Sustainable Process Industry through Resource and Energy Efficiency

Global Climate Change Forum

World Cement Association

SPIRE

Towards the next generation of EU Process industry

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Daniel Gauthier, SPIRE Chairman

Public Private Partnership between the European Union

and

cement, ceramics, chemicals, engineering, minerals and ores, non-ferrous metals, steel and water sectors

SPIRE 2050 Vision

ENHANCED R&I SUPPORT FOR THE PROCESS INDUSTRY IS NEEDED

Our Vision address two major challenges:

The level of ambition of
EU & GLOBAL ENVIRONMENTAL TARGETS
has grown exponentially

- Paris Agreement: keep global warming "well below 2 degrees"
- EU: reduce GHG emissions by 40% (2030), 60% (2040) and 80% (2050)
- EU circular economy package

The required R&I capacities and the level of investments needed to develop, pilot and deploy related technologies also grow exponentially.

The need to enhance
EU GLOBAL COMPETITIVENESS
levels remains crucial

Keeping jobs and the whole value chain in the EU

SPIRE 2050 Vision

THE POLICY & SOCIO-ECONOMICAL CONTEXT

- **Transition to a carbon neutral economy:** mobility, urbanisation, energy transition
- **Transition to a fully circular economy**: resource conservation, near zero waste, landfill ban)
- **Cultural change end-users**: customized, healthy, responsibly sourced and high quality products
- **Social demand for "local" production**: short value chains, welfare creation in our regions and cities

"An integrated and digital European process industry fostering a "well-below 2°C" and fully circular future for our planet and society."
SPIRE 2050
Our Value Proposition

Integrated

Innovative “industrial ecology” models
Building physical and digital bridges
across sectors and countries

Digital

Boosting process efficiency
Generating new business models

Well-below 2 degrees

Process industries as enablers for
a carbon-neutral economy

Circular

Process industries = “Hubs for Circularity”
of energy and resources in Europe
Circularity at scale

The transformation will enhance the competitiveness of entire EU value chains

delivering **growth** and **jobs** in Europe

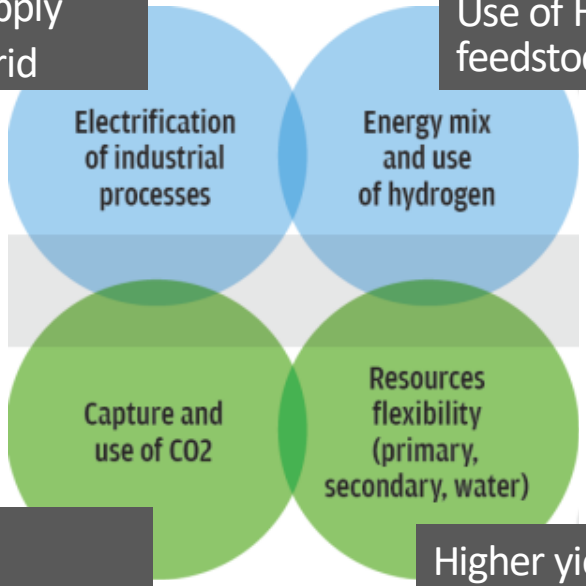
SPIRE strives for positive change at **local, regional, Member States and European levels**.

Pathway towards decarbonisation:
adaptation of industrial processes to the switch towards renewable electricity (e.g. electrochemistry, electric furnaces or kilns, plasma, microwave).

Technologies to help balance supply and demand on the electricity grid

Renewable electricity, low carbon fuels, bio-based fuels, waste-derived fuels
Use of mixed energy sources, minimizing waste heat and addressing fluctuation of supply.

Use of Hydrogen as energy vector and feedstock



Intelligent carbon management,

aiming at fuels or chemicals production or at mineralisation in (building) materials

Higher yields from complex and fluctuating raw material feeds
Full re-use, recycling or recovery of waste

Zero water discharge
Traceability of value chains

Examples of projects in the cement industry

Industrial symbiosis between sectors: optimisation of all resources and energy flows across fence lines

CO_2/CO from the cement industry as feedstock for chemicals and alternative fuels

New digital tools to boost recycling of demolition waste

Each concrete element, brick, board, piece of wood or glass in a building has a value.

Electrification of all process industry sectors

New comminution technologies in process industries

Our ambitions

Closing the climate technological gap

Development of the required solutions to fully contribute to the EU Climate Policy targets

Process industries as Hubs for circularity

Development of required solutions to move towards zero-waste-to-landfill and create Hubs for circularity across Europe

Global competitiveness

Development of technologies which create new investment opportunities for globally competitive EU Process Industries

- **Business as usual is not an option**
- **Massive innovation efforts are needed**
    - Maximizing energy efficiency, waste co-processing and clinker substitution
    - Exploring new types of cement and concrete, new ways to construct
    - Capturing residual emissions for use or sustainable storage
- **Public-Private Partnerships are crucial to unlock change**
    - Supporting research and innovation
    - Enforcing regulations which favour low carbon solutions
- **A part of the solution is in cross-sectorial strategies**

Closing the technological gap towards a « well-below 2 degrees » future

Thanks for your attention