European Commission

Mutual learning for national roadmaps to Europe's industrial decarbonisation

#HorizonEU

PSF CHALLENGE - MUTUAL LEARNING EXERCISE

The Policy Support Facility (PSF) has successfully concluded its Mutual Learning Exercise (MLE) on Industrial Decarbonisation. This collaborative initiative brought together experts, policymakers and stakeholders from 12 countries (Austria, Belgium, Spain, Finland, Georgia, Latvia, Lithuania, Portugal, Sweden, Slovenia, Slovakia, and Turkey) to share knowledge, best practices and innovative approaches for tackling the critical challenge of reducing the carbon emissions of European industries.

Policy context and challenges for the process industry

The EU has many policies and initiatives pushing for low-carbon technologies. One such policy is the Critical Raw Materials Act, which sets the ambitious goals for net-zero technologies by 2030 of ensuring that 40 % of strategic raw materials should come from domestic processing, 10 % from mining, and 15 % through recycling. There is also the Net Zero Industry Act, a proposed regulation aiming to ensure 40 % of the EU's annual deployment needs for net-zero technologies are met through domestic manufacturing by 2030. The overarching European Green Deal and the REPower EU Plan supported by the Recovery and Resilience Facility (RRF) demonstrate the EU's commitment to leading the transition to a climate-neutral economy.

However, the EU faces challenges to achieving net zero. Post-COVID-19, the process industry is still recovering from the impact of the pandemic. Other challenges include ensuring an economical and competitive energy supply and geopolitical factors that pose challenges for the process industry's transition to sustainability, such as the Russian war in Ukraine affecting supply chains and industry resilience.

Industrial decarbonisation requires cooperation of government authorities at all levels, industry and variety of stakeholders. It is important for a greener future for the whole of Europe.

The industry emits a large share of global greenhouse gas emissions because industrial processes use high temperatures and depend on high energy densities. The process industry ecosystem covers a broad range of sectors and is the basis for many value chains. This industry is key to modern life, as this industrial ecosystem transforms resources (like carbon, metals, minerals, etc.) into materials that form the basis for the manufacturing industry (like automotive, textile, etc.) to produce consumer products and other industrial/ construction materials.

In the critical journey towards a sustainable future, industrial decarbonisation stands as a paramount challenge for European Industry, while also holding many opportunities. The Mutual Learning Exercise on Industrial Decarbonisation was launched as a platform to help countries to effectively address the challenges of reducing carbon emissions in the industrial sector and move towards a more sustainable future by facilitating development of integrated low-carbon technology or sector-specific roadmaps at national levels with key stakeholders as part of the ERA Policy Agenda 2022-2024.

About the Mutual Learning Exercise

The MLE on Industrial Decarbonisation started in April 2023 as a platform for 12 Member states and Associated countries under Horizon Europe. The MLE countries came together to discuss their specific industrial decarbonisation needs and engage in a series of activities, workshops and site visits to explore innovative decarbonisation pathways. They shared experiences for the goal of guiding policymakers in developing or updating their plans to reduce carbon emissions in industries, such as with industrial technology roadmaps and sector-specific strategies for industrial decarbonisation. The MLE provided guidance and models for industries to shift from carbon-intensive processes to renewables, tailored to each country's needs. It also advised policymakers on creating and revising industrial technology roadmaps and sector-specific strategies for decarbonisation.

The Mutual Learning Exercise ended in April 2024 with a series of dissemination activities, held under the Belgian Presidency of the Council of the European Union in Brussels, Liège and Genk.

The four topics of this year-long exercise were:

- Topic 1: Introduction and overview of the national and region roadmaps.
- Topic 2: Policies, design and financing for research and innovation (R&I) investments in development, uptake and deployment of low-carbon technologies.
- Topic 3: Actors' engagement.
- Topic 4: Framework conditions.

Policy recommendations and key conclusions to expand and strengthen industrial decarbonisation across Europe

The MLE participants developed the following policy recommendations and key conclusions, showing a strong alignment over the different thematic approaches, presentations and discussions of the respective thematic meetings.

The first recommendation is to **enhance the roadmap development process**. Countries are at different points in the development of roadmaps essential for crafting policies for industrial decarbonisation. These roadmaps are essential for completing their National Energy and Climate Plans (NECPs), due mid-2024.

MLE participants also recommend **enhancing stakeholder engagement and speed up implementation by establishing de-risking instruments**. To accelerate industrial strategy implementation, it is crucial to engage stakeholders from all industrial levels and sectors at regional, national, and European levels fostering collaboration through agreements and aligning energy-intensive industries with the energy sector. This effort includes promoting science-business partnerships via Open Innovation Test Beds and advocating for a standardised EU funding instrument to ensure consistency across member states.

Improve monitoring and data collection and utilisation is another key suggestion from the participants. It is crucial to enhance the collection and usage of data for monitoring the impact of investments in low-carbon technologies, prioritising projects that promote product durability and circularity. An ESF (European Social Fund) - aligned impact monitoring framework will ensure investment strategies are in sync with banking and investor expectations, supported by detailed impact and efficiency models for policy making.

Member states and Associated countries participants call also attention to the need of **boosting coordination and collaboration on energy and resources**. A Community of Practice focused on energy and resources would better link national roadmaps and strategies, foster knowledge exchange and mutual learning in industrial decarbonisation, and encourage inter-ministerial collaboration and the development of integrated industrial hubs.

Establishing a supportive regulatory frameworks is essential for the success of industrial descarbonisation. Creating consistent regulatory frameworks focusing on standardisation, regulatory sandboxes, and innovative financing models would stabilise decarbonisation efforts for relevant stakeholders and develop markets for sustainable products and foster industrial practices through public procurement.

Enhance communication with the wider community. Increasing transparency and communication of decarbonisation strategies and roadmaps will help build trust in consumers and citizens. Using narrative storytelling and a participative approach will reach a larger audience and broaden engagement towards carbon neutrality.

Finally, addressing the skills gap for future technologies is vital. Conducting Green Skills Needs Assessments can help tailor educational programmes and initiatives, fostering collaboration between academia and industry. Aligning curricula with the needs of digitalisation and decarbonisation transitions would prepare the workforce for future challenges.

Benefits of the MLE on Industrial Decarbonisation for participating countries and beyond

Through participation in the MLE, countries have gained valuable insights into industrial decarbonisation, identified opportunities for innovation, and strengthened collaborations. For instance, the exploration of carbon capture, utilisation, and storage (CCUS) technologies, the role of green hydrogen, and the potential for industry symbiosis have emerged as key areas for development and investment.

The Mutual Learning Exercise on Industrial Decarbonisation marks a significant step towards a more environmentally sustainable and competitive European industrial sector.

The insights and recommendations generated through the MLE on Industrial Decarbonisation serve as a valuable resource for policymakers, industry leaders, and stakeholders across Europe. By continuing to build on mutual learning and collaboration, Europe can accelerate its transition towards a sustainable, low-carbon industrial future.

For further information:

Factsheet – Mutual Learning Exercise on Industrial decarbonisation

First thematic report – Mutual Learning Exercise Industrial Decarbonisation: Overview of national strategies and roadmaps for industrial decarbonisation

Second thematic report ¬– Policy-mix for R&I investments in deployment and uptake of low-carbon technologies

Third thematic report – Actors' Engagement

Fourth thematic report – Framework Conditions for deployment and uptake of low-carbon technologies

Final Report

The PSF's objective is to help Member States and Associated Countries to 'improve the design, implementation and evaluation of R&I policies.' The PSF provides expertise and practical support in three major ways: PSF Country (formerly PSF Peer Reviews & Specific support to countries); PSF Challenge (including the PSF Mutual Learning Exercises, focused on specific and operational R&I challenges of interest in several volunteering countries); and PSF Open (which allows countries that have already benefited from a PSF exercise to receive support to follow up on PSF recommendations). The PSF is funded under Horizon Europe Framework Programme.

ISBN 978-92-68-14321-6, doi: 10.2777/597648, KI-AX-24-012-EN-N