

asking *more*  
from chemistry®



**SOLVAY**

asking more from chemistry®



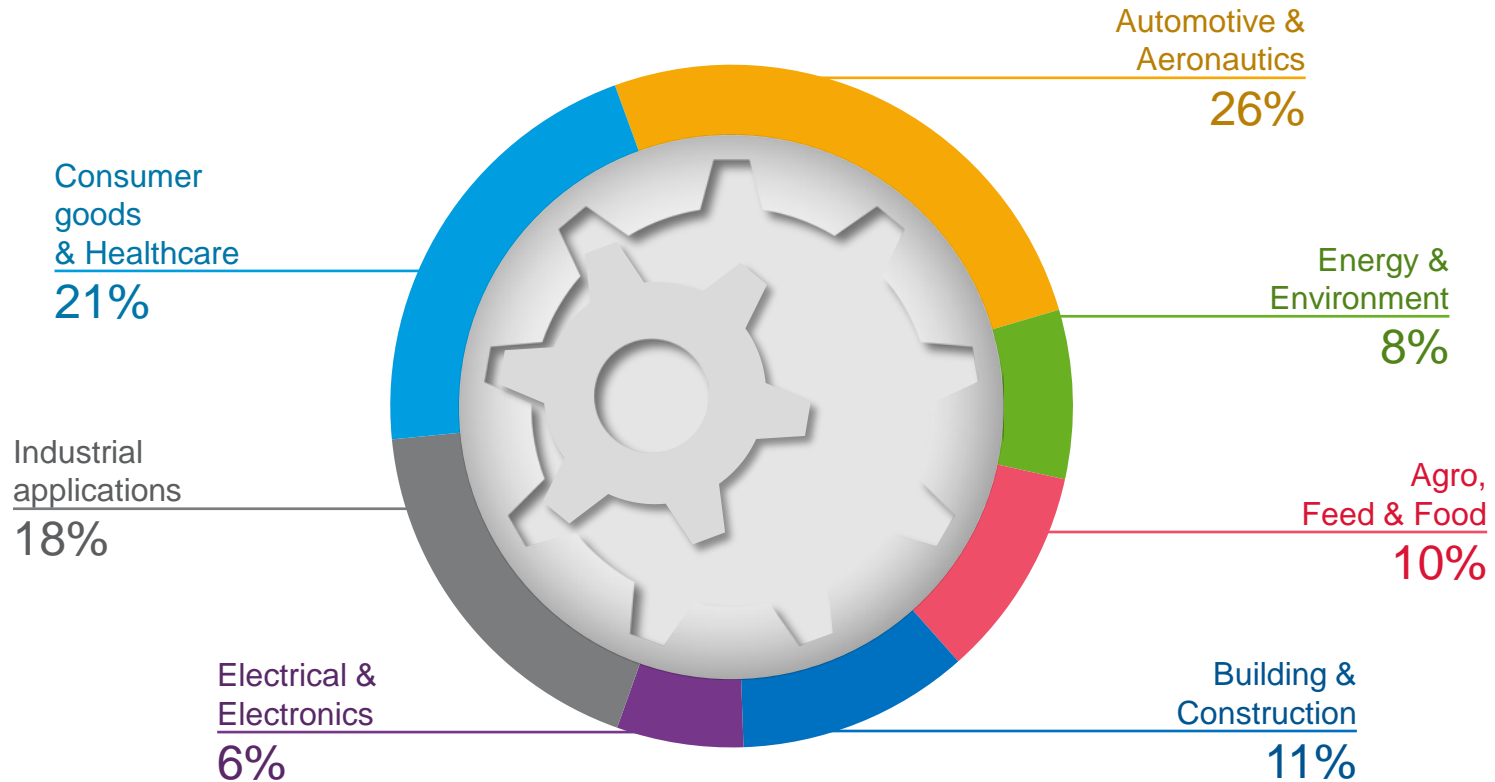
# Solvay's view on materials efficiency

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*Chief Executive Officer  
President of the Executive Committee*

**9 June 2016**

# Solvay offers chemical solutions and materials to a very broad range of industries



Pro forma 2015 figures  
incl. Cytec

# Climate change is the key driver in the quest for system efficiency in Solvay's materials innovation

Need to lower emissions and energy consumption

- transport
- energy
- construction

Lightweighting

Energy efficiency & storage

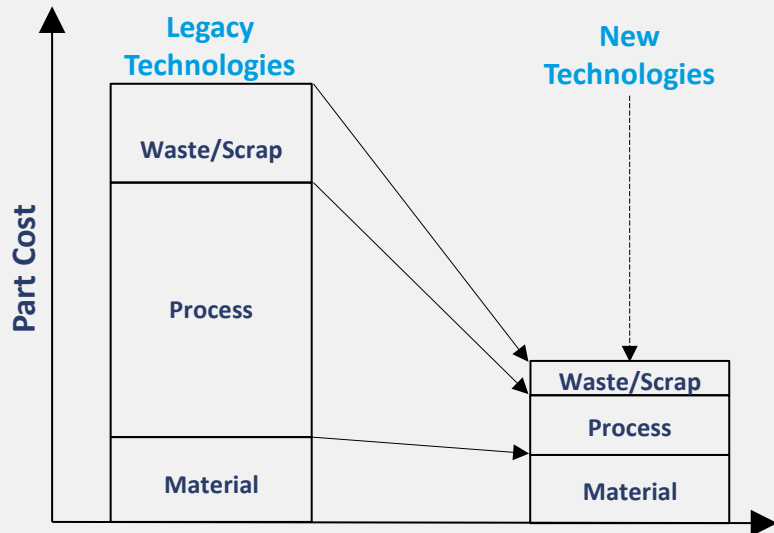
Electrification

Green & clean technologies



# Solvay's new material solutions enable our customers to meet the climate challenge at affordable cost

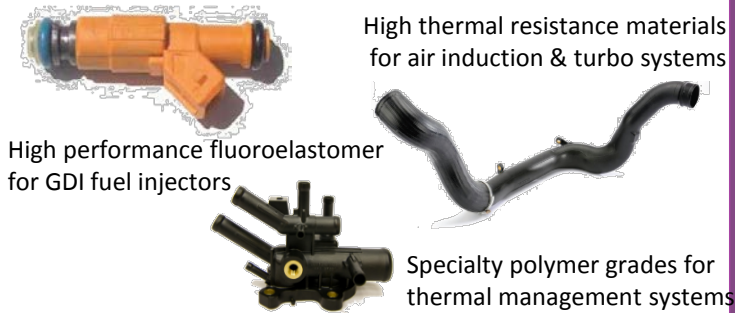
- Integration of design, material technologies (specialty polymers, composites...) and processes: **design for efficiency**
- Ensure **optimal trade-off** between materials performance & efficiency, cost and sustainability



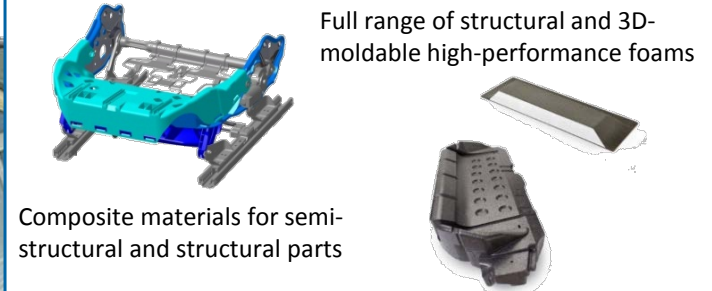


# Examples of materials efficiency in automotive

## Powertrain efficiency



## Lightweighting



## Electrification

New generation of electrolytes, salts, binders and separators to improve li-ion battery performance



A complete portfolio of products for fuel cell vehicles

## Clean and green technologies



# Solvay is pushing the limits of materials efficiency

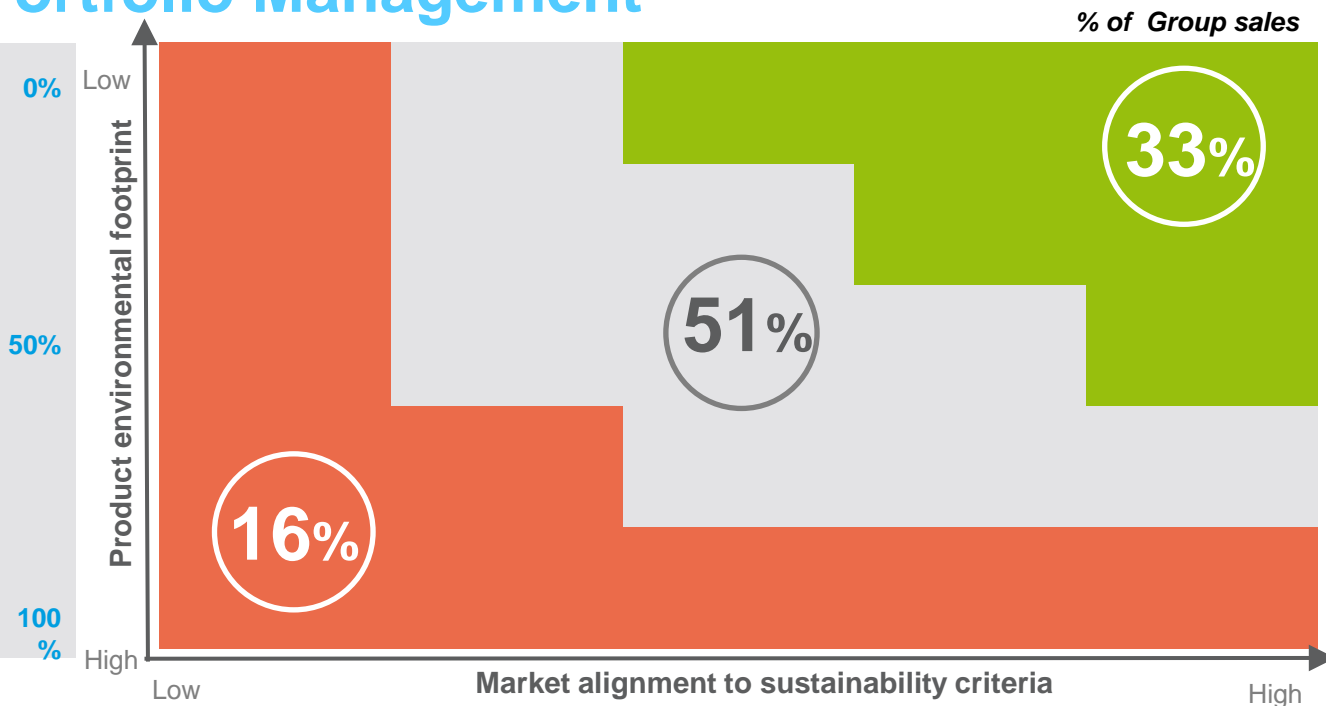


# Si2

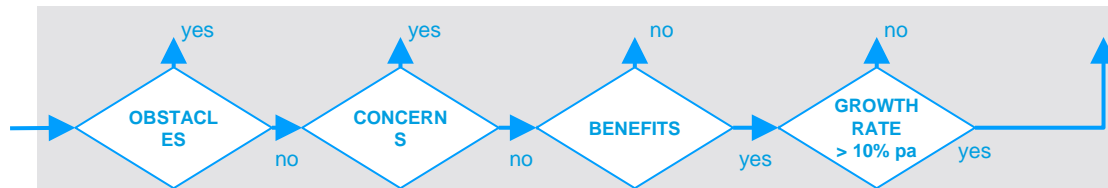
THE FIRST ROUND-THE-WORLD  
SOLAR FLIGHT

# Solvay's current tool to evaluate materials efficiency: "Sustainable Portfolio Management"

- Produce **Ecoprofile**
  - Cradle to gate, following guidelines from EcolInvent
  - Shadow costs
- **Monetize** it
- Pull it back on the average 5 year sales price



**88 %**  
of our turnover  
analyzed



- Questionnaire (yes/no, why, external authoritative evidence to support the claim)

- Factual (listed on CMR product or not)
- Not only from authorities (eco-labeling system, consumers/ customers, ...)

# The next frontier: Develop a circular economy ecosystem for materials

## Approach

- eco-design
- Repair
- Reuse
- recycle

## Challenges

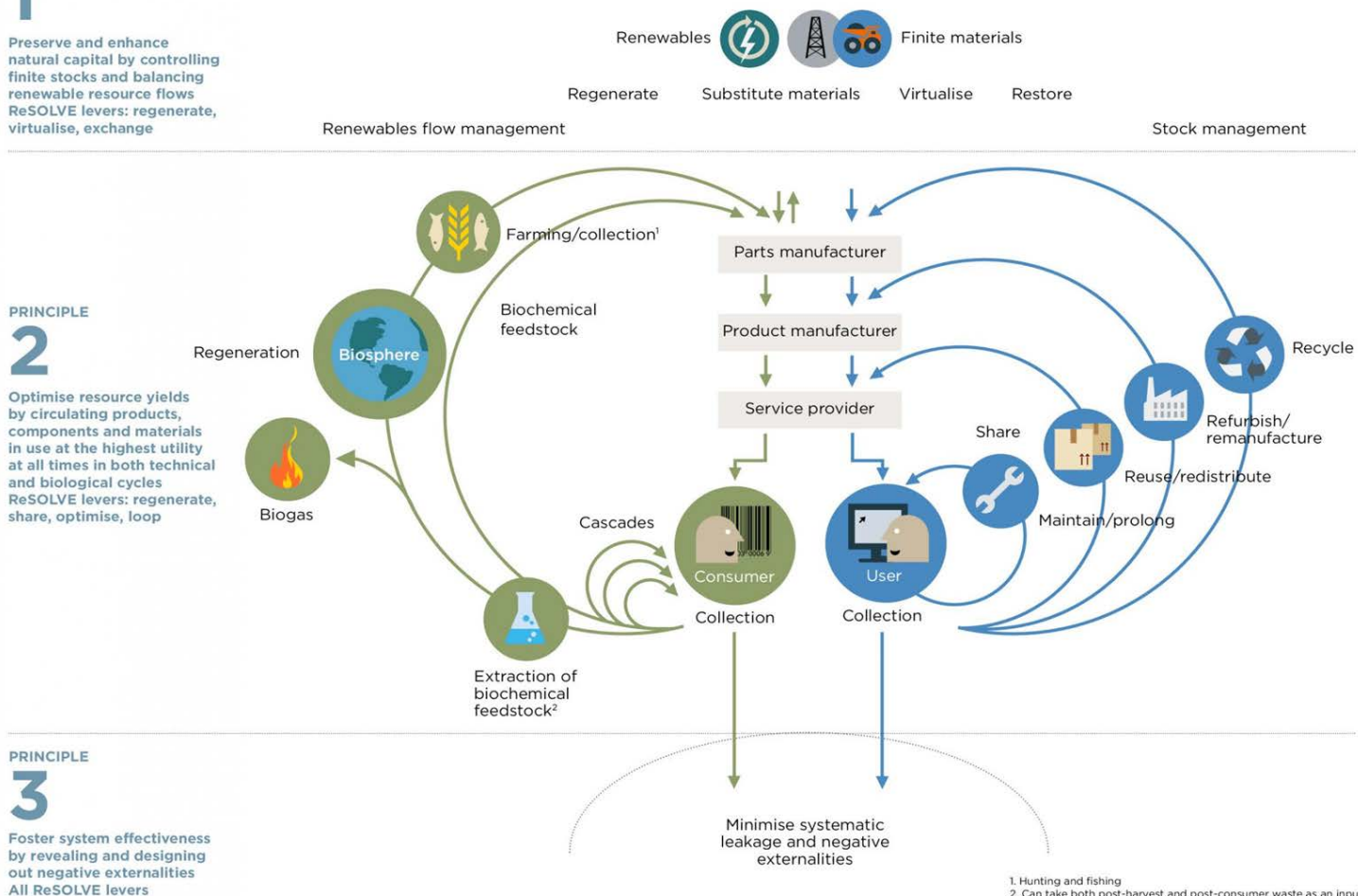
- Material efficiency may vary for each application of a given material
- Current Life Cycle Analysis is complex, takes time, and is limited to environmental aspects.

### PRINCIPLE

1

Preserve and enhance natural capital by controlling finite stocks and balancing renewable resource flows  
ReSOLVE levers: regenerate, virtualise, exchange

### Building Blocks of a Circular Economy as presented by the Ellen McArthur Foundation





# How to move forward our materials efficiency thinking

## Incremental improvements:

- Use less
- Use longer

## “No regret” indicators

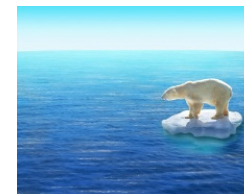
- Final product lifetime
- Quantity of material
- Usage cycles

## “Design for efficiency”:

- Use smarter  
(design for efficiency)
- Use more sustainably  
(circular economy principles vs. best alternative)

Integrated approach required with collaboration **throughout the value chain** (material suppliers, material users, system designers, final consumers)

- Involve cross sectoral entities with expertise on the matter, such as the WBCSD
- Set up an **expert working group** to define high-level KPIs for WMF2017



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