Processes4Planet Partnership

Transforming the European Process Industry
for a sustainable & prosperous society

Horizonte Europa Jornada Informativa Nacional
Clúster 4 Industria

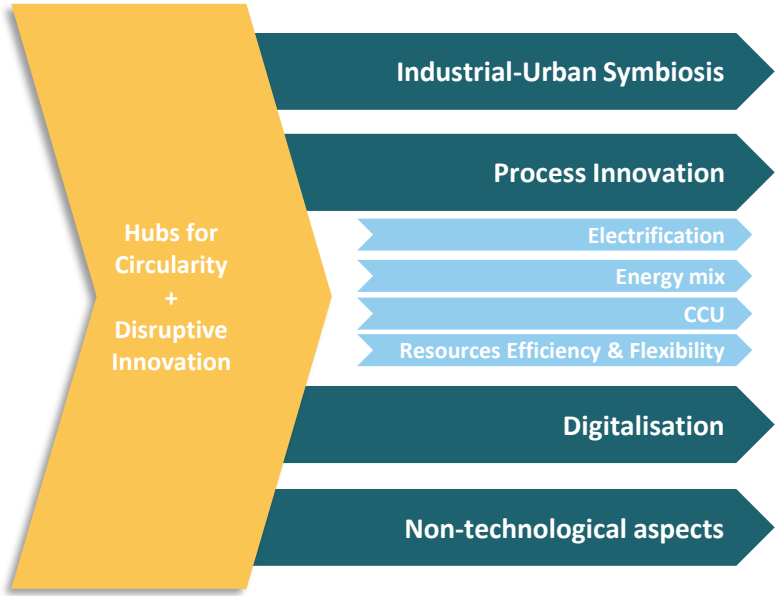
15 Diciembre 2022
Madrid / En línea

Àngels Orduña Cao
Executive Director
A.SPIRE

PROCESSES4PLANET

Ambitions and Challenges

WE NEED TO START NOW, THE WAY IS LONG



Innovation area	Progress up until milestone year[1] 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.

[2] It is extremely difficult to foresee future technological developments and related innovation opportunities over a 5- to 10 year horizon. This Table outlines the foreseeable progress of each innovation area based on best available knowledge about technologies under development.

Table 1 shows an estimate of the anticipated progression by innovation area level.

SRIA 2050: P4PLANET'S STRATEGIC RESEARCH AND INNOVATION AGENDA

ASPIRE

Innovation

Unique cross-sectoral community

Innovation area	Progress up until milestone year[1] 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				

14 Innovation Areas

36 innovation programmes

to FILL the GAP

1st deployment

First-of-a-kind plants

Hubs for Circularity

Impact delivery

Roll out to achieve prosperity for all

- Climate neutrality
- Near zero landfilling
  Near zero water discharge
- Competitive EU process industries

UPCYCLING & ECO-DESIGN:
Near zero-landfilling &
Near zero-water discharge

PROCESSES4PLANET

Disruptive new processes: Towards net-zero CO_2 emissions

- Renewable Electricity integration
- Alternative Fuels integration: H2
- Biomass / Waste
- Electrificaiton of furnaces
- Electrification of Processes
- Energy Efficiency

PROCESSES4PLANET

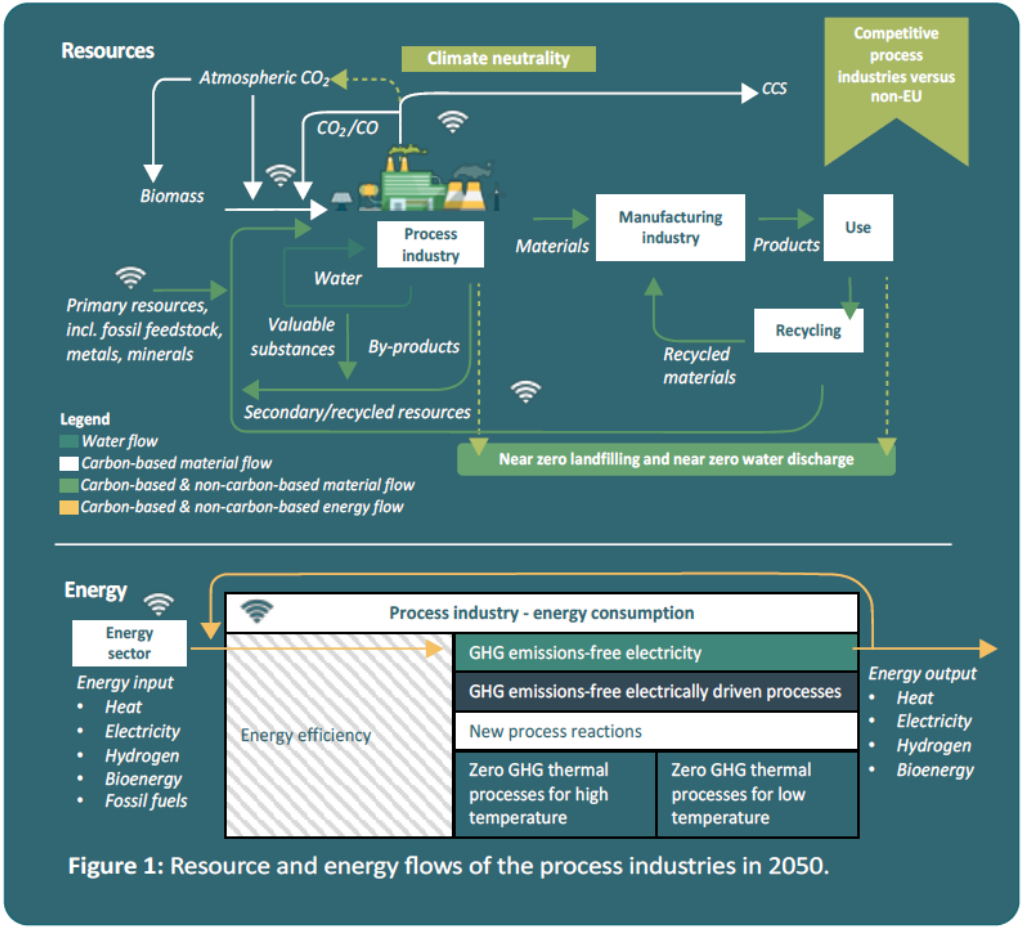


Figure 1: Resource and energy flows of the process industries in 2050.

END USER

Integrating innovations at TRL 8-9

First-of-a-kind Large scale plants in operation

- Combine one or several P4Planet Innovations towards the 2030/2050 ambitions to reach Climate neutrality and circularity
- Acting as Hubs of bulk amounts of resources from industry and the municipalities.
- Several marbles will likely connect to reach together the targets of the partnership's KPIs
- **50+ "Marbles"** identified. Aiming to **launch 15 in the period 2021 – 2030**, responding to the Green Deal plan, and enabled by the P4Planet innovation portfolio

PRIVATE INVESTMENTS

- **Industry leader commitment**
- **when technical and economic feasibility is proved through Horizon Europe programs.**
- **Public support needed to de-risk and accelerate**

First-of-a-kind plants

Ambitions to enable Prosperity for all

- Climate neutrality
- Near zero landfilling and near zero water discharge
- Competitive EU process industries

Hubs for Circularity

essential tool to deliver the transformation

Regional demands
- Societal needs
- Customer needs
- Stakeholder demands

Regional benefits
- Industrial-Urban Symbiosis
- Economic growth
- Understanding regional demands

Regional community
- RTOs
- SMEs
- Civil society
- Across sectors
- Process industry
- Financial institutions
- Public sector

Sustainable business model
- Business-to-territory plan
- Co-investments model

Disruptive innovation
- Social innovation
- Business model
- Technology
- Processes

Knowledge sharing through Community of Practice

Exporting innovations

H4C
ECOP

Mapping Europe's potential for H4Cs – clusters

ACROSS EUROPE

- **West European countries**: high potential for hubs identification
- **Eastern Europe**: more scattered landscape, but high potential to attract innovative industries

ACROSS SECTORS

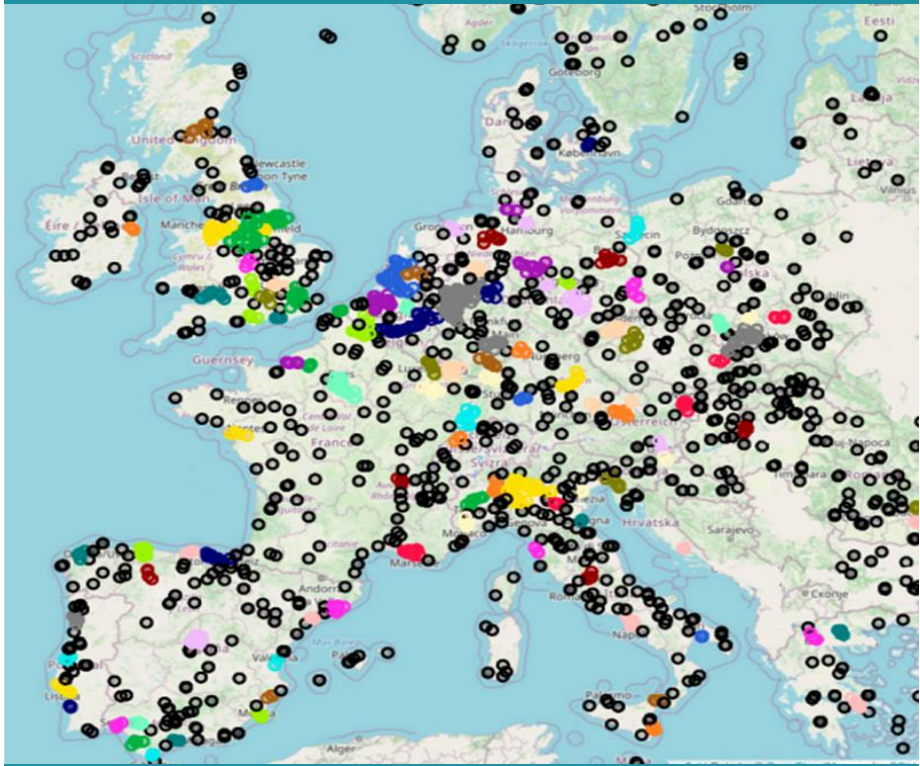
Lower level of geographical clusterisation of aluminium, cement, lime, plaster or electricity, compared to 70% for petrochemical sector

URBAN AREAS

Clusterisation increases by a third in urban districts.

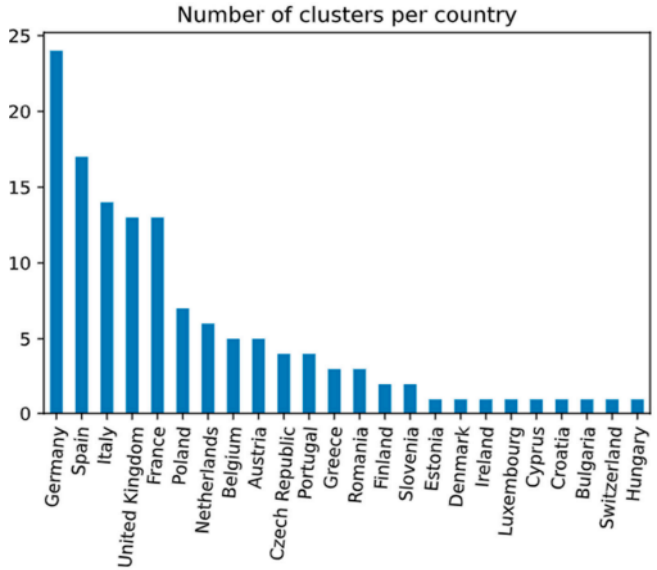
Most cities clustered in: Belgium, Germany and The Netherlands

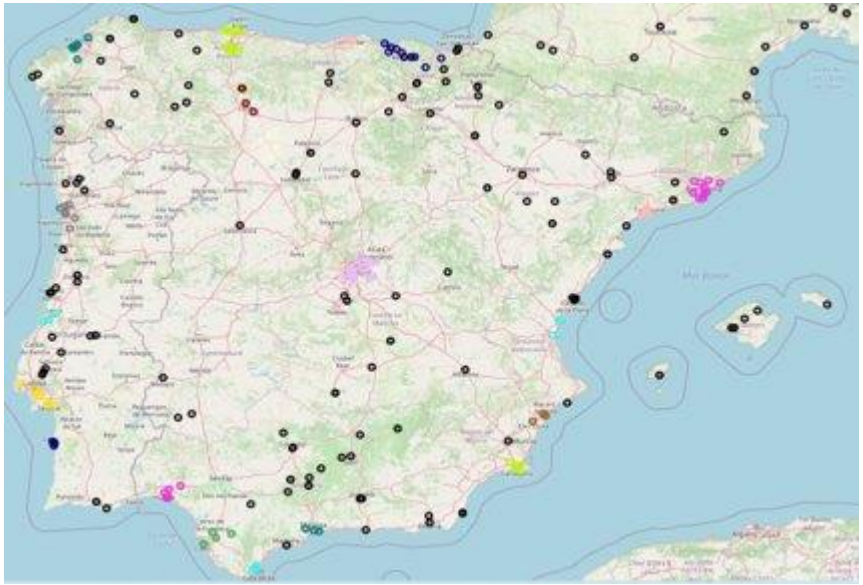
Based on DBSCAN clustering algorithm:
Radius 25 km and 5 minimum points. Hubs in color, Non-clustered installations in black



***References**: Ghent University master thesis, Rob De Boever; and journal article in Sustainability (Elsevier) 'Hubs for circularity: geo-based industrial clustering towards urban symbiosis in Europe' by Francisco Mendez Alva, Rob De Boever and Greet Van Eetvelde*

Clusters in Central and Southeastern Europe



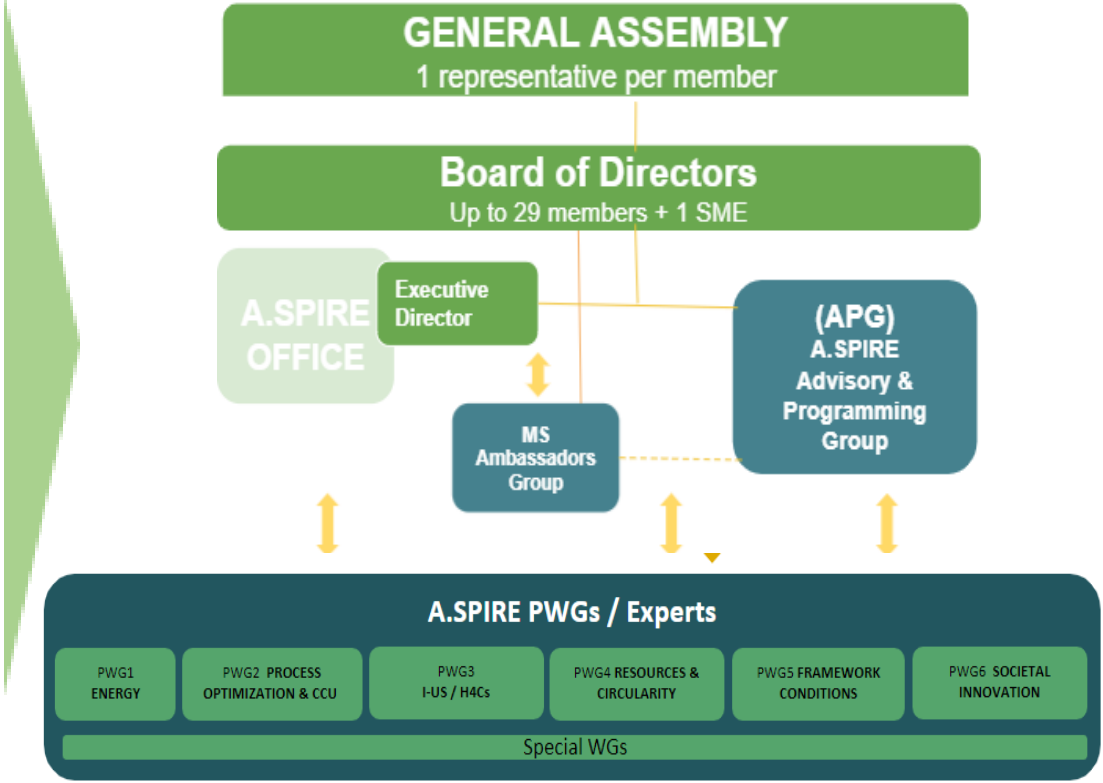


Spain

Clusters identified close to Santander (Cantabria), in Catalonia et al.

Urban districts attract more industry: great potential for the H4Cs

EU Process Industry Association



Governance and External consultation

PROCESSES4PLANET

PRIVATE PARTNER

ASPIRE

Board of Directors
5 representatives

Executive Director
1 representative

APG
15 representatives
(Incl. **Ambassadors Group Leader**)

Co-chair of PB

PARTNERSHIP BOARD

PROCESSES4PLANET

- Signatories
- Commitment
- Decision making

Co-chair of PB

PUBLIC PARTNER

COMMISSION EUROPÉENNE

IMPACT PANEL

Dialogue with public investors beyond HEU

FEEDBACK PANEL

Dialogue with civil society

WHY JOIN A.SPIRE

Teaming up to address the challenges of Climate Change, Circular Economy and Competitiveness together

LARGER INDUSTRIES:

- Continuous dialogue on R&I across SPIRE sectors and beyond
- Channel to raise your voice on R&I for HEU & other programmes
- Access to a pool of knowledge & talent (in Universities, research centres….)
- Direct access to SME providers
- Collaboration with the innovation ecosystem and value chain
- Access to developments by other projects, SMEs, universities…
- Protection of intellectual property
- Dialogue with the EC, MS, regions, MePs & other stakeholders

SMEs:

- Direct Access to growth opportunities
- Direct Access to new markets
- Direct Access to large industry customers

RTOs, Universities, NGOs, Innovation agencies, Regions et al.:

- Direct Access to applied innovation
- Link to deliver impact to society and regions
- Collaboration for disruptive innovations

BECOME A MEMBER. Send us an online application

https://www.spire2030.eu/spire/join-us/application-and-fees

Contact Us:

Rue Belliard 40 Bte 21B-1040 Brussels

info@spire2030.eu

+ 32 (0) 491 171 19 74