



## ***The SPIRE PPP – Creating a visible impact on the EU's competitiveness.***

### ***SPIRE in FP9 will pave the way towards the next generation of sustainable European process industries to benefit the entire value chain and society***

Today our society is exposed to rapid changes in its economy, environment and technologies that impact both European citizens and industry. The resulting sustainability challenges are met by opportunities for innovation. Transforming the European process industries into a rejuvenated, highly innovative, dynamic, flexible and sustainable and productive sector will increase Europe's global competitiveness, foster reindustrialization and therefore positively affect wealth, growth, job creation and our environment.

High risk and long term investment is needed to meet European industry's objectives of competitiveness and sustainability. Research and Innovation (R&I) investments have a direct impact on productivity. The European Process Industries strengthen the EU's competitiveness and maximize the value that companies can create from Europe's excellent research capabilities through projects funded under the Sustainable Process Industry through Resource and Energy Efficiency contractual Public Private Partnership (SPIRE cPPP). SPIRE provides at least a 5.4 leverage factor from industry.

The eight sectors of the European process industry (cement, ceramics, chemicals, engineering, minerals, non-ferrous metals, steel and water) within the SPIRE Association (A.SPIRE) highlight the key considerations that the European Commission should take into account to keep these vital sectors engaged with the forthcoming ninth research framework programme (FP9). This is essential to ensure impact and delivery for sustainability, growth and jobs in Europe.



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**A.SPIRE aisbl**

Av. E. van Nieuwenhuysse, 4 - B-1160 Brussels

Email: [info@spire2030.eu](mailto:info@spire2030.eu) - Tel: +32 (0)2 676 73 09

[www.spire2030.eu](http://www.spire2030.eu)

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## 1. Europe's excellence in Research and Innovation for the benefit of society needs to secure the participation of large companies, SMEs, start-ups and academia in FP9.

The European Process Industries, all being concerned with the efficient processing of material resources into other value-added products, are of major importance for economic development and wealth creation. By providing materials, goods and services, process industries effectively enable technical solutions for all sectors and value chains of the manufacturing economy. They deliver sustainable and innovative solutions (Key Enabling Technologies - KETs) addressing the Societal Challenges identified by the European Commission. Innovative technologies and processes, as deployed in the EU by SPIRE industries, are the way to overcome growth stagnation and reverse deindustrialization.

The process industries contribute over half of European industrial production. Any improvement in the process industry will have a strong impact on Europe's industrial competitiveness through reindustrialization and therefore employment. SPIRE is an essential solution provider to meet the needed level of impact. Data from 2014 show that the Process Industries contributed some 1.3 trillion EUR annually in gross value added to the European economy: more than half (56.4%) of industrial value added in the EU and approximately 10% of all economic activity. The sectors also account for 46% of total industrial employment and 7% of all employment in Europe.

Europe needs to support industry through FP9 to achieve its sustainability goals at environmental, social and economic levels, and encourage the necessary commitment from industry to bring the required transformations to market and society. Industries are in the best position to secure the transfer of new solutions and technologies to less developed parts of Europe: for example energy efficiency and industrial symbiosis measures developed by SPIRE projects are being transferred to industrial sites in the EU-13 countries.

It is therefore crucial to keep supporting all actions of the Horizon 2020 pillars, including a strong LEIT (Leadership in Enabling and Industrial Technologies) pillar, which has shown to be a powerful instrument to implement solutions in industries in Europe with a tracking effect in innovation for SMEs and RTOs. The LEIT pillar liaises between the Excellent Science and the Societal Challenges pillars and the participation of industries, through cPPPs like SPIRE, reduces the distance between Research & Innovation and its implementation and impact in the market and society.

The current Horizon 2020 structure could be expanded by including the EIC (European Innovation Council) in the second pillar together with the LEIT actions. This would ensure that appropriate measures are taken to realize the potential of future and emerging technologies (FETs) and key enabling technologies (KETs) that can bring breakthrough innovations to the whole value chain and to enable rapid scaling-up of new businesses.

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**2. SPIRE aims to empower the next generation of process industries in a modern economy: fully embracing digitization, the circular economy and low carbon-economy. SPIRE intends to be a long-term initiative securing sustainable innovations and competitiveness across-sectors to respond to the challenges in society and bringing innovations to all EU regions.**

The SPIRE cPPP provides the process industries with a platform to combine public and private efforts, to promote cross-sectorial interactions with common targets and challenges with the objective to develop and transfer innovative solutions rapidly through multiple sectors and regions. Its structure is open and transparent, which allows wide participation and bottom-up initiatives from and for members and non-members alike operating under the same rules as Horizon 2020.

SPIRE and its ability for cross-sectorial networking in the process industries strengthens its capability to provide sustainable innovations, long-term solutions and developments with significant impact across the EU. SPIRE in FP9 can ensure energy and resource efficiency in industrial processes are increased. This will result in sustainable environmental performance, higher global competitiveness and innovative applications (products and materials) that will be used to deliver our society's most important overarching needs: the creation of smart industries, smart cities and smart mobility.

The SPIRE Community calls for innovative Key Enabling Technologies and a strong Industrial Pillar to be mobilized in the next Framework Programme to support industry's capability to turn challenges into key opportunities. As the process industry is at the roots of most value chains and industries, this should be a winning formula for growth and job creation for ALL other industries and sectors in Europe.

The SPIRE community is already moving towards a transformation of the process industry. Thanks to SPIRE, Europe can count on a strong and committed industrial community which is mobilizing resources and is ready to mobilize high additional investments, beyond public funding, to create real impact. More than 95% of private investments related to SPIRE projects remain in the EU demonstrating SPIRE's ability to keep and increase investments at home. SPIRE actively contributes to boosting measures covering the whole industry cycle (production, consumption and resource management) that are being transferred from innovation leaders to less developed member states and, therefore, having a significant social, economic and environmental impact across the EU.

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3. Public Private Partnerships, such as SPIRE, play a key role in the innovation ecosystem in Europe. They support open innovation through collaborative projects along the value chain and between regions. They team-up innovators and investment to bring innovations to the market and society faster.

Public Private Partnerships (PPPs) are extremely important and beneficial instruments acting as key-providers of innovative solutions that ensure competitiveness and sustainability for European industries and offer solutions to the EU's Societal Challenges.

The PPPs under Horizon 2020 are performing very effectively through their ability to support high quality and high impact projects leveraging powerful ecosystems of innovators across Europe. They are highly suitable innovation instruments where academia, research organizations, investors, SMEs and large industries join forces to bring inventions quickly to market and they connect vertical value chains. SPIRE cPPP represents 6.8 million jobs in European industry working to transform a range of raw materials that are then used by the discrete manufacturing sectors.

Contractual PPPs have proven to be effective facilitators enabling industrial sectors to engage with EU Research Framework Programmes. A bottom-up approach for the benefit of the whole ecosystem of innovators is secured through Technology and Innovation Agendas and an extensive interactive and proactive exchange between the European Commission, industry and academia working together to shape appropriate EC Work Programmes. The SPIRE research and innovation roadmap builds on our knowledge of the long-term challenges and related opportunities faced by the full spectrum of process industry sectors and by society and will enable the EU's process industry to stay ahead of its global competitors.

Breakthrough, radical, disruptive, discontinuous or market creating innovations can only deliver impact by bridging the "Valley of Death", taking risks, time and capital investment. Significant innovation funding in the frame of the PPPs and SPIRE allows large-scale technological, business and socio-economic advances that build a sustainable innovation pathway in the European Union. It is essential to work on a long-term framework of commitment with the cPPPs and SPIRE to successfully set up and transfer the knowledge developed in funded projects to the market and society.

High levels of industry participation, as experienced in the cPPPs, is essential for exploiting the results from projects at European level and to maximize impact. cPPPs, like SPIRE, have the critical mass and well developed market access channels needed to ensure exploitation, market uptake, platform building and standardization. To ensure the maximum impact for FP9, it is essential to further enhance industry participation through the cPPPs and SPIRE, incentivizing further private R&D investments to close Europe's innovation gap with the United States and Japan, stay competitive with Asia/China, and contribute to close the innovation gap across the EU's regions.

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4. The breakthrough innovations developed by SPIRE projects on Energy and Resource Efficiency are setting the basis to move towards the 'next generation' of European process industry. SPIRE-Horizon 2020 projects are showing their capacity to generate a strong and visible environmental, economic and societal impact.

In only three years, SPIRE has already shown its capacity to contribute to the objectives of economic, social and environmental sustainability in the European Union.

The following data show SPIRE's commitment and capability to reach all its targets established for Horizon 2020 and keep the benefit of its work in the European Union. At the mid-term of the Horizon 2020 programme, some of the expected impacts (at maturity) of SPIRE's current project portfolio compared to the targets are listed below. And, of course, further complementary results will be achieved through future, scheduled SPIRE project calls to 2020.

- With more than **750 M euros of expected private leverage investment commitments**, SPIRE has already reached half of the target set in its roadmap for the whole Horizon 2020 period (Target: 1 400 M Euros). 95% kept in the EU
- Estimated **leverage factor in 2017 was at least 5.4** (Target by 2020 ranks from 5 to 10)
- **45% of SPIRE projects expect to fully deploy their results in the frame of 0 to 5 years** after the project is finished. This shows SPIRE's capacity to deliver to markets and society
- **173 technologies** developed or under development (Target: 40 new technologies)
- **58 new high-skilled job profiles** created (Target: 10 new job profiles)
- **20% reduction in fossil energy intensity at deployment level** (Target: up to 30%)
- **25% efficiency improvement of CO<sub>2</sub> equivalent footprints at deployment level** (Target: up to 40%)
- **20% reduction in non-renewable, primary raw material intensity at deployment level** (Target: up to 20%)
- More than **25% reduction of waste** at deployment level

Building on the results of its Horizon 2020 projects, SPIRE foresees a range of new innovations for the European Process Industry by 2050 that will have turned challenges into opportunities.

Flexible modular production and new key enabling materials that align with products' customization for the end-user down the value chain and breakthrough technologies for an "integral" control of process industries through digital twins are among the trends SPIRE envisions to transform the process industry in the EU. Cost-effective industrial symbiosis across sectors and regions, renewable energy for near-zero emission processes and alternative feedstock to move towards completion of the circular economy and near-zero waste add to SPIRE's innovation perspectives to deliver significant results for sustainability and substantial reductions of greenhouse gas (GHG) emissions for the European Union.

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## ***SPIRE ENCOURAGES RETAINING THE SUCCESSFUL CONTRACTUAL PPP SCHEME***

**In order to strengthen industrial leadership and guarantee sustainable application and implementation of European research, the EU needs to retain the SPIRE cPPP in FP9.**

Public-Private Partnerships have a pivotal position to drive economic growth and create jobs by removing barriers to innovation and putting forward appropriate objectives for specific industries and sectors. Increasing the framework programme's attractiveness for large and small industries will further increase impact in markets and society. Impact can be further increased by, for example, clustering projects or applying higher funding for key flagship-oriented projects. Funding levels for industry and SMEs need to ensure support to overcome the Valley of Death.

To position Europe, once again, as a global industrial leader, further participation of the process industries in the next Framework Programme, through the SPIRE cPPP, will be paramount to drive sustainability and growth, secure employment, and create impact in our society and environment. Despite only three years of life, the SPIRE cPPP is already showing a great capacity to generate impact and inspire a transformation of the EU process industries.

**It is essential to retain SPIRE in FP9 to ensure delivery of results and maximize impact.**

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