

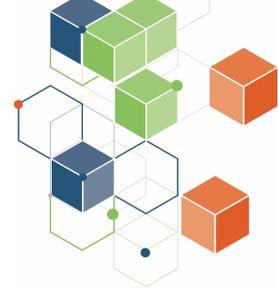


NATIONAL ENERGY & CLIMATE PLANS

Examples of best practices in technological approaches and systemic aspects of the energy transition in the NECPs



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SUPEERA in a nutshell

The SUPEERA project supports the coordination of national research and innovation programmes in the areas of activities of the European Energy Research Alliance (EERA).

The National Energy & Climate Plans (NECPs)

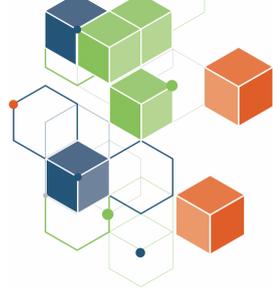
NECPs are **crucial instruments to deliver the European Green Deal** – strategic energy and climate planning across all dimensions of the Energy Union.

The 27 NECPs provide an overview of how each Member State (MS) is approaching the first phase of the **transition towards climate neutrality** in the period 2021-2030.

Why carry out an analysis of the NECPs?

-  To consolidate different planned energy measures into “**common pathways**” based on the most promising areas for cooperation between research and industry and cross-thematic activities.
-  Because the pathways will be the starting point to define a **facilitating framework** in dialogue with the EERA Joint Programmes (JPs) and industrial platforms and select **key cases** to be piloted during the SUPEERA project.
-  The resulting common pathways will provide the basis to formulate **recommendations on R&I priorities** and **input** to improve cooperation between research and industry.





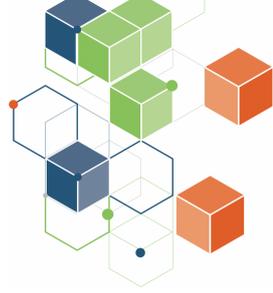
Methodology

-  Analysis of 27 NECPs to formulate **common pathways**, i.e., technological approaches and systemic aspects to advance the low-carbon society.
-  Focus on **relevant cooperation practices** and **experiences** to facilitate innovation & market uptake, especially concerning research and industry.
-  **Main focus of the analysis:** cooperation with industry, knowledge transfer, infrastructure needs, regional cooperation, financial programmes, cross-cutting and sectoral issues.

Impact

-  Provide an **overview of all NECPs** concerning:
 - Best practices regarding technological developments.
 - Good examples of cooperation and funding instruments.
 - Geographical and historical differences.
 - Barriers and opportunities.
-  Activate and foster **dialogue** with SUPEERA stakeholders in open **webinars** and **workshops**.
-  Develop the **facilitating framework** to best pilot the selected key pathways.
-  Ignite **cooperation** and **information sharing** between research and industry in all Member States and produce recommendations later in the project.





Deliverable 2.1 contents

- Method and summary of NECPs analysis.
- Identification of **six common pathways**.
- Summaries of the three webinars hosted on the pathways in 2020-21.
- Mapping of relevant stakeholders.
- Analysis of the pathways, including information on all Member States.
- Summary of the analyses of the EC assessments on the NECPs (Oct 2020).

Six common pathways



1. Energy systems integration
2. Bioenergy
3. Energy storage



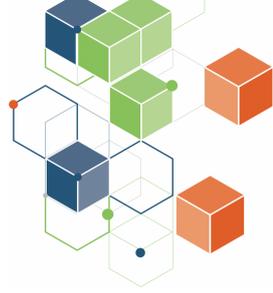
4. Hydrogen
5. Solar power
6. Wind energy

Three webinars

SUPEERA hosted a series of three introductory webinars on the topic "**Bringing research and industry closer: Accelerating innovation and uptake of new technologies**".

Each webinar focused on two pathways, presenting the related findings and promoting a dialogue between EERA Joint Programmes (JPs) and industrial platforms.





EXAMPLES OF FINDINGS AND BEST PRACTICES

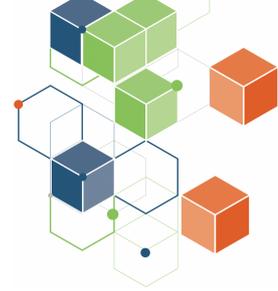
Energy systems integration

- In the **Nordic electricity market**, smart metering will be completed once Denmark reaches 80% coverage. The market is moving to 15-min balancing period in 2023 to give more responsiveness to intermittent generation.
- **Pentalateral Energy Forum countries** plan to allow unrestricted integration and implementation of e-mobility options and services within the Penta region.
- In **Finland**, the power reserve system ensures the security of the electricity supply when market-driven electricity does not cover demand. Both power plants and facilities capable of demand-side flexibility and storage can participate in the power reserve, which ensures generation adequacy in light of the renewable energy contribution.

Hydrogen

- The **European industry** needs clarity, and investors need certainty in the transition; a clear understanding across the Union on the hydrogen production technologies that need to be developed in Europe and what can be considered renewable and low-carbon hydrogen.
- **A long-term challenge:** the EU will need to plan the transition carefully, given that starting points and infrastructures differ across Member States.
- In 2019, **Denmark** launched two Power-to-X projects to establish large scale production and storage of green hydrogen.





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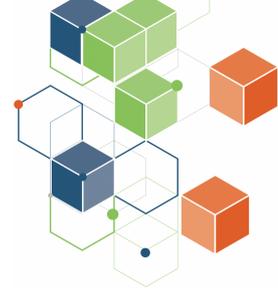
Bioenergy

- **The key conditions** for using biomass as renewable energy source (RES) are biomass sustainability, availability and price.
- **Biogases and fuels** are mainly used in a few EU countries, and there are only a few plans to significantly increase production. Scaling up production requires R&D and policies in place.
- In the **heating sector**, district heating allows better use of bio-based CHP plants. Heat pump incentives allow switching from bioenergy residential heating to carbon-neutral solutions. Inefficient fireplaces using firewood for domestic heating in some countries could switch to pellets, heat pumps and district heating.

Solar power

- Ongoing or planned **funding mechanisms**, enabling **regulatory frameworks**, and **simplifications** in the permitting processes include: tenders to speed up the expansion of photovoltaics, simplified administrative procedures for the development of solar energy projects, purchase agreements and subsidy grants.
- **Many EU countries** have plans for advancing roof photovoltaic in residential and non-residential buildings.
- In **Belgium**, there are R&I plans for prefabricated active roof and façade elements combining photovoltaic and thermal solar systems.





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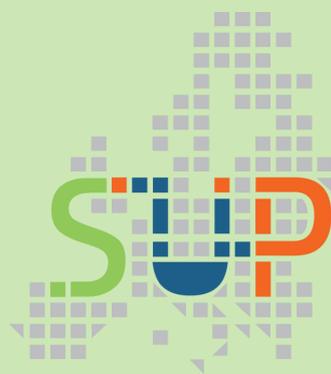
Energy storage

- **Regional cooperation in Nordic countries** – Nordic Energy Research supports the development of seven key areas, including Energy Storage.
- **Battery storage for mobility and stationary uses** is a European priority, scaling from house to transmission substation battery banks.
- For **heat storage technologies**, the time scale is from daily to long-term seasonal storage, and primary needs are in buildings and industry. Plans include storing excess RES electricity as heat in liquid or solid matter and utilising currently wasted heat streams via heat pumps.

Wind energy

- **Identified barriers** include obstacles in grid planning, market arrangements, common projects, de-risking of projects, including R&I in new business models and technical challenges.
- **Issues** on environmental impact, conservation and protected areas onshore and offshore, as well as participation, acceptance and indigenous rights need to be tackled.
- **North Seas Energy Cooperation (NSEC)** supports offshore grid development and the large renewable energy potential in the region.





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