SUSCHEM
European Technology Platform
for Sustainable Chemistry

SusChem Plastics SIRA Project

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EU Long term research strategy on plastics

28 September 2018

Jornada 'Innovación con plásticos para una Europa Circular y eficiente en el uso de los recursos'

suschem.org

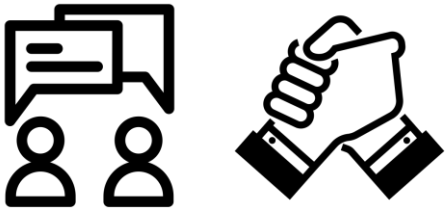
SusChem Plastics SIRA Project

Collaboration Cefic/ PlasticsEurope/ ECP4

- SusChem introduction
- How the collaboration started/ Plastics SIRA Project
- Research and Innovation strategies

The role of SusChem - European Technology Platform

- Responding to **global challenges and EU priorities**
- Providing **innovation solutions: sustainable chemical technologies**



- **Enabling a collaborative environment for all stakeholders:**

  Industry (incl. SMEs), Startups, Academia, Research Organizations (RTOs) & National Technology Platforms (NTPs)

SusChem means sustainable chemistry, processes and **materials**

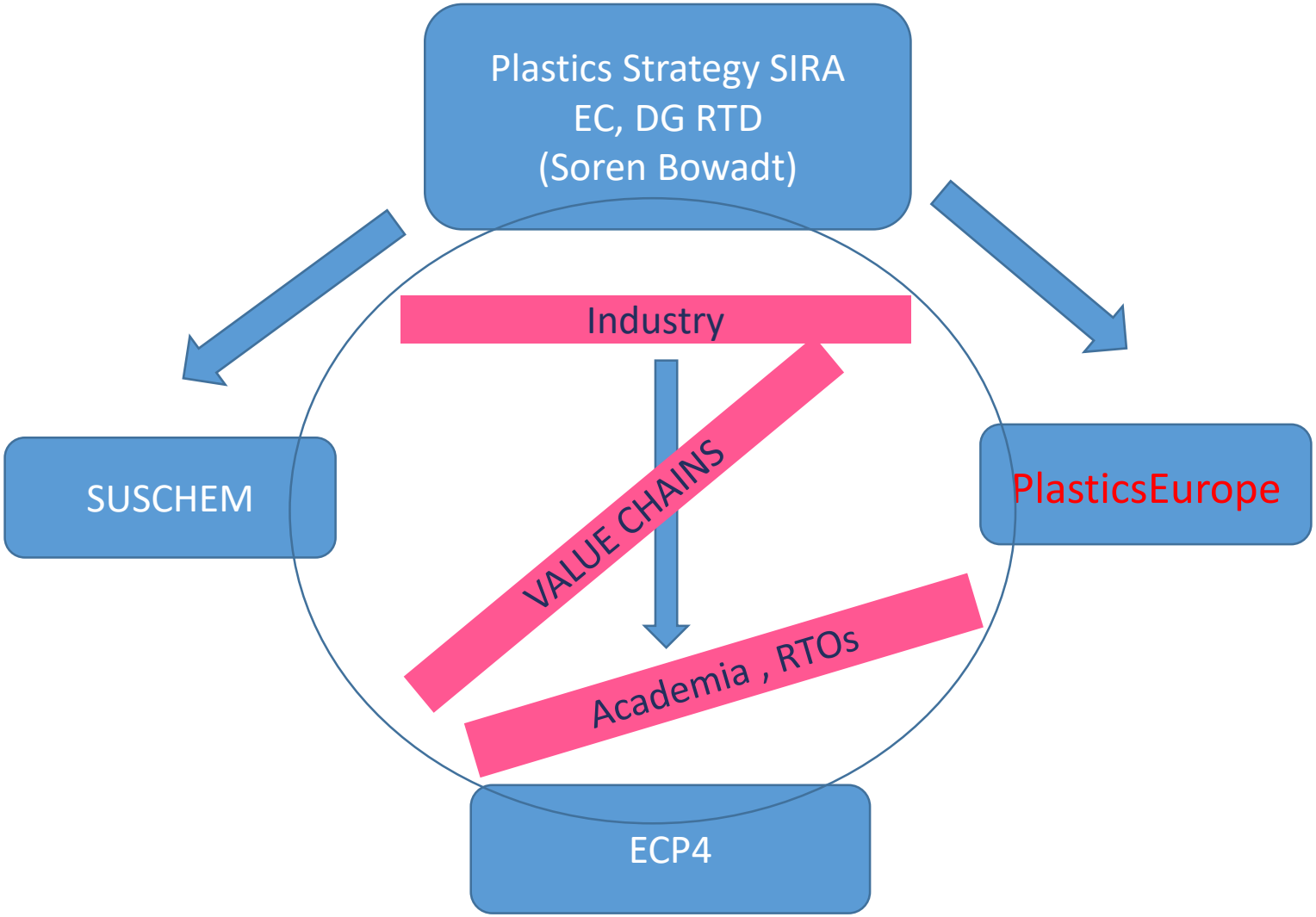
Yes, we can!

- **Enable sustainable technologies via chemistry**
- **Innovate complex value chains**
- **Co-develop with all stakeholders**

What we need

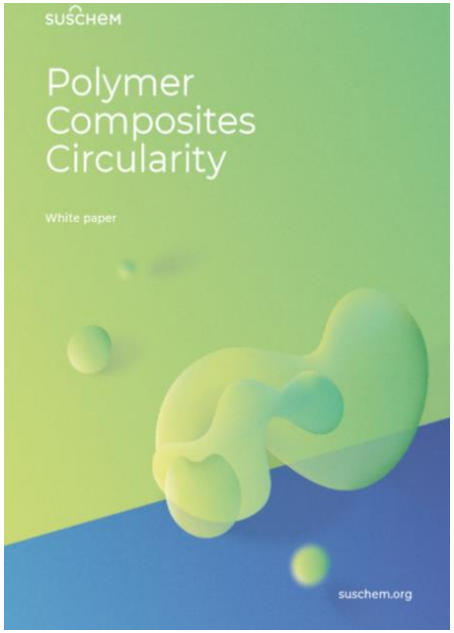
- **Climate pro innovation**
- **Well financed and structured innovation system**
- **Public Private Partnerships**

SusChem is an active and engaging partner of the EC


Plastics Strategy SIRA
EC, DG RTD
(Soren Bowadt)
Industry
VALUE CHAINS
Academia , RTOs
SUSCHEM
PlasticsEurope
ECP4

Plastics SIRA Project

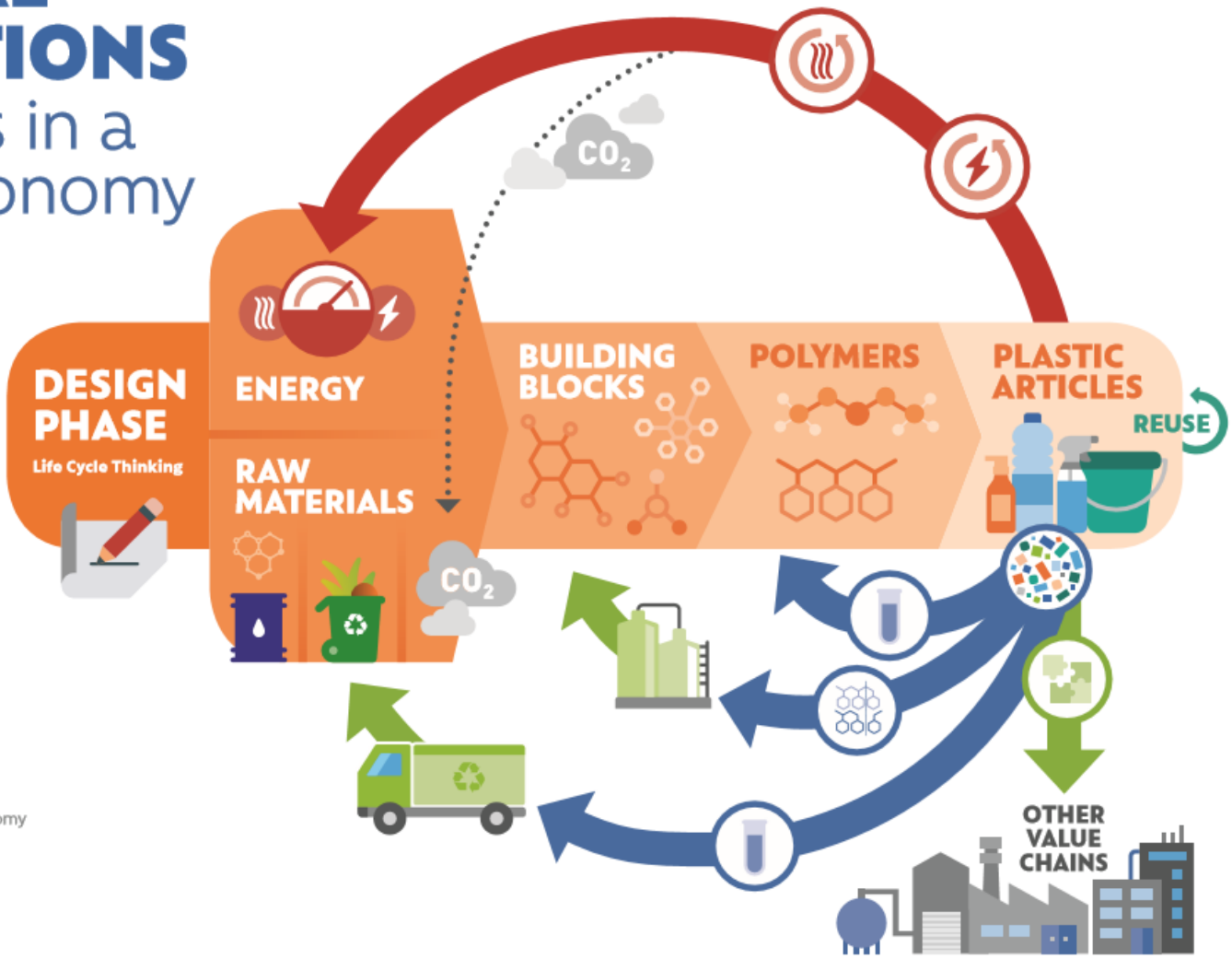
- Gather all possible technology solutions to the plastics circularity challenges through the SusChem materials experts, ECP4, EuPC and PlasticsEurope experts
- Work already done on composites was also used
- Presentation of the key elements from the draft document on 19th of June board meeting
- Document delivery to the EC the 19th of July
- Currently work on publishable version (15th of October)



RESEARCH AND INNOVATION STRATEGIES

CHEMICAL INNOVATIONS FOR Plastics in a Circular Economy

- Production chain
- Recycling technologies
  Grinding, washing, compounding
  Depolymerization, solvent extraction, controlled bio-degradation
- Secondary raw materials
- Carbon utilization
  CO_2 as raw materials
- Energy recovery
  Heat, electricity



For more information about the Chemical industry's commitment to the circular economy please check our website **www.cefic.org**

Follow us on social media: **@Cefic**

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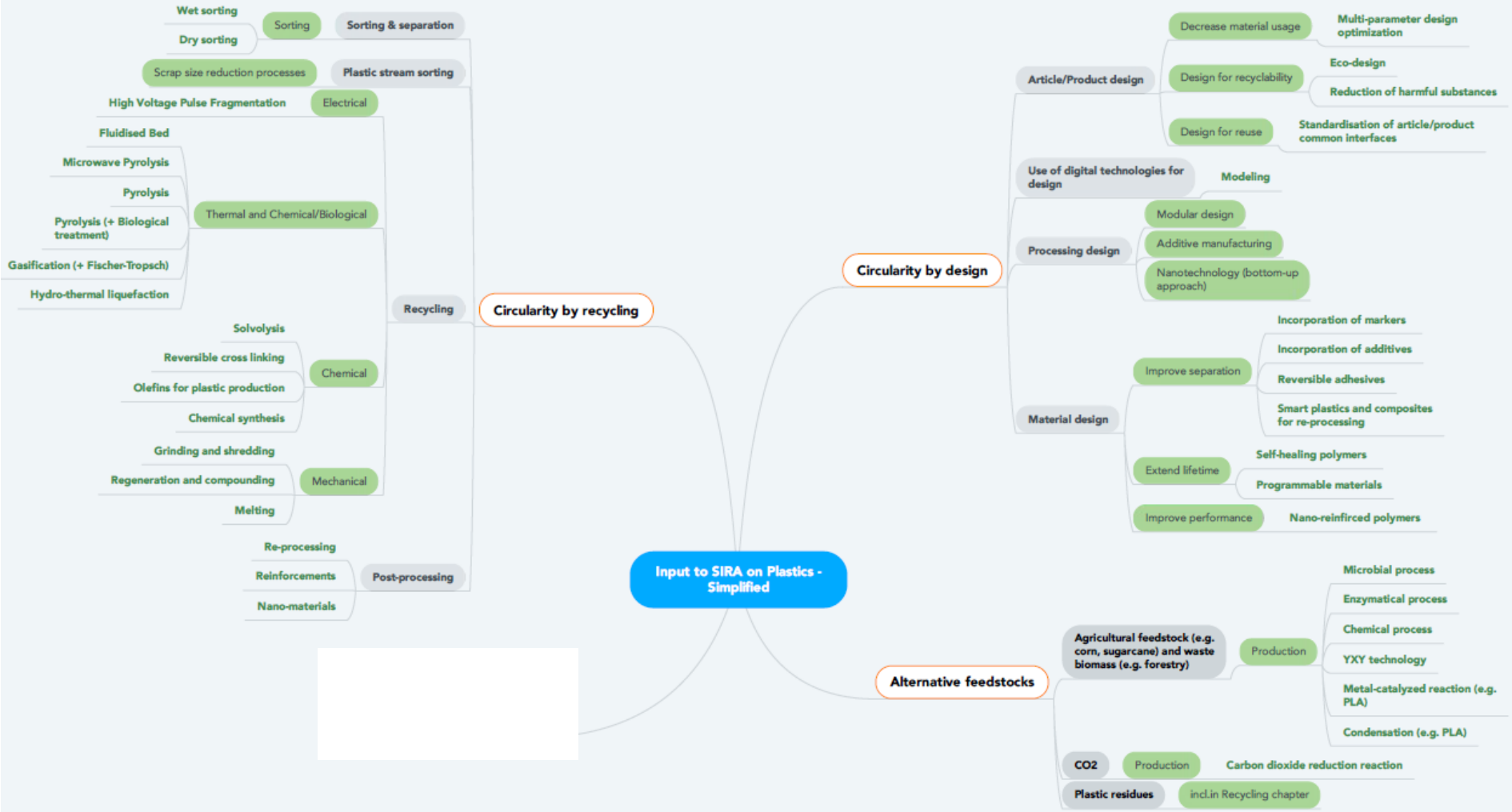
SIRA's table of contents



CIRCULARITY BY DESIGN: New generation recyclable light weighting

- Development of high performance **recyclable reinforcement fibres** (carbon, bio-based) for composite materials.

- Cellular material developments including foamed nanostructuring and aerogel polymer blends .

- Development of **recyclable new materials, like thermoplastic resins**, biobased resins and polymers (for example, PLA and sustainable composites)

- **Design for better separation (reversible crosslinking properties)**

- Development of durable coatings (erosion, resistance)

CIRCULARITY BY RECYCLING

- Develop technologies which facilitate the recycling and **which create value of the recycled plastics** (e;j Improve quality and/or new high value applications for mechanically recycled materials)

- **Tracers**: Intelligent labels with invisible markers. The technics are based on surface markings through diffraction gratings, fluorescent markers or UV markers, etc…

- Towards compatible polymers: **Compatibilisers** have been developed but the dispersion, the efficiency and repetability need to be better…

- **Chemical recycling of different plastics waste streams: moving from plastics to fuels towards plastics to plastics**

- Organic recycling and bio-degradation

CIRCULARITY BY ALTERNATIVE FEEDSTOCKS

Bio sourced plastics

- Fundamental research is necessary to find highly active and selective catalysts, high-yield fermentation processes, and atom-economic metabolic reaction pathways in order to increase the overall process efficiencies.

Plastics made from mixtures (e;j multi layers)

- Chemical recycling of the target waste can be done by
  1. low severity pyrolysis,
  2. high severity catalysis,
  3. catalytic pyrolysis.
- Develop the necessary separation and purification technologies to satisfy the purity requirements of the process

CO2/CO based plastics

- Convert CO2 into usable building blocks

CONCLUSION

- The SIRA offers many smart technology solutions with different TRL levels
- Implementation (short and long term) through full value chain collaboration
- The Innovation ecosystem will need financial support in implementing this complete, highly challenging R&I programme (Mission in Horizon Europe?)

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European Technology Platform
for Sustainable Chemistry

Thank you

—

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