

Processes4Planet



Hubs for Circularity (H4C), a way to make local/regional initiatives climate neutral and circular in a more competitive way

Ludo Diels

Vice-chair advisory board Process4Planet to the EC



EFCE Conference, Third European Forum on new Technologies
Toulouse, 4 September 2020

WHO ARE WE?

A vibrant community with a joint strategic Vision

A.SPIRE – European Cross-Sectoral association



DG R&I
DG Grow



PROCESSES4PLANET

2050
Process
Industries

- ✓ Develop & deploy climate-neutral solutions
- ✓ Closing the energy and feedstock loops
- ✓ Achieve global leadership of the Process Industry
- ✓ Accelerate innovation & unlock public-private investments

OPEN APPROACH: inclusive of different stakeholders and welcoming Newcomers

- Industries, incl. SMEs
- Industrial Associations & Clusters
- Consultancies

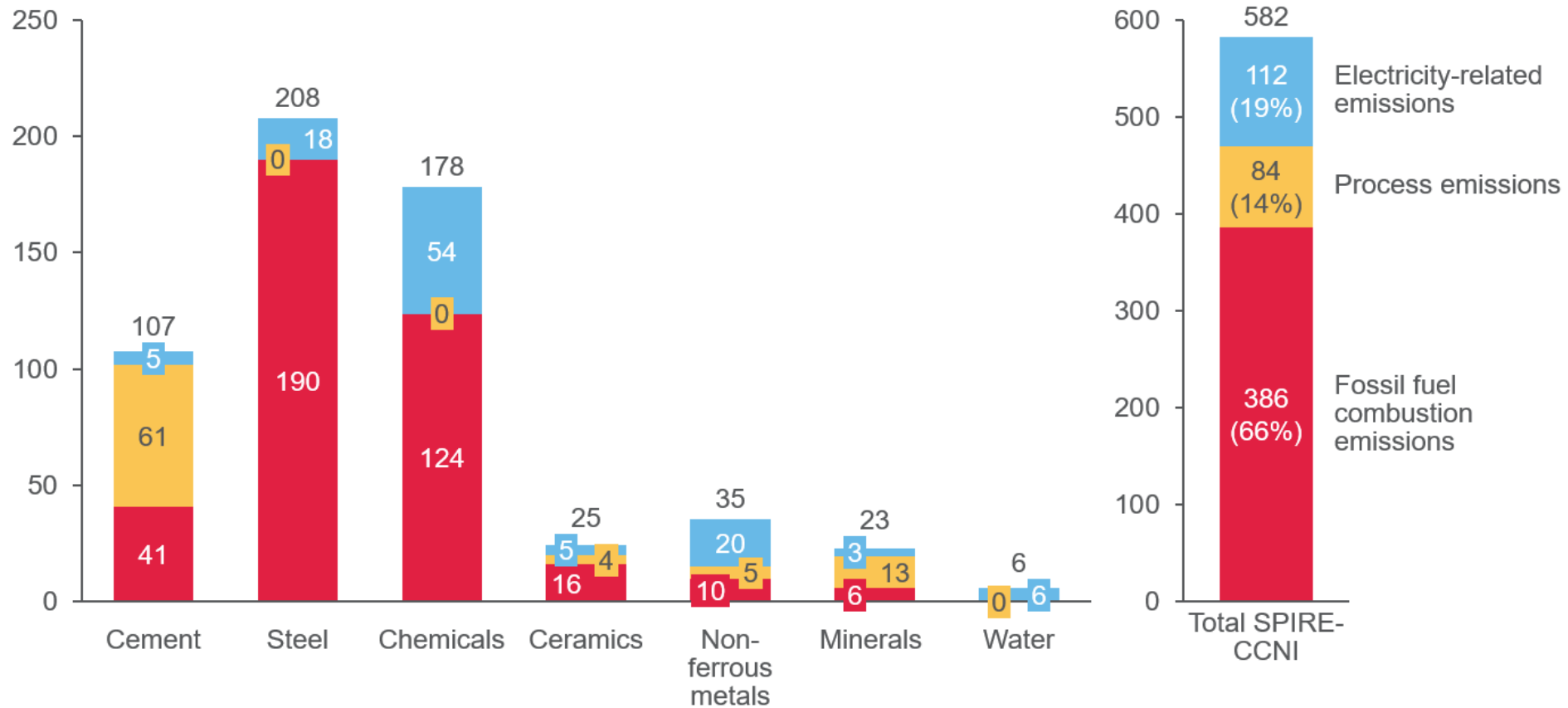
- RTOs
- Higher Education Institutions
- NGOs

- Public institutions
- Innovation Agencies
- MS and Regional representatives

- Partnerships & EITs
- Financial parties
- New sectors

The challenge: > 700 Mtons CO2 emissions directly contributing to climate change

CO₂ emissions in the EU-28
MtCO₂

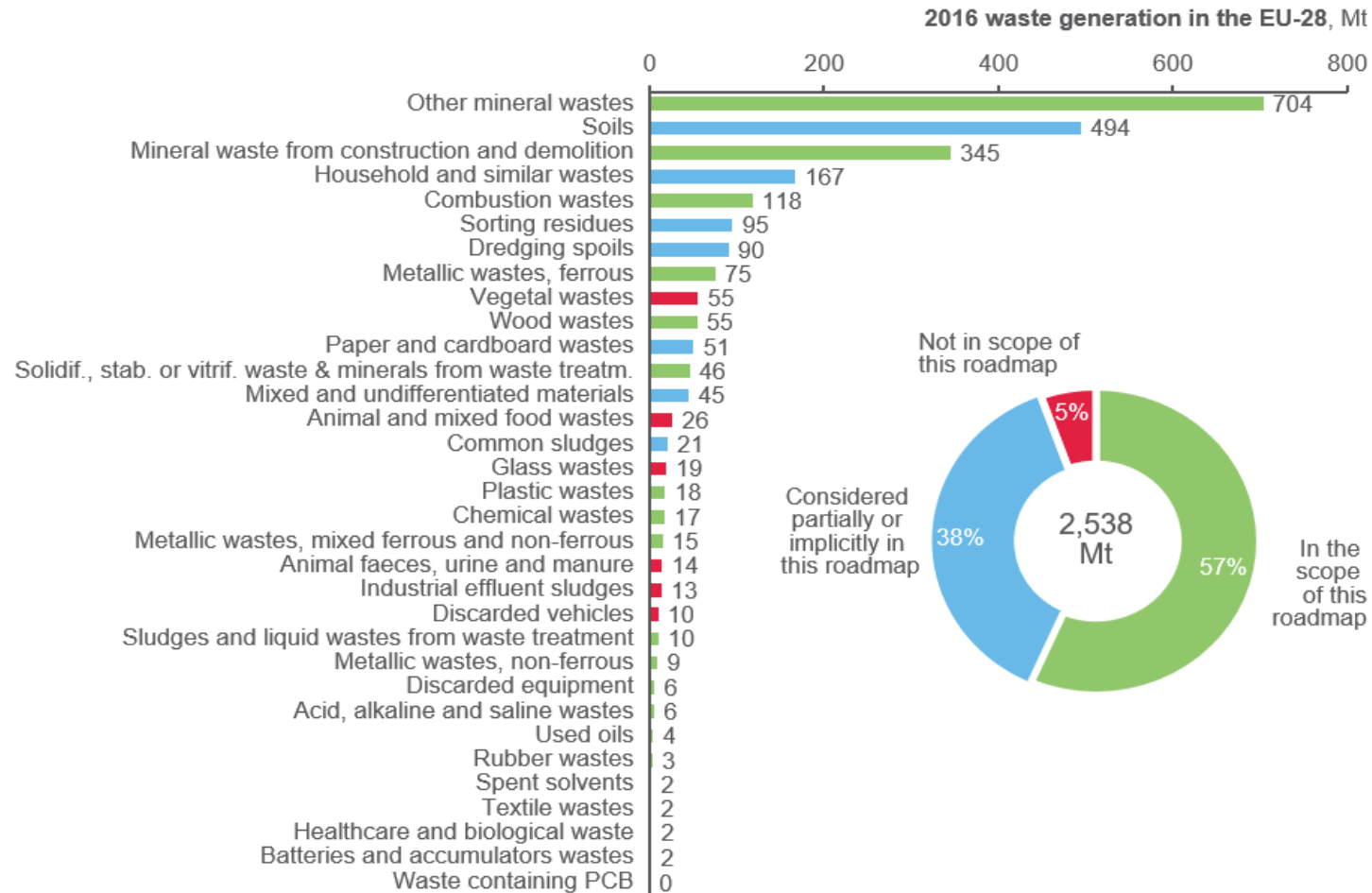


Refining and P&P sector not yet included

Sources: VUB/IES, Eurostat, EEA, Material Economics, Global Cement and Concrete Association, Cefic, Cerame-Unie & EuLA



The challenge of too many wastes (> 1500 Mtons) at the end of the value chains



Source: Eurostat



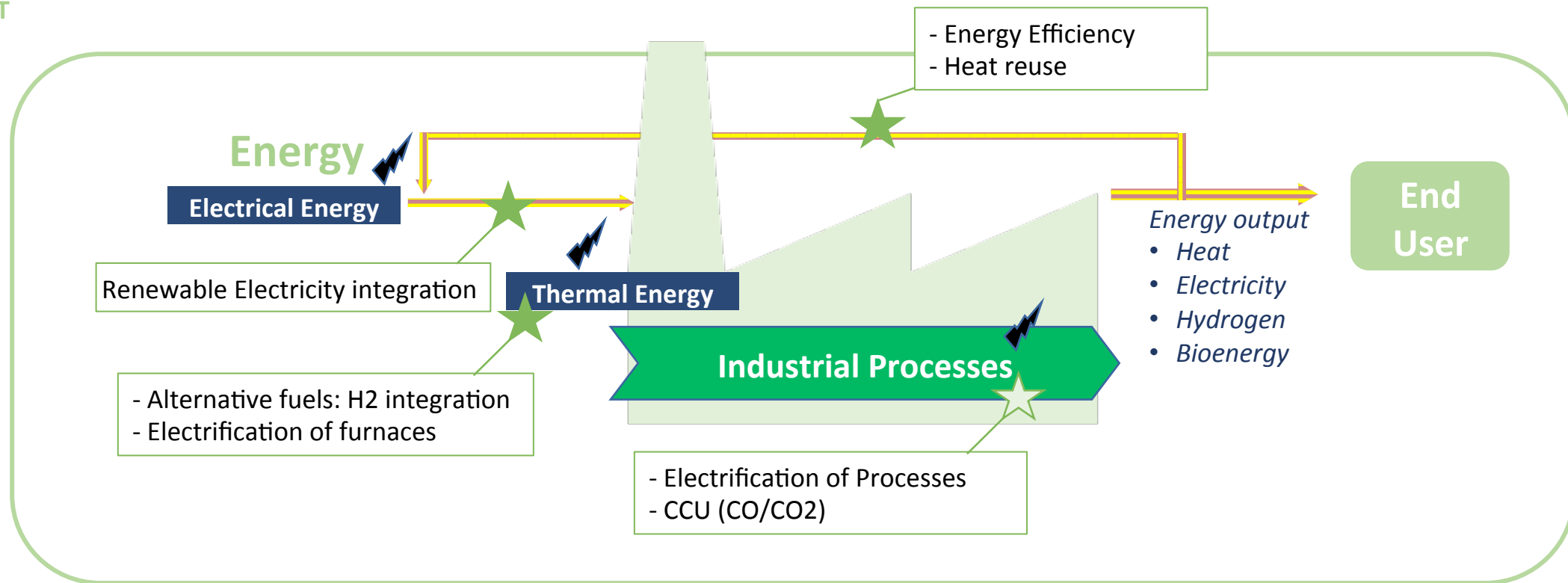
CLIMATE NEUTRALITY AMBITION

DISRUPTIVE PROCESS INNOVATION TO ABATE GHG EMISSIONS

From fossil and low energy mix

To efficient integration of renewables and valorisation of process emissions

4PLANET



Towards net-zero CO₂ emissions

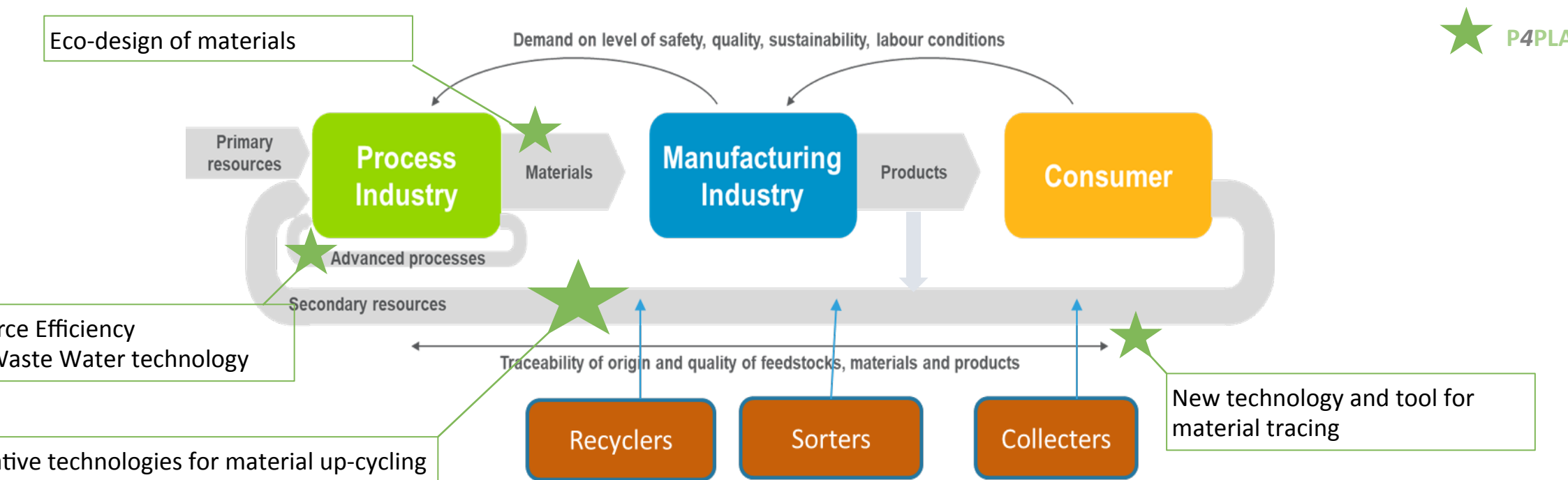


CIRCULAR RESOURCES AMBITION

DISRUPTIVE PROCESS INNOVATION TO CLOSE THE LOOPS

Moving away from: Landfilling, Incineration and Recycling at the end of a linear value chain

To UPCYCLING large volumes of secondary resources reused by the PI in a circular value chain



Near zero-landfilling / Near zero-water discharge



COMPETITIVENESS AMBITION

DISRUPTIVE PROCESS INNOVATION TO TRANSFORM PROCESS INDUSTRY GLOBALLY

EU Process Industries are highly exposed to global competition

UNLOCKING PRIVATE INVESTMENTS & THE BARRIERS TO MARKET FOR CLIMATE NEUTRAL & CIRCULAR SOLUTIONS



EU Process Industry's GVA to grow quicker than the EU GDP



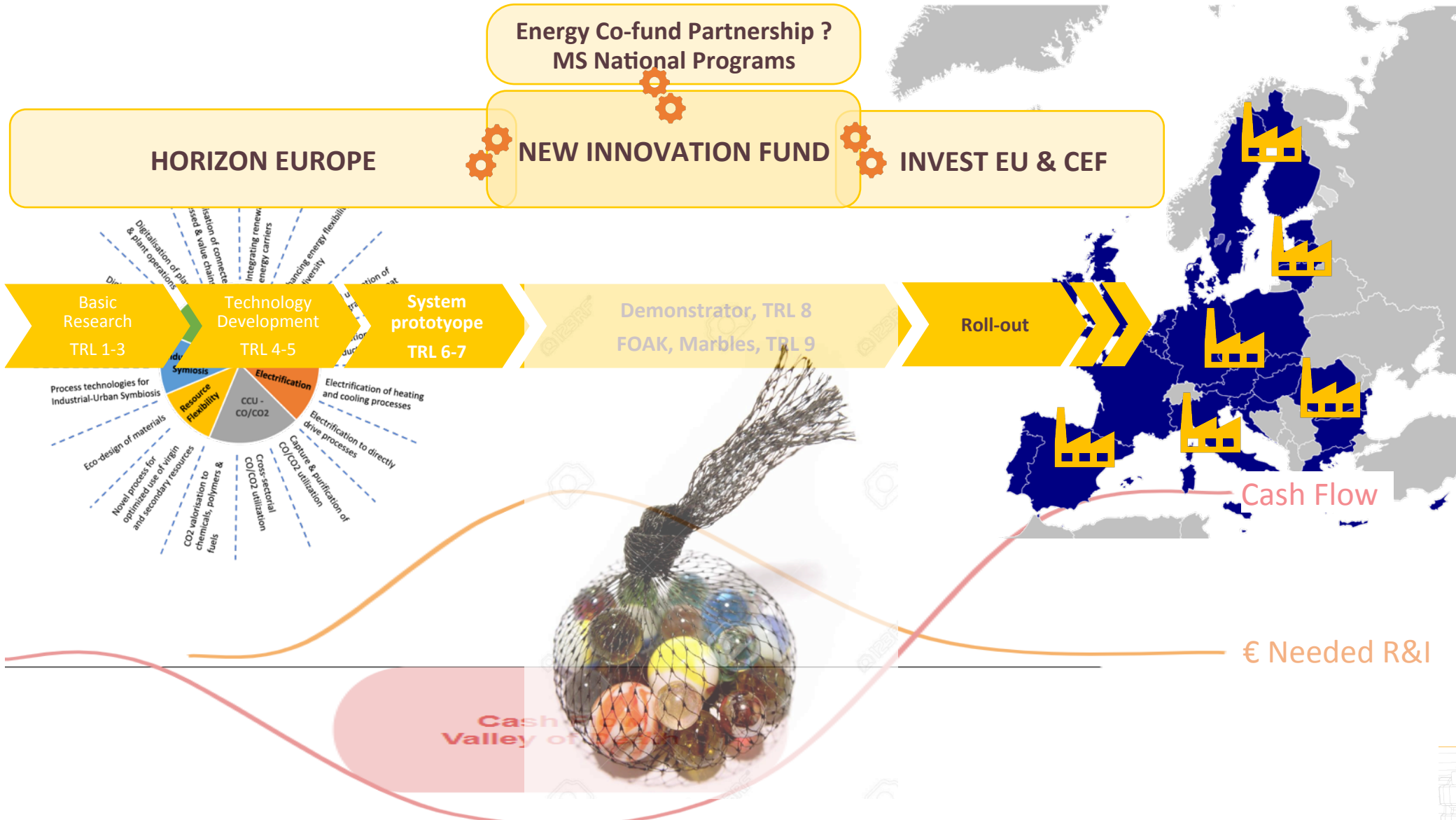
RE 5050 R&I Outstanding Challenge

Comprehensive and coordinated funding & financing tools needed

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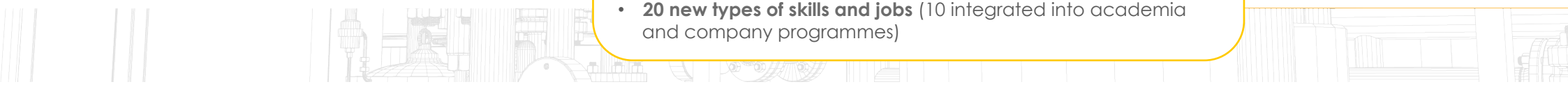
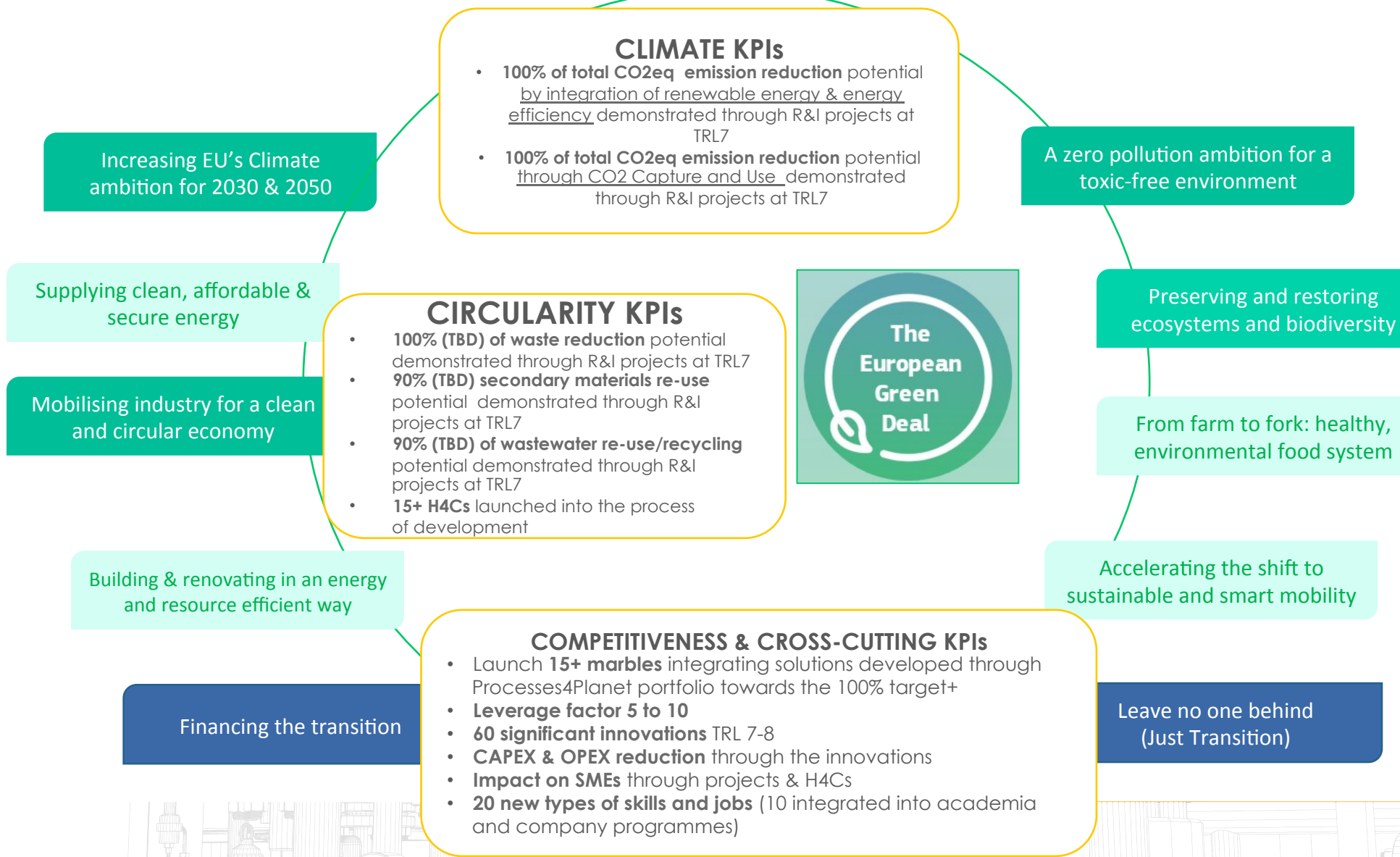


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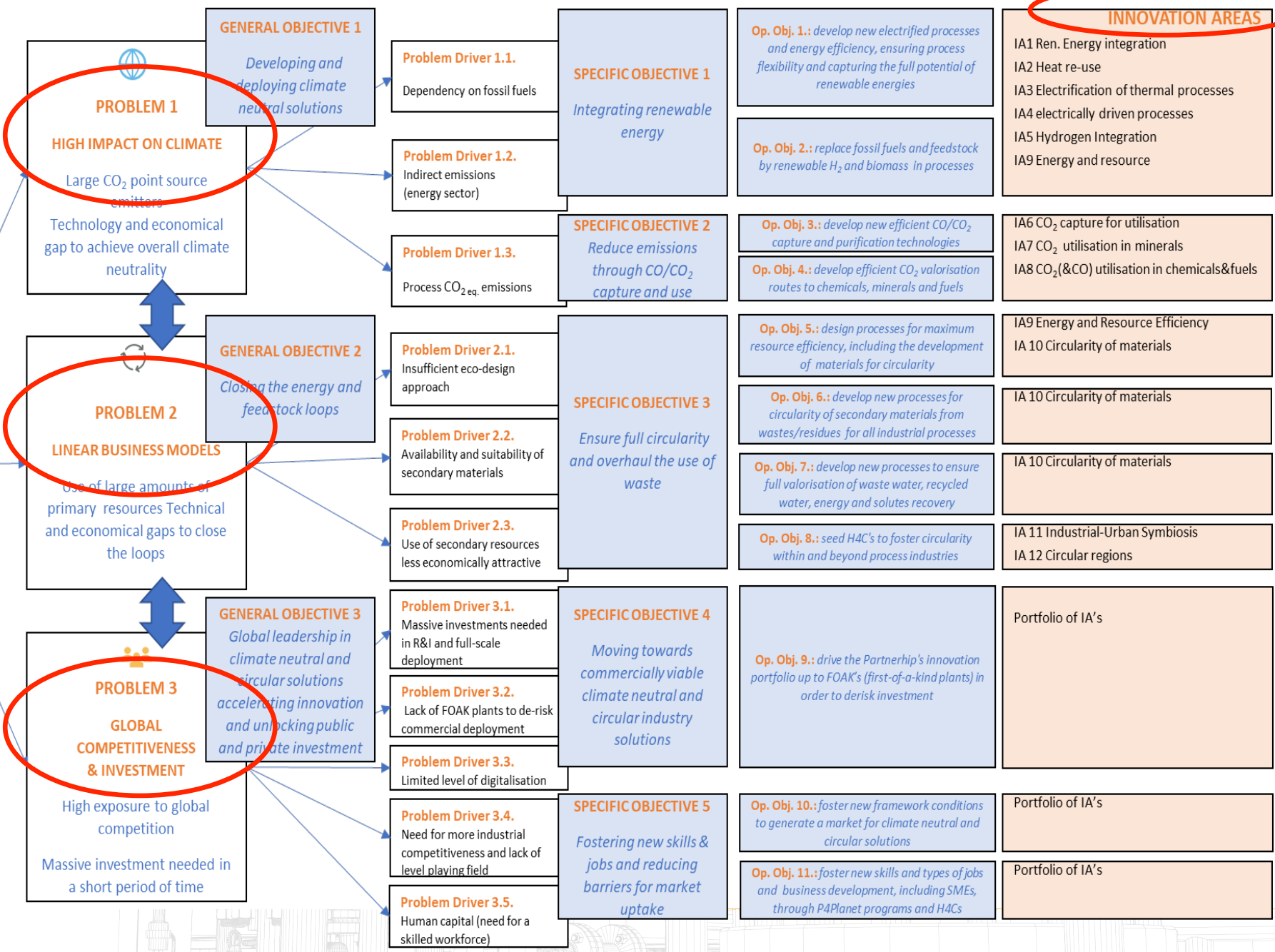
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Processes4Planet KPIs



TREE OF PROBLEMS & OBJECTIVES (Intervention Logic)

Processes4Planet



INNOVATION AREAS



- IA1 Ren. Energy integration
- IA2 Heat re-use
- IA3 Electrification of thermal processes
- IA4 electrically driven processes
- IA5 Hydrogen Integration
- IA9 Energy and resource

- IA6 CO₂ capture for utilisation
- IA7 CO₂ utilisation in minerals
- IA8 CO₂(&CO) utilisation in chemicals&fuels

- IA9 Energy and Resource Efficiency
- IA10 Circularity of materials

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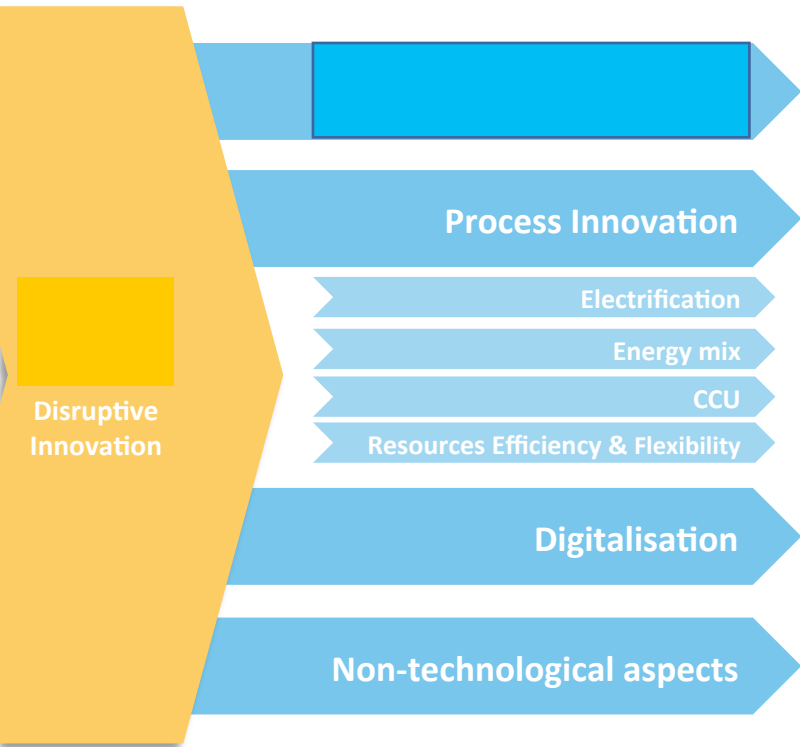
- IA11 Industrial-Urban Symbiosis
- IA12 Circular regions

Portfolio of IA's

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We need to start now, the way is long



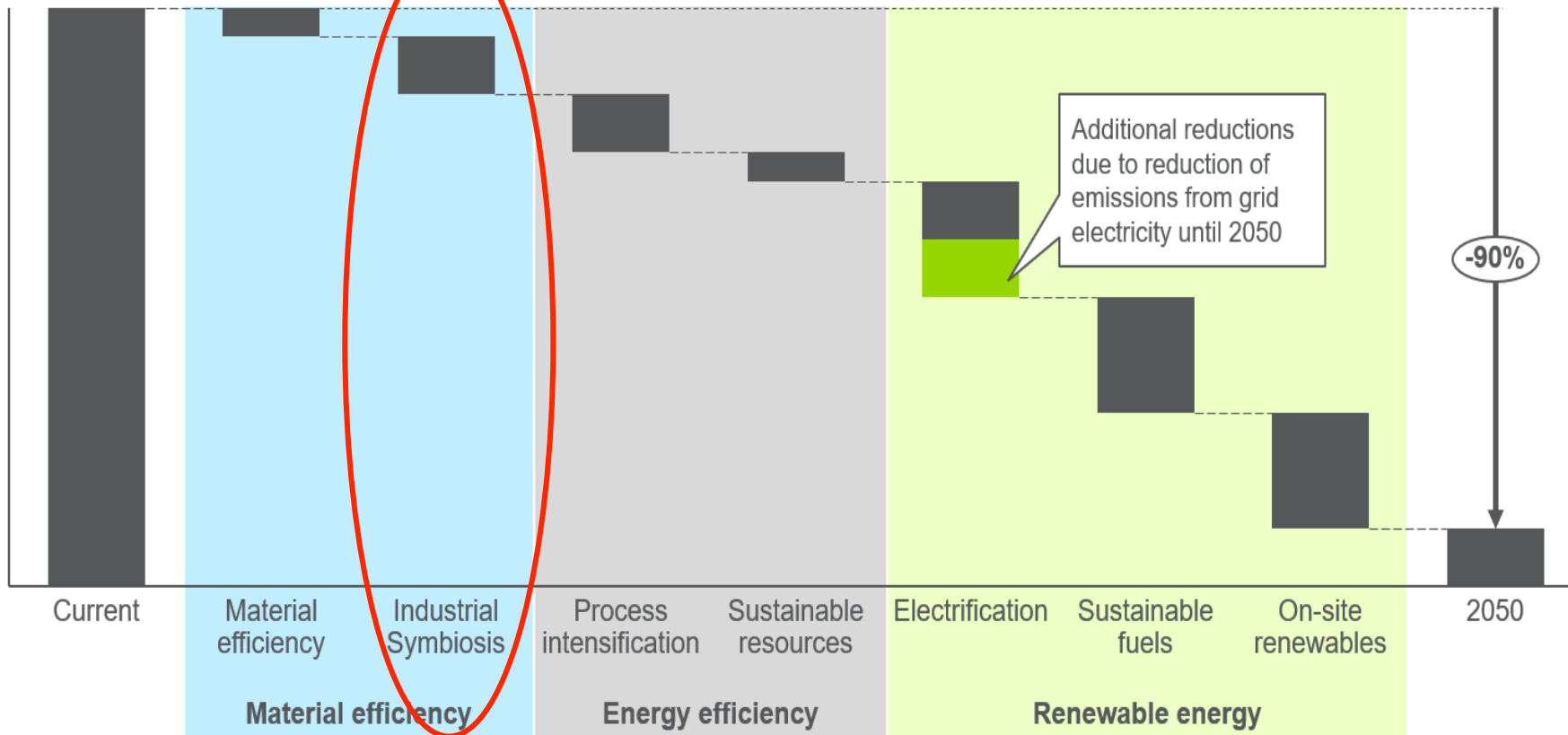
Innovation area	Progress up until milestone year			
	2024	2030	2040	2050
Renewable energy integration				
Heat reuse				
Electrification of thermal processes				
Electrically-driven processes				
Hydrogen integration				
CO ₂ capture for utilisation				
CO ₂ utilisation in minerals				
CO ₂ & CO utilisation in chemicals and fuels				
Energy and resource efficiency				
Circularity of materials				
Industrial-Urban symbiosis				
Circular regions				
Digitalisation				
Non-technological aspects				

¹ Progress is depicted here as % of total TRL9 projects programmed in each area, and for circular regions, digitalisation, and non-technological aspects % of total investment needs until 2050



Process industry relies on many measures to reduce its carbon emission intensity

CO₂ emissions intensity per tonne of material produced



HUBS FOR CIRCULARITY

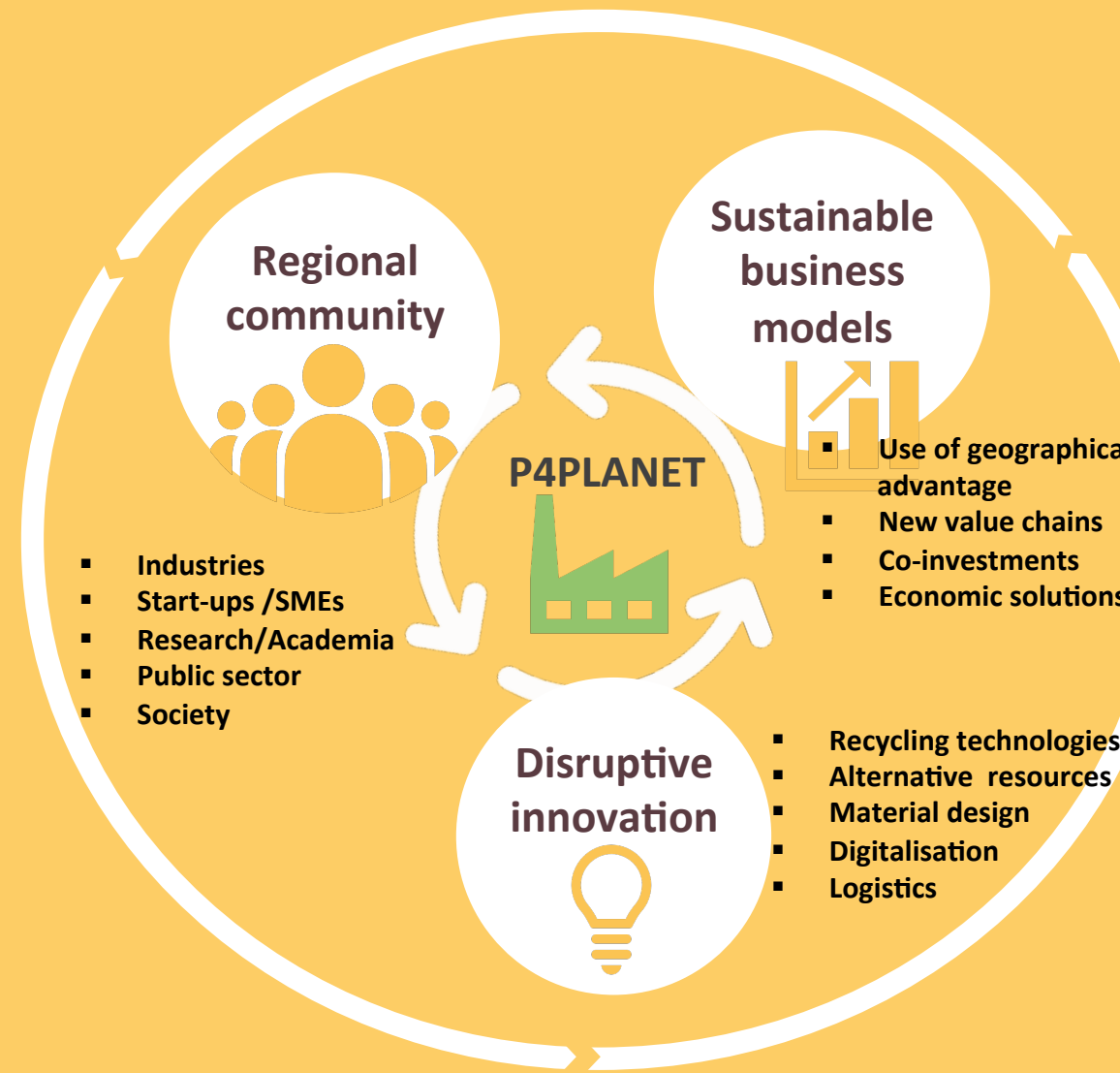
CONCEPT

...sustaining economic industrial ecosystems for **scale Industrial-Urban Symbiosis and Circular economy, closing energy, resource and data loops** and bringing together all relevant stakeholders, technologies, infrastructures, tools and instruments necessary for their incubation, implementation, evolution and management.

Territorial systemic solutions (regional approach)

Processes4Planet inside!

Facilitation necessary to overcome non-technological barriers to symbiosis



Starting Hubs

Intermediate Hubs

Advanced Hubs

Mature Hubs



Different levels of symbiosis in regions

Starting Hubs



Intermediate Hubs



Advanced Hubs



Mature Hubs



A portfolio of projects (SPIRE and beyond)

Technologies • IT platforms and tools • LCA & LCCA • Success factors • Barriers

Calls for proposals

SPIRE 1 2020 • Green Deal • Circular Industries • ...and more

BS FOR CIRCULARITY (H4C)

ONALE

Process industries can **reintroduce bulk amounts of resources into the industrial process**, avoiding waste-to-landfill

Objectives alignment of EU regions and SPIRE 2050 Vision: zero-waste, climate neutrality and competitiveness.

High potential for synergies by connecting the local stakeholders (process industries, other sectors, public sector and civil society) within the regions and across regions.

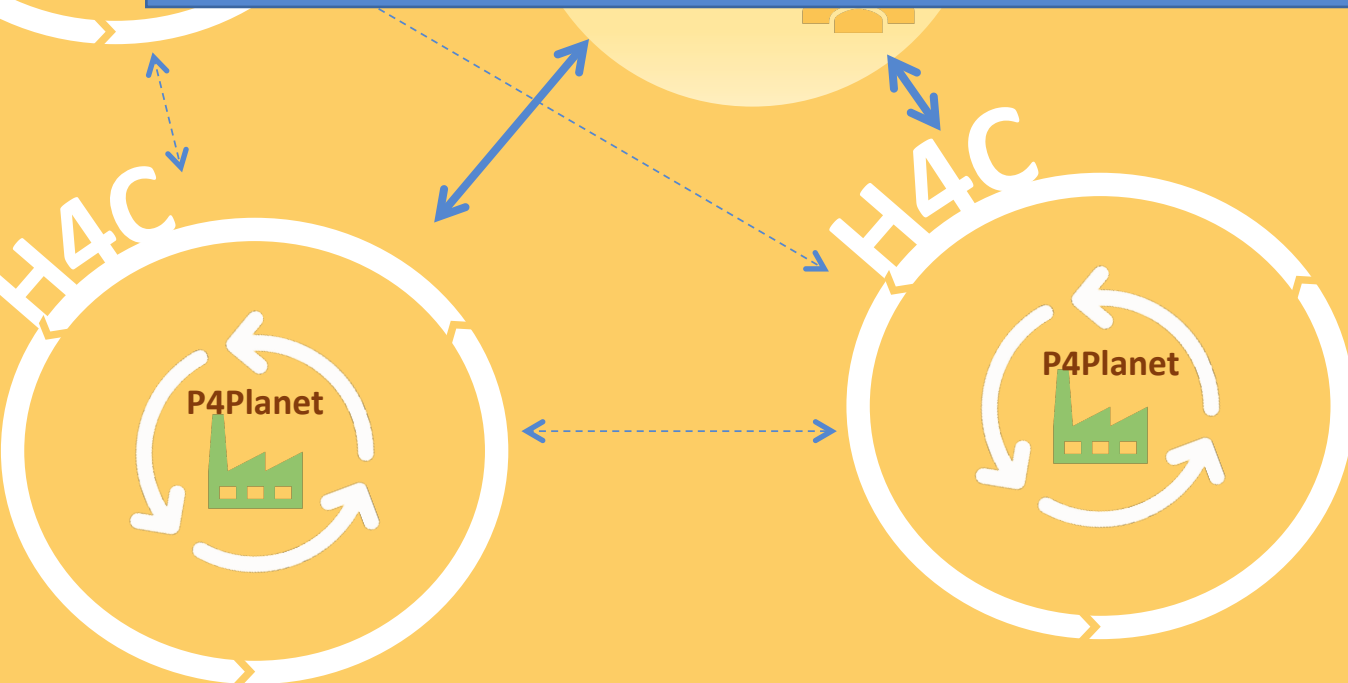


European Community of Practice

Expert
Community

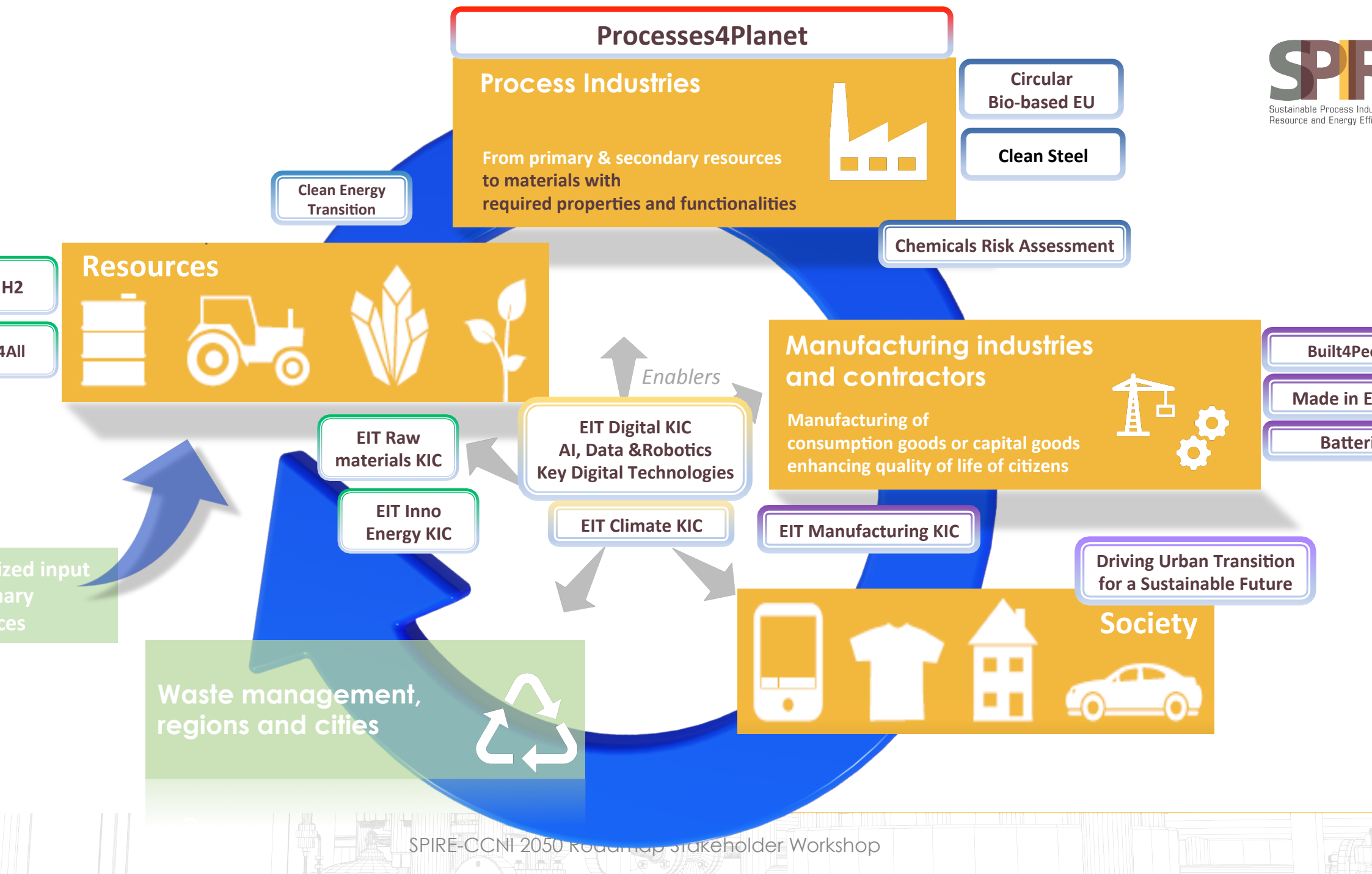
6-7 October 2020 A workshop to discuss on H4C and a brokerage on HEU topics with industries and experts across sectors

12-15 October 2020 The 18th European Week of Regions and Cities in Brussels
– side event (TBC)



the missing pieces in the puzzle
symbiosis

- **Modelling** circular concepts of plants of the future
- Enhancing **replicability**
- Communication and **policy outreach**
- Education and training
- **Sustainability** of the network



H4C

SPiRE
Sustainable Process Industry through
Resource and Energy Efficiency

Connecting the H4C across borders and citizens

- H4C: connected to other stakeholders & citizens
- Circular flows: widespread reality across Europe
- Critical mass of knowledge, solutions & unexpected opportunities
- Innovative brains and talent working together across regions

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