



Cleantech Forum **Europe**

Antwerp | May 14-16, 2018



Cleantech Forum **Europe** | Antwerp

Welcome to our 14th Cleantech
Forum Europe: Thinking Circular,
Thinking Differently, Thinking
Next Generation Industries



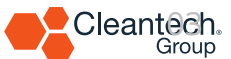
Cleantech Forum **Europe** | Antwerp

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RICHARD YOUNGMAN
CEO, Cleantech Group

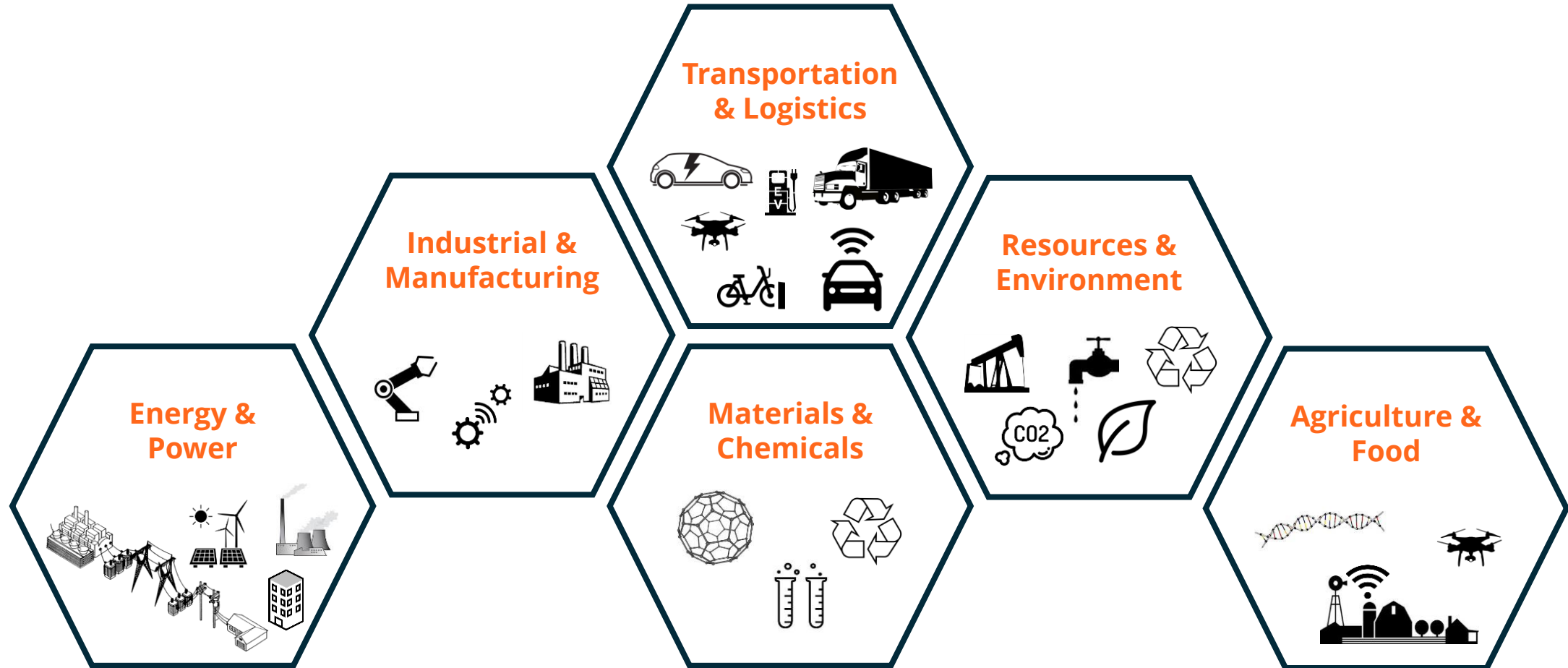
#cleantechEUROPE



Thinking Circular, Thinking Differently, Thinking Next Generation Industries

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Innovation Ecosystems vary considerably.

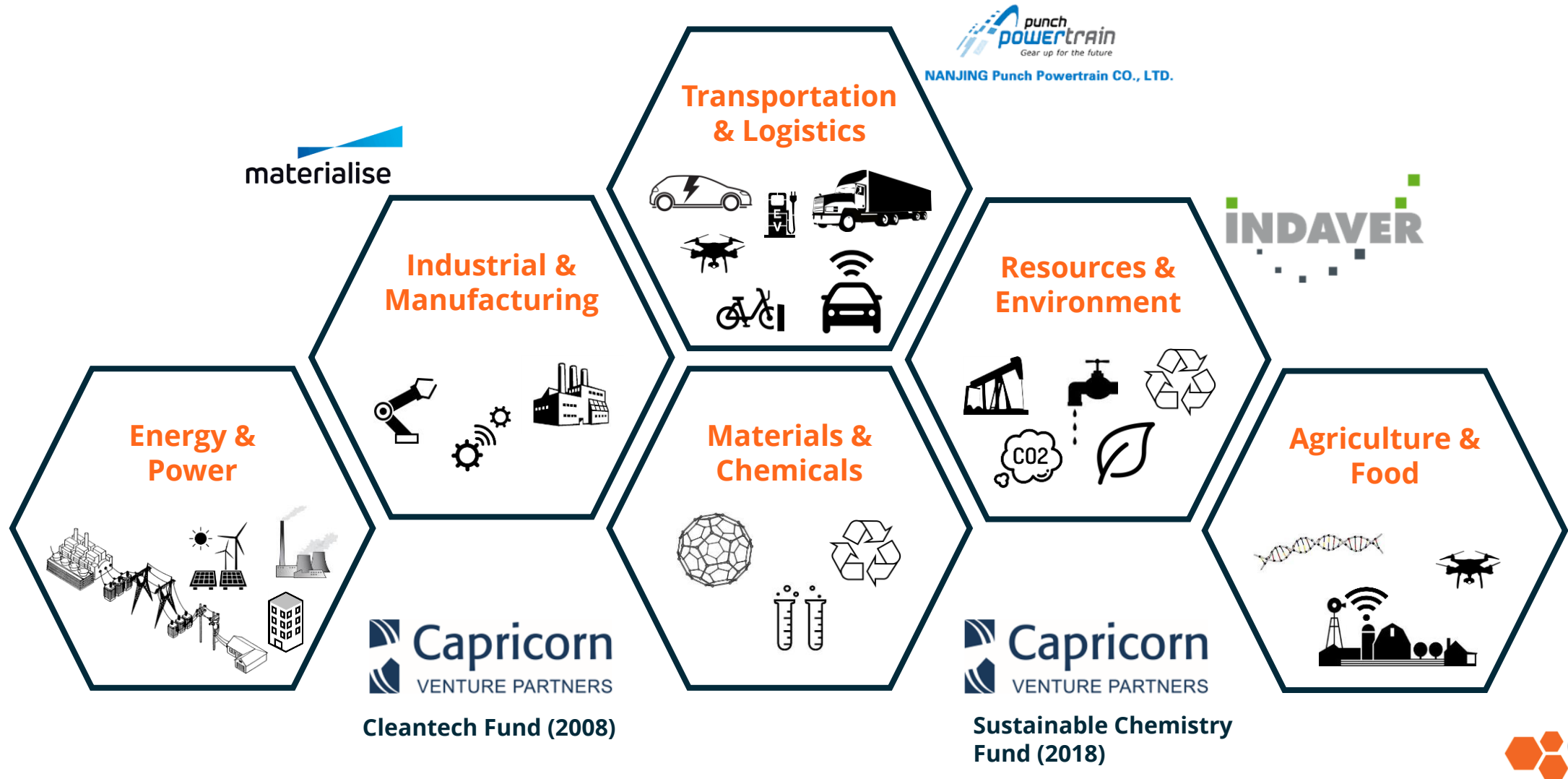
Home to Europe's largest chemical hub, look to this one for deep chemistry expertise



Thinking Circular, Thinking Differently, Thinking Next Generation Industries

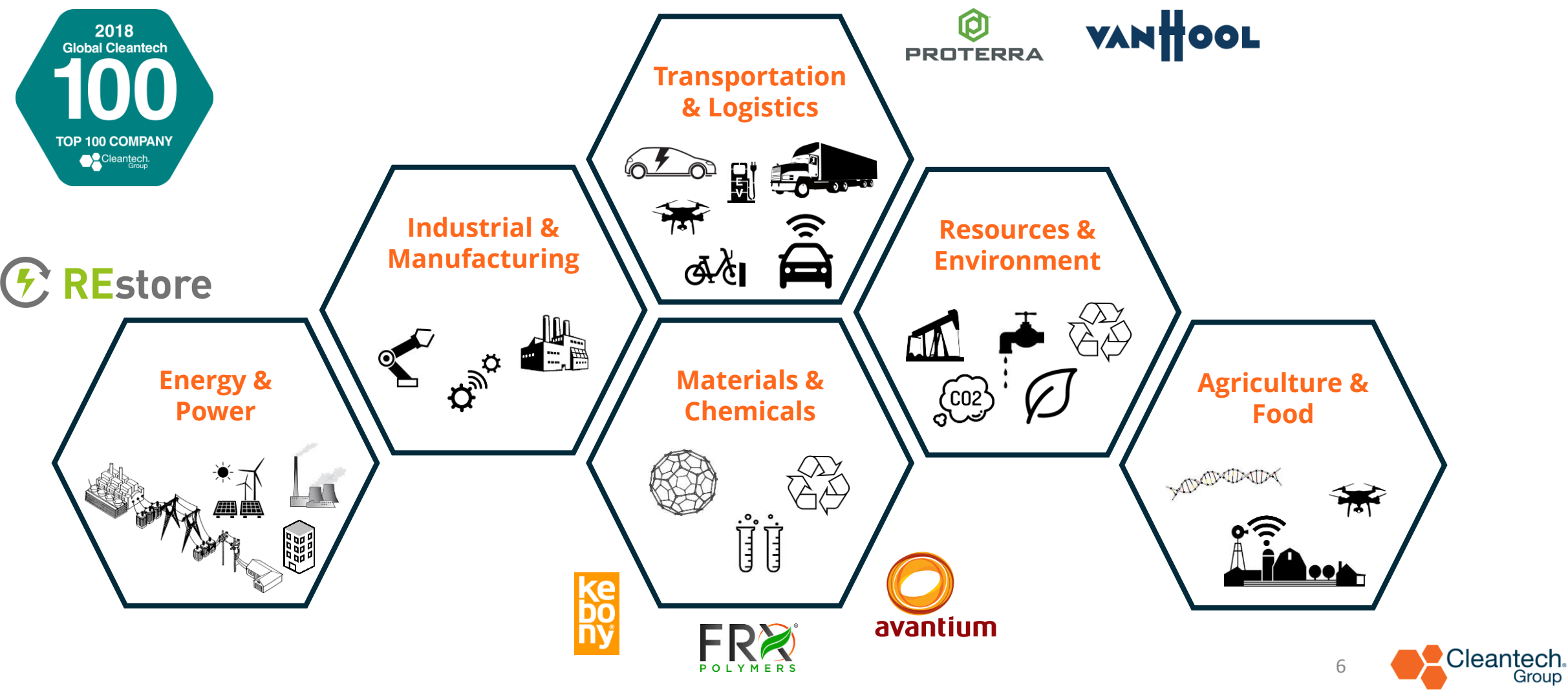
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Innovation Ecosystems vary considerably.

Look to this one for pioneers, and quality over quantity



Thinking Circular, Thinking Differently, Thinking Next Generation Industries

Innovation Ecosystems vary considerably.
Our visitors this week should pay attention to its openness to international connections and partnerships





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CARINE VAN HOVE

Managing Director, Flanders Cleantech Association

Thinking Circular, Thinking Differently, Thinking Next Generation Industries

Next-Gen Industries – Chemicals and Maritime/Shipping

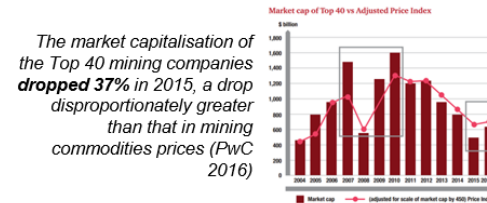


From the Archives....

Disruptive Forces will expand to more industries yet

Three to Watch in the next 15

1. **Mining** companies to respond to pressure to innovate
2. Next Generation Transportation Technologies to Permeate **Shipping** in the Drive for Efficiency
3. De-centralization, Localization and Personalization to visit the **Chemicals** World. Supply Chains to be Re-Invented by bio-chemicals and 3D Printing



Only **27%** of CEOs across the chemicals sector agreed that 3D printing was "strategically important" to their organizations (PwC 2015)

Thinking Circular, Thinking Differently, Thinking Next Generation Industries

Next-Gen Industries – Chemicals and Maritime/Shipping



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PORTXL
world port accelerator

SOLVAY
asking more from chemistry®

#cleantechSF | Cleantech Group

Thinking Circular, Thinking Differently, Thinking Next Generation Industries

Next-Gen Industries – Chemicals and Maritime/Shipping

Next-Gen Models & Thinking



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The market capitalisation of the Top 40 mining companies **dropped 37%** in 2015, a drop disproportionately greater than that in mining commodities prices (PwC 2016)



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Thinking Circular, Thinking Differently, Thinking Next Generation Industries

Next-Gen Industries – Chemicals and Maritime/Shipping

Next-Gen Models & Thinking



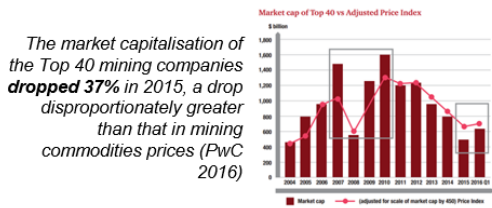
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Opening Reception Co-Hosts





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CHRISTIANE MALCORPS

Country Manager for Belgium and Global Head of
Facility Excellence, SOLVAY

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SOLVAY

asking more from chemistry®

Let's create more future
Christiane Malcorps



Antwerp

**Cleantech Forum
Europe**

May 14-16, 2018



WE ARE AN ADVANCED MATERIALS AND SPECIALTY CHEMICALS COMPANY



24,500
employees¹



61
countries¹



124
industrial
sites¹



21
major
R&I centers¹



0.65
occupational accidents at
Group sites per million
hours worked²



€ 10.1
billion of
net sales¹



€ 2.2
billion of
EBITDA¹



5.53
greenhouse gas
intensity
kg CO₂ eq. per € EBITDA

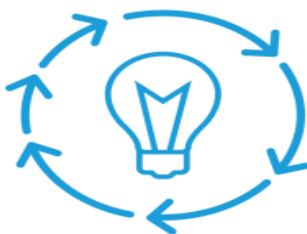


49%
sustainable
solutions
Group net sales

1. 2017 underlying results

2. MTAR: Medical
Treatment Accident
Rate

WE ARE BUILDING A MODEL OF SUSTAINABLE CHEMISTRY TO MEET THE CHALLENGES OF SOCIETY



OUR ACTIVITIES ARE STRUCTURED ALONG 3 MEGATRENDS



Evolving demography
and consumer behavior



Innovation
acceleration



Resources constraints
and demand for sustainability

WE CREATE VALUE FOR OUR CUSTOMERS



AUTOMOTIVE AND AEROSPACE

Cleaner mobility



LIGHTWEIGHTING

Lightweight materials (high-performance polymers, advanced composite materials, etc.) for lighter and greener vehicles ([Solvavite™](#), [Tegracore™](#)).

POWERTRAIN EFFICIENCY

Products (fluorinated elastomers, polymers, etc.) improve the motor longevity ([Nocolok® Flux](#), [Tecnoflon®](#)).

ELECTRIFICATION

Flame-retardant materials and heat-resistant engineering plastics improve the lifespans of hybrid and electric vehicles ([Solef® PVDF](#), [LiTFSI salts](#), [Amodel® PPA](#)).

GREEN TECHNOLOGIES

Catalytic materials and highly dispersible silica, limit polluting emissions and fuel consumption ([Premium SW](#), [Optalys®](#)).



**We help manufacturers meet the
challenges of sustainable mobility.**

AGRO, FEED AND FOOD

*Sustainable living,
environmental protection*



Our solutions help crop and livestock farmers and food processors to operate responsibly, qualitatively, and sustainably.

↑ AGRICULTURE

Environment-respecting formulations, protect crops and improve performance ([AgRHO™](#), [PROCrop™](#)).

FEED

Silica, hydrogen peroxide, and sodium bicarbonate-based solutions meet the quality, food safety and productivity requirements of this market ([Bicar® Z](#), [Paramove® solution](#)).

FOOD

Flavors and polymers contribute to safer and healthier food ([Vanifolia™](#), [Solvera® PFPE](#), [Ixa® PVDC](#)).

ELECTRICAL AND ELECTRONICS

*Connectivity
and energy efficiency*



Our miniaturization technologies and advanced materials open up new perspectives for manufacturers.

DESIGN AND CONNECTIVITY

Solid, high temperature-resistant polyamides for slim and stylish smartphones ([Kalix® HPPA](#)).

SAFETY

Flame-retardant products ([Amodel® PPA](#)) at the forefront of electrical safety.

PROCESS EFFICIENCY

← Hydrogen peroxide, a reference for manufacturers ([Interox® Pico](#)), improves the production efficiency of semiconductors.

BUILDING AND CONSTRUCTION

*Sustainability
and energy performance*



Our high-performance solutions take part in the development of safe, healthy and sustainable housing.

ENERGY PERFORMANCE

Solutions used in energy-saving triple-glazed windows and in foam wall insulation for low-energy housing (Soda Solvay®).

PROTECTION AND SAFETY

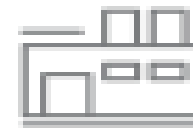
Corrosion-resistant, UV-resistant and flame-retardant materials for greater safety and longevity in buildings (Rhodoline®, Cyasorb Cynergy Solutions®).

RESOURCE MANAGEMENT

High-performance plastics ensuring the robustness of water supply systems and drinking water quality (Radel® PPSU).

INDUSTRIAL APPLICATIONS

Efficiency and value



We help manufacturers get more out of their equipment in a more responsible way.

INDUSTRIAL AND PROTECTIVE COATINGS

Wide range of binders, solvents pigments and additives. Biodegradable solvent ([Rhodiasolv® IRIS](#)) used industrial cleaning, paints and coatings, etc.

3D PRINTING

3D printing polymers generating fast and inexpensive prototypes ([KetaSpire® PEEK](#)).

METAL AND SURFACE TREATMENT

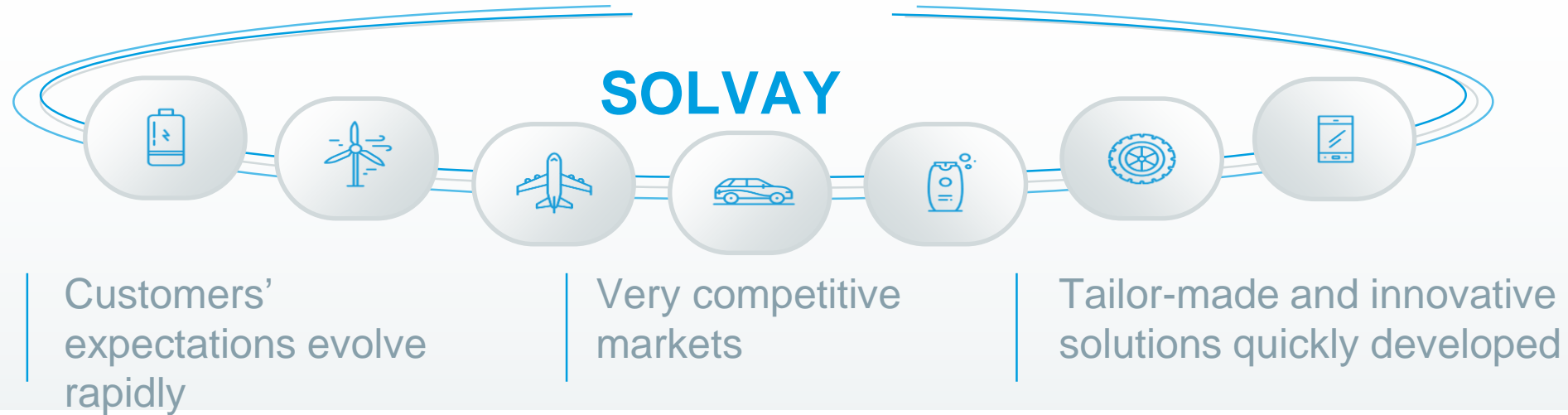
Environmentally responsible solutions improve performance of finished products ([Rhodoclean®](#), [Augeo® SL191](#)).

INDUSTRIAL EQUIPMENT PROTECTION

Materials resistant to corrosion, high temperatures and chemical aggression ([Solef® PVDF](#)).

MEETING CUSTOMERS' NEEDS WITH TAILOR-MADE SOLUTIONS

TRANSFORMATION
FOR GROWTH



Solvay Suez Alliance solutions for water treatment in China



Solvay and Henkel to team up Sustainable Guar Initiative



U.S. Solvay solar farm opening addressing customer demand for sustainable energy

How do we drive our strategy to sustainability?

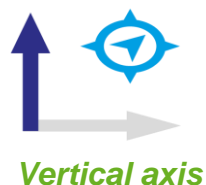


SPM Methodology

In a nutshell

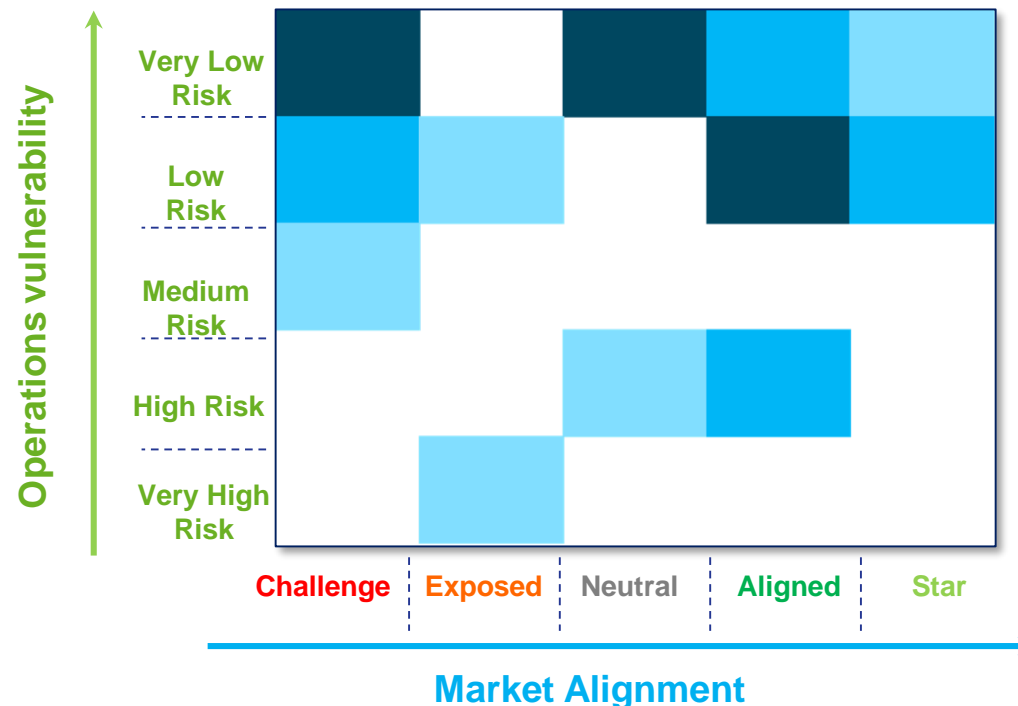


The SPM gives dynamic vision of product's sustainability risks and opportunities in their business environment. Decision-makers are informed on the contribution of Solvay's products to sustainability considering both:



Their environmental manufacturing footprint and correlated risks and opportunities

Quantitative assessment by 19 impact indicators



How in their applications they bring benefits or faces challenges from a market perspective

Qualitative assessment by 60 questions on social and environmental topics

INNOVATION AND SUSTAINABILITY DRIVE OUR STRATEGY



INNOVATION CREATES THE CHEMISTRY OF THE FUTURE



Ernest Solvay
invents the
process for
producing soda
ash

1863



Solvay is the
first industrial
multinational
operating
simultaneously
in the US and
Europe

1880



Solvay invents
the plastic bottle for
mineral waters

1960



Solvay
acquires
Rhodia

2011



Solvay flies
around the world
with Solar Impulse

2015

Solvay
acquires
Cytec

1878

Solvay innovates
in social welfare
(paid vacations, social
security, 8-hour day)



1911 & 1927

The congresses
bring together the
greatest physicists
of their time



1990

Solvay invents
precipitated silica
for green tires



2013

1st Chemistry
for the Future
Solvay Prize



WE INNOVATE FOR MORE SUSTAINABLE CHEMISTRY

RESPONSIBILITY

Life Cycle Analysis methodology to assess projects

- Assess all R&I projects
- Develop eco-designed products for sustainable solutions
- Conceive and implement eco-efficient processes

OPEN INNOVATION

At the heart of global innovation systems to access external knowledge

- Collaborating with academia worldwide
- Investing in venturing funds and start-ups
- Partnering with the industry (customers, research consortia)
- EC's Environmental Funding

EXCELLENCE

Market proximity and long-term growth perspectives

- 83% of the Group's R&I investments are directly managed by the GBUs
- Corporate R&I leads Solvay into new growth territories, incubates emerging competencies and enhances innovation excellence


Innovation
in figures


2,100
employees


284
patent applications


€ 325 million
R&I efforts

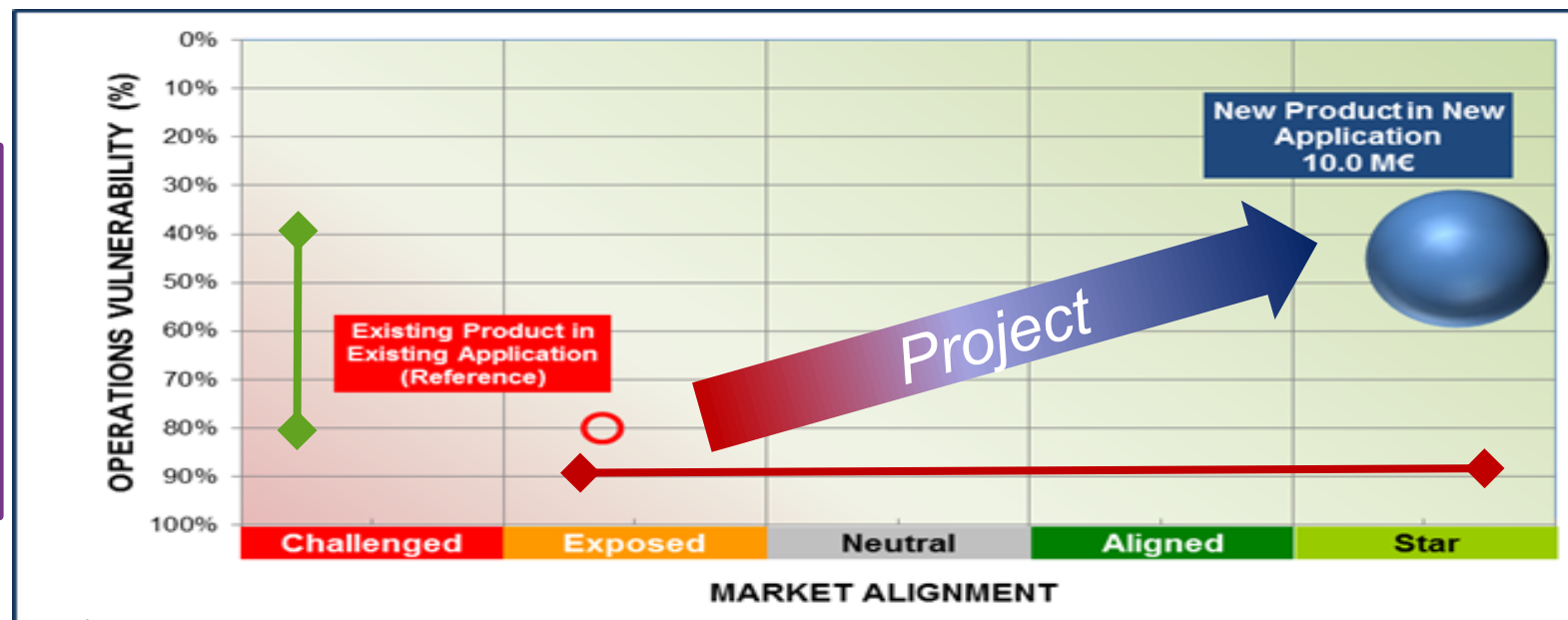
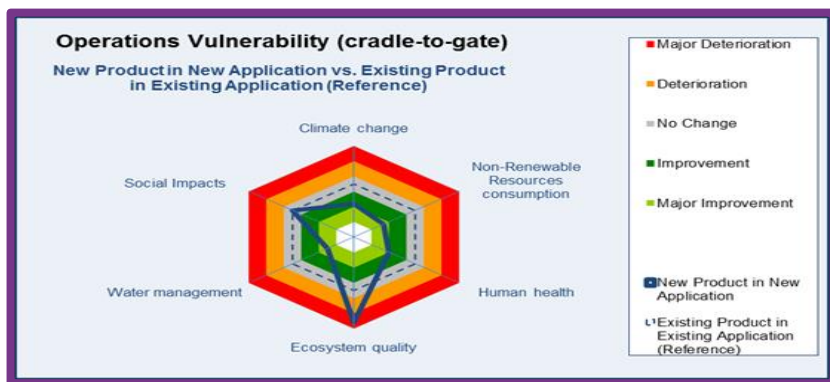

€ 80 M
allocated to funds
and start-ups

2017
underlying results

Apply SPM to Innovation projects

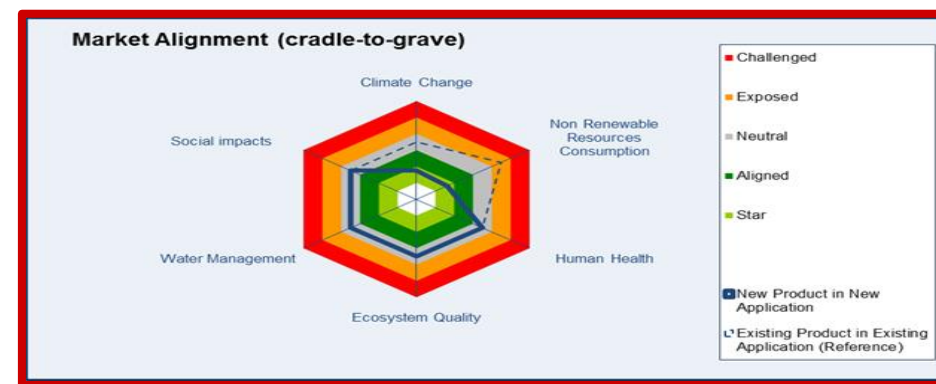
Manage project portfolio

Guide for Eco-design



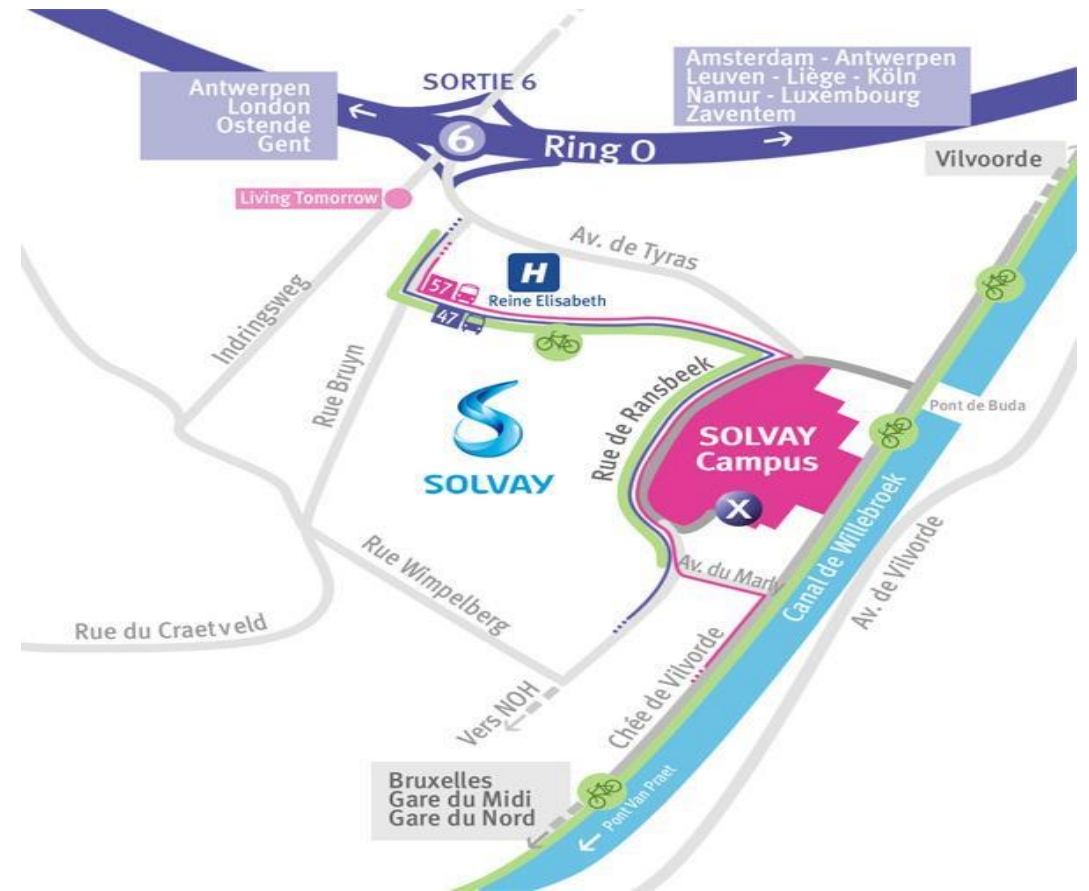
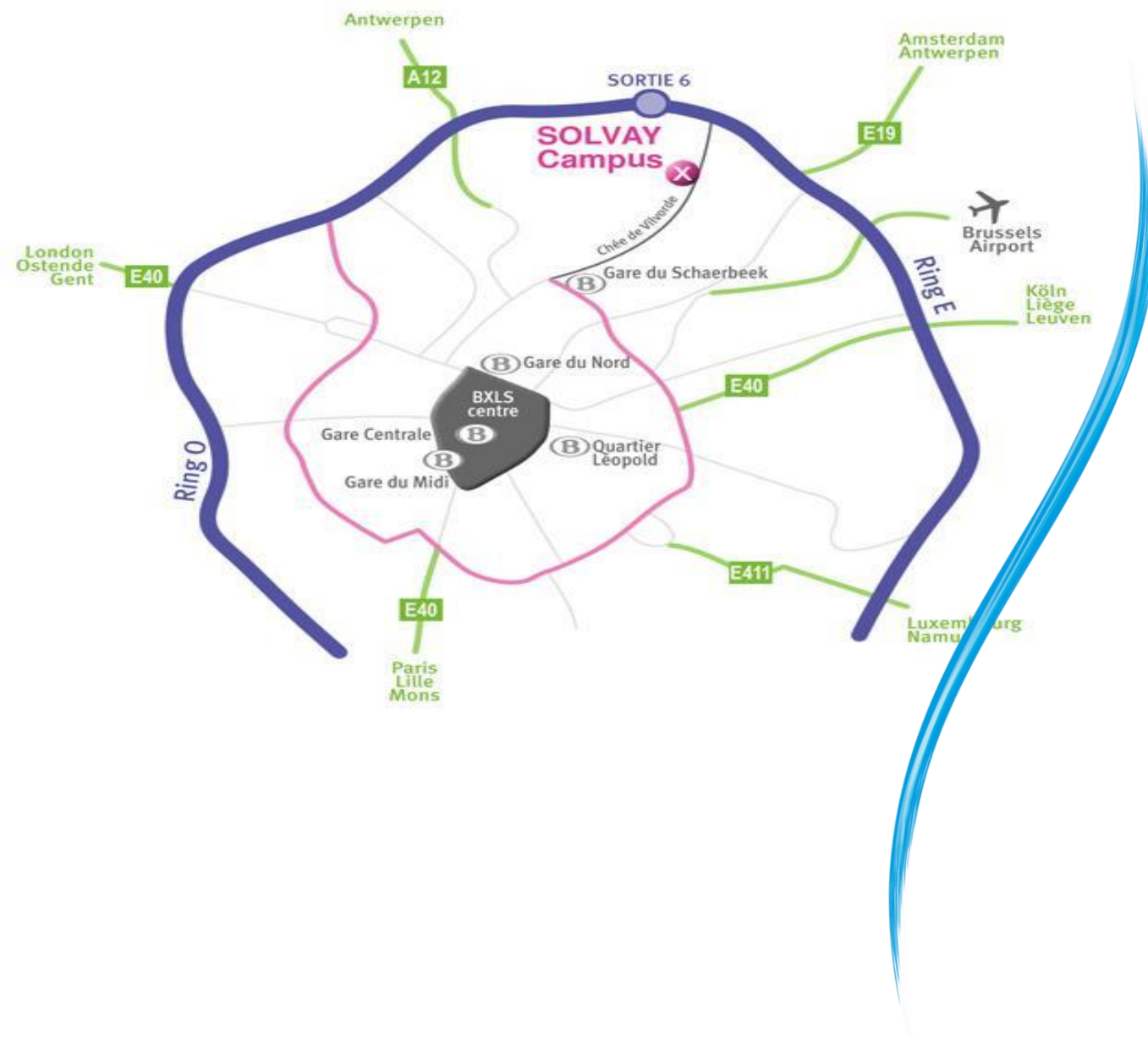
SPM applies simultaneously and consistently to:

- The "starting point" of the project (the reference)
- The "expected output" of the project (the target)



Our roots are in Belgium

A large white rectangular sign with the words "SOLVAY" and "CAMPUS" in bold, dark, three-dimensional letters. The sign is set against a background of a modern building with a grid-like facade and several tall chimneys under a blue sky with some clouds. There are trees and a green lawn in the foreground.



Tomorrow: a complete transformed and open Campus



EMBODY THE FUTURE AND CULTURE OF SOLVAY



New Head Office in Brussels
with
the creation of a material
science application center

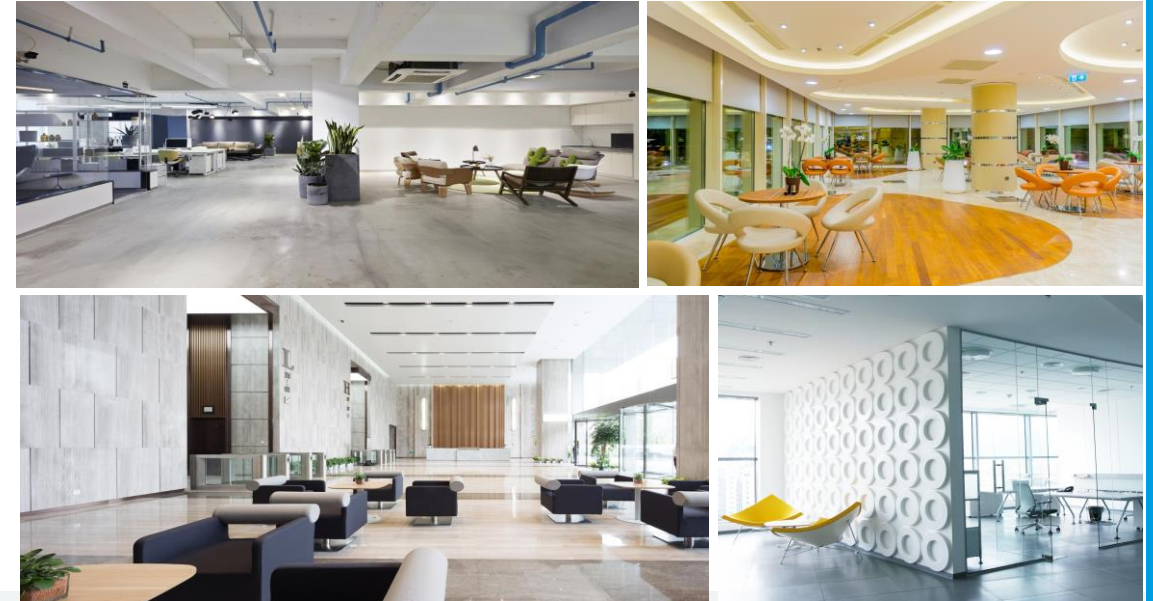


Better Collaborate
and be more efficient

Foster communication
& showcase innovation

New image towards all
stakeholders

TRANSFORMATION
FOR GROWTH



www.solvay.com





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CEES-WILLEM KOORNEEF
Director, PortXL Antwerp



PORTXL
world port accelerator

“THE FIRST PORT ACCELERATOR IN THE WORLD, BRINGING HARD-TECH AND DIGITAL INNOVATION TO MARITIME, TRANSPORT & LOGISTICS, CHEMICALS & REFINERY AND ENERGY SECTORS”





OUR FOCUS SECTORS



Energy



Transport & Logistics



Chemicals & Refinery

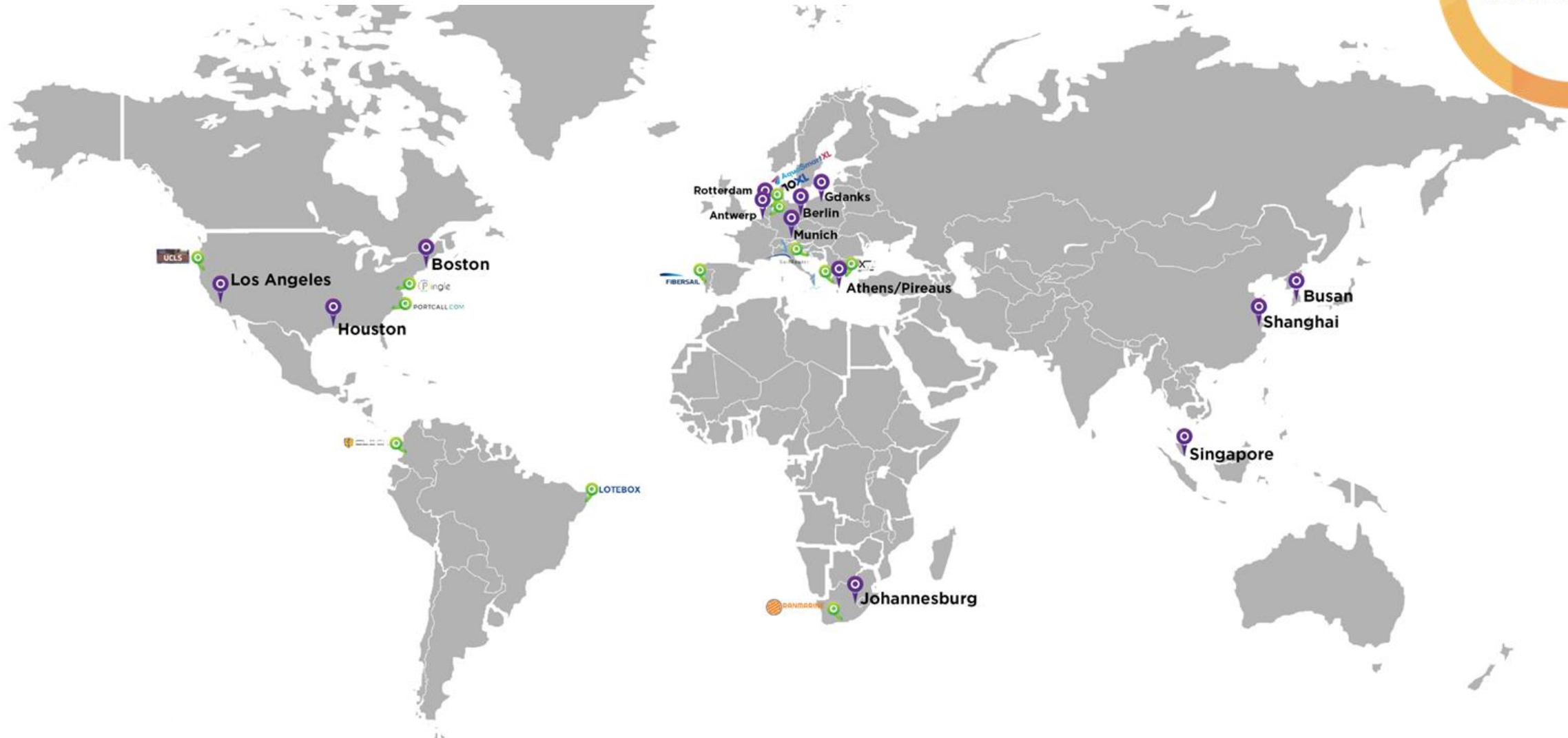


Maritime

INNOVATIONS ADDRESSING PORT CHALLENGES



OUR INTERNATIONAL NETWORK



OUR STARTUPS

10XL

 AquaSmart**XL**



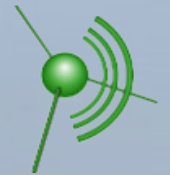
PORTCALL.COM



Oceanos



Parable
learn by immersion



LOTEBOX

The background of the image shows a wide river or harbor. In the foreground, a large green and white cargo ship named 'SERENITY' is moving from left to right, leaving a white wake. In the background, a large white cable-stayed bridge with a single pylon is visible. To the left of the bridge, there are several tall, modern buildings. To the right, there are more buildings, including a tall, curved one. The sky is blue with some light clouds.

PORTXL

world port accelerator

www.portxl.org/be/



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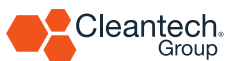
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RIEN OTTO

Founder & CEO Dutch aWEARness

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THE FUTURE IS NOW !!!!! CIRCULAR ECONOMY TRAVEL

DUTCH AWEARNESS

HOW WE CLOSE THE LOOP LEARNING BY DOING:

No 1

CE = 20% PR + 80% MA

AND WASTE BECOMES MATERIAL

No 2 :SHARING KNOWLEDGE

No 3 :PARTNERSHIPS

No 4:TRANSPARENCY WHO/WHAT AND WHERE

No5:INNOVATION

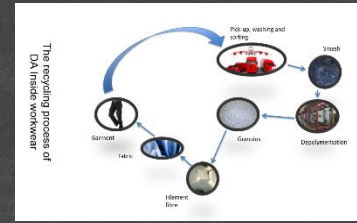
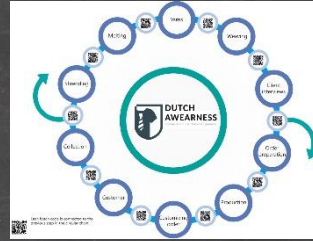
No 6:SHARED RESPONSIBILITY

No 7:CONSUMER IS USER

No 8:CREATIVE COCREATION

No 9:EXCHANGE OF MULTIPLE VALUES

No 10 :PERFORMANCE BASED CONTRACTING



WHAT DO WE DO PRACTICAL /SOLUTIONS

DESIGN AND PRODUCE 100% RECYCLABLE GARMENTS

TEST MARKET VALIDATION

DESIGN AND MANAGE SUPPLY CHAINS

DEVELOP NEW BUSINESS MODELS

CONTROL THE CIRCULAR CHAIN

CREATE ECO-EFFECTIVE INNOVATIONS

NEW RECYCLE TECHNOLOGIE



SOLUTION FOR OLD CLOTHING URBAN

MINING

CLIFF

ENVIRONMENTAL SAVINGS

60% CO₂

100% WASTE

The success shows what you do,
what you make, stop talking about circular economy,
make products, sell them and make it normal !!!!

WITH CCMS WE MANAGE THE CHAIN

(CIRCULAR CONTENT MANAGEMENT SYSTEM),

WE FOLLOW MANAGE OUR SUPPLY CHAIN MATERIALS AND

PRODUCTS IN THE PRODUCTION PROCESS.

WE MEASURE AND REPORT THE ENVIRONMENTAL IMPACT OF THE

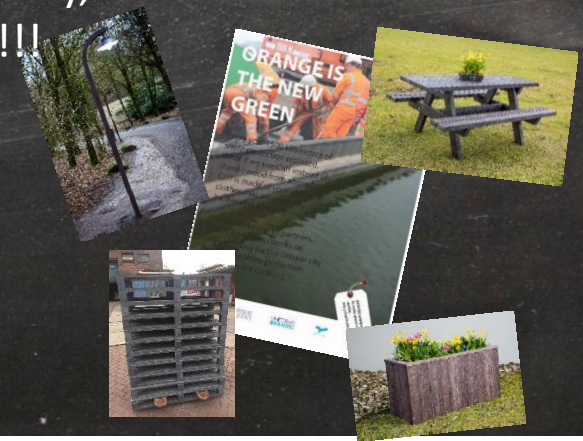
PRODUCTS WE MAKE, SO THAT CONSUMERS CAN SEE IT.

WE SAVE PER RAIN SUIT

98 KG CO₂

163 L WATER

13,96 EUROS SOCIAL COST





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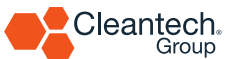
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CAROLINE BASTIAENS

Vice Mayor for Culture, Economy, City Maintenance & Property Management, City of Antwerp

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Glimpses of Tomorrow's Future In Action Today: Flemish Flavor, Global Implications

You have the chance to join **4 of the 8 single-speaker workshops** (each 20 mins long).
The format is intended to be conversational, informal and interactive. Join us upstairs!



Time/Room	Gorilla Room 1	Gorilla Room 3	Gorilla Room 4	Gorilla Room 5
	Chemistry-as-a-Service	Next-Gen Industry in Action Today	Circular Economy in Action Today	Bringing you Green Chemistry Today
11:00am-11:20am	DNCP	Finindus/ArcelorMittal	Indaver	Harsonic
<i>5 min transition</i>				
11:25am-11:45am	Derbigum	Exypnos	ISVAG	Oleon
<i>5 min transition</i>				
11:50am-12:10pm	DNCP	Finindus/ArcelorMittal	Indaver	Harsonic
<i>5 min transition</i>				
12:15pm-12:35pm	Derbigum	Exypnos	ISVAG	Oleon



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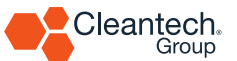
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PAUL DE BRUYCKER
CEO, Indaver

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Leading the field in sustainable waste management



We seek to close material loops in a low-carbon and energy-efficient way.

This is the only way to sustain prosperity and well-being in this world.

Paul De Bruycker
CEO Indaver



Cleantech Forum **Europe** | Antwerp

Next: 6:00 PM - 7:30 PM
WELCOME RECEPTION

Co-hosted by:



ATYPICAL
ANTWERP



Port of
Antwerp

