

 creating solutions together



Sustainable Chemistry – Innovation for Competitiveness

14th STAKEHOLDER EVENT, Brussels, June 16, 2016

What happened at the 2015 SusChem Stakeholder Event

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- 162 participants
- over 20.850 Twitter clicks
- Over 1.110 SusChem blog views



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Rudolf Strohmeier

Former Deputy Director General, DG Research and Innovation

- Directorate D Key Enabling Technologies
- Directorate E Health
- Directorate F Bioeconomy
- Directorate G Energy
- Directorate H Transport
- Directorate I Climate action and Resource Efficiency



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Rudolf Strohmeier

**Former Deputy Director General, DG Research and Innovation
Director General Inter-Institutional Office for Publication**



Thank you for your support and encouragement !

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Rudolf Strohmeier
Deputy Director General, DG Research and Innovation

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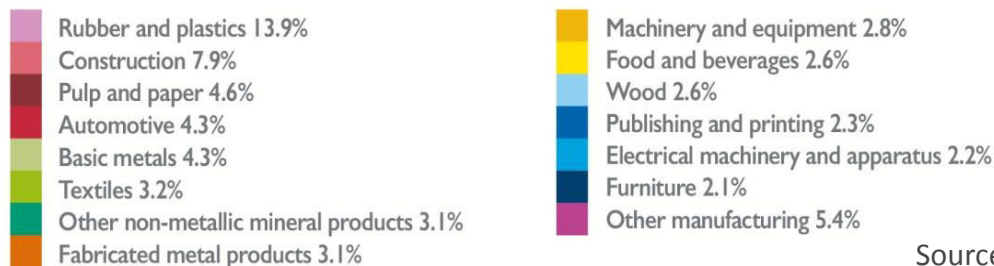
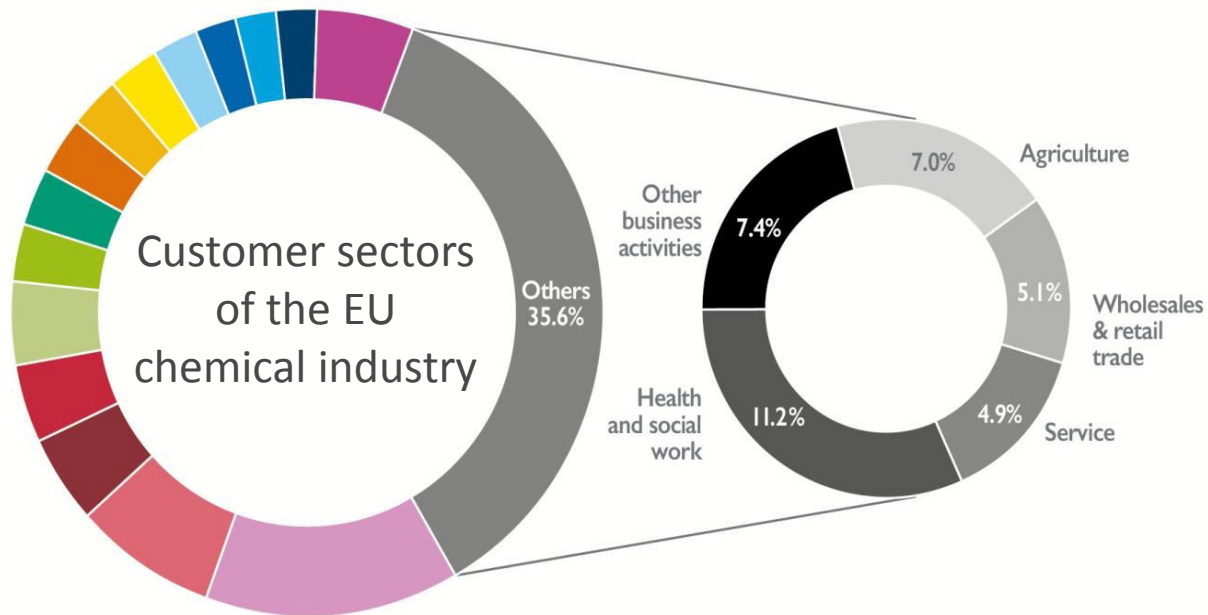


Implementing the New Strategic Innovation and Research Agenda: Status and Priorities

Klaus H. Sommer – SusChem Chairman

Contribution of the Chemical Industry to the EU Economy

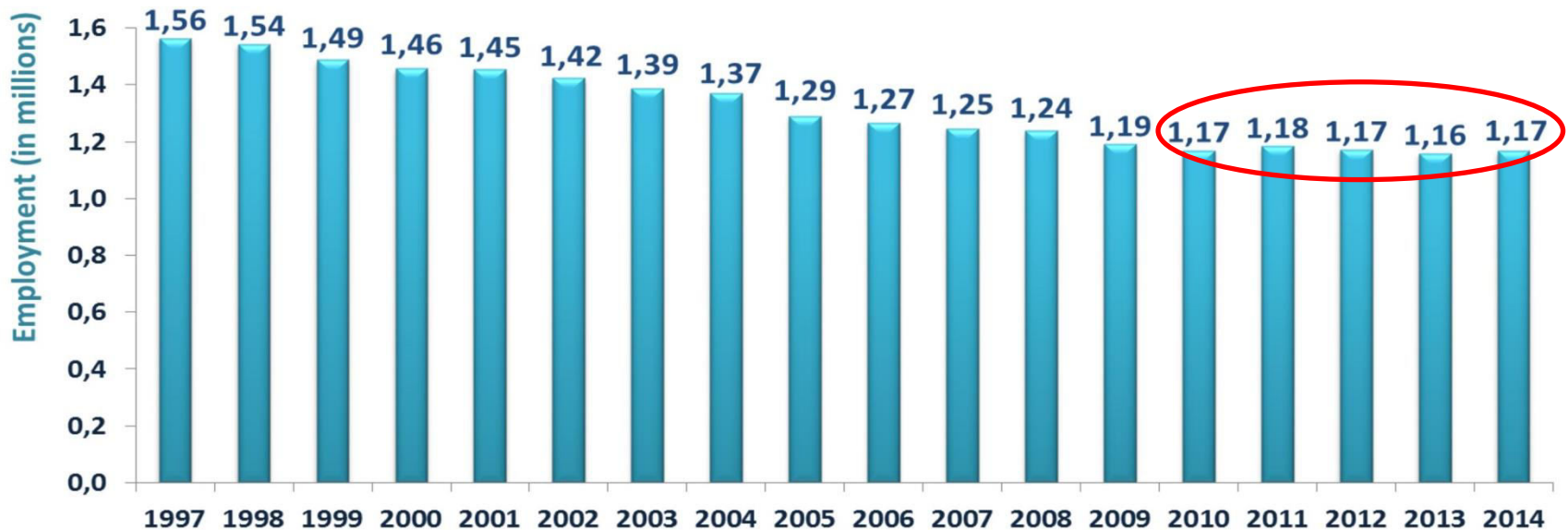
- The Chemical Industry underpins virtually all sectors of the economy
- 2/3 of the EU chemicals are supplied to the EU industrial sector
- 1/3 of the EU chemicals go to other branches (agriculture, health, services, others)



Employment in the EU Chemical Industry

- Chemical companies in the European Union in 2014 employed a total staff of about 1.2 M
- The sector generated an even greater number of indirect jobs – up to three times higher than through direct employment.

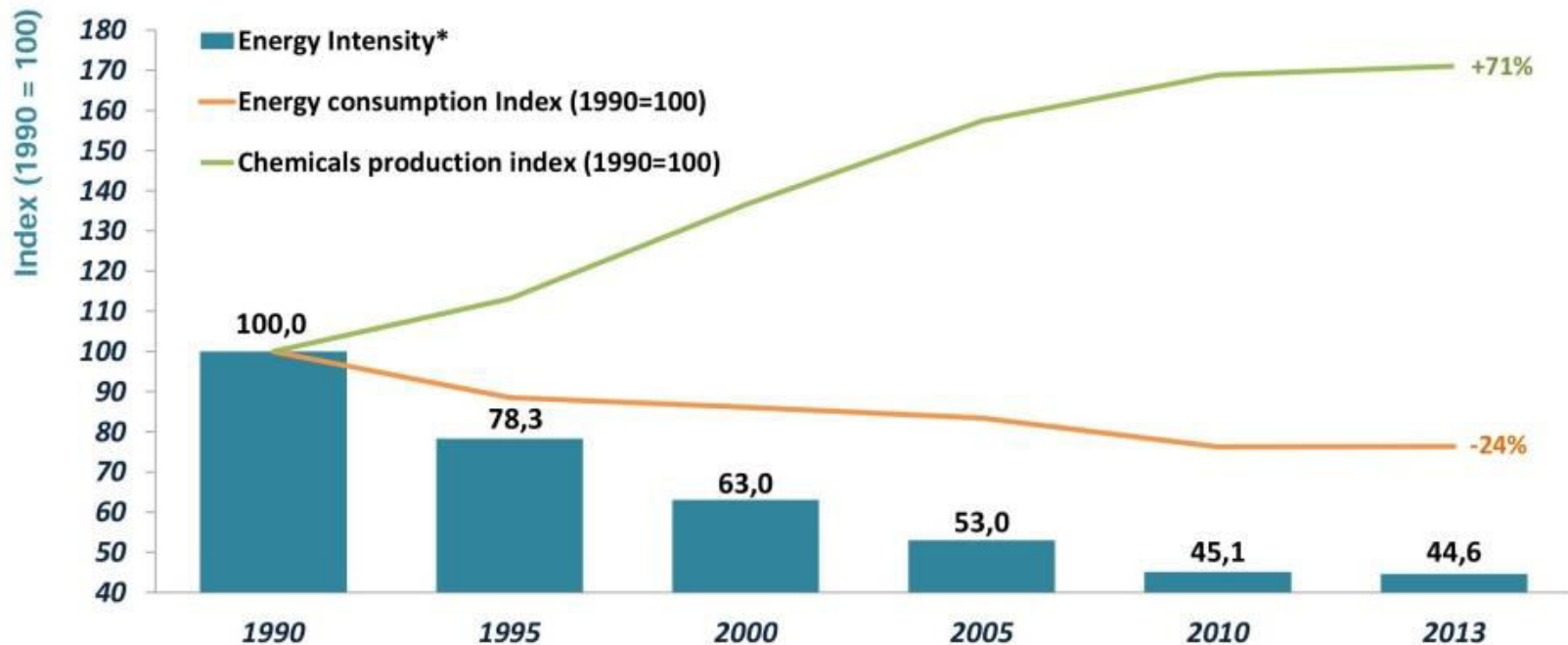
Employment level stabilised since 2010



Energy Intensity in the EU Chemical Industry

- The Chemical Industry is one of the most energy intense sector
- In 23 years the Chemical Industry succeeded to continuously increase output, lowering significantly its energy intensity.
- Consequently, GHG emissions were reduced by 58%

EU chemicals energy intensity slashed in half during 23 year period



*Energy intensity is measured by energy input per unit of chemicals production (including pharmaceuticals)

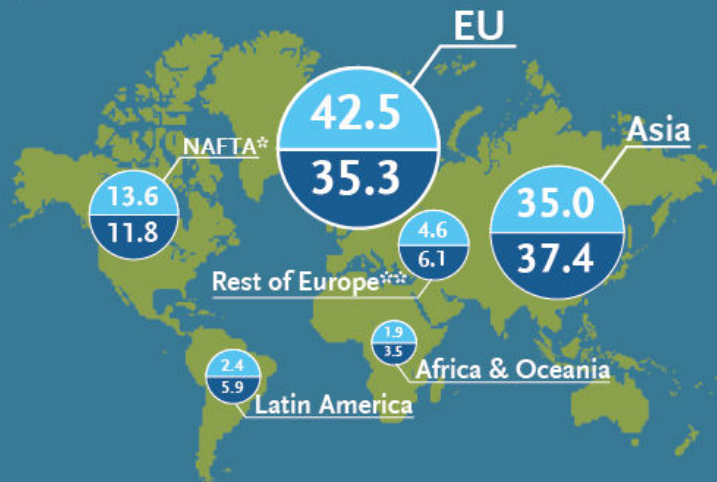
The European Chemical Industry

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- A strong contributor to growth and jobs, but competition is growing
- Access to competitive Raw Materials and Energy is more and more an issue

The European Union remains the world's leading exporter of chemicals

- World exports of chemicals 2013 in %
- World imports of chemicals 2013 in %



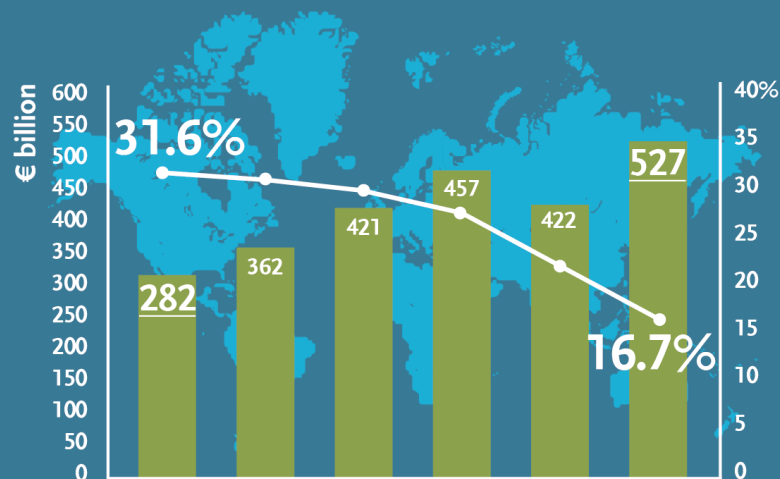
Sources: Eurostat and Cefic Chemdata International (2014)

* North American Free Trade Agreement

** Rest of Europe includes Switzerland, Norway, Turkey, Russia and Ukraine

EU chemicals sales nearly double in 20 years, while it's world market share halves

- EU chemicals sales (€ billion)
- World share (%)



Sources: Cefic Chemdata International (2014)

Strategic impact through strong strategies and great projects



SIRA 2015



Strong Involvement in PPPs

The SusChem Role

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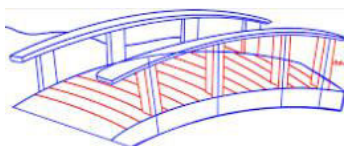
- **SusChem is the mediator between the Chemical Industry needs and the European Commission funding in R&I**
 - Focus on rejuvenating industries via innovation
 - SusChem is a tool to improve competitiveness and sustainability in the Chemical Industry

Chemical Industry Focus

A sustainable energy system

**Intelligent industrial processes
via ICT**

A low carbon economy



Major EU Commission Initiatives

Energy Union – SET plan

**Digital Single Market Initiative
Digitization of the Chemical Industry**

Circular Economy Package

An alignment between needs and policy framework is key to
implement technologies successfully

SusChem SIRA and EU Commission Initiatives

2. Commission Initiatives

- Energy Union – SET plan
- Digitization of Industries
- Circular Economy

3. SusChem Technologies

Raw Material & Alternative Feedstocks

Energy Source for Chemical Processing

Process Technology

Materials for...

1. Societal Challenges

		Industrial Leadership	Bio-Economy	Clean Energy	Green Transport	Resource Efficiency, Raw materials	Health
NMBP*	ICT*						
Raw Material & Alternative Feedstocks	● ●	●				● ●	
Energy Source for Chemical Processing	● ●	● ●	●			● ●	
Process Technology	● ●	●	● ●	● ●		●	
Materials for...	● ● ●	●	●	● ●	●	● ● ●	●

*NMBP: Nanotechnologies, Advanced Materials, Biotechnology, and Advanced Manufacturing and Processing

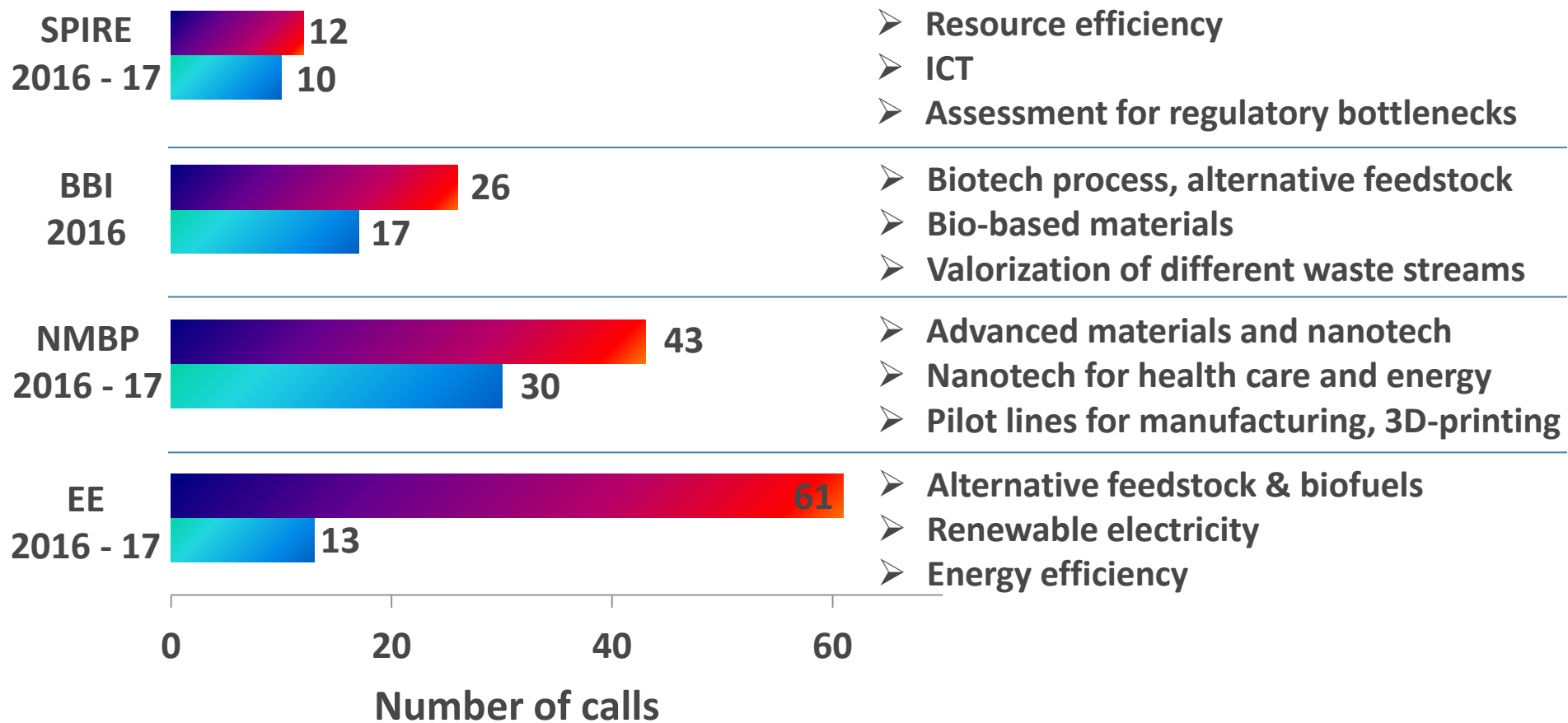
** ICT: Information and communications technology

- SusChem Technologies = Solutions for **Societal Challenges**
- **ICT** to play an increasing role in our innovation agenda
- **Horizontal Issues:** Sustainability Assessment, Skills, Societal Uptake of Innovation, New Business Models

Open Calls relevant to SusChem

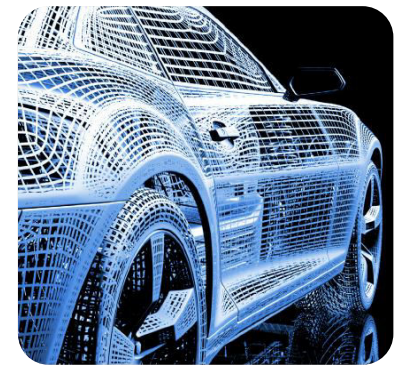
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Total open calls
SusChem relevant calls



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- **Improve energy and resource efficiency in the chemical sector with:**
 - Improved process technologies
 - Alternative carbon sources
 - Industrial symbiosis
- **Europe as world leader in renewable energy**
 - Advanced materials for sustainable production
 - Energy storage
- **More sustainable transport system “decarbonization of the transport sector”**
 - Advanced lightweight materials
 - Advanced sustainable alternative fuels



Coherent and stable policy framework

Future factories will rely on well-integrated ICT systems for data capturing, planning and control

Boost monitoring of environmental targets

Integration regional innovation hubs



Efficient energy & water use

Production process optimization

Stimulate the use of technology best practices (including SMEs)



Requirement: Dedicate programs to enhance the skills and the adaptation of employees to digital technologies

Digitization and Process Intensification Example

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- **Flexible intensified continuous plants: fast and accurate online sensing and process parameters including closed-loop control and online optimization**



Characteristics

Miniaturized equipment

Intensified heat & mass transfer

Possibly modular setup



Benefits

Product uniformity

Sustainability

Fast adaption to market demand

Innovative products

Digitization and Process Intensification Example

Transferring ICT-enabled batch to continuous processes impact

Financial savings	<ul style="list-style-type: none"> - 130 M€/y in pharmaceutical and specialty industry - 100 M€/y in production of consumer chemicals - 35 M€/y in production of polyamides, polyester polyols, thermoplastic polyester
Reduction of CO₂ emissions	<ul style="list-style-type: none"> - 230,000 t/y reduction in polymer production - 170,000 t/y reduction in pharmaceutical and specialty industry
Less of consumption of non-renewable raw materials	<ul style="list-style-type: none"> - 176,000 t/y less consumption of solvents in pharmaceutical and specialty industry
Faster development of new products	<ul style="list-style-type: none"> - 2x faster additional innovations - 2x shorter times-to-markets

SusChem SIRA and the Circular Economy

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- Sustainability-based approach
- Resource efficiency including water use
- Utilization of alternative feedstock

- Improved efficiency for production processes
- Eco-design of products

- Biotech processes

- Advanced alternative fuels
- New composite materials
- **Industrial symbiosis**
- Bio-refineries: “zero waste”



- Technology development
- Deployment is Key

- Increase market & customer acceptance

- Sustainable use of alternative carbon sources

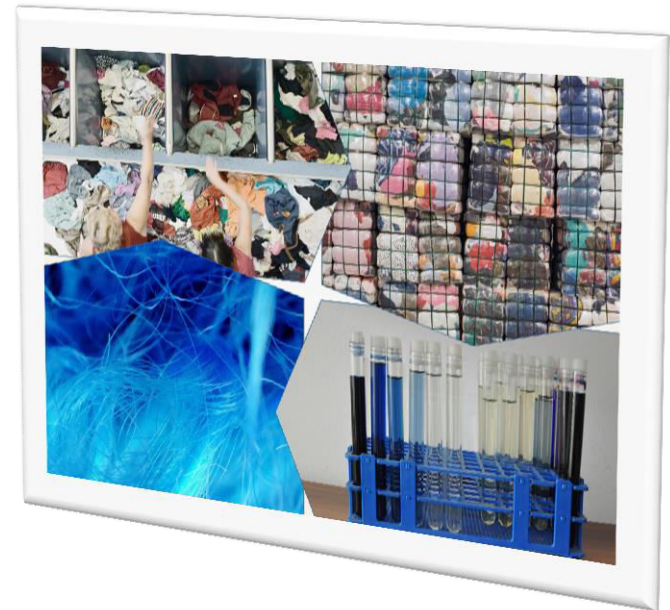
Requirement: Coherence and stability over time for the policy framework is critical for European leadership

“Recovery of different monomers from textiles”

1. Better **RE**cycling to generate new secondary raw materials
2. Through **SYN**thesis, project combines various fields
3. **TEX**tile waste – a resource for textiles & chemicals

Impact:

- Strategic design for value chain
- Improve collection approaches & public awareness
- Enable traceability & credibility of waste processing
- Innovative business models for chemicals & textiles
- Demonstrate a complete reprocessing line



SusChem - Last year's main activities

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- Input for the 2016 – 2017 SusChem Work Packages
- Brokerage event 2015 and SME and NTPs involvement
- Synergies between SPIRE and BBI
- Reactivated working groups for 2018 – 2020 programs
- SusChem at the High Level Group on Energy Intensive Industries
- Publication on composite materials
- Position Paper on Circular Economy
- 2 new National Technology Platforms (Austria, Greece)

12 National Technology Platforms:



+



What is planned for the future

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- Intensify the activities in the working groups including thematic workshops
 - Link to Chem21 in IMI
- Work on synergies between SPIRE and BBI and other PPPs
- Contribute to the WPs 2018 – 2020
- Brokerage event in Seville on Sept 13, 2016
- Identify new lighthouse projects



SusChem is a very active ETP creating significant impact

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*Thank you
for your active participation!*

