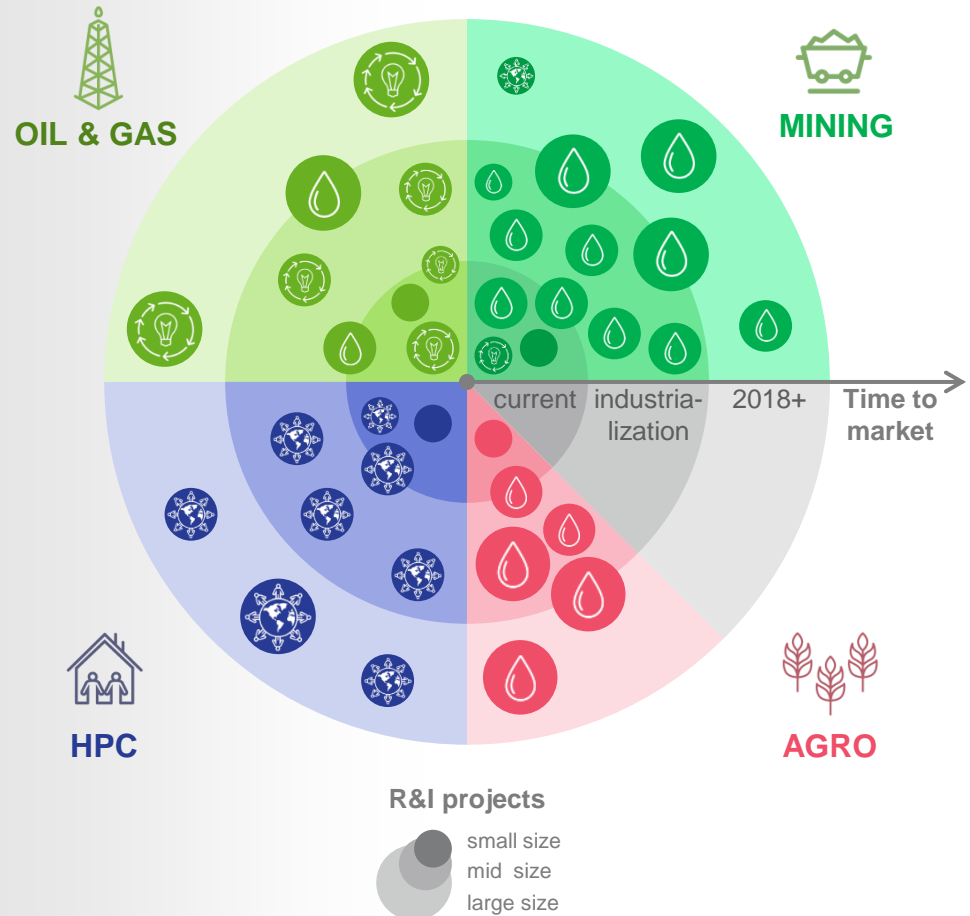
~ 20%

Innovation  
acceleration



~ 60%

Resource constraints  
& increased sustainability  
demand



Meeting our customers'  
sustainability challenges  
today & tomorrow



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# MORE SUSTAINABLE FORMULATIONS

**FOR  
OIL & GAS**

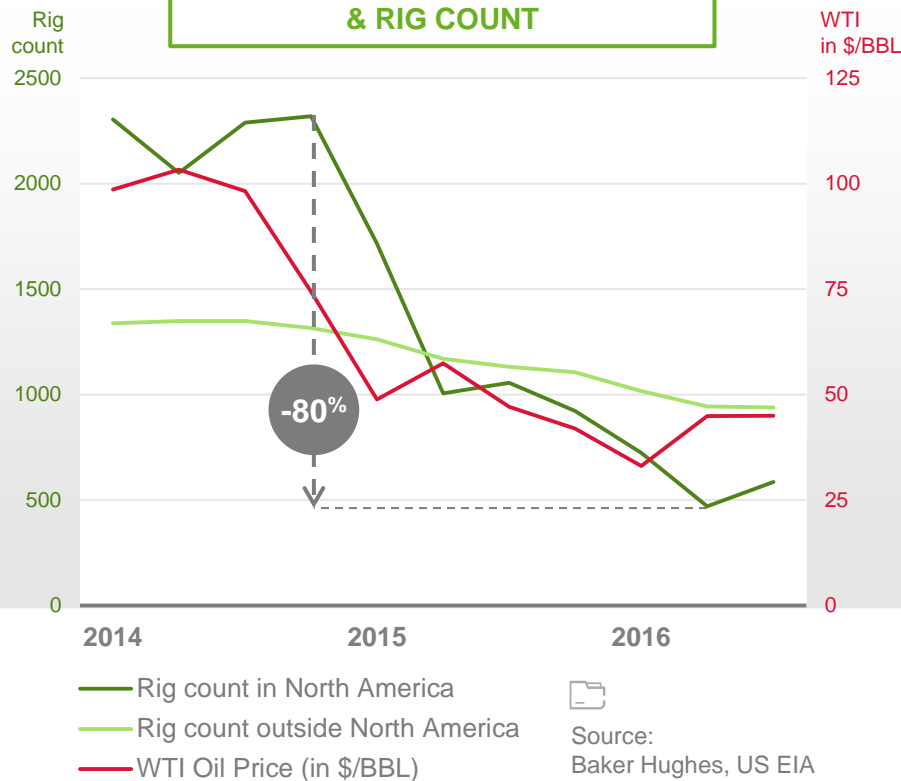
**Emmanuel Butstraen**  
President, Novecare



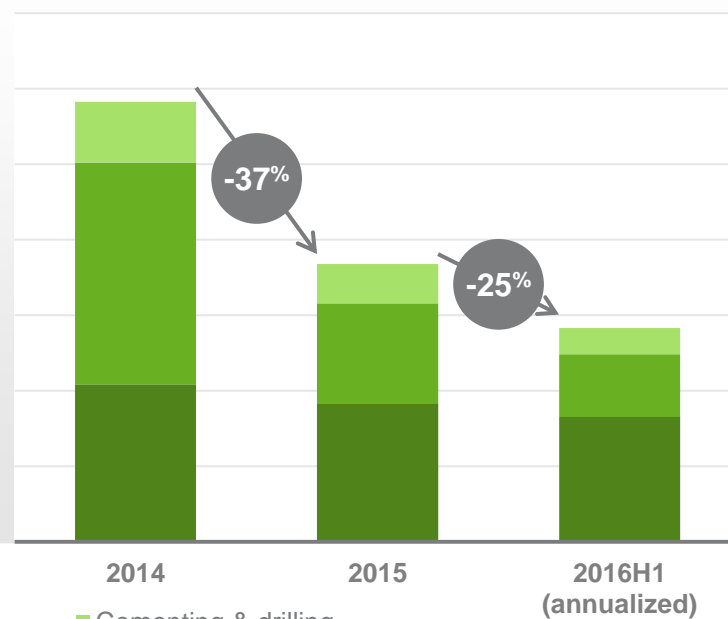
# STABILIZING OIL & GAS MARKETS



**OILFIELD MARKET CONDITIONS  
& RIG COUNT**



**GLOBAL OILFIELD  
SPECIALTY CHEMICALS DEMAND**



Decrease of fracking  
break-even point in  
North America

North American  
oilfield activity  
recovering since May

Cost constraints pushing  
customers to demand  
different chemicals mix

International market  
& production segment  
more resilient

# BROAD PORTFOLIO & CUSTOMER ACCESS ADAPTED TO NEW MARKET CONDITIONS



2015

**Market** > € 6 bn  
**Sales** ~ € 500 m



**Cementing  
& drilling**  
~ 10%



**Stimulation**  
~ 60%



**Production**  
~ 30%

## OUR SOLUTIONS

- **Broadest technology** portfolio
- “**Lab to Well**” service model
- Unique innovation & formulation **expertise**
- Adapted to **changing market conditions**

## IMPROVE YIELD & EFFICIENCY

- **Cost efficient** solutions in the North American fracking market
- **Optimum yield** solutions in high performing reservoirs

## REDUCE ENVIRONMENTAL FOOTPRINT

- **Water usage reduction** per oil barrel
- Solutions enabling **water recycling**

# BUILDING ON SOLID FOUNDATIONS & STRENGTHENING MARKET POSITION



## SOLVAY LEVERS

Unique technology  
portfolio & knowledge

Global presence  
& full market access

“Lab to Well”  
service model

## MARKET DRIVERS

Horizontal drilling expansion  
with flexible assets

Regulation on water  
& chemicals use

Growing  
energy demand

## STRATEGY

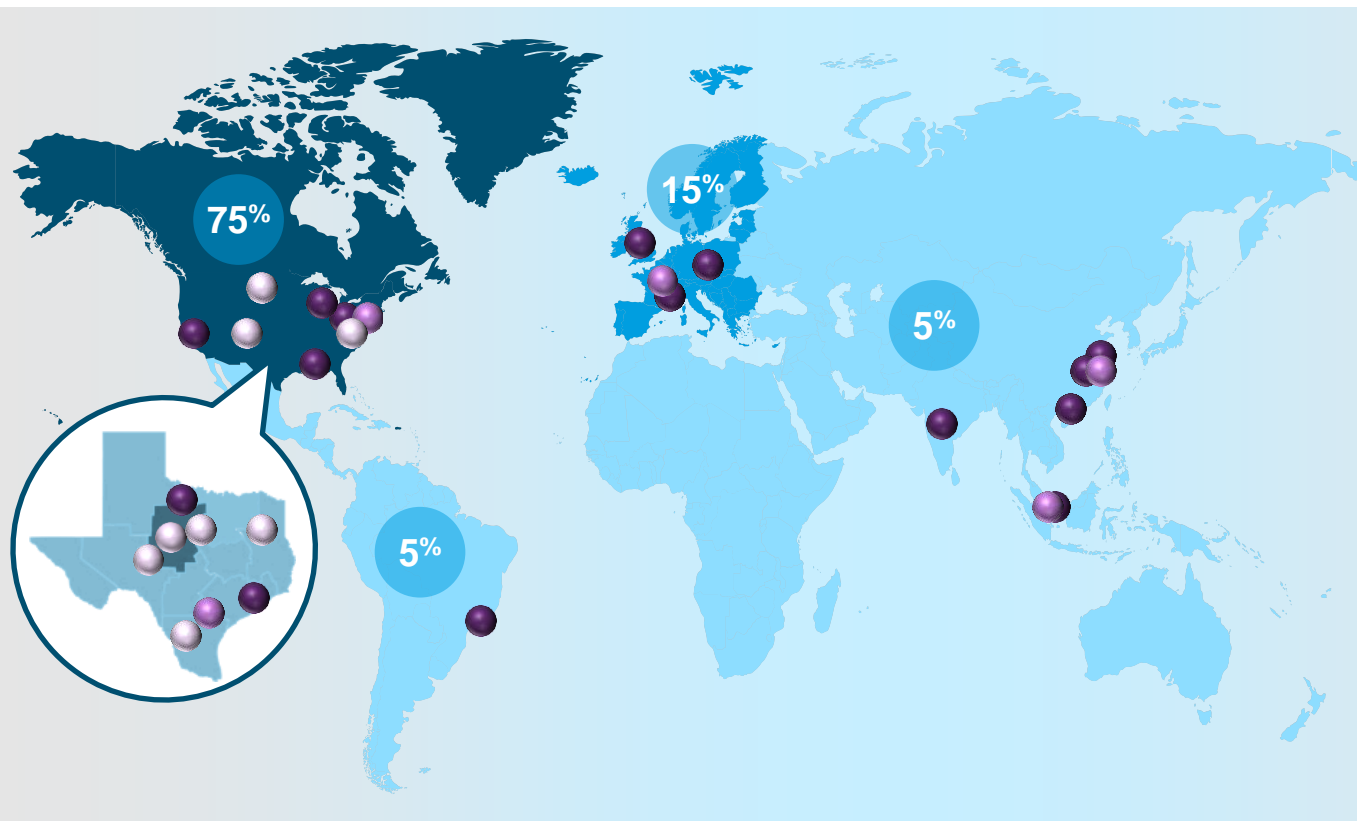
→ **Provide cost-effective tailor-made solutions,**  
adapted to changing market conditions

→ **Strong innovation set-up**  
to deliver in any segment & region

→ **Internationalize,** growing outside North America

→ **Adjust fixed cost base** to market activity

# OUR FOOTPRINT SERVING ALL CUSTOMER TYPES WORLDWIDE



→ Current sales weighted to North America

→ To grow overseas



→ Global industrial set-up

→ To serve international customer base



→ Central R&I centers

→ Formulation centers close to customer wells



Solvay 2015 oil & gas net sales distribution



● 15 plants



● 5 R&I centers  
● 8 O&G formulation centers

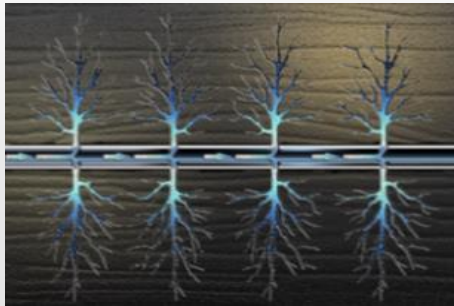
# UNIQUE INNOVATION EXPERTISE ALLOWING TO REACT TO MARKET CHANGES



Innovation  
acceleration



Resource constraints & increased sustainability demand



## FRICITION REDUCERS

**Leading  
position**

- Reduces total customer cost
- Increases salt tolerance, reducing fresh water consumption



## RHODIABLOC FL SERIES

**Additive for all  
cement types**

- Delivers strong cement bonding
- Broadens working temperature range



## NEXT-GENERATION POLYMERS

**All-in-one  
solution**

- Enables better cost in use
- Reduces complexity for operators



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**MORE  
SUSTAINABLE  
FORMULATIONS**

**FOR  
HOME & PERSONAL CARE**

**Emmanuel Butstraen**

President, Novecare

# DELIVERING ON CONSUMERS' NEEDS IN HOME & PERSONAL CARE



2015  
Market ~ € 22 bn  
Sales ~ € 500 m



Personal  
care  
~ 70%



Home  
care  
~ 20%



Institutional  
& Industrial  
~ 10%

## OUR SOLUTIONS

- **Largest technology toolbox** to respond to consumer needs
- Supported by continuous **innovation**

## IMPROVE YIELD & EFFICIENCY

- Deliver **mildness** to formulations
- **Cost-efficiency**
- Replace surfactants by **low volume** polymer technology
- Enable **efficient, less time-consuming** cleaning solutions

## REDUCE ENVIRONMENTAL FOOTPRINT

- **Reduce water** usage in all segments
- **Replace ingredients** (sulfate & silicone)
- Demand for **bio-sourced solutions**

# OUR STRATEGY TO GROW BEYOND GDP



SOLVAY  
LEVERS

Broad  
technology portfolio

New assets  
in new territories

Strong  
customer relationships

MARKET  
DRIVERS

Demand for  
sustainable solutions

Health & well-being

Growing population

## STRATEGY

→ Expand competitive **global presence**

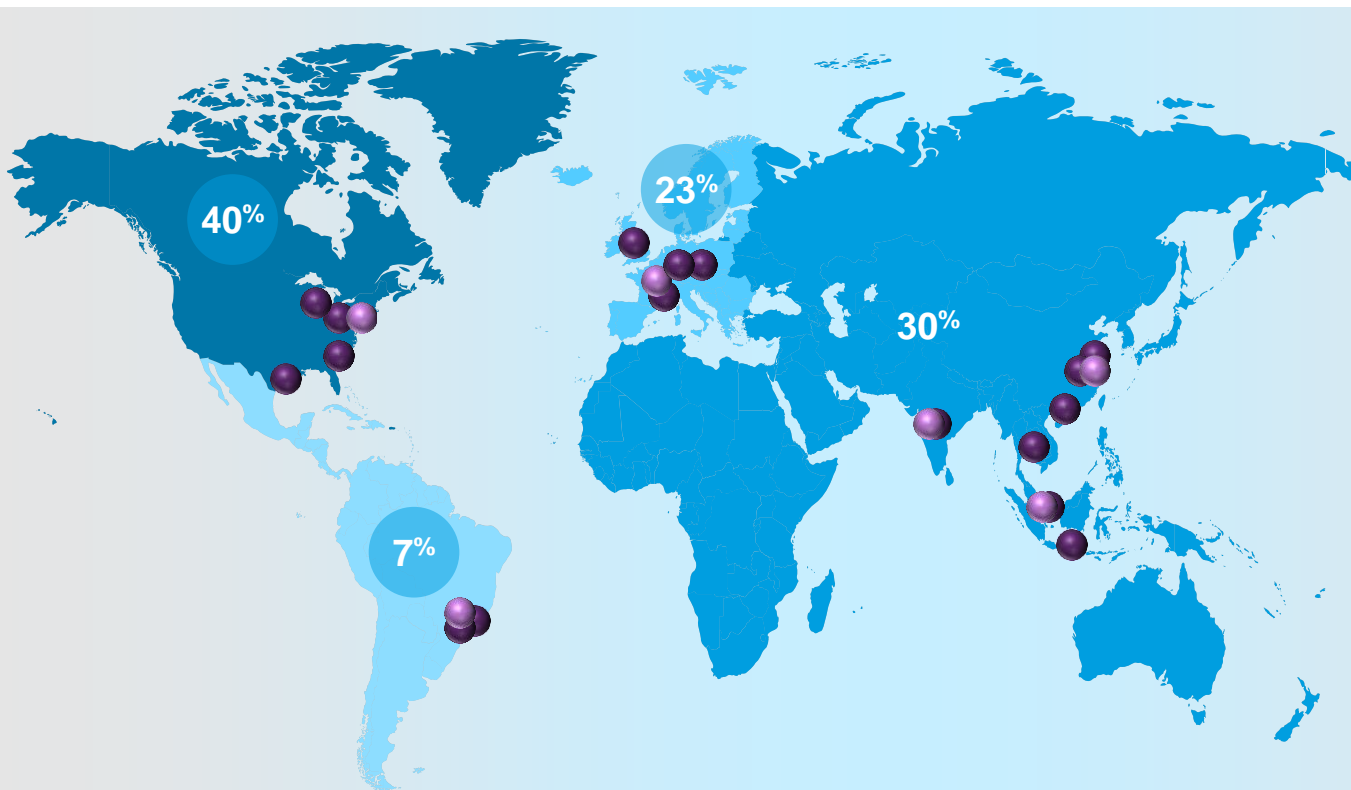
→ Access **all customer types**  
with **complete** formulation & application expertise

→ Focus innovation in Personal Care  
on **niche segments** with **best value-add potential**

→ Focus innovation in Home Care  
with **breakthrough cost-effective technology**



# COMPETITIVE FOOTPRINT TO SERVE GLOBAL & REGIONAL CUSTOMERS



→ Balanced sales weighted in 3 regions  
→ To improve in Latin America



→ Worldwide organization



→ R&I labs in close customer  
→ Proximity for joint developments



Solvay 2015 HPC  
net sales distribution



● 17 plants



● 6 R&I centers

# BROAD TECHNOLOGY PORTFOLIO UNDERPINNING INNOVATION



Resource  
constraints & increased  
sustainability demand



Evolving demography & consumer behaviors



## HAIR CARE PLATFORM

**Next-generation guar  
polymers & derivatives**

- Improve delivery of  
actives & additives
- Deliver hair repair,  
protection &  
conditioning



## EZSOFT LAUNDRY

**Breakthrough  
softener technology**

- Great performance  
& cost-effective  
solution
- Improves  
sustainability profile



## ACTIZONE

**Long lasting  
biocidal effect**

- Longer disinfection  
protection
- Enables better  
hygiene in surface  
cleaning



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# MORE SUSTAINABLE FORMULATIONS

**FOR  
MINING**

**Michael Radossich**

President, Technology Solutions

# TECHNOLOGY SOLUTIONS AT A GLANCE

## TECHNOLOGY SOLUTIONS



€ 0.6 bn  
Net sales 2015



~ 1,700  
Headcount



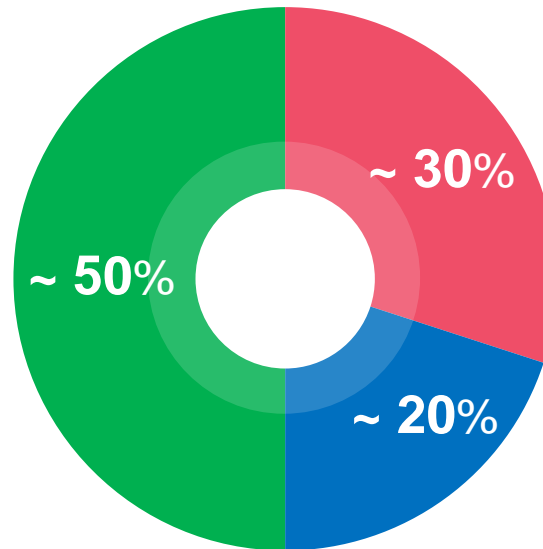
12  
Industrial sites

3

main market  
segments

### Mining solutions

Copper separation  
Alumina processing  
Other minerals separation



### Phosphorous specialties

Agro  
Pharma  
Electronics

### Additive technologies

Agro  
Building & construction  
Automotive

% of 2015 Net Sales

# WHAT WE DO IN MINING



2015  
**Market** ~ € 1 bn  
**Sales** ~ € 350 m



**Copper**  
~ 60%



**Alumina**  
~ 25%



**Other  
minerals**  
~ 15%

## OUR SOLUTIONS

- **Broad** product portfolio
- **Applications expertise**
- Constant stream of **innovative**, proprietary products & **technology**

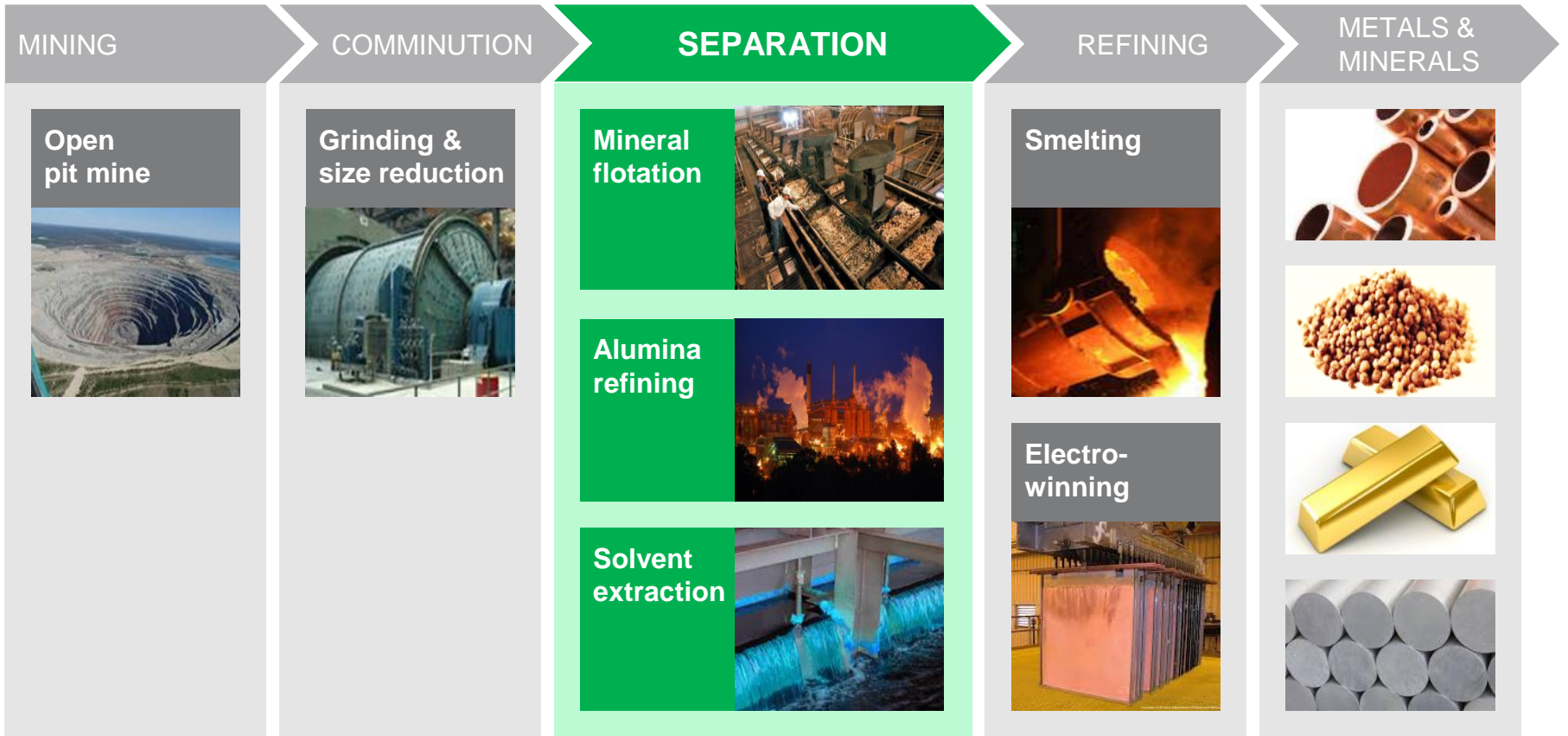
## IMPROVE YIELD & EFFICIENCY

- Increase **selectivity in separation** of metals/minerals, reducing total cost
- Enable **processing of declining quality** ore grades

## REDUCE ENVIRONMENTAL FOOTPRINT

- Improve **energy efficiency** of mine sites
- Reduce **fresh water** usage
- More **eco-friendly** reagents

# STRONGLY POSITIONED IN THE MINING INDUSTRY VALUE CHAIN



Optimizing  
customer process



Maximize  
selectivity

Reduce  
process variability



Improve  
throughput & yield

# FOCUS ON FLOTATION PROCESS

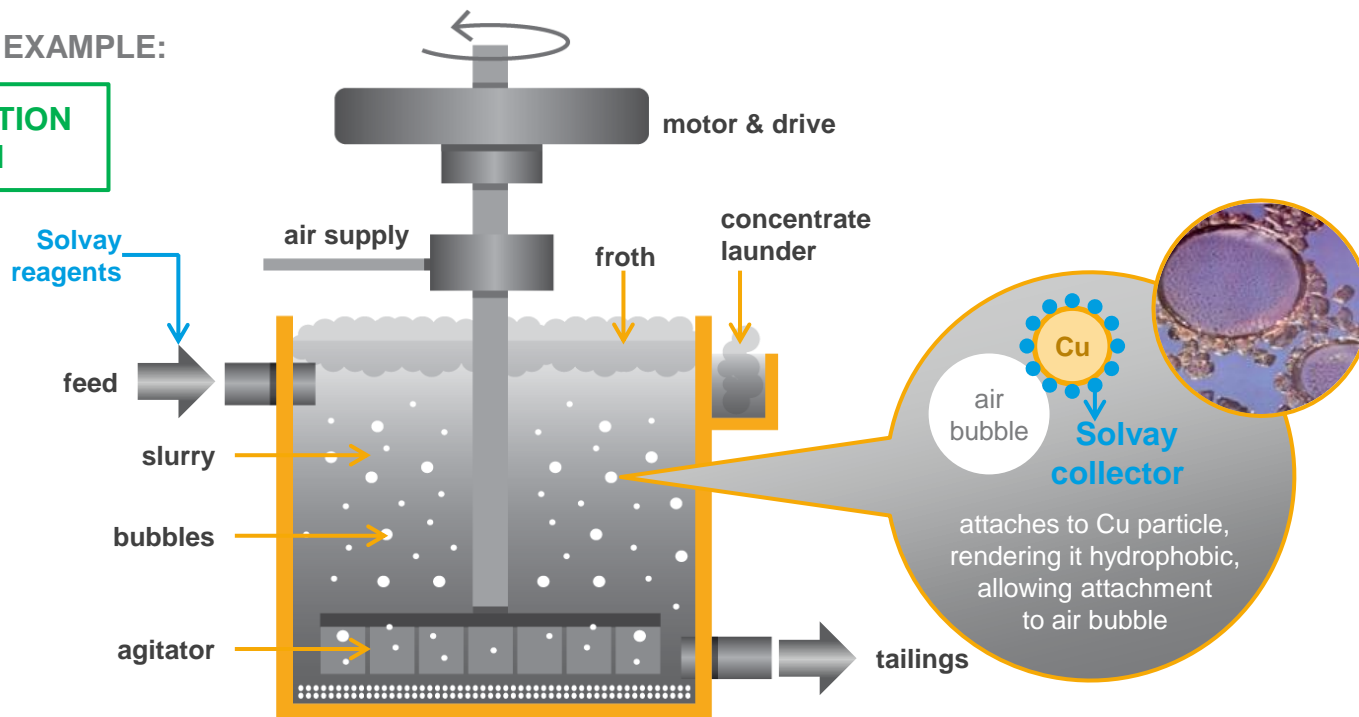
## SOLID-LIQUID SEPARATION



### SEPARATION

SEPARATION PROCESS EXAMPLE:

#### SOLID-LIQUID SEPARATION IN COPPER FLOTATION



Typical reagent benefits resulting in 4-12x ROI

# MARKET LEADER WITH CUSTOMIZED MARKET APPROACH



## TECHNOLOGY LEADERSHIP

<b>Innovation</b>	Strong history of constant streams of valuable new technology
<b>Product line</b>	Largest specialty mining reagent supplier in the world
<b>Formulation expertise</b>	Expert systems & modeling capability to develop unique reagent blends
<b>Application knowledge</b>	Global technical experts to optimize & service customer operations

## CUSTOMER PARTNERSHIP

Resulting in

## UNIQUE PRODUCTS & SERVICES

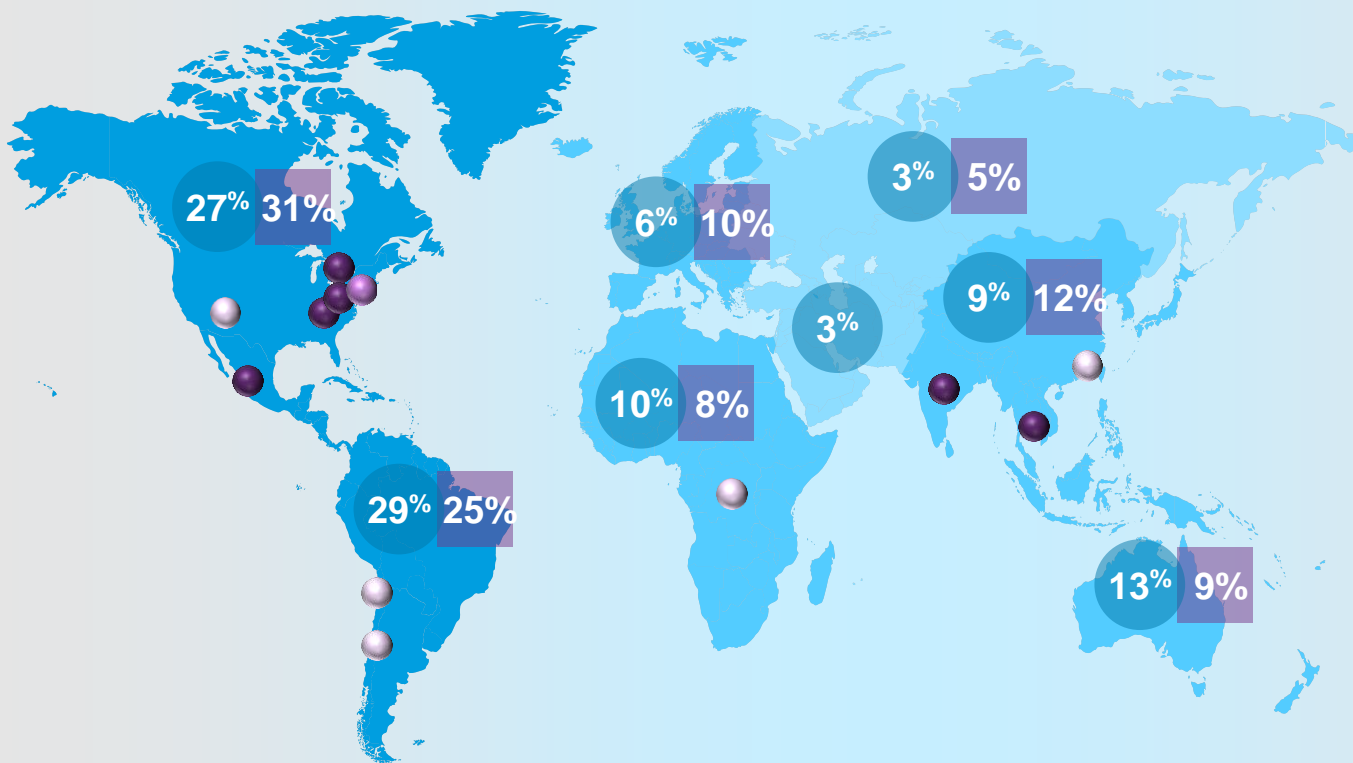
for refinery design, build & ongoing operations

	INNOVATION	PRODUCTS	SERVICES
<b>Solvay</b>			
<b>Clariant</b>			
<b>Nalco</b>			
<b>SNF</b>			
<b>Chinese</b>			
<b>BASF</b>			

Leadership position with full capabilities  
 Strong position with majority of offerings needed  
 Market player participation in select areas  
 Partial capabilities  
 Lack of meaningful presence or offerings



# COMPETITIVE FOOTPRINT SERVING GLOBAL CUSTOMER BASE



→ Selling worldwide



→ Consolidated industrial footprint

→ Robust supply chain servicing global customers



→ Centralized R&I with regional tech labs

→ Sales & technical support close to customers



# OUR STRATEGY FOR GROWING BEYOND GDP IN MINING



SOLVAY  
LEVERS

Market  
adjacencies

New customers:  
competitor share

Existing customers:  
share of wallet

MARKET  
DRIVERS

Ore quality decline

Metal demand

## STRATEGY

→ Capture new **mines**

→ Capture new **geographies**

→ Capture new **metals/minerals**

## Supported by INNOVATION

- Unique technology & services
- New sales ratio 15 - 20% target

# BROAD TECHNOLOGY BASE ALLOWS FOR INNOVATIVE SOLUTIONS



Evolving demography  
& consumer behaviors



Resource constraints & increased sustainability demand



## EMERGING METALS Li

- Increase process speed & efficiency
- Reduce extraction cost

↓  
**ADJACENT  
MARKETS**



## CHINA FLOCCULANT FOR ALUMINA

- Enhance performance under varying conditions
- Reduce processing cost

↓  
**NEW  
GEOGRAPHIES**

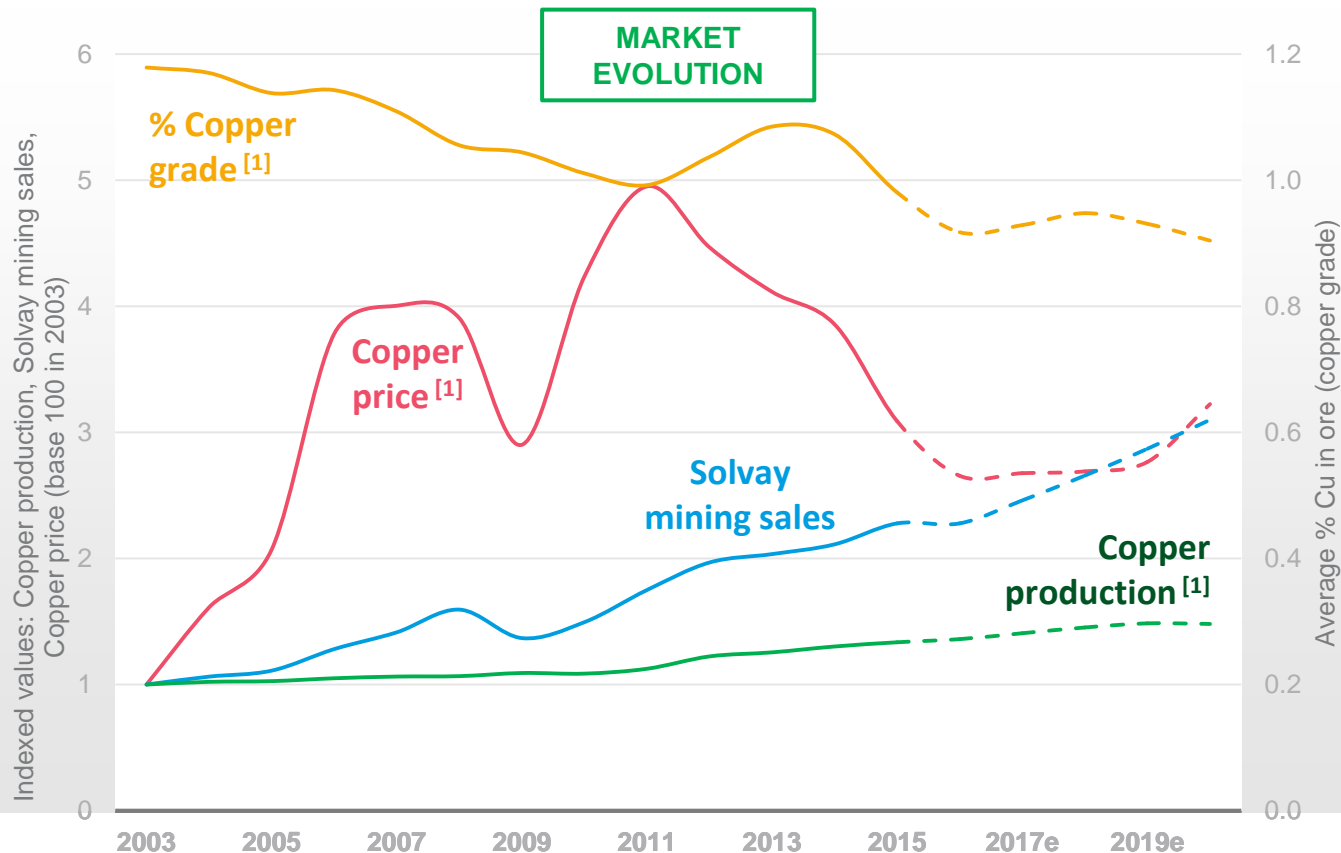


## NASH REPLACEMENT

- Reduce toxic exposure to operators, local community & environment

↓  
**ENVIRONMENTAL  
IMPACT**

# SOLVAY STEADY GROWTH IN THE FACE OF MARKET DRIVERS



→ Proven business model of technology leadership and customer partnerships

→ Strategy set to grow in new mines, new geographies and adjacencies

→ Leverage expanded footprint & capabilities, to accelerate growth

[1] Source:  
Wood Mackenzie

# MORE SUSTAINABLE FORMULATIONS

A photograph of a young child standing on a rocky shore, looking out at a calm lake. The sun is setting or rising, creating a golden glow on the water's surface, which reflects the sky and the surrounding mountains. The child is standing on dark, wet rocks, and their reflection is visible in the water. The overall mood is peaceful and contemplative.



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# MORE FUTURE

**SPEAKERS' RESUME**



**Vincent  
De Cuyper**

*Member of the Executive Committee*

## Vincent De Cuyper

began his career at Solvay in 1987 and has held various positions in production and project management when sent on international assignments in France, Thailand and Argentina. In 1999, he was appointed Manager of the Vinythai plant in Map Ta Put in Thailand and, subsequently, Managing Director of Vinythai PCL. He was Group General Manager of the Chemicals Sector from 2006 until 2012.

Since 2006 he has been a member of the Executive Committee of Solvay.

Vincent De Cuyper holds a degree in Civil Chemical Engineering awarded by the Catholic University of Louvain-la-Neuve and a Master degree in Industrial Management.





## Emmanuel Butstraen

*President, Novecare*

### Emmanuel Butstraen

served in BASF for 17 years prior to joining Solvay, holding several positions, his last being Group Vice President for Strategic Marketing worldwide. Prior to that role, Emmanuel headed BASF's Agrochemicals operations in France for the Agrochemicals Divisions, following a variety of roles in commercial and marketing for the Fine Chemicals businesses. These roles included European Marketing Director for its Agrochemicals business, Sales Director for Animal Nutrition and Sales Engineer for Animal Nutrition & Veterinary Pharma.

He joined Rhodia in 2009 to head Silcea, which consisted of the Rare Earth Systems, Silica and Aroma Performance businesses. Emmanuel Butstraen has been leading Solvay's Novecare Global Business Unit since 2010.

Emmanuel Butstraen, a French national, graduated as an Agricultural Engineer in 1989 and obtained a Masters' degree in Business Administration in 1991, both from the University of Lille.





## Michael Radossich

*President, Technology Solutions*

### Michael Radossich

Prior to the creation of Solvay's Technology Solutions GBU, Michael Radossich spent 20 years with Cytec in positions of increasing responsibility. He began his career as a project engineer before moving into an operations leadership role within Cytec's manufacturing organization. Michael also has extensive experience in global sales and business management. In 2003, he began working for Cytec's Performance Chemicals business. Michael went on to serve as vice president for various facets of this business group.

From 2009-2011, Mike returned to roles in engineering and manufacturing, before joining Cytec's Safety, Health and Environment organization as vice president in 2011. From 2012-2015, he served as President of Cytec Specialty Chemicals and was a member of Cytec's Executive Leadership Team. From 2013 until Cytec's acquisition by Solvay, Mike was also a Cytec officer.

Michael holds a B.S. in Chemical Engineering from Villanova University and a Master's Degree in Business Management from Fairleigh Dickinson University.

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