

A.SPIRE

| the future of **European process industry** with **Processes4Planet**

A.SPIRE is the international 10 sectors association of European Process Industry. It represents the private partner in the Processes4Planet co-programmed Partnership launched under **Horizon Europe** programme.

With Processes4Planet and its unique common and cross-sectoral R&I strategy, A.SPIRE will be the keystone to transform the European Process Industry towards **climate neutrality, circularity and competitiveness for a sustainable & prosperous society.**

CHALLENGES, AMBITIONS, PATHWAYS

The Processes4Planet (P4Planet) Partnership aim is to transform the European process industries to achieve circularity and overall climate neutrality at the EU level by 2050 while enhancing their global competitiveness. The Processes4Planet Strategic Research & Innovation Agenda (SRIA) is the starting point to meet three strategic challenges. Processes4Planet will tackle these challenges along three pathways for impact and through the development of First-of-a-kind plants and Hubs4Circularity.

CHALLENGES



PATHWAYS

CLIMATE AMBITION

Net zero GHG emissions in 2050

CIRCULARITY AMBITION

Near-zero landfilling and near-zero water discharge

COMPETITIVENESS AMBITION

The innovations contribute to the EU process industry's GVA growing quicker than EU GDP

INNOVATION AREAS

In this SRIA, the A.SPIRE community outlines the innovation needed to enable the realization of the vision for climate neutral, circular and competitive process industries in 2050. The 14 innovation areas (IA) presented in the document are expected to collectively deliver these technological and non-technological solutions. The full SRIA is built up from 36 detailed innovation programmes that are clustered in distinct innovation areas.



AMBITIONS

1

CLIMATE AMBITION

Process industries as frontrunners to develop and deploy disruptive solutions to drastically reduce CO₂ eq. emissions, including:

- Integrating renewable energy
- Reducing emissions through the capture and use of CO/CO₂ eq. direct and indirect emissions
- Fostering First-Of-A-Kind Plants that integrate solutions developed through P4Planet portfolio

2

CIRCULARITY AMBITION

Processes4Planet aims to contribute to the development of sustainable circular solutions and business models through technological and non-technological innovations, cross sectoral collaboration and engagement with local socio-economic ecosystems leading to:

- Real circularity through upcycling waste-derived materials and wastewater resources, and through eco-design of materials.
- Seed Hubs4Circularity for full scale Industrial-Urban symbiosis, closing energy, resources and data loops.

3

COMPETITIVENESS AMBITION

Accelerating innovation and unlocking public and private investments is needed to foster EU Process Industry global leadership in climate neutral and circular solutions. Proven economic feasibility of the solutions and adequate framework conditions for market uptake should ensure competitiveness and jobs in Europe.

- Accelerate innovations through digital solutions for the Process Industry 5.0
- Reducing barriers for market uptake
- Fostering new skills & jobs, including digital skills

The Circularity Pathway

Process industries will develop and deploy sustainable circular business models through technological and non-technological innovations, cross-sectoral collaboration and engagement with the local ecosystem



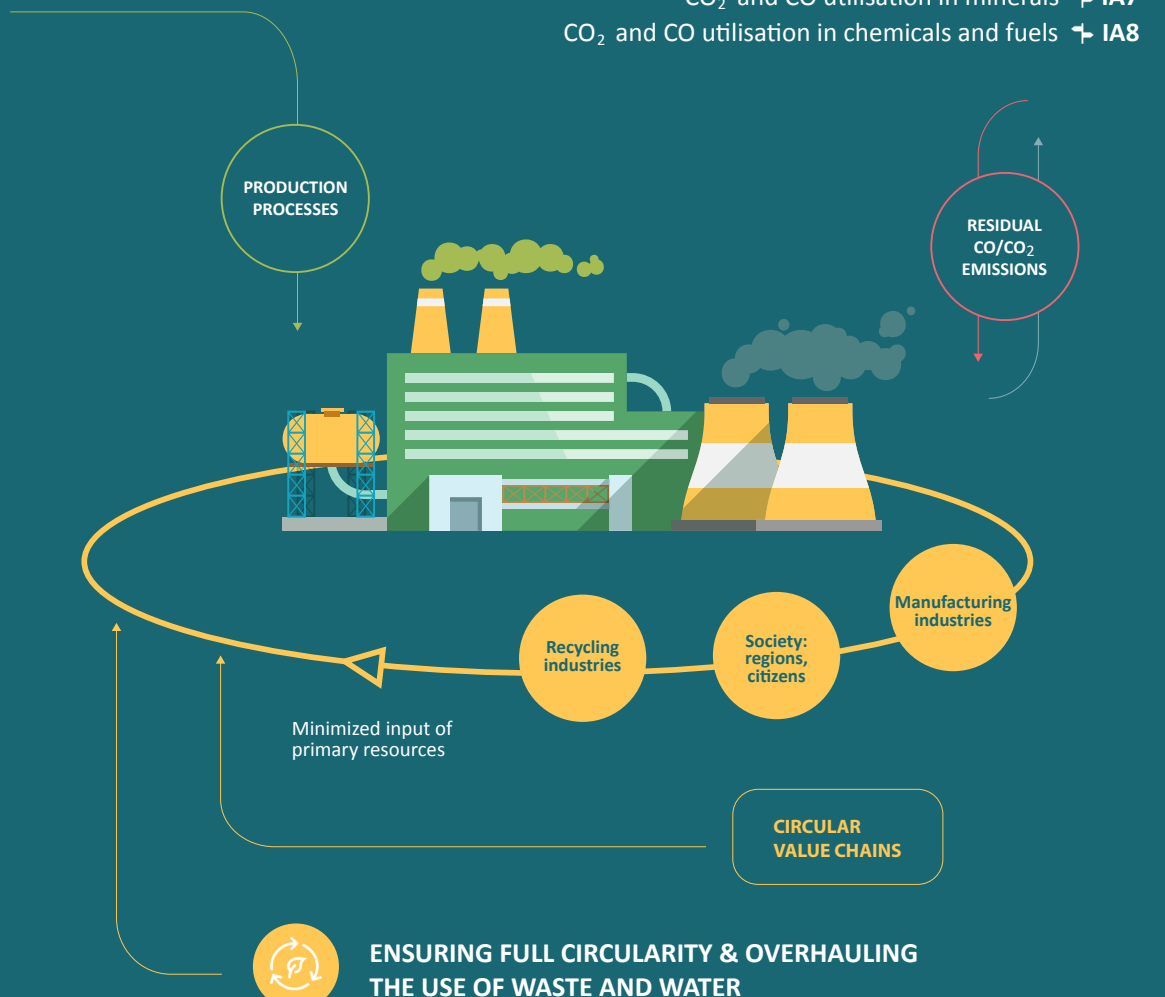
RESOURCE AND WATER EFFICIENCY

Energy and resource efficiency ↗ IA9
including eco-design ↗ IA10



CIRCULARITY OF CARBON

CO₂ capture for utilisation ↗ IA6
CO₂ and CO utilisation in minerals ↗ IA7
CO₂ and CO utilisation in chemicals and fuels ↗ IA8



ENSURING FULL CIRCULARITY & OVERHAULING THE USE OF WASTE AND WATER

Circularity of resources ↗ IA10
Industrial-Urban symbiosis ↗ IA11
Circular regions (Hubs4Circularity) ↗ IA12

The Climate Neutrality Pathway

The process industries will redesign industrial processes and rethink their interaction with the energy system (sector coupling)



INTEGRATING RENEWABLE ENERGY / FEEDSTOCK

Renewable energy and circular feed stocks for energy applications ↗ IA1
 Heat reuse ↗ IA2
 Electrification of thermal processes ↗ IA3
 Electrically driven processes ↗ IA4
 H2 integration ↗ IA3



REDUCING EMISSIONS THROUGH ENERGY EFFICIENCY

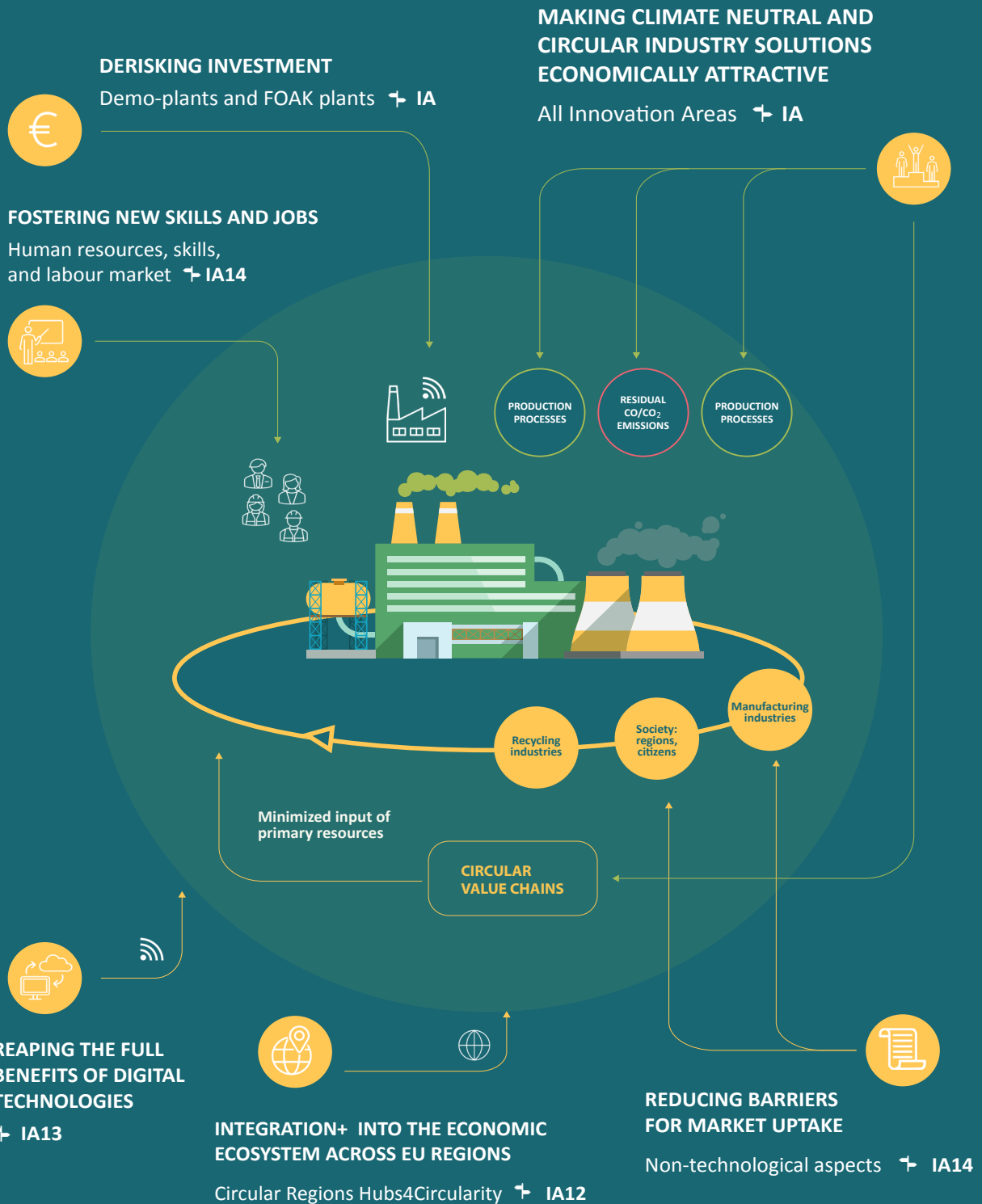
Energy and resource efficiency ↗ IA9



REDUCING EMISSIONS THROUGH CO/CO₂ CAPTURE & USE

CO₂ capture for utilisation ↗ IA6
 CO₂ and CO utilisation in minerals ↗ IA7
 CO₂ and CO utilisation in chemicals and fuels ↗ IA8

The Competitiveness Pathway



A.SPIRE VALUE FOR HORIZON EUROPE AND BEYOND

A.SPIRE represents **ten process industry sectors** - cement, ceramics, chemicals, engineering, minerals, non-ferrous metals, pulp&paper, steel, refining and water - and industrial and research industry stakeholders across Europe.

Become a member of A.SPIRE to:

1. SHAPE THE FUTURE OF THE PROCESS INDUSTRY AND ADDRESS ITS R&I NEEDS

- **Let your voice be heard** by participating in the first-ever influential public-private partnership promoting the competitiveness and sustainability of Process Manufacturing in Europe.
- Provide input and shape the **EC R&I working programmes** (Horizon Europe, New Innovation Fund, SET PLAN, etc.).
- Contribute to the successful implementation of P4Planet as a co-programming Partnership and to the building and spreading of Hubs for Circularity.

2. NETWORK AND FIND PARTNERS IN TEN MAJOR PROCESS INDUSTRY SECTORS

- Find partners from research, industry and academia in the European A.SPIRE/P4PLANET network through **member-only brokerage activities**.
- Benefit from **synergies among different sectors and cooperate with the innovation system and the entire value chains**.
- Enter an enriching **discussion** with fellow stakeholders and policy makers.

3. ACCESS TO KNOWLEDGE

- **Access to knowledge** on technological and non-technological developments in the A.SPIRE community and access to a **pool of talent** across academia, research organizations, foundations, and industry.
- **Share** best practices and **transfer solutions across sectors and borders**.
- **For SMEs:** have direct access to new growth opportunities, new markets, and large industry customers

4. GET VISIBILITY ACROSS DIFFERENT SECTORS AND PLAYERS

- **Make your business/organization policy input and results more visible and relevant** to the climate neutrality and circularity debate through A.SPIRE website, events, publications, etc.
- **Outreach to a larger range of actors** of European stakeholders in various political, innovation and industrial fields.

By becoming a member of A.SPIRE, you are entitled to participate in our **Permanent Working Groups (PWGS)**. Our Industrial and Research members can also be appointed as leaders in our **Advisory and Programming Group (APG)**, for which a rotation process is set up every 2 years. A.SPIRE members are also entitled to join our **Ambassadors Group** to set a liaison with Member States.

PWGS

- **PWG1** Energy
- **PWG2** Process optimization & CCU
- **PWG3** Industrial-Urban Symbiosis/Hubs4Circularity
- **PWG4** Resources & Circularity
- **PWG5** Framework conditions
- **PWG6** Societal Innovation

Advisory and Programming Group

Ambassadors Group

HOW TO JOIN A.SPIRE:

Join A.SPIRE and get ready to give your contribution in accelerating the transition of process industry as part of the Processes4Planet community.

Discover more on how to apply for the membership here:



VISIT A.SPIRE WEBSITE AT www.aspire2050.eu

SOCIAL MEDIA



[aspire2050association](https://www.linkedin.com/company/aspire2050association)



[@ASPIRE_P4Planet](https://twitter.com/ASPIRE_P4Planet)



Cement



Ceramics



Chemicals



Engineering



Non-ferrous
metals



Minerals



Pulp &
Paper



Refining



Steel



Water

CONTACT A.SPIRE TEAM

