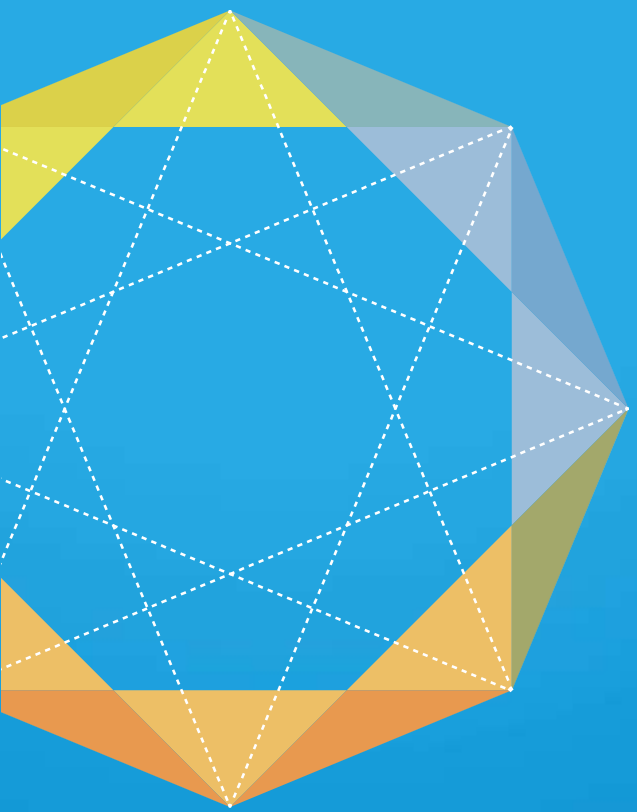
European Commission

16th ETIP SNET Regional Workshop

Proceedings



ETIP SNET

European Technology and Innovation Platform

Smart Networks for Energy Transition

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ETIP SNET

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1. Introduction

As part of its mission of guiding Research and Innovation activities to support Europe's energy transition, the European Technology and Innovation Platform for Smart Networks for Energy Transition (ETIP SNET) will organize 8 Regional Workshops in the course of the next 3 years, covering the whole European Union.

To guarantee to cover all EU countries (including associated ones), these Workshops have been named "Regional" because they gather together Member States in 4 Macro "Regions". The gathering is mainly based on criteria of neighbourhood and common geographic characteristics and priorities.

Background

As part of its mission of fostering Research and Innovation activities to support Europe's energy transition with the goal to research, develop and demonstrate technologies, services and their integration across all energy carriers and considering grids and storage, the European Technology and Innovation Platform for Smart Networks for Energy Transition (ETIP SNET), organises Regional Workshops with the aim to:

- Allow for national and regional R&I programmes to present their approaches and projects of significant added value as input for the development of roadmaps and implementation plans in Europe,
- Align thematic priorities of national programmes and the ETIP SNET/BRIDGE Working Groups, de-scribing concrete developments of technologies towards products, services and how they are integrated in demonstrations, identifying unsolved RD&I topics and monitoring the implementation of RD&I activities at national and regional levels in Europe,
- Ensure consistency between national and European views and stimulate knowledge-sharing be-tween stakeholders of multiple sectors and among European countries,
- Foster the efficient implementation of RD&I projects with their integration of technologies, services across sectors and energy vectors and create interoperable, reusable, scalable results with impact all over Europe.

ETIP SNET implements these workshops in close cooperation with experts of the European Commission, and many relevant institutions. It liaises with national and transnational and international initiatives such as BRIDGE, various ERA-Nets (e.g. JPP SES) and the recently started Clean Energy Transition Partnership (CETPartnership). The workshops have been named "regional" because they bring together representatives of Countries in 4 Macro "Regions". The gathering is mainly based on criteria of neighbourhood and common geographic characteristics and priorities.

• **Western Region:** France, Ireland, Portugal, Spain and the United Kingdom
• **Central Region:** Belgium, Netherlands, Luxembourg, Poland, Austria, Germany, Switzerland, Czech Republic, Slovakia
• **South-Eastern Regio**n: Bulgaria, Croatia, Cyprus, Greece, Hungary, Italy, Malta, Romania and Slovenia
• **Northern Region:** Sweden, Finland, Denmark, Norway, Latvia, Lithuania, Estonia

This "Regional" dimension has been discarded for the last 3 workshops due to the pandemic crisis and due to the fact that the workshops have been held online. As of the 16th Regional Workshop, a return to this regional aspect and a restructuring of the sessions, objectives and content was made.

In the framework of ETIP SNET – from 2016 till today – a first series of 8 Regional Workshops has already taken place. You can find the minutes and PPTs of all of them HERE.

The 16th Regional Workshop for the Western Region took place on **28th February 2023 from 9.00 to 17.00.**

1.1 Objectives of the Regional Workshops

The aim of the regional workshops is to contribute to the next ETIP SNET R&I Implementation Plans, Roadmap update and the Progress Reports. The selected R&I projects present their findings and will help to identify R&I gaps to update the R&I Implementation Plans (2023-2026) and update of the current Roadmap 2020-2030.

The Regional Workshops have four overall objectives:

- Present and create knowledge on project research results, good practices and lessons learnt of R&I projects on energy system integration.
- Monitor and identify gaps in R&I topics and priorities and to have convergence among national, regional and the European levels.
- Ensure consistency between national and European views.
- Collect information from national and regional projects to feed the Progress Reports and Implementation Plans and Road Map.

1.2 Concept Note.

Regional Workshop Structure

Outline of agenda:

The workshop will comprise moderated expert roundtables with

- **Representatives of ETIP SNET who will present European R&I programmes** and plans (particularly the ETIP SNET Roadmap, Implementation Plan and Project Results and Impact Monitoring) and representatives from member states and countries who will present national programmes, exchange views on RI topics and priorities, identifying potentials for cooperative approaches.
- **Coordinators of national and EU projects together with representatives of the national funding agencies of the Western region** will be invited to panel sessions to elaborate their findings in the aim of identifying gaps, common challenges in how national, regional and EU projects relate to each other and to the higher-level EU R&I roadmaps, in particular the ETIP SNET Roadmap and Implementation Plan.

Added value

The inputs to and the results of these meetings will be assembled to a formal document for the EC, the ETIP SNET and will be summarised to stakeholders. This way, the outcomes of the expert-roundtables can foster joint approaches, activities, and messages across the wider European energy R&I community. At the same time, the R&I mapping of national, regional and EU project outcomes to the ETIP SNET Implementation Plan will help bridge the outcomes of projects with EU-level and national-level R&I priorities.

The **added value of participating in this workshop would be:**

- Networking opportunity within the stakeholders attending,
- Discussions leading to key recommendations for the EU policymakers on R&I priorities in Smart Networks,
- Visibility toward the European Commission
- Gather crucial information from other MSs' R&I priorities and funding opportunities at national and regional levels

1.3 Structure of this Report

For each of the Workshops a Report including all the proceedings and key recommendations will be produced. The proceedings will gather the following information:

- List of projects presented at the workshop, with a short description of each of them.
- Number of people registered to the workshop and their distribution per country and organisation of origin.
- Minutes of each session and main questions raised during the panel sessions and results from each session.
- Recommendations for innovation implementation in the business environment.

2. ETIP SNET 14th Regional Workshop

The 16th ETIP SNET Regional workshop was held online via Teams on 28th of March from 9.00-17.30.

2.1 Programme of the Workshop

The agenda of the 16th Regional Workshop held on 28th of February from 9.00-17.30 is the following:

9.00 – 17.30

Iberdrola Global Smart Grids Innovation Hub - Avenida San Adrian, 48 Larraskitu, 48003

Bilbao, Spain

TIME	TOPIC	SPEAKERS
09.00	**Opening Remarks**	**Estibaliz Goñi Gaztelu -** Director Processes & Technology (i-DE)
09.10	**Keynote Speeches**	• **Javier Marqués** Technical director, B*asque Government –Ente Vasco de la Energía (EVE)* • **Miriam Bueno** *Spanish Ministry of Ecological Transition and Demographic Challenge* • **Paloma Aba-Garrote** *CINEA* – Director (*recorded video message*) • ***George Paunescu,*** *European Commission DG ENER B5, Policy Officer*
09.40	**Introduction to ETIP SNET & BRIDGE**	**Luis Cunha** ETIP SNET Vice-Chair
09.50	**Introduction to ETIP SNET Roadmap 2022-2031 and HLUCs**	**Nikos Hatziargyriou** ETIP SNET CORE Team
10.00	**Panel Session: National/regional representatives** • Key Ideas from Funding Programmes	**Ludwig Karg** – Moderator National/regional reps: **Lucy Corcoran -** SEAI *(EI)* **Paulo Partidário –** DGEG *(PT)* **Nadine Berthomieu –** ADEME *(FR)* **Marina Sopeña Escalona –** CETP rep in Spain and JPP SES. *(ES)*
11.00	**COFFEE BREAK**	
11.30	**Projects Panel Session 1: Integrated Energy Networks** • Cross Sector Coupling • Transport & Storage • Energy Markets *(based on ETIP SNET IP **HLUC 1,3,8**)*	**Ludwig Karg** – Moderator ETIP SNET CORE Team National/regional reps **Project reps:** **Joao Peças Lopes -** GreenH2Atlantique (*PT*) **Stefan Übermasser -** REgions (*FR*) **Pilar Quevedo de Meneses -** ENERisla (*ES*)
12.15	**Projects Panel Session 2: Renewable Energy Systems** • Massive RES Penetration • System Operators' Collaboration	**Ludwig Karg** – Moderator ETIP SNET CORE Team National/regional reps **Project reps:** **Paula Tomas -** FST, RESET (*ES*)

	• Power Electronics Challenges *(based on ETIP SNET IP **HLUC 2,4,6**)*	**Gerfried Cebrat –** EPC4SES (*ES*) **Miguel Louro –** PREDIS (*PT)* **Mateo Toro-Cadenas –** Prot4HiRes (*PT*)
13.00	**Projects Panel Session 3: Digitalisation & Citizen's Involvement** • Empowering Consumers & Smart Communities • System Control • Cybersecurity *(based on ETIP SNET IP **HLUC 5,7,9**)*	ETIP SNET CORE Team National/regional reps **Project reps** **Miguel Sanchez Fornié –** EDDIE (*EU*) **David Martin Utrilla –** FLEXENER (*ES*) **Chris Merveille –** GoiENER (*ES*) **Raquel Pedrero Alonso –** BEYOND (*ES*) **René Menendez Ramstad –** R2D2 *(ES)*
13.45	**Wrap Up**	**Rainer Bacher** – ETIP SNET CORE Team
14.00	**Closing Remarks**	**Miguel Rodrigo Gonzalo** Director de Conocimiento, Desarrollo de Nuevos Modelos de Negocio y Competitividad (IDAE) **Santiago Gallego Amores –** Regulation Manager for Europe (i-DE)
14.15	**End of the meeting** **LUNCH at MENDIPE Restaurant**	
16.00	**VISIT to Iberdrola Global Smart Grids Innovation Hubs** • Global Smart Grid Innovation Hub: The Global Smart Grids Innovation Hub is a global center of innovation and knowledge that aims to be a world benchmark in smart grids, it will allow to provide answers to the challenges of the energy transition. With more than 1000m^2 and 5 laboratories Iberdrola has created and ecosystem to promote innovation and developing talent thought collaboration with universities, Start-ups and manufactures (see link Global Smart Grids Innovation Hub - Iberdrola) • Smart Mobility lab : The Iberdrola mobility lab is equipped with the most current recharging technologies of the electric vehicle. The laboratory has about 30 charging points (PDR) of different powers, serving, as well as a test center for PDR manufacturers and as support to the after-sales service since it investigates the incidents found in operational equipment, replicating them and giving solutions remotely	

Moreover, the following figure gives an indication of the distribution of participants by their type of organisation:

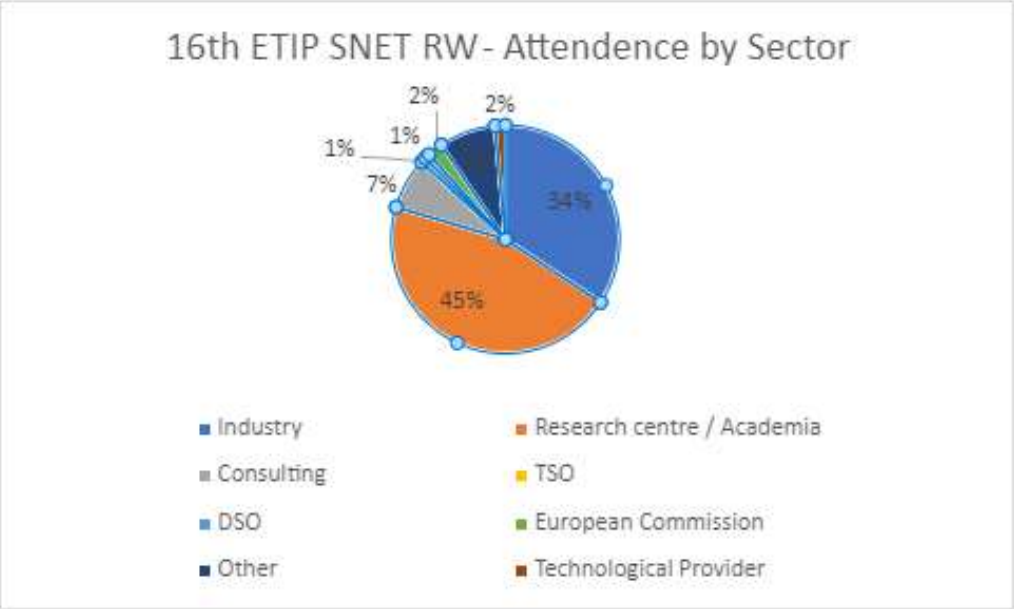


Figure 1: Distribution of participants by sector

Expert Roundtable:

Ludwig Karg – Moderator
National/regional reps:
Lucy Corcoran - SEAI *(EI)*
Paulo Partidário – DGEG *(PT)*
Nadine Berthomieu – ADEME *(FR)*
Marina Sopeña Escalona – CETP rep in Spain and JPP SES. *(ES)*

2.2 List of Attendees

147 people registered for the one-day workshop. The workshop was attended by 109 people with around 50 in person participants.

Participants:

First Name	Last Name	Company
Maria Laura	Trifiletti	ZABALA Innovation
Edoardo	Genova	Zabala Innovation Europe
Georgios	Stravopodis	ESCI
Marcela	Mantilla	RTE
Iosu	Cendoya	CIDETEC Energy Storage
Ana	Villafaña	CIRCE
Carlos	Madina	TECNALIA
Eugenio	Perea	TECNALIA Research and Innovation

Florent	Cadoux	Roseau Technologies
Iñaki	Angulo	Tecnalia
Oscar	Miguel	CIDETEC Energy Storage
Peter	Stettner	Andritz Hydro
Mário Bruno	Ferreira	REN – Rede Eléctrica Nacional, S.A.
Bard	Rama	Independent Expert
Mariano	Gaudó	UFD (Naturgy Group)
Iván	Martínez	Galicia Institute of Technology
Lorenzo	Grande	Free2Move eSolutions
Marta	Alvarez	CIDETEC energy storage
Emilio	Rodríguez	TECNALIA
Joao	Peças Lopes	FEUP & INESC TEC
Antonio	Duarte	SolarisFloat
Ricardo	Pastor	R&D NESTER
Robert	Nyiredy	Vysus Group
Fabio	Hernandez	HART ENERGY & CONTROL CONSULTING
Vasileios	Iliadis	AESTECH PC
Fernando	Garcia	Future
Romain	Mauger	University of Groningen
Ibrahim	Sengor	University College Cork
Gabriel	García Naveda	CENER
Pilar	Meneses	CIDETEC
David	Cabezuelo Romero	Mondragon Unibertsitatea
Óscar	García Roca	T-Systems
Asier	Larretxea	SQ Consult B.V
Laura	Sanguino Casado	Universidad Politécnica de Madrid

Paula	Pernaut	CENER
ANDRES	CADENAS	Accenture
Enrique	Sagredo Blanco	Mondragon Unibertsitatea
Begoña	Molinete	Asociación Cluster de Energía (Basque Energy Cluster)
Christian de Jesus	Diaz Rosas	DRC CORPORATIVO CONSTRUCTOR
Santiago	Gallego	i-DE
Chris	Merveille	Goiener
Asier	Larretxea	SQ Consult B.V
Stefan	Wilker	TU Wien, Institute of Computer Technology
Susana	Garayoa	Susana Garayoa
Anabel	Soria Esteve	ITE
Jon	Martínez Rico	Tekniker
David	MacDonald	GE
David	Rubio Miguel	i-DE (Iberdrola)
Philippe	CALVEZ	ENGIE
F David	Martin Utrilla	i-DE
Jon Ander	Landeta	Fundación Tecnalia Research & Innovation
Santiago	Otero	ENEL
Carlos Alberto	Froes Lima	KNBS
RAFAEL	BELLIDO	IBERDROLA
Christoph	Wanzenböck (TP SGA)	Technology Platform Smart Grids Austria
Dagmar	Jarásová	SFÉRA
arne brufladt	svendsen	Vysus Group
Rainer	Bacher	BACHER ENERGIE AG
Nicolas	Marx Hermoso	EPRI Europe
David	de la Vega	University of the Basque Country (UPV/EHU)
Sonja	Berlijn	Vysus
Ariane Raïssa	Decramer	Flux50

Oleksandr	Novykh	Universidad de la Laguna
Aliya	GG	Vienna University Research/Policy Counsel Proell, Oblin, AliyaGG, Gaetan
Fiona	Williams	Ericsson
Georgios	Kouvaros	TRANSMISSION SYSTEM OPERATOR CYPRUS
Andrés	Nieto	GE Digital
Anna	Wronka	PSE
Giovanna	Santamaria	Jema Energy S.A.
Henk-Jan	Mebius	CMP nl
Melinda	Murail	Think Smartgrids
Adrian	Andrei	ADR Nord Est
Madalina	Vitelaru	North East Regional Development Agency
Gabriela	Espinosa	IREC
rayhane	koubaa	National Engineering School of Sfax
Zoltán	Székely	Székely Family and Co. Nonprofit Kft.
Ana Yurena	García González	Iberdrola España
JUAN JACOBO	PERALTA	CEMOSA
Orsolya	Kurucz	ATS Advisory
Marco	Terenzi	Politecnico di Milano
Camino	Correia	Zabala Innovation
Andrei	Strachinaru	C2S Geophysics SRL
Thai Phuong	DO	CEA-INES
Jesus	Lugaro	Hitachi Energy
Yuhan	Zheng	University of Galway
Melis	Malko	B-H2
Sara	Golroodbari	Utrecht University - Copernicus Institute of Sustainable Development
Diamantis	Koutsandreas	Aalto University
Ander	Barreiro	NTT DATA
Konstantinos	Chrysagis	PPC SA

christos	christodoulou	NTUA
Noemí	Alonso	i-DE Redes Inteligentes
Luis	Layo	i-DE
Alex	Lopez	i-DE Redes Electricas Inteligentes
Idoia	Moreno Alsasua	Iberdrola
Irene	Cirujano	I-DE
Josue	Muñoz	HITACHI ENERGY
vincenzo	antonucci	CNR-ITAE
Lenin	Lemus	Universitat Politècnica de València
Juan	Marti	Iberdrola
Ana	Glez Bordagaray	i-DE
Jesús	Gutiérrez Serrano	i-DE
Sabine	Alexandre-Klein	ESCI gGmbH
John	Karakitsios	ICCS/NTUA
Laura	Bertolucci	RINA CONSULTING SPA
Sofia	Rodriguez	GE Digital
Andreia	Figueiredo	GE
Jesús	Alonso Calvo	Europa de Gestión
Luis	Rodrigues	INESC
Alejandro	Belinchón Calderón	ITE
Jose Vicente	Rocamonde	ITE (Instituto tecnológico de la Energía)
Mateo	Toro-Cárdenas	R&D Nester
Ricardo	Cartaxo	R&D Nester
Rui	Pestana	R&D Nester
Nikolaos	Chrysanthopoulos	University College London
Jens	Merten	INES.2S
Ludwig	Karg	B.A.U.M. Consult GmbH
Nikos	Hatziargyriou	ETIP SNET
Shenja	Ruthenberg	CLERENS NV
Erik	Zabala	Zabala Innovation

Andrew	Syrmakesis	Institute of Communication and Computer Systems (ICCS)
Andreas	Corusa	B.A.U.M. Consult GmbH
ARIS EVANGELOS	DIMEAS	National Technical University of Athens
Jesús José	Fernández García	Comillas University
Katja	Sirviö	University of Vaasa
Natalie	Samovich	Enercoutim
Diego	Cirio	RSE
Mirela	Carlan	ANRE
Lola	Alacreu García	Etra
Maria-Eleni	Delenta	CYPRUS ENERGY REGULATORY AUTHORITY
Joao	Domingues	FEUGA
Francesca	Cappelletti	RSE S.p.A.
Sotirios	Christopoulos	HEDNO
Nerea	Ruiz	TECNALIA
Anna	Mutule	Institute of Physical Energetics
Ricardo	Almeida Henriques	E-REDES
Rosana	Martín	i-DE Redes Inteligentes
Oleksandr	Chemerys	G.E. Pukhov Institute for Modeling in Energy Engineering
René	Alba Menéndez	EDP Spain
Dudley	Stewart	Micro Electricity Generation Association Clg
Stefan	Übermasser	AIT Austrian Institute of Technology
Radu	Porumb	University POLITEHNICA of Bucharest
Paula	Tomás Pérez	CIRCE
nadine	berthomieu	ADEME
Gerfried	Cebrat	effiziente.st Energie und Umweltconsulting e.U.

3. Proceedings

3.1 Representative Roundtable

Projects Panel Session 1: Integrated Energy Network

Ludwig Karg introduced the project panel session and explained the HLUCs that are investigated and are summarized in the next figure

Figure 1: Overview of ETIP SNET HLUC

Joao Peças Lopes - GreenH2Atlantique (PT)

Joao Peças Lopes represented the GreenH2Atlantique project which is a European funded Horizon project. The main goal of the project is to promote the supply of green, affordable electrolysis on a gigawatt scale by 2030 in Europe, which will help supporting the electric grid and increase the integration of renewables. The initiative also carries significant socio-economic benefits, with projections indicating the creation of approximately 3,000 direct and indirect job opportunities. Furthermore, GreenH2Atlantique is set to amplify the development of Hydrogen (H2) valleys across Europe, acting as a catalyst to invite and expedite investment plans in this sector. Lastly, GreenH2Atlantique is poised to play an important role in shaping European Union (EU) policies, providing actionable input to drive the harmonization of regulations and standards across member states.
The relevance of the project to each HLUC is depicted in the next figure:

project / program ... for	HLUC 1	HLUC 2	HLUC 3	HLUC 4	HLUC 5	HLUC 6	HLUC 7	HLUC 8	HLUC 9	other
GreenH2Atlantic	●●		●●	●● ●						

Figure 2: GreenH2Atlantic mapping on HLUC

The presenter mentioned the key findings of the project that indicate that H2 has significant potential for seasonal storage, contributing to the security of energy supply. Electrolysers can be instrumental assets, offering essential ancillary balancing services like Frequency Containment Reserves (FCR), automatic Frequency Restoration Reserves (aFRR), manual Frequency Restoration Reserves (mFRR), and Replacement Reserves (RR). These services become particularly valuable in scenarios characterized by large-scale renewable generation. However, these developments also underscore the need for comprehensive market design considerations. To fully leverage electrolysers' capabilities in providing system services, it is crucial to devise specific frameworks and regulations.

Stefan Übermasser – REgions (FR)

Stefan Übermasser presented the REgions which is a collaborative research and demonstration European-funded project of the three European countries namely Austria, Germany and France. The goal of the project is to design a new regional market and inter regional coordination of VPPs for re dispatch/voltage support. The design is based on technical, social and regulatory aspects as well as evaluation and tests. Additionally, the project aims to increase the coordinated support of fluctuating renewable energy sources to regional, inter regional and European layers of ancillary services and markets.
The project consists of 7 use cases taking place in the three European countries covering a range of flexibility services for congestion management, voltage support, participation of PVs in the balancing market.
The relevance of the project to each HLUC is depicted in the next figure:

of project / program ... for	HLUC 1	HLUC 2	HLUC 3	HLUC 4	HLUC 5	HLUC 6	HLUC 7	HLUC 8	HLUC 9	other
REgions		●●	●● ●	●● ●	●				●	●● ●

Figure 3: REgions mapped onto the HLUC

Stefan presented the key findings of the project and their relevance with the HLUC. The project proposed a new market design for local flexibility markets dealing with congestion management at an electrical regional scale. As part of the project, a Smart Dispatch algorithm is developed to ensure a reliable ancillary service provision of a pool of RES. The concept of energy data spaces and/or common internet of energy promote standardized, interoperable, secure and cross sectoral data sharing, accelerating the energy transition. These efforts should be accompanied by high open data engagement e.g. in terms of spatial congestion management forecasts. As ancillary service provision by RES is not stable during low production, a generation mix including flexible assets (e.g. CHPs, batteries) is recommended for better compensation and reliability. Finally, the experience of frequent communication failure emphasized the need of reliable (redundant) ICT backup strategies and good substitution strategies.

Pilar Quevedo de Meneses – ENERisla (ES)

Pilar Meneses de Quevedo presented the ENERISLA Project. The goal of the project is to develop the technological capabilities needed to begin setting up 100% fully renewable isolated microgrids taking advantage of the energy system developments.
The tools developed as part of the project can be used to support technological services based on Li-ion pouch cell prototyping and designing and manufacturing high-density “post-Li-ion” cells and high-tech “beyond-Li-ion” cells. The tools can be used for the optimal dimensioning of the batteries and the techno-economical assessment in stationary applications. Additionally, advanced energy management strategies for operating the batteries and smart charging solutions for EVs are considered, taking into account the integration and management of the electric vehicles and the characterization of the flexibility in different charging scenarios.
The relevance of the project to each HLUC is depicted in the next figure:

of project / program ... for	HLUC 1	HLUC 2	HLUC 3	HLUC 4	HLUC 5	HLUC 6	HLUC 7	HLUC 8	HLUC 9	other
ENERISLA	●● ●	●	●	●● ●	●●	●	●●	●		

Figure 4: ENERisla mapped onto the HLUC

The presenter mentioned the key findings of the project regarding the regulatory barriers to provide remuneration schemes to deploy storage in microgrids. The presenter mentioned the importance of integrating new technologies to provide flexibility services, new generation of renewable energy technology that will promote hybrid electricity generation solutions and the new generation for the microgrid operators of the future.

Projects Panel Session 2: Renewable Energy Systems

Paula Tomas – FST, RESET (ES)

Paula Tomas presented several research projects focusing on the infrastructure of power grids, mainly smart transformers, and inverters. The Flexible Smart Transformer (FST) Project focuses on the Solid-State Transformer (SSTs) Project and developed a DCDC for an SST with a high degree of isolation between primary and secondary, paving the way for very high voltage SSTs. Therefore, the SST is aiming at acting as UPFC.
The RESET project focuses on distribution STATCOM that will increase the active power balancing, voltage stabilization, harmonics filtering and dip voltage compensation. The design of a converter able to handle unbalanced loads is tested.
The relevance of the projects to each HLUC is depicted in the next figure:

PROJECT	HLUC 1	HLUC 2	HLUC 3	HLUC 4	HLUC 5	HLUC 6	HLUC 7	HLUC 8	HLUC 9
FST, TIGON, SSTAR	● ●	● ●	●	● ● ●		● ● ●	● ● ●	● ●	●
RESET, PARITY	● ● ●	● ● ●	●	● ● ●	● ●	● ●		● ●	●

Figure 5: FST, RESET mapping onto HLUC

Gerfried Cebrat – EPC4SES (ES)

Gerfried Cebrat presented the EPC4SES project which is an ERANet REGSYS project with 6 partners from Germany, Spain, Austria, Norway. The goal of the project is to develop a Model Predictive Control (MPC) approach for HVAC, which is based on a digital twin for buildings.
The project's outcomes demonstrate that MPC can create significant savings by achieving the dynamical set of temperature in rooms, while the hot water tank is fed with solar energy. The exchange of load forecast and CO2 forecast over a prognosis over a Transparent Smart Meter Gateway TSMGW was envisaged, creating further advantages with a goal to operate A/C more at times with low CO^2 intensity, applying MPC.

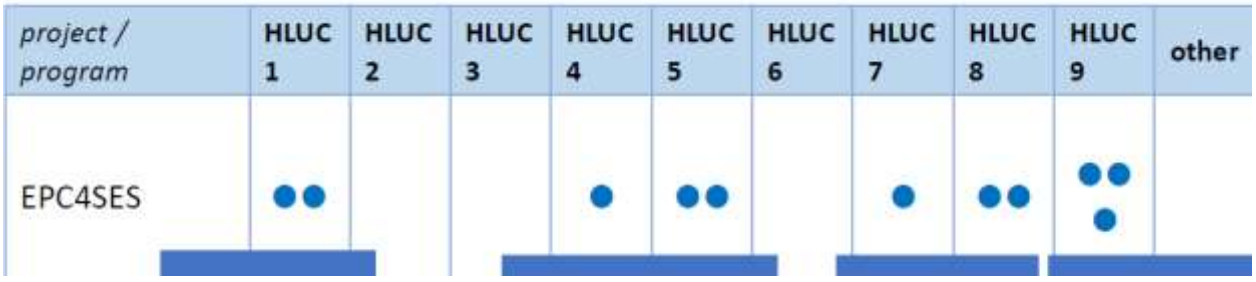


Figure 6: EPC4SES mapping of HLUC

The key findings of the project were discussed, highlighting the importance of Transparent Smart Meter Gateways in advancing CO2 responsive demand control using MPC. The cybersecurity aspect of managing the transactions is also mentioned since the adoption of responsive demand control will increase the transactions between the households and the establishment of a transparent and secure framework is required.

Miguel Louro – PREDIS (PT)

Miguel Louro from E-REDES Portugal presented the PREDIS research project. Miguel introduced E-REDES which is the

main DSO in Portugal and manages approximately 84'000 km of HV and MV network with approximately 26'000 HV and MV clients and 1'000 connected distributed generation. The goal of E-REDES in the near future is to have an interventive role in the load flow of the network that will allow additional connection of load and generation to the distribution network.
PREDIS' main goal is to be able to forecast the real-time consumption and production of distributed resources by implementing Big Data technologies. The project is expected to develop advanced analytical capabilities and have a direct impact on improving the energy balance by supporting dispatch and planning processes.
The relevance of the project to each HLUC is depicted in the next figure:

of project / program ... for	HLUC 1	HLUC 2	HLUC 3	HLUC 4	HLUC 5	HLUC 6	HLUC 7	HLUC 8	HLUC 9	other
PREDIS	●● ●	●●	n/a	●● ●	●	●	●●	●● ●	●● ●	●● ●

Figure 7: PREDIS mapping onto the HLUC

The key findings emphasize the important role of weather data in forecasting load and generation. The findings also affirm the ability to generate reliable estimates of load and generation for the next few days. Furthermore, the possibility of having a comprehensive power flow of the entire grid underscores advancements in grid monitoring and modeling technologies. These findings collectively underscore the increasing sophistication and predictive capabilities in grid management, which are critical for a reliable and sustainable energy future.

Mateo Toro-Cadenas – Prot4HiRes (PT)

Mateo Toro-Cadenas from R&D Nester presented the Prot4HiRes project. Mateo Toro-Cadenas initially presented the R&D Nester which is a global and independent R&D centre which was established in 2013 and has strong collaboration with the Portuguese TSO contributing to various national and European Horizon Projects.
The goal of the Prot4HiRes project, which is an internal project with cooperation with REN (Portuguese TSO), is to research on protection systems configuration and schemes adequate for transmission grids with high penetration of RES. The project is divided in 3 main tasks in order to: 1) perform a simulation modeling and fault characteristics analysis of renewable energy delivery system, 2) research on protection and strategy optimization and setting calculation methods and 3) develop a novel protection specification for transmission lines in high penetration of RES.
The relevance of the project to each HLUC is depicted in the next figure:

of project / program ... for	HLUC 1	HLUC 2	HLUC 3	HLUC 4	HLUC 5	HLUC 6	HLUC 7	HLUC 8	HLUC 9	other
Research on the key technology of relay protection for high permeability renewable energy delivery system	●	n/a	n/a	●● ●	●	●●	●	n/a	●	

Figure 8: Prot4HiRes mapping onto HLUC

Mateo presented the key findings of the project. First of all, the project aims to identify a critical point where traditional protection systems might start to fail, either due to low infeed currents or due to bigger voltage dips. Additionally, the necessity of determining a set of parameters that will enable the design of a new transmission line protection is highlighted. Matteo underlined the importance of generating simulation scenarios that will evaluate new requirements. Mateo also emphasized the development of specifications for protection systems for transmission grids with high penetration of RES.

Projects Panel Session 3: Digitalisation & Citizen's Involvement

Miguel Sanchez Fornié - EDDIE (EU)

Miguel Sanchez Fornié from the University of Comillas presented the EDucation for DIgitalisation of Energy project (EDDIE). The EDDIE project aims at creating a Sector Skills Alliance (SSA) by bringing together all the relevant

stakeholders in the Energy value chain, such as industry, education and training providers, European organizations recruiters' social partners, and public authorities. The main objective of this SSA is to develop a long-driven blueprint (or strategy) for the digitalization of the European Energy sector.
The blueprint of the project has to ensure sustainability after the project ends in order to become a major reference in the education of the sector in the future.

David Martin Utrilla - FLEXENER (ES)

David Martin Utrilla presented the project Flexible Energy System for the Efficient Integration of New Decarbonisation Technologies (FLEXENER). The goal of the project is to identify flexibility capacities in generation, demand and the distribution network, to achieve a 100% renewable electricity system. To achieve this goal, the project investigates the flexibility options from various sources such as renewable/storage generation mix, distribution network flexibility and flexible demand management technologies and integrates them in future operational scenarios of the system. The goal is to provide recommendations for new markets, flexibility services and regulations of the system in order to achieve a 100% renewable energy mix.
The relevance of the project to each HLUC is depicted in the next figure:

of project FLEXENER for	HLUC 1	HLUC 2	HLUC 3	HLUC 4	HLUC 5	HLUC 6	HLUC 7	HLUC 8	HLUC 9	other
Distribution	●	●●●	●●●	●●●	●	●●	●	●	●●	●●●
Renewables	●	●	●	●●●	●	●●●	●●	●●	●	●●●
Retail	●●	●	●●	●	●	●●	●●●	●	●●●	●●●

Figure 9: FLEXENER mapping onto HLUC

David also highlighted the key findings of the project. First, regarding the distribution network, the findings highlight the importance of strategic placement of flexible services within the distribution network. Additionally, DSOs can assist in the provision of flexibility services to the transmission system. Regarding the integration of 100% of renewable energy into the system, the presenter commented that it is costly but feasible, considering the advantages of the grid forming and synchronous compensators models. Additionally, David highlighted the importance of new business models for the retailers for demand flexibility considering the high impact of peak consumption in the energy prices.

Chris Merveille - GoiENER (ES)

Chris Merveille presented the work of GoiEner S. Coop., which is a Citizen Energy Cooperative with more than 17'000 members, mainly private citizens. The activities of GoiEner include, among others, the electricity supply, with renewable generation of rooftop PV and mini hydropower, of the citizens of the RECs. The goal of GoiENER is to promote and support the creation of RECs and their research activities including power poverty, bioenergy behavioral change, contributing to various R&D projects and serving as use cases and pilots.
The relevance of the GoiENER and the various projects that have participated to each HLUC is depicted in the next figure:

project / program	HLUC 1	HLUC 2	HLUC 3	HLUC 4	HLUC 5	HLUC 6	HLUC 7	HLUC 8	HLUC 9	other
H2020-WHY	●	●	●●	●●	●●●			●●	●●●	
H2020-BECoop	●				●●				●●	
H2020-CHESTER	●●●	●●●	●●	●●	●					
Euroregion Hidro-Ttipi				●	●●●				●●	
Regional: GoiEner Soziala	●			●	●●●				●●●	

Figure 10: GoiENER mapping of HLUC

The presenter commented that the activities of GoiENER are mainly relevant to HLUC 5 which focuses on a one stop shop and Digital Technologies for market participation of consumers (citizens). The presenter highlighted the willingness of end users to displace their consumption despite the limited controllability and the lack of information for the price signals. The importance of battery energy storage systems in future scenarios is also highlighted in order to increase the renewable generation and the local consumption in the RECs. David also underlined the need for citizen/community-oriented research attempts that will manage and demonstrate better the present-day reality conditions and will increase the willingness of end-customers to contribute to the energy transition.

Raquel Pedrero Alonso – BEYOND (ES)

Raquel Pedrero Alonso presented the BEYOND project which has a main goal to investigate the integration of local energy markets based on smart contracts and blockchain technologies. The BEYOND project aims to introduce new business models and market designs to the operation of Energy Communities that will enable virtual clustering between consumers and prosumers accounting for the grid related issues. The project also investigates the impact that the Blockchain and EVs will have on shaping the new design of energy communities and local energy markets for energy sharing.
The relevance of the project to each HLUC is depicted in the next figure:

of project / program ... for	HLUC 1	HLUC 2	HLUC 3	HLUC 4	HLUC 5	HLUC 6	HLUC 7	HLUC 8	HLUC 9	other
BEYOND		●●	●●●	●●	●●●		●	●	●●●	

Figure 11: BEYOND mapped onto the HLUC

Raquel highlighted the key findings of the project that are relevant to the HLUCs. End-user flexibility has emerged as a critical resource for DSOs, potentially enabling better coordination with TSOs. Towards this direction BEYOND evaluates an innovative inter-Community trading marketplace, that provides TSOs and DSOs the opportunity to trade or procure flexibility. Additional to this development is the evolving dynamics of consumer-prosumer interactions. The proposed methodologies are able to raise flexibility from local markets and energy communities accounting for the technical grid constraints.

René Menendez Ramstad – R2D2 (ES)

René Menendez Ramstad presented the R2D2 project which focuses on the resilience of the energy infrastructure and aims to develop proactive measures to ensure the reliability of physical assets. As part of the project, four tools will be developed for the energy system security strategy accounting for both preventive and corrective measures to increase the reliable operation of the power system against cyber, physical and natural/climatic threats. The presentation introduced the demonstration activities that take place in four different European countries and the test cases that will be implemented.
The relevance of the project to each HLUC is depicted in the next figure:

of project / program ... for	HLUC 1	HLUC 2	HLUC 3	HLUC 4	HLUC 5	HLUC 6	HLUC 7	HLUC 8	HLUC 9
R2D2/HORIZON EUROPE CL5-2021-D3-02	●●●	●●	●	●●	●	●	●●●	●	●

Figure 12: R2D2 mapping onto the HLUC

The presenter mentioned that the project has just recently started, therefore there are no key findings yet. The presenter highlighted the need for the definition of risk measurement models against TSO and DSO cybersecurity and resilience risks. Additionally, the presenter mentioned that there is a lack of regulatory framework in European level to support the power system operation risk assessment.

Conclusions

Rainer Bacher, in his concluding presentation, presented an overview of the workshop, highlighting the importance of such regional sessions for exchanging ideas, discussing research progress, and questioning current procedures. He began by referring to the keynote speeches, posing the question of whether the ultimate goal for 2050 needs a revision in light of ongoing developments. Regarding a common understanding of these goals, a discussion was held on aligning national and European efforts, with a focus on understanding the benefits and differences.
The topic of forecasting was central across several projects. Rainer Bacher noted that this term seems to be less clear than it should be, given its significance in the industry.
Additionally, he highlighted the attempts by different participants to associate their projects to the nine High Level Use Cases, suggesting that an effective approach is needed giving as an example the EDDIE project which deals with skills. Concluding he compared the previous roadmap compared to the new roadmap and the need to close the gap between the research area and the use cases that demonstrate the real effects that should be achieved.

4. Feedback from Participants

Participating representatives of the 16th ETIP SNET Regional Workshop received after the event an evaluation form, where they could express their appreciation for the event. In total, we received 13 responses. The figure below showcasing overall participant satisfaction in the event.

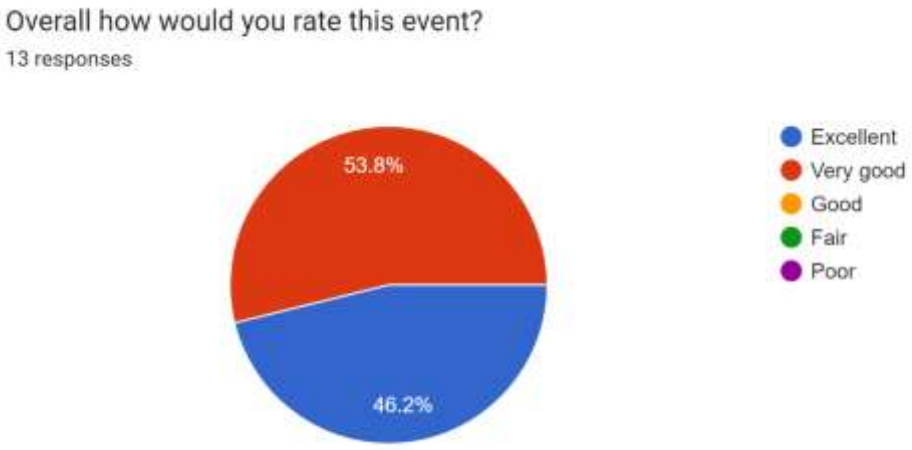


Figure 13: Overall how would you rate this event?

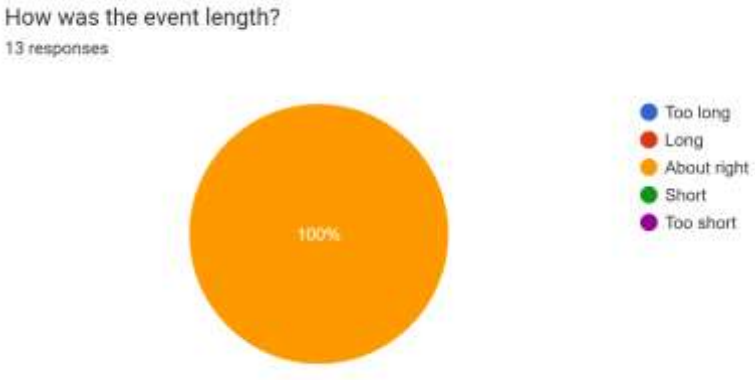


Figure 14: How was the event length?

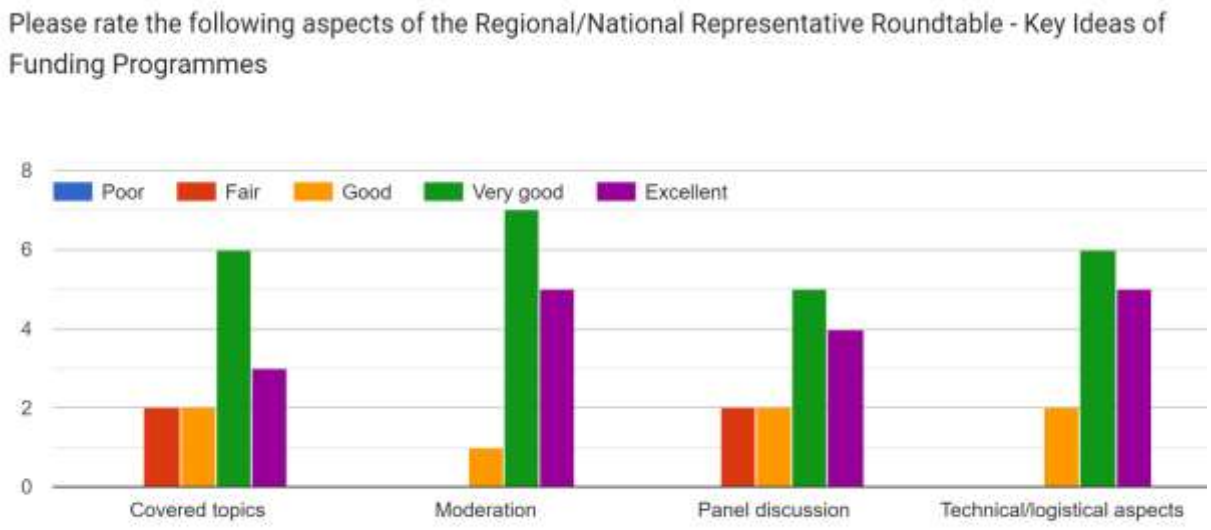
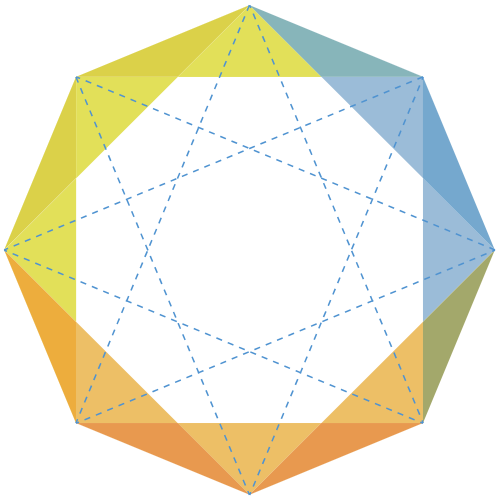


Figure 15: Please rate the following aspects of the Representative Roundtable



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