



ETIP SNET

European Technology and Innovation Platform
Smart Networks for Energy Transition

WHERE VISION MEETS ACTION

ETIP SNET 2024 brochure





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Foreword

As we tackle the complexities of today's energy landscape, the European Technology and Innovation Platform on Smart Networks for Energy Transition (ETIP SNET) remains at the forefront for driving innovation and sustainability.

Launched by the European Commission in 2016 as part of the SET Plan, ETIP SNET was created with the aim of developing a vision for Research and Innovation with a focus on smart energy networks. More specifically, ETIP SNET was designed to bring together different perspectives and expertise to provide input to the SET Plan actions, in particular Action 4 "Increasing the resilience, security and intelligence of the energy system". The focus on energy grids is central for our evolving energy landscape: grids are the backbone of our electricity system, and they are expected to grow in importance as we move towards a net-zero energy system, also due to the increased needs for flexible generation.

Since its creation, ETIP SNET has fostered collaboration between a wide range of stakeholders including TSOs and DSOs, storage providers, academic institutions, industry players, members from the main European energy associations and policymakers, to develop and implement innovative solutions for the integration of renewable energy sources and the modernisation of the electricity grid.

Together, we aim to drive innovation in smart grids and energy systems, shape policy discussions with cutting-edge strategies for industry and utilities, foster connections and partnerships across Europe.

This is facilitated by the production of different policy papers produced by the Working Group experts, as well as strategic documents such as the ETIP SNET R&I Roadmap, which outlines a decade-long path towards a decarbonised future, and the ETIP SNET R&I Implementation Plan 2025+, which identifies key research and innovation priorities and initiatives at EU and national levels.

The ongoing discussions within the initiative, following the revision of the SET Plan, are both crucial and

time-sensitive. The recent revision underlines the urgent need for increased cooperation to accelerate the transition to clean energy, benefiting our society at large. The opportunities for efficient networks are immense, and despite the significant progress and milestones achieved by the ETIP SNET initiative, there is still much to be done.

We would like to thank the many experts who are committed to this cause, bringing new ideas and expertise to the initiative and ensuring that the key milestones continue to be achieved. Together, we can accelerate the energy transition and build a smarter, more sustainable grid for future generations to come.

Dr. Vincent Berrutto



Head of Unit for "Digitalisation, Competitiveness, Research & Innovation"
Directorate-General for Energy, European Commission

Policy context

- Strategic Energy Technology Plan** to develop a vision for Research and Innovation in the energy field
- European Green Deal** to make Europe climate-neutral by 2050
- RePowerEU** to speed up the deployment of RES and energy efficiency
- 'Fit for 55'** to provide the legal means for GHG emissions reduction
- Green Deal Industrial Plan** to strengthen the EU base of clean tech manufacturing of net-zero technologies
- Net-Zero Industry Act** to strengthen the manufacturing of net-zero technologies
- EU Action Plan on Digitalising the Energy System** to address the needs of smart and integrated energy networks
- EU Action Plan on Grids** to scale up investments and promote innovation



SET Plan

Launched in 2007, the SET Plan has played a crucial role in advancing clean, efficient and cost-effective energy technologies by promoting coordination and collaboration on clean energy research and innovation between European industry, academia and national governments

The SET Plan is structured around 10 key actions as presented below. ETIP SNET will mainly support Action 4, while also contributing to the overarching objectives across the other actions.

1 Integrating RE technologies in the energy systems	2 Reducing costs of technologies	3 New technologies and services for consumers	4 Resilience and security of energy systems	5 New materials and technologies for buildings
6 Energy efficiency for the industry	7 Competitiveness in the global battery sector and e-mobility	8 Renewable fuels and bioenergy	9 Carbon capture and storage	10 Nuclear safety

The SET Plan was recently revised (Communication on the revision of the Strategic Energy Technology (SET) Plan adopted on the 20 October 2023), with key changes including:

- Establishing a new dedicated work-stream on hydrogen, implementing the *European Research Area pilot on Green Hydrogen*.
- Introducing new priorities on cross-cutting issues using a task force approach.
- Expanding the current technology scope.
- Enhancing cooperation between ETIPs and European industrial alliances.
- Updating the roadmap for progress.
- Leveraging the Clean Energy Transition Partnership to support the expanded scope.



Vision for 2050

ETIP SNET aligns closely with EU energy policy, supporting 3 objectives for 2050 Energy Systems:



WHY FOCUS ON SMART NETWORKS?

Smart electricity grids are essential for the achievement of the net-zero objectives within the energy systems, reducing GHG emissions, enhancing energy efficiency, and enabling the widespread use of renewable energy while empowering consumers with real-time data and demand-response programmes. However, ageing infrastructure and growing populations pose significant challenges, including reliability issues, grid congestion, and integration difficulties with renewable energy sources and decentralised generation. Modernising the grid through technological advancements, research and innovation development is crucial for improving stability, efficiency, and resilience of the energy grids.

Mission

ETIP SNET positions itself together with the smart electricity grid at the centre of an energy system shifting towards a low carbon neutral energy. Its mission is to **support the delivery of a R&I roadmap** that will enable the EU to deliver on its 2050 and the intermediate 2030 climate & energy targets.

Acting as a **primary interface for industry, academia and sectoral associations to engage with policymakers**, ETIP SNET facilitates feedback on key research priorities and policy recommendations with a focus on electricity networks. It promotes **collaboration and networking** to create synergies among ETIP SNET stakeholders and to foster a collaborative innovation ecosystem.

ETIP SNET's activity relies on **structured Working Groups that enable focused discussions and knowledge sharing** to tackle specific challenges in relation to the reliability and efficiency of smart grid systems, storage technologies, flexible generation, digitalisation, customer participation and innovation implementation.





Strategic Objectives

- 1

Set out a vision for RD&I for Smart Networks for Energy Transition and engage stakeholders in this vision.
- 2

Prepare and update the Strategic Research and Innovation Roadmap.
- 3

Report on the implementation of R&I activities at European, national/ regional and industrial levels.
- 4

Identify innovation barriers, notably related to regulation and financing.
- 5

Prepare consolidated stakeholder views on Research and Innovation to European Energy Policy initiatives.
- 6

Provide input to the SET Plan action 4 which addresses the technical challenges posed by the transformation of the energy system.
- 7

Develop enhanced knowledge-sharing mechanisms that help bring R&I results to deployment.

Within this overarching framework, ETIP SNET publishes 3 documents that consolidate the views of the stakeholders involved (see next section), to guide and identify research and innovation R&I priorities and address the innovation challenges for the energy system:

ETIP SNET R&I Roadmap

Describes the 10-year path towards a net-zero energy system and is regularly revised. The current roadmap version was published in March 2023, and covers the 2022-2031 time horizon. The next update will be released in December 2025.

ETIP SNET R&I Implementation Plan

Describes in more detail the most urgent R&I needs for the next 3-4 years and is revised every 2 years. The current Implementation Plan version was published in August 2023 covers the 2025-2028 timespan with a total overall proposed budget of €954m for R&I.

The next update will be released in June 2026.

Mapping progress in energy systems research and innovation

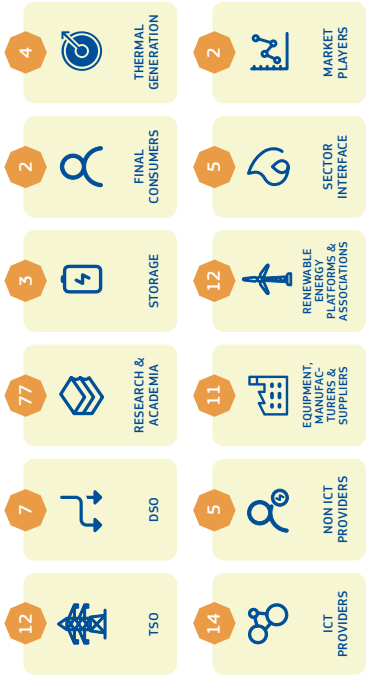
Evaluates the progress of European Research and Innovation projects in relation to the ETIP SNET R&I Roadmap and the ETIP SNET Implementation Plans. The current report was published in July 2023 as a continuation of the progress monitoring report published in 2021. The next update will be released in August 2025.

Stakeholders

The ETIP SNET is a stakeholder-driven platform that brings together a wide range of experts committed to working together to contribute to the energy transition.

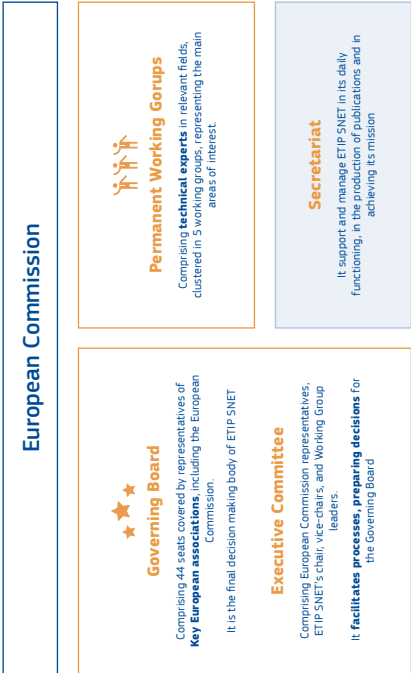
Over 150 active experts, from 12 different stakeholder groups and more than 100 different organisations, contribute to the discussions within the initiative.

Below is an overview of the ETIP SNET experts per stakeholder category.



Governance

The ETIP SNET governance structure, as described in the ETIP SNET Terms of References, is designed to have a broad representation of stakeholders and to provide an agile and efficient operation.



Working Groups

**WG1**
Reliable, economic and efficient smart grid system

Addressing grid smartening through medium and long-term business and technology trends that contribute to the overall optimisation of the energy system at affordable investment and operating costs

**WG2**
Storage technologies and system flexibilities

Addressing the technological and market developments related to energy storage solutions, intended as one of the main tools to ensure the required flexibility in transmitting and distributing electricity

**WG3**
Flexible Generation

Addressing integrated solutions (generation, storage, transportation, consumption) based on variable and dispatchable renewable energy, focusing on the large-scale integration of RES into the grid in a safe and reliable mode

**WG4**
Digitalisation of the electricity-system and customer participation

Addressing the use and impact of ICT as a pervasive tool along the entire value chain of energy production, transport and use, following the full digitalisation of energy networks

**WG5**
Innovation implementation in the business environment

Addressing barriers related to the market uptake of innovative solutions and technologies as well as creating a platform for their dissemination

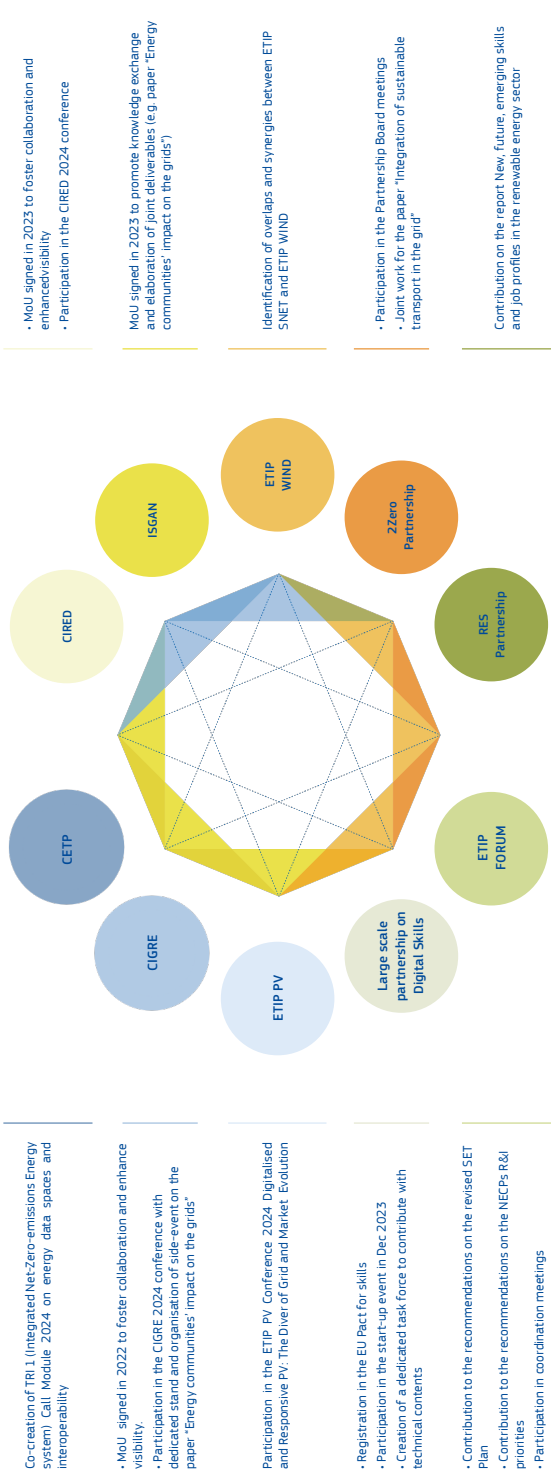
Key Topics

Below is an illustrative list of topics that have been addressed by the 5 working groups of ETIP SNET:

 Reliable, economic and efficient energy system <u>Energy communities' impact on grid</u>	 Storage technologies and system flexibilities <u>Energy storage systems</u>	 Flexible generation <u>Ramp-up and role of hydrogen-based power generation</u>	 Digitalisation and customer participation <u>Energy data spaces</u>	 Innovation implementation in the business environment <u>Regulatory sandboxes</u>
 Coordinated energy infrastructure planning <u>Energy communities' impact on grid</u>	 District storage <u>Energy storage systems</u>	 Coupling of H&C and electricity in cooperation with ETIP PHC	 Enhance System Supervision and Control through Cyber Security and IOT	 Innovation implementation to the grid <u>Regulatory sandboxes</u>
 Hydrogen's impact on grids	 Sustainable transport integration <u>Energy communities' impact on grid</u>	 Ramp-up of renewable generation	 Upskilling	 Energy communities as catalysts of energy transition



Partnerships



Benefits of joining ETIP SNET

In addition to the established partnerships, ETIP SNET cooperates with various initiatives to produce joint outputs and to organise events, including:

Cooperation with ETIP RHC in 2022, which resulted in a joint report on coupling of heating/cooling and electricity sectors in a renewables-driven Europe

Regular engagement of HORIZON's project experts in drafting papers and project analyses, through the BRIDGE initiative

Frequent exchange within review of deliverables with other ETIPs (such as ETIP OCEAN)



Networking opportunities

By participating, you will be able to connect with a diverse community, fostering collaborations, partnerships and the exchange of ideas



Collaboration and Coordination

You will have the chance to collaborate and coordinate efforts and address common challenges with stakeholders in the sector



Early access to information

The platform will enable you to access valuable insights, including research, best practice and innovative solutions



Enhanced Visibility

Active participation will provide you with the opportunity to gain increased visibility and recognition within the energy sector



Contribution to R&I Priorities

You will contribute to the EU's R&I agenda and exchange information with the European Commission on R&I priorities and funding needs



Contribution to R&I Projects

You may contribute to the definition of the project priority concepts as part of the revised ETIP SNET R&I Roadmap





How to join the initiative

If you have an insightful understanding of expected developments and R&I priorities that can contribute to the ETIP SNET work, please consider applying to become a GB member or a WG technical expert:

Join the Governing Board (only for EU level associations)	
1	Send official applications by sharing your CV to secretariat@etipsnet.eu
2	The official applications will be presented to the Governing Board members
3	Final approval by majority vote or during the next Governing Board meeting or via email

Join the Working Groups	
1	Identify which of the 5 working groups is most closely aligned with your area of expertise
2	Apply to become a member by filling in this form and send the application to secretariat@etipsnet.eu
3	The application will be evaluated by consensus among the WG chair and co chairs

Professionals or associations interested in joining the ETIP SNET community should be actively engaged in promoting the broader objectives of the initiative, as outlined in our brochure.



Contacts



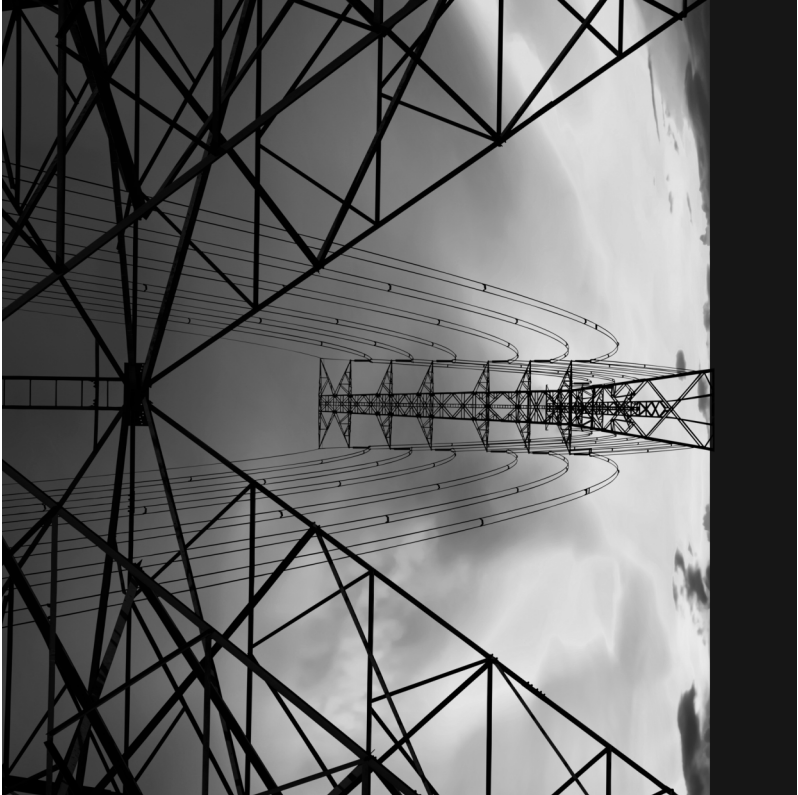
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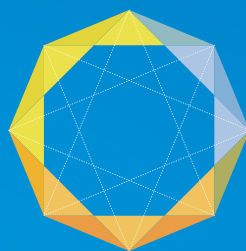
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ETIP SNET Website

<https://smart-networks-energy-transition.ec.europa.eu/>





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