European Commission

Energy Efficiency in Manufacturing

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"Advanced Manufacturing Systems and Biotechnology"

DG Research and Innovation

EUSEW Workshop

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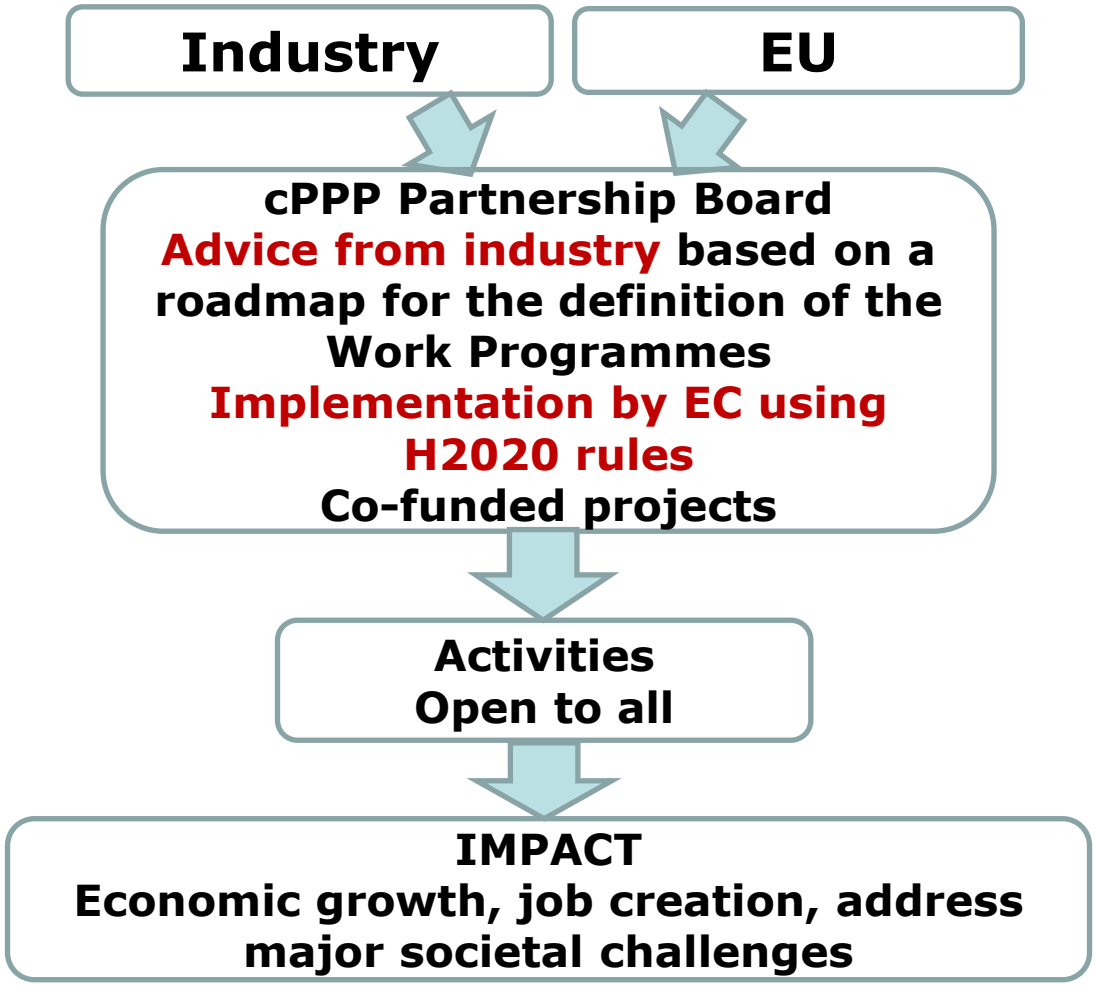
HORIZON 2020

Overview:

- cPPP concept in a nutshell
- cPPP relevant to Energy Efficiency in manufacturing (discrete and continuous)
- Approaches to improve Energy Efficiency
- Conclusions

European Commission

cPPPs with industry



cPPP with high relevance to Energy Efficiency in Manufacturing

- *Factories of The Future (Discrete manufacturing): 1.15 Billion Euro in H2020*

  http://www.effra.eu/

- *SPIRE (Processing technologies): 900 Million Euro in H2020*

  http://www.spire2030.eu/

Sustainable Process Industry PPP (SPIRE)

- **Process industries**

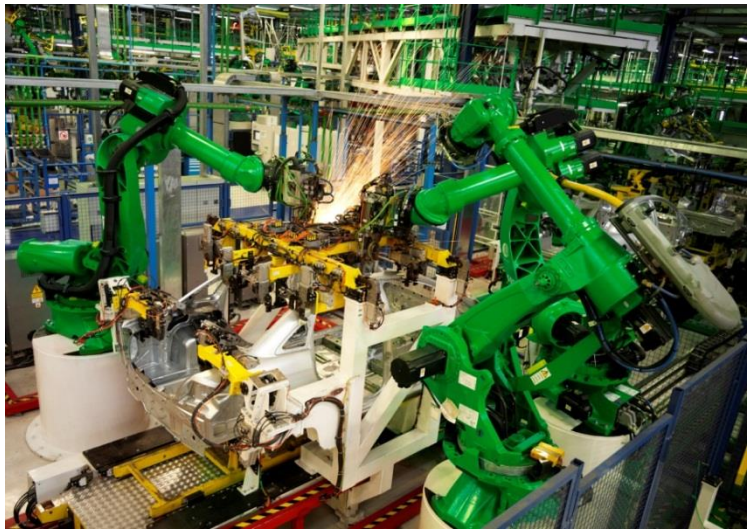
- Eight EU industrial sectors: chemical, steel, cement, ceramics, minerals, non-ferrous metals, industrial water and process engineering
- 6.8 million jobs in 450,000 enterprises
- Turnover of over €1,600 billion/year
- At the core of the value chains and highly dependent on resources
- **Striving for competitiveness and sustainability**
- **High risks and long-term investments**
- **Need for co-operation along the value chains**

SPIRE Main Objectives

- **Development of technologies and strengthen cross sectorial integration to improve efficiency (energy, resources) paving the way towards industrial symbiosis**
- **A reduction in fossil energy intensity of up to 30% by 2020**
- A reduction in non-renewable, primary raw material intensity of up to 20%:
- increase in renewables, reduction and re-use of waste (even cross-sectorial) with ambition to achieve a close loop
- Reduction of the water footprint of industrial processes
- **Efficiency improvement of CO2-equivalent footprints of up to 40%, with the achievement where possible of carbon-neutral sectors**

Factories of the Future PPP

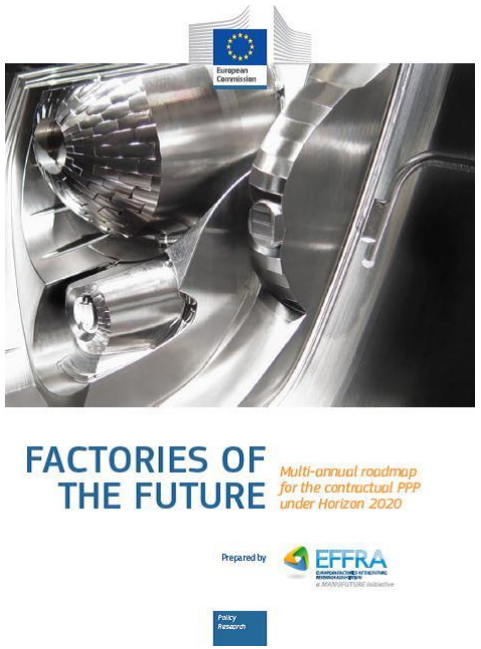
- **Manufacturing sector**
- 23% of European jobs (over 30 million)
- The vast majority are in SMEs
- Manufacturing gives 80% of EU exports
- Complex R&D-intensive activity
- R&D costs and risks are high



- **Technological capabilities and supply chains are dispersed across the EU**
- **Critical mass of stakeholders at EU level is needed to go beyond the capacity of individual Member States**

Goals of the FoF PPP

- Strengthen EU industrial competitiveness and sustainability
- **Reduce energy consumption up to 30%**
- Reduce use of material up to 20%
- 20% less waste generation
- Increase the share of manufacturing GDP to 20% by 2020



Approaches to improve energy efficiency in manufacturing

- *More efficient processes (higher yields), higher quality (low to zero defect manufacturing):*

e.g. Develop processes utilising alternative sources of energy (e.g. MW, US)

Advanced ICT process monitoring & control technologies

- *Integration of multiple steps (process+ downstream), transition batch to continuous, flexible processes*
- *Replace traditional processes with bioprocesses, that run in milder conditions*
- *Industrial symbiosis (utilisation of energy streams across multiple plants, sectors, maximising efficiency)*

Conclusions

- *It is important to establish an agenda of shared priorities across sectors to tackle common issues (e.g. energy efficiency) [critical mass]*
- *Close cooperation across sectors (sub-sectors), possibly leading to integration of operations (symbiosis), transfer of best practises*
- *Investigate the potential of novel technologies with respect to energy efficiency e.g. alternative sources of energy, wider use of bioprocesses, ICT*

Thank you for your attention

More information:

HORIZON 2020:
http://ec.europa.eu/research/participants/portal/desktop/en/home.html

Contractual Public-Private Partnerships in research and innovation:
http://ec.europa.eu/research/industrial_technologies/ppp-in-research_en.html

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