



European Commission

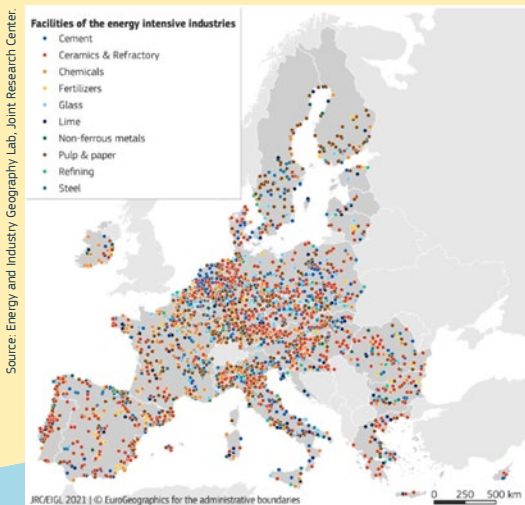
The ERA roadmap for low-carbon technologies in energy-intensive industries

Production facilities of the energy-intensive industries' ecosystem in the EU

Energy-intensive industries accounted for 17% of the EU's total greenhouse gas emissions in 2019¹.

The reduction of GHG emissions in these industries is therefore a cornerstone to achieving the EU's climate goals for 2030 and 2050 under the European Green Deal.

This industrial ecosystem is present in all Member States, through production facilities spread throughout Europe.



The first European Research Area (ERA) roadmap for low-carbon technologies, developed together with Member States, industry and other stakeholders, sketches out key low-carbon technologies and the means to transfer them to the industrial ecosystem for energy-intensive industries (chemicals, iron & steel, cement and other industries) at EU and national level.

The roadmap implements the **new ERA** calling for a better and accelerated transfer of research & innovation (R&I) results into the economy. Its findings will feed R&I priorities into the upcoming transition pathway for EU energy-intensive industries ecosystem, as announced in the updated **Industrial strategy**.

MOST RELEVANT TECHNOLOGICAL PATHWAYS (GROUPS OF SIMILAR TECHNOLOGIES) IDENTIFIED:

The analysis results in a list of the most relevant technological pathways needed for the decarbonisation of the energy-intensive industries ecosystem. These are: electrification; use of green hydrogen; carbon capture and storage and utilisation; alternative feedstock and integration of renewables; alternative materials and processes; energy and materials efficiency including circularity; and industrial symbiosis.



¹ According to ETS greenhouse gas inventories, 2019.

Key conclusions and ways forward

Scaling up and deploying the – manageable – number of innovative low-carbon technologies currently at high technology readiness is needed to reach the 2030 emission objectives.

Technologies that are still in pilot and demonstration phases and at even lower development levels are crucial for reaching 2050 emission targets.

The most pressing challenge is to speed up innovation projects at scale to reach the market.

In order to make best use of the public toolbox to leverage private R&I investment, and to increase cross-sector cooperation and accelerate deployment and uptake, the following opportunities for action have emerged from the roadmap's analysis:



Assessing the potential for establishing an industrial alliance or similar initiative for low-carbon technologies in energy-intensive industries based upon the Processes4Planet and the Clean Steel Partnerships, as referred to in the 2020 New Industrial Strategy. Such initiatives should have a special focus on cross-sectoral technologies linked to the energy efficiency of the industrial processes and use and integration of renewables.



Facilitation of specific national sectoral and cross-sectoral strategies or programmes with key stakeholders as part of the ERA policy agenda 2022-2024.



Establishment of a community of practice to facilitate the authorisation for first-of-a-kind installations for low-carbon industrial technologies, building upon similar approaches under the **European Chips Act**, the **Regulatory Hubs Network** under REFIT (RegHub), and EU recommendations for approval processes for renewable energy installations and the **Hubs4Circularity** Community of Practice.



Enabling further valorisation by exploring with industry the opportunity to open up IP on central (cross-sectoral) green inventions, widening the access to IP for licensing (e.g. patent pool) and knowledge transfer.



Cooperation with CEN/CENELEC and industrial partnerships to identify and fill the main standardisation gaps for innovative low-carbon industrial technologies.

More information at:

ERA Common Industrial Technologies Roadmaps

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