CoPro Final Symposium
Digitalisation for Sustainability
On line, 3rd April 2020
SPIRE ADDED VALUE: The European Process Industry at the forefront of innovation

+150 Members teaming up

€900 Million budget (2014-2020)

8 Sectors (currently)

95% Of investments in EU

6.3 million direct jobs
19 million indirect jobs
450,000 enterprises
€1.8 trillion/y turnover
4.7% OF EU28 GDP

Strengths

Challenges

Resources & energy
Competitiveness
High-risks/long-term investments

450,000 enterprises
€1.8 trillion/y turnover
4.7% OF EU28 GDP

Countries

Resources & energy
Competitiveness
High-risks/long-term investments
GOVERNANCE SPIRE cPPP

PRIVATE PARTNER
ASSOCIATION SPIRE

• Discuss priorities
• Propose call topics
• Form consortia
• Apply to calls

PUBLIC PARTNER

• Develop work programme
• Publish open calls

PARTNERSHIP BOARD

• Discuss priorities & call topics H2020/HEU
• Assess progress

European Commission

GENERAL ASSEMBLY
1 representative per member

Board of Directors
Up to 19 members + honorary members or advisors

A.SPIRE OFFICE

IRIAG - ADVISORY GROUP
Chair / Vice-chair

Chairs of WGs
Industry
RTOs
EI at
Sectors & RTOs representatives

WG / TASK FORCES / TOPIC GROUPS
(1 chair + 1 co-chair / group)
P4Planet 2050 ROADMAP – WGs
BE PART OF IT: JOIN US TO DEFINE THE FIRST TOPICS OF HORIZON EUROPE

SPIRE 2050 AMBITIONS: The impact on the planet and society
- Climate Tech gap: Net-zero emissions
- Hubs4Circularity: Zero-landfilling
- Competitiveness

SPIRE 2050 TRANSFORMATIONS of the EU Process Industry
- T2: Process Industries as enablers of carbon-neutral economy
- T3: Process Ind, regions & cities deploying circular economy at scale
- Integration of Process Industries

SPIRE NEW WGs (1 chair + 1 co-chair / group)
- WG1: Energy mix
- WG2: Electrification
- WG3: H2
- WG4: CCU - CO2
- WG5: Resource & Process Efficiency

TRANVERSAL TASK FORCE
Social & non-tech innovations
SPIRE’s impact in the four year period up to 2018

SPIRE-CCNI will be building on the experience, achievements and lessons learnt from its predecessor. Despite its relatively short existence, SPIRE cPPP has already managed to deliver high impact:

**PRIVATE LEVERAGE**
- **8.5 average leverage factor** (Target: 5 to 10)
- INVESTED by COMPANIES: 4.52 bn €

**ENVIRONMENTAL KPIs**
- 29% reduction of emissions (Target: 40%)
- 38% less dependency on fossil energy (Target: 30%)
- 31% less dependency of non-renewable, primary resources (Target: 20%)
- 43% reduction of waste (no initial target established)

**JOBS**
- 100 new jobs being/to be created, directly related to projects
- 1523 new jobs being/to be created, directly related to SPIRE companies

**SIGNIFICANT INNOVATIONS**
- 264 developed or being developed (of which 86 major innovations) (Target: 40)
- 68% of projects planning to patent / commercialise / deploy

**SPIRE SMEs**
- 7 new employees / SME (higher than EU average = 2)
- 40% growth in turnover (double than EU average)
- 27% of SMEs won new business through SPIRE contacts
SPIRE Roadmap 2050 to achieve transformation in Process Industry

Transformation levers and tools that will enable SPIRE-CCNI to achieve its AMBITIONS:

- **Climate Neutrality** - Towards Net-Zero CO2 emissions in 2050
- **Circular Resources** - Near-Zero landfilling and near-zero water discharge in 2050
- **Competitive Process Industries** — Innovations contribute to EU process industry competitiveness

**Current Process Industries**

- TRL 1
- TRL 9

**Innovation Areas**

- 16 Innovation Areas
- Specifying what innovation is needed to meet the SPIRE ambitions

**Innovation Programs**

- 36 Innovation Programs
- Specifying how SPIRE aims to achieve the required innovations

**Enablers**

**4 Transformation Levers**

- Industrial-Urban Symbiosis
- Process Innovation
- Digitalisation
- Non-technological levers
Digital Innovation Programs

- IP 13.a.- Digital Materials design
- IP 13.b.- Digital Process Development and Engineering
- IP 13.c.- Digital Plant Operation
IP 13.c.- Digital plant operation  (€147 M)
• Fully dynamic cognitive control of integrative single systems
• Optimisation of interconnected processes and plants
• Development of eco-systems of digital twins for plants, processes and products
• Integration of anti-cyber attack solutions
• Role of humans in plants
• Virtual environment/reality for training

IP 13.d  Intelligent material and equipment monitoring  (€111 M)
• Powerful and intelligent on line sensors or wireless sensor networks
• Solutions for automatic pre-processing of large amount of data from plants
• Solutions to detect possible equipment failures automatically
• Full plant monitoring on the environmental footprint

Building on the results of:

• INEVITABLE: digitalised monitoring tech. TRL7 in 2022
• COCOP: integrating unit-level sub-problems into plant-wide optimal schedule. From TRL6 to 9 by 2025
• MONSOON: model-based control framework for process efficiency. From TRL7 to 9 by 2025
• COPRO: process monitoring techs that can be applied to all Process Industries and other sectors. TRL6-8. 10% GHG reduction. SME to rollout the system
• RECOBA: transforming design of batch processes. Reduce GHG by 6000.000 tone/year. From TRL7 to 9 by 2030 (dynamic process models)
SPIRE 2050 FUNNEL towards first-deployment

14 Innovation Areas

36 Innovation Programmes

The “Marbles”

- Large-scale demonstrators, pilot or first-of-a-kind plants
- proof the feasibility of highly ambitious CO2 abatement plants
- acting as Hubs of bulk amounts of resources from industry and the municipalities.

PRIVATE INVESTMENTS

- Industry commitment
- When technical and economic feasibility is proved
- Public support needed to de-risk
Hubs for Circularity: essential tool to deliver the transformation

Regional demands
- Societal needs
- Customer needs
- Stakeholder 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 models
- Technology
- Processes

Exporting innovations

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

Knowledge sharing through Community of Practice
Search Outputs from SPIRE Projects
This new (beta) section of the SPIRE website allows you to browse and search through Outputs from projects across the SPIRE portfolio. Beyond just information on the main exploitable technologies and innovations, projects are also encouraged to use this framework to share other resources that could be of use to SPIRE stakeholders and other projects, such as education and training materials, links to published papers, demonstration photos, technology reviews, etc. Guidance for Creating SPIRE Project Output Summaries is available here.

Outputs section / Website
- Showcase your project’s results
- Find the results of other SPIRE projects

Other Sections
- Videos of projects 2014 - 2016
- Add your events to our web calendar

Send us your Success Story
- Progress Monitoring Report
- Yearly Projects’ Brochure

Social media
- Connect to SPIRE Linkedin: SPIRE 2030
- Connect to SPIRE twitter: @spire2030

https://www.spire2030.eu/projects/outputs
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

Further benefits to other members

**SMEs:**
- Direct Access to growth opportunities
- Direct Access to new markets
- Direct Access to large industry customers

**RTOs, NGOs Innovation agencies et al.:**
- Direct Access to applied innovation
- Link to deliver impact to society and regions
- Collaboration for disruptive innovations
A.SPIRE upcoming events / meetings 2020

• **23 January:** A.SPIRE at Public Hearing on Partnerships at the European Parliament – Brussels/Belgium

• **March**
  • Roadmap shared with members
  • Board Meeting + IRIAG Meeting

• **March to June:**
  • Webinars on Added Value for membership
  • Webinars to develop the first topics of Horizon Europe (only for members)
  • On line dialogues with regions & relevant stakeholders on the H4C

• **May:** BoD meeting + IRIAG meeting + Meeting with DG R&I

• **24 June 2020:** A.SPIRE General Assembly, Brussels + SET PLAN Networking event (tbc)

• **Sept- Oct** (date tbc): Topics workshop in Brussels or on line (only for members)

• **27-28 October:** INDTECH – Mainz/Germany + side event / meeting on H4C & German Presidency

• **November:** BoD meeting in Poland (tbc) + side Processes4Planet event (tbc)

• **Oct- Dec 2020:** Signature of new SPIRE MoU + BoD meeting

• **Nov. – Dec 2020,** Brussels: launch of Processes4Planet partnership + SPIRE projects day (date tbc)

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**MAIN ACTIONS ALONG 2020:**

• **Review and update of roadmap** (with members and new sectors in A.SPIRE)

• **Preparation of Guidance Document** (how the new Partnership will work)
  • April 2020: members consultation + open consultation

• **Preparation of the first set of Processes4Planet topics for the first Work Programme of HORIZON EUROPE**
  • March – April: First list proposal (Advisory Group – IRIAG)
  • May – June: Second draft proposal discussed with the European Commission (Partnership Board / IRIAG)
  • Working Groups and IRIAG develop the topics content further + Discussions with the EC, MS and relevant regions
  • Sept- Oct: Topics workshop in Brussels or on line (date tbc)

• **A.SPIRE contributes to SET PLAN #6 new Implementation Plan**
  • IRIAG and WGs to develop proposals of content
Connected across borders and to citizens