Support to the coordination of national research and innovation programmes in areas of activity of the European Energy Research Alliance

International research collaboration opportunities: fostering EU Clean Energy transition in Lithuania
SUPEERA and PANTERA joint workshop

Support to the coordination of national research and innovation programmes in areas of activity of the European Energy Research Alliance

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 949125.

Mobilization of EU13 national public research resources in the Clean Energy Transition: challenges and opportunities

SUPEERA/PANTERA workshop, Vilnius, Lithuania
27th April 2023

Ivan Matejak, EERA

Agenda 1/4

10:00 - 10:30	**Registration and coffee**
10.30 - 10:45	**Welcome address** ***Gintautas Dzemyda*,** Head of the Division of Technical Sciences, Lithuanian Academy of Sciences ***Ivan Matejak***, SUPEERA coordinator, EERA ***Venizelos Efthymiou*,** PANTERA coordinator, FOSS Research Centre of University of Cyprus
10:45 - 11:05	**The SUPEERA project.** Mobilization of EU-13 national public research resources in the Clean Energy Transition: challenges and opportunities ➢ SET Plan and CET - benefits and engagement possibilities ➢ Investment and reform measures for Lithuania for CET ***Ivan Matejak***, SUPEERA coordinator, EERA
11:05 - 12:10	**Panel discussion and Q&A** Moderators: Ivan Matejak (SUPEERA, EERA) & Andrei Morch (PANTERA, SINTEF) - **Research and innovation for the clean energy transition: political context in the EU** with ***Brigita Serafinavičiūtė***, Research Attaché,Permanent Representation of Lithuania to the EU - **Updates of the Energy Technology Policy** with ***Daumantas Kerežis*,** Adviser at the Innovation Group of the Ministry of Energy of the Republic of Lithuania - **The importance of the collaboration on the EU level** with ***Tadas Tumėnas***, Head of LINO Office (Lithuanian RDI liaison office in Brussels)
12:10 – 12:25	**Coffee break**

Agenda 2/4

12:25 – 12:40	**R&I opportunities for collaboration and funding:** ➢ Horizon Europe o Cluster 5 o Widening Calls ➢ Norway/EEA Grants ***Spyridon Pantelis***, Project Manager, EERA
	Petter Støa, Vice President Research at SINTEF **EIC funding opportunities for Clean-tech technologies** ***Francesco Matteucci***, Programme Manager, European Innovation Council (online)
12:40 - 13:30	**Panel discussion and Q&A** Moderator: ***Spyridon Pantelis***, Project Manager, EERA
	Lithuanian incentive package to facilitate participation in Horizon Europe ***Aistė Vilkanauskytė***, Adviser at Technology and Innovation Unit, Ministry of Science, Education and Sports **Challenges and opportunities for Widening countries' participation in Horizon Europe programme** ***Aurelija Povilaikė***, Head of NCP Unit and Coordinator, WIDERA NCP **Participation of Lithuanian Confederation of Industrialists in European Partnerships** ***Tomas Garuolis***, Department Director at Business, Environment and Economy, Lithuanian Confederation of Industrialists
13:30 - 14:45	**Lunch and networking**

Agenda 3/4

14:45 - 15:00	**The PANTERA project.** ➢ Mission, vision, and approach ➢ PANTERA in support of networking: Overview of international and EU initiatives active on energy system's R&I activities (Mission Innovation, ISGAN, ETIP-SNET, EERA JP on Smart Grids, etc.) ➢ The way forward ***Mattia Cabiati***, International activities and EU projects, Ricerca sul Sistema Energetico
15:00 - 15:30	**The EIRIE platform in support of the R&I European ecosystem** Objectives and opportunities EIRIE's functionalities and tools facilitating the work of stakeholders: ➢ Active participation & contribution on the EIRIE platform ➢ The Lithuanian corner and its role in bringing its R&I community ➢ Sli.do questions ***Venizelos Efthymiou***, PANTERA coordinator, FOSS Research Centre of University of Cyprus ***Anna Mutule***, Head of Smart Grid Research Centre, Institute of Physical Energetics, Latvia
15:30 - 15:45	**Sharing experience and best practice in R&I collaborative projects** ***Mečislovas Kaulakis***, Innovation Project Manager, Litgrid
15.45 - 16.00	**Outcomes of PANTERA interaction with the stakeholder: challenges and barriers for R&I activities in the Smart Grids domain"**

Agenda 4/4

	Andrei Morch, Research Scientist, SINTEF Energy Research Energy Systems, Norway
16:00 - 16:35	**Panel discussion: Opportunities to increase participation in joint R&I activities** Moderator: ***Andrei Morch***, Research Scientist, SINTEF Energy Research Energy Systems, Norway
	Mečislovas Kaulakis, Innovation Project Manager, Litgrid ***Rolandas Urbonas***, Senior Research Associate, Lithuanian Energy Institute ***Vytenis Barkauskas***, Head of Energy Security and Innovations at Lithuanian Energy Agency
16:35 - 16:45	**Wrap up and feedback** ***Ivan Matejak***, SUPEERA coordinator, EERA
16:45 – 18:00	**Networking**

EERA
European Energy Research Alliance

- European Energy Research Alliance, **a key player** in the European Union's **Strategic Energy Technology (SET) Plan**
- The **largest low-carbon energy research community** in Europe bringing together **leading research institutes** to expand and optimise EU energy research capabilities
- Membership-based, non-profit association

250
public research centres and universities

30
countries

50K
energy experts

- We support the **Clean Energy Transition** by catalysing European energy research and providing world-leading scientific expertise on **three thematic categories** organised in **18 Pan-European Joint Research Programmes**.

Materials (2)	LOW-CARBON technologies (10)	SYSTEMIC Research areas (6)

“SUPEERA” supports the SET Plan and the Clean Energy Transition

We...

- → Facilitate the coordination of the research community (also by “widening”)
- → Accelerate innovation and uptake by industry
- → Provide recommendations on policy
- → Promote the SET Plan and the Clean Energy Transition

We connect the dots.

EERA
European Energy Research Alliance

cea

DTU

KIT
Karlsruhe Institute of Technology

SINTEF

VTT

The new European/World Context

Revamping SET Plan

REPower EU

EU Green Deal

Energy crisis emergency

New Energy Paradigm

EU Strategic Autonomy

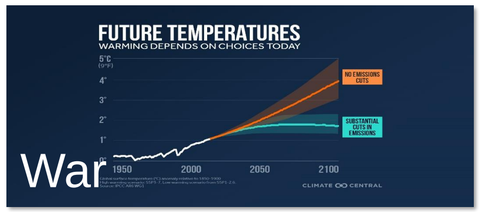
New Geopolitical Order

200 – 700 M migrants 2050

2° in 2050, 3°-4° in 2100

Rebound Fossil invest.

Increasing emissions



Strategic Energy Technology (SET) Plan

Established in 2008 (currently in revision process), it plays a key role in serving the **goals of the European Green Deal** by facilitating the **delivery of clean energy R&I** necessary to achieve the European transition to climate neutrality by 2050.

Synergies with the EGD and FIT455

- Alignment with EC strategies
- Break down the silos
- Track for 55% reduction

R&I alignment

- NECPs measures
- Improving competitiveness
- Coordination between MS

Monitoring of R&I spending

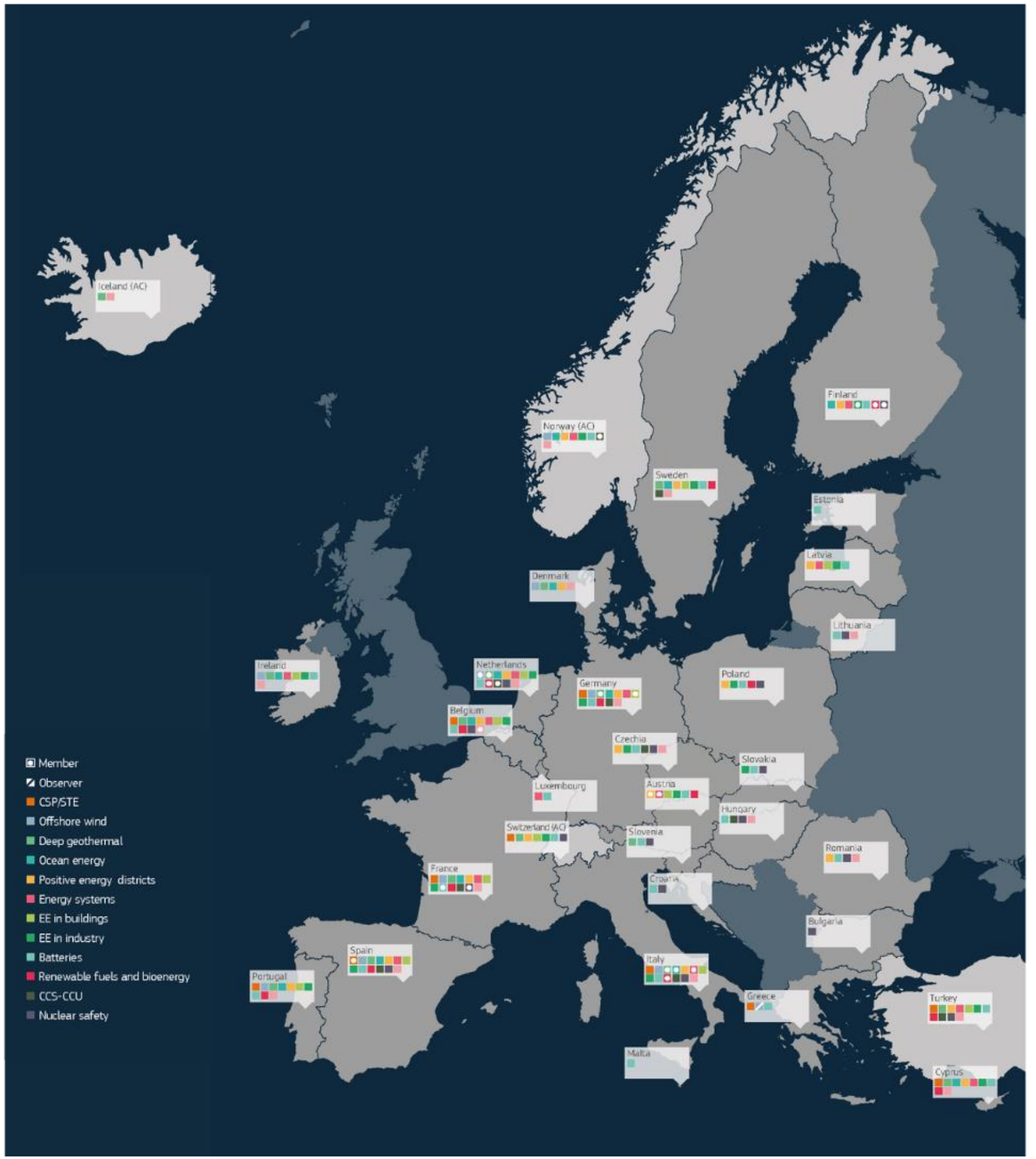
- Defining the shared methodology
- Monitoring evolution of spending
- Identifying trends

Mobilising public and private investment

- Facilitate private investments
- Scale/up of infrastructure
- Avoid duplication

The European Strategic Energy Technology Plan

	SET Plan key actions	13 implementation working groups
N°1 in renewables	#1 Performant renewable technologies integrated in the system #2 Reduce costs of technologies	→ Offshore wind → Photovoltaics → Deep geothermal → Ocean energy → Concentrated solar power / Solar thermal electricity
Energy systems	#3 New technologies & services for consumers #4 Resilience & security of energy system	→ Energy systems → Positive energy districts
Energy efficiency	#5 New materials & technologies for buildings #6 Energy efficiency for industry	→ Energy efficiency in buildings → Energy efficiency in industry
Sustainable transport	#7 Competitive in global battery sector and e-mobility #8 Renewable fuels and bioenergy	→ Batteries → Renewable fuels and bioenergy
CCS - CCU	#9 Carbon capture storage / use	→ Carbon capture and storage Carbon capture and utilisation (CCS – CCU)
Nuclear safety	#10 Nuclear safety	→ Nuclear safety



The gap in relation to the SET Plan

EU13 participation to SET Plan Implementation Working Groups (IWGs)

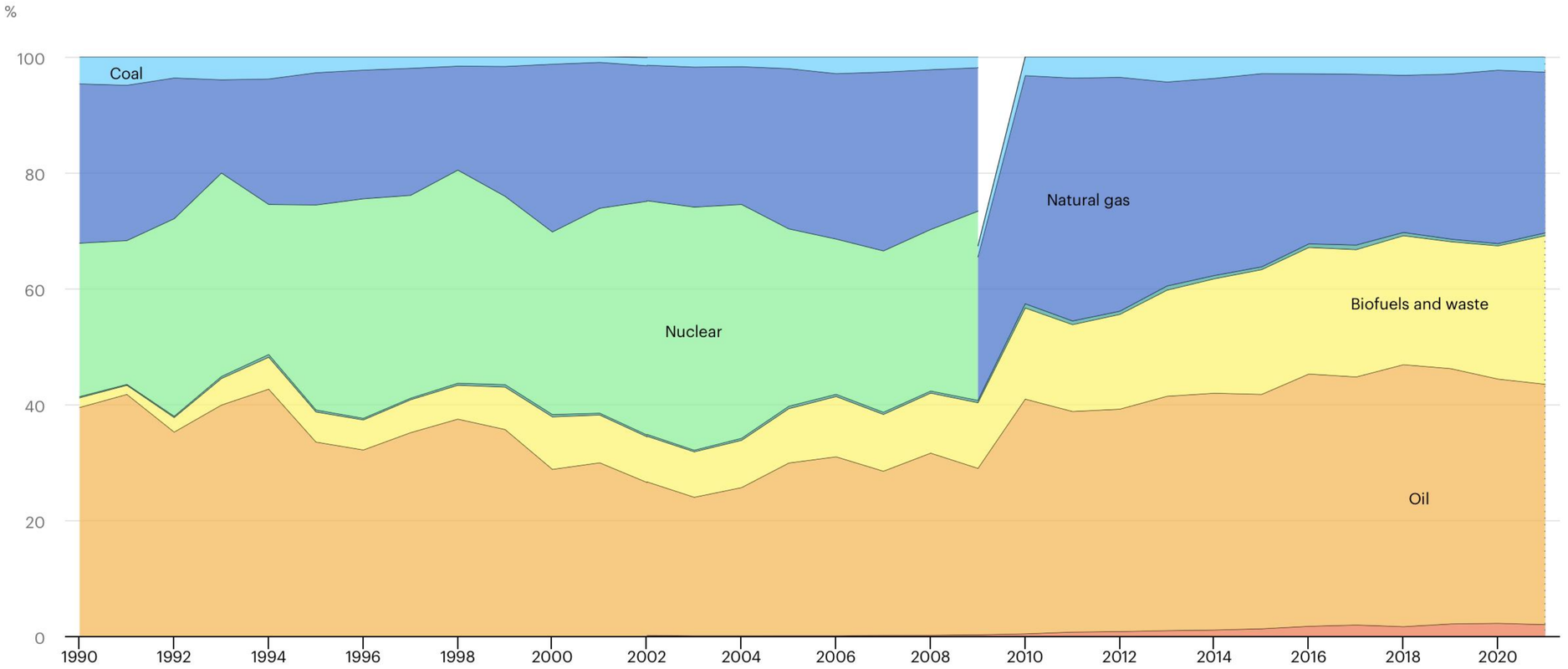
Country	Batteries	CCU-CCS	CSP-STE	Deep Geothermal	Energy Efficiency in Buildings	Energy Efficiency in Industry	Energy system	Nuclear safety	Ocean energy	Offshore wind	Photovoltaics	Positive energy districts	Renewable fuels and bioenergy
Bulgaria								X					
Croatia	X							X					
Cyprus	X		X	X		X	X		X		X	X	X
Czechia	X	X				X		X			X	X	
Estonia	X												
Hungary	X	X						X					
Latvia	X				X	X	X					X	
Lithuania	X							X			X		
Malta	X												
Poland	X					X		X				X	X
Romania	X							X			X	X	
Slovakia	X					X		X					
Slovenia	X					X		X					

All EU13 countries participate in the SET IWGs, with Cyprus being the most active country.

EU13 involvement is mostly circumscribed to nuclear safety, batteries, energy efficiency in industry and PED

Source: SETIS's website, Implementing the actions.

Lithuania's energy sector, total energy supply (TES) by source

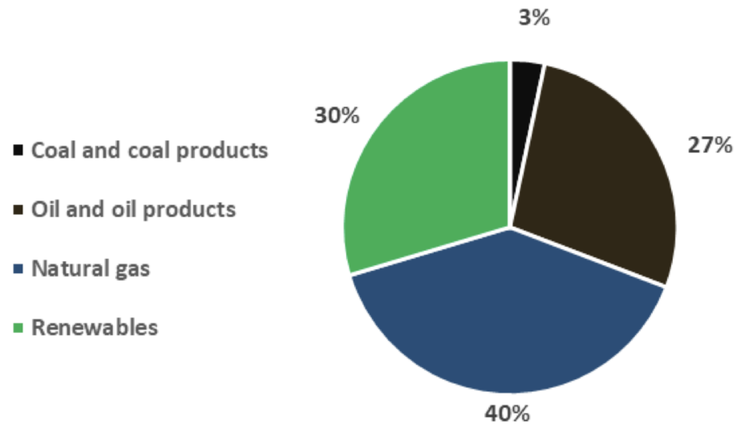


IEA. All rights reserved.

Coal · Natural gas · Nuclear · Hydro · Biofuels and waste · Oil · Wind, solar, etc.

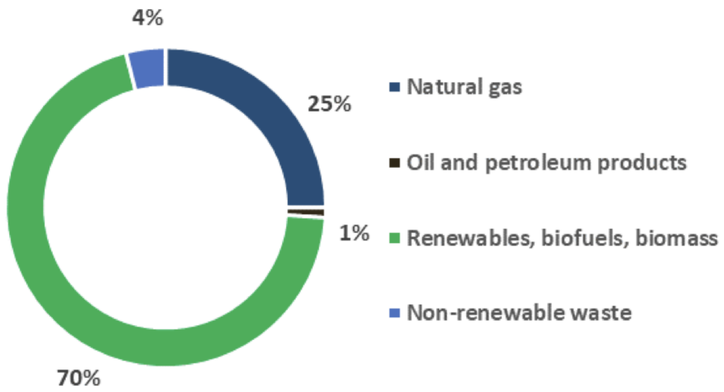
Lithuania's energy sector, energy/electricity mix and dependencies

Energy mix – 2021



Source: DG ENER and Eurostat

Electricity mix - 2021



Source: DG ENER and Eurostat

Dependency from Russian fossil fuels (2020) (c)(d)

	Gas	Oil	Coal
EU27	44%	26%	54%
LT	42%	73%	100%

Source: Eurostat (nrg_ti_sff, nrg_ti_oil, and nrg_ti_gas)

Lithuania in the SET Plan and CET

SET Plan

→Lithuania participates in three SET Plan Implementation Working Group: Batteries, Nuclear Safety, and HVDC (withdrawal from PV)

→2020: NECP briefly mentions the SET Plan; noting that the report should include information on how the SET Plan objectives and policies are being translated to a national context

→ 2022: Ministry of Energy provided a comprehensive overview of LT's energy sector, plans and strategies for transitioning to low-carbon energy system, including the CET Partnership (allocating 1 mil €)

CET in the Recovery Plan

→ Allocation: **€2.1 billion in grants**.

→ **43,63%** of allocated funds to channel towards **climate objectives**.

→Specific investments:

- **Transport**: €346,9 million for moving without polluting the environment
- **Energy**: €242,4 million for boosting sustainable electricity production
- **Buildings**: €217,8 million to accelerate renovation of buildings and a sustainable urban environment

Support to the coordination of national research and innovation programmes in areas of activity of the European Energy Research Alliance

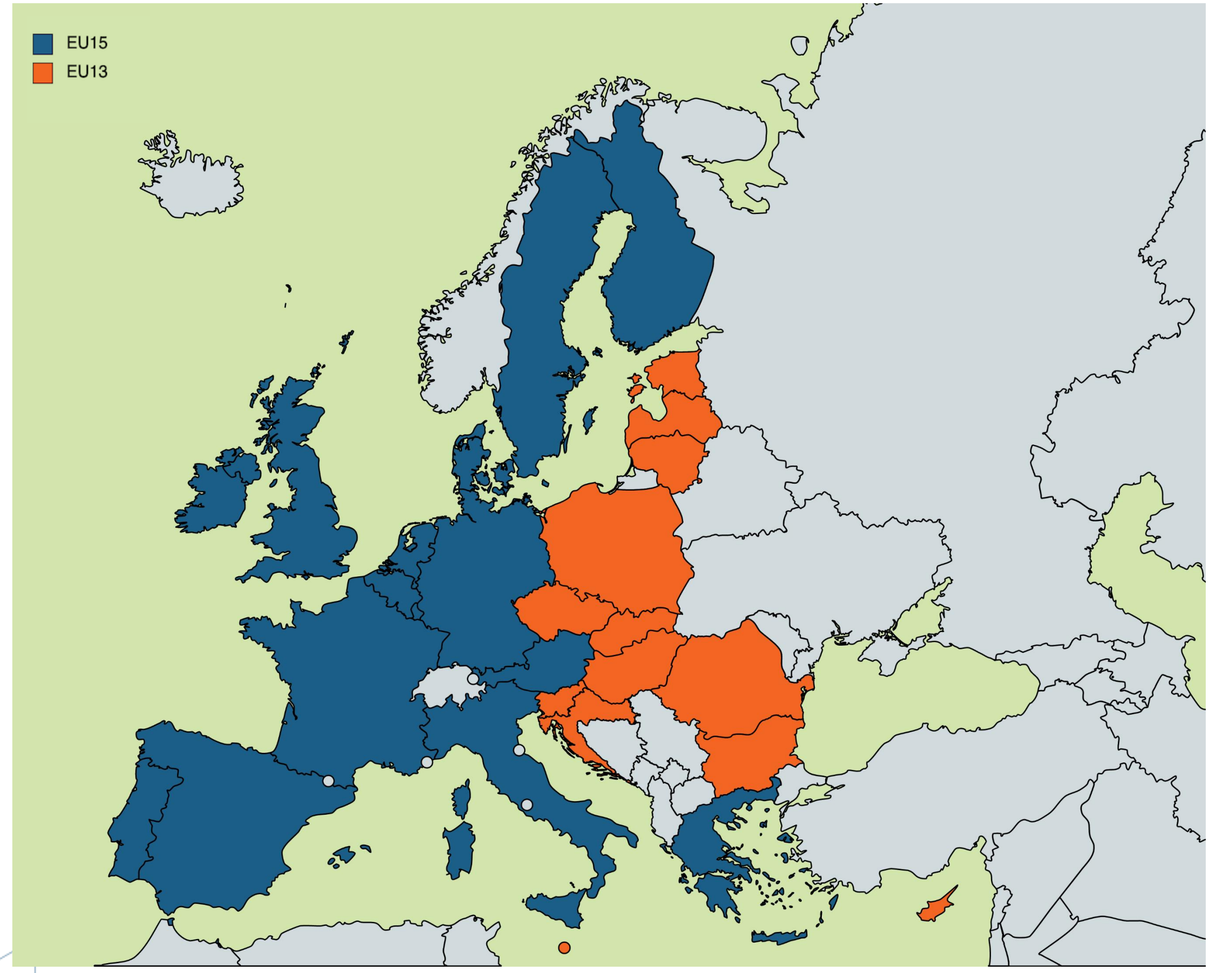
This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 949125.

Engagement of Lithuania in H2020

Introductory note

The research and innovation gap between EU13 and EU15 Member States

The R&I gap between EU13 and EU15 Member States

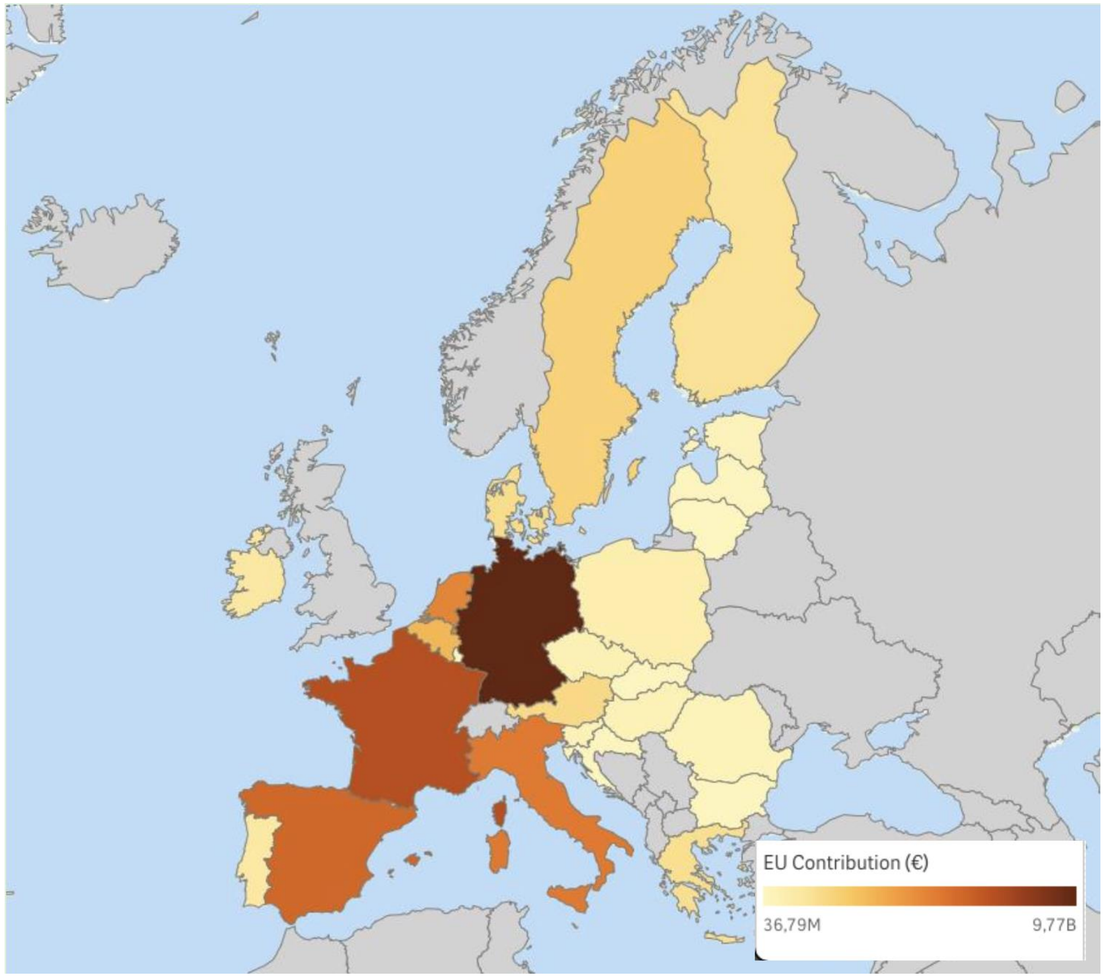


The **research and innovation (R&I) gap** in the EU is a pressing **challenge**, especially in consideration of the **2030** and **2050 climate goals**.

EU13 countries have **low participation rates** in the SET Plan, their national research organisations have **limited awareness** of the Clean Energy Transition (CET) priorities, funding schemes and initiatives and have received only a **marginal contribution** of Horizon 2020's budget.

The gap in relation to Horizon 2020 contribution: geographical distribution

Geographical distribution of Horizon 2020 net contribution by country



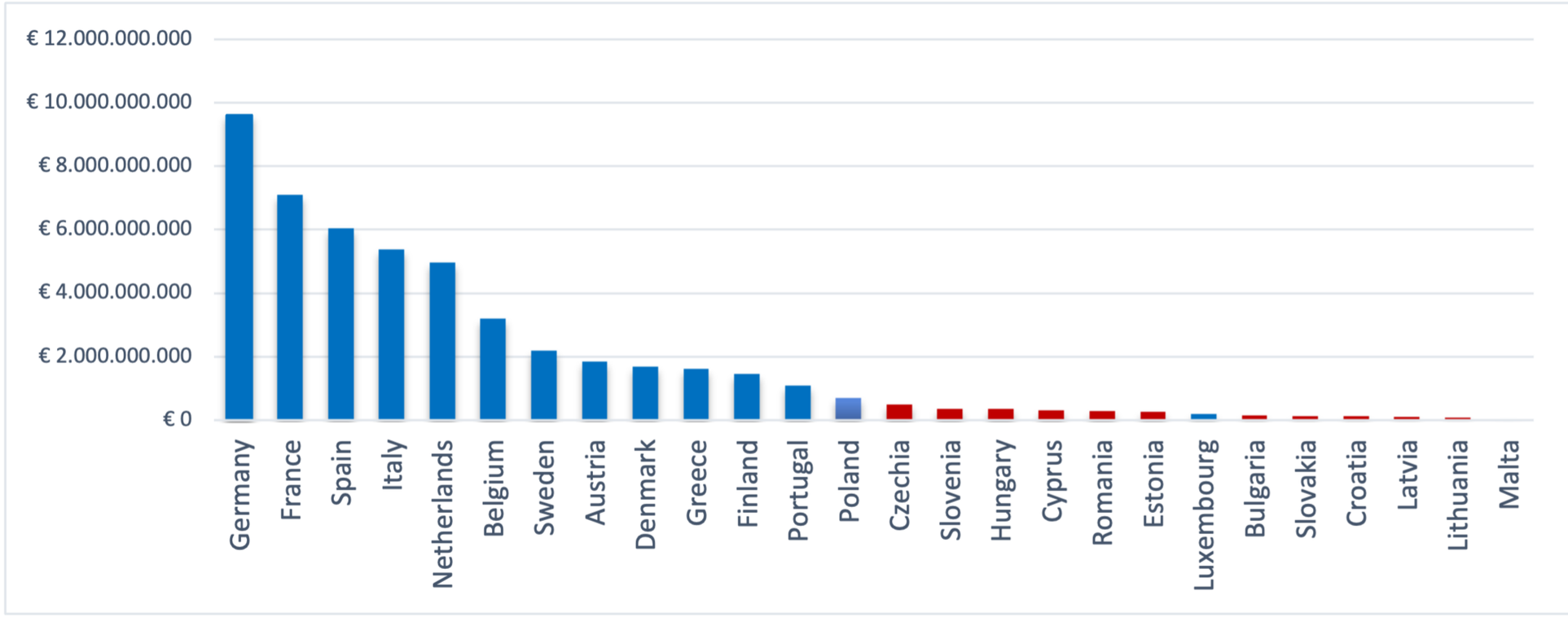
The limited commitment to the SET Plan reflects in **low H2020 performance**.

EU13 countries have received only a **marginal contribution** of Horizon 2020's budget compared to EU15.

Image source: Horizon 2020 dashboard (European Commission, 2021).

The gap in relation to Horizon 2020 contribution: EU13 vs EU15

H2020 net EU contributions (mil. EUR)



Only 5% of the total Horizon 2020 budget has been allocated to research teams from the EU13 Member States.

Source of the data: Horizon 2020 country profile database (European Commission, 2021).

H2020 performances

Sample	Organisations involved in H2020 projects	Organisations involved in H2020 projects (% of EU total)	H2020 net EU contribution (in Mil)	H2020 net EU contribution (% of EU total)
EU total	151.718	100,00%	€ 59 580	100,00%
EU13 total	**14.640**	**9,65%**	**€ 3 470**	**5,82%**
EU15 total	137.078	90,35%	€ 56 120	94,18%

→Among EU13, **Malta** receives the lowest net contribution (EUR **36,79 million**), while **Poland** receives the highest contribution (EUR **713,12 million**).

vs.

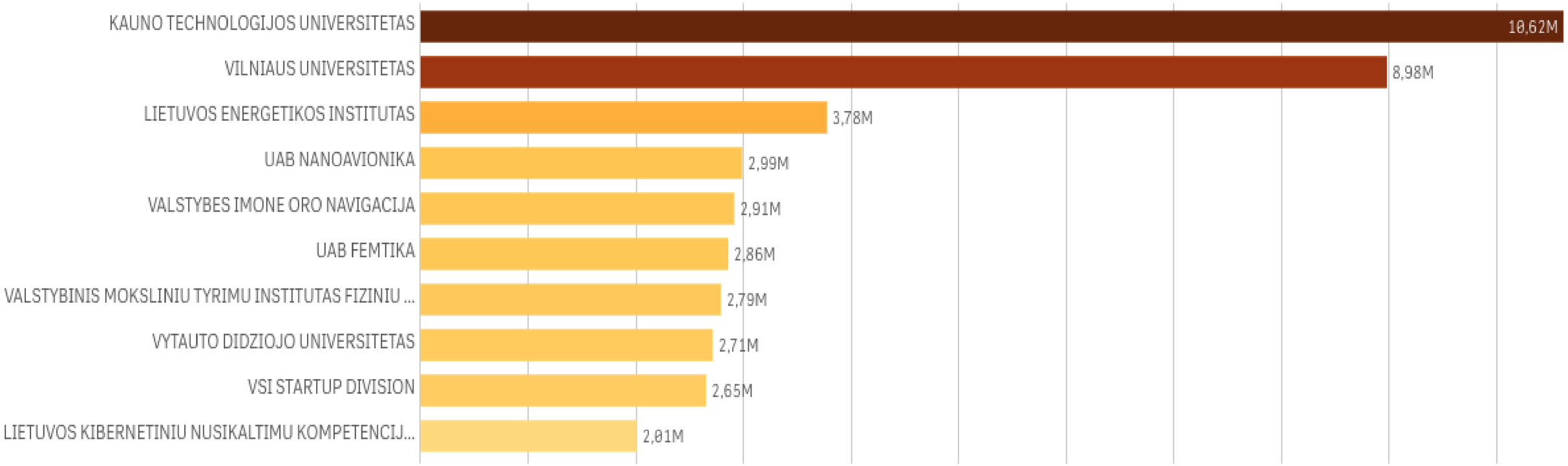
→Among the EU15 countries, **Luxembourg** is the country receiving the lowest share from Horizon 2020 (EUR **189 million**), while **Germany** receives the highest contribution of EUR **9 600 million**

Lithuania's H2020 performances

H2020 performance

Sample	H2020 signed grants	H2020 signed grants (percentage of EU total)	Organisations involved in H2020 projects	Organisations involved in H2020 projects (percentage of EU total)	H2020 net EU contribution (in Mil)	H2020 net EU contribution (percentage of EU total)
Lithuania	493	1,54%	597	0,39%	€ 93	0,16%
EU total	32.064	100,00%	151.718	100,00%	€ 59 580	100,00%
EU13 total	6.229	19,43%	14.640	9,65%	€ 3 470	5,82%
EU15 total	30.881	96,31%	137.078	90,35%	€ 56 120	94,18%

Ten highest-ranking organisations by net Horizon 2020 contributions (mil. EUR)



Lithuania's Horizon Europe performances

Lithuania with HORIZON EUROPE*					
Sample	HORIZON EUROPE signed grants	Organisations involved in HORIZON EUROPE	Organisations involved in HORIZON EUROPE (% of EU total)	HORIZON EUROPE net EU contribution (in mil)	HORIZON EUROPE net EU contribution (% of EU total)
Lithuania	145	176	0,46%	46,59	0,30%
EU total	117544	482.683,00	100%	125.470	100%
EU13 total	20457	45129	9,35%	7.970	6,35%
EU14 total	97087	437554	90,65%	117.500	93,65%

Possible reasons and challenges

Explaining the performance gap between EU13 and EU15 Member States

Root causes and structural challenges

Among the reasons explaining EU13 performance gap are:

- **National priorities not aligned** with European ones;
- **Weakness** of the **R&I systems**
- **Administrative** and **regulatory burdens** obstructing R&I;
- Socio-economic **relevance of fossil fuels** (especially coal) making the transition towards a low-carbon economy less appealing;
- **Limited involvement** in the **SET Plan** landscape;
- **Lack of ties** at European and international level;
- **Absence of integration** between **business** and **academia**.

Reasons for the Horizon 2020 performance gap

Main causes for EU13 performance gap are:

1. **Relative weakness** of the **R&I systems** of EU13 vs EU15;
2. **Relative lack of scientific excellence in institutions** from EU13 vs EU15;
3. **Relative lower quality of proposals** involving EU13 participants compared to those that do not.

These three hypotheses have been assessed through a set of indicators and led to the identification of a **correlation between low scores** in these **indicators** and **Horizon 2020 performance**.

Other challenges related to Horizon 2020

- **Lack of experience** and **complexity of Horizon 2020** dissuading from participating in the Framework Programme;
- **Lack of international network** and **regional cooperation**;
- Ease of accessing **alternative** sources of **funding**;
- **Lack of adequate administrative support.**

Opportunities and recommendations

Opportunities arising participating in the SET Plan

Deeper involvement in the SET Plan would lead EU13 to:

- **Get involved in the EU discourse** about research in energy technologies and influence underlying policies;
- **Understand current priorities**;
- Enhance **international ties**;
- Share **research infrastructures**;
- Higher **awareness** of and **involvement** in **transnational funding schemes**.

Recommendations

Some preliminary recommendations may include:

1. **Link** national **R&I priorities** to European ones;
2. Strengthen **participation** in EU **R&I networks**;
3. **Increase R&I funding**;
4. Foster stronger **academia-business cooperation**;
5. **Improve** administrative **procedures** and **reduce** administrative **barriers**;
6. **Enhance** the activities of **National Contact Points**.

Benefits of being EERA member

In return for its expertise, our members gain unrivalled opportunities to:

1	2	3	4
Build a **pan-European expert network** to share knowledge and develop leading-edge expertise in the field of clean energy.	Participate in the structuring of the research field by **creating critical mass,** avoiding duplication, and leveraging the best R&I capabilities.	**Gain visibility at EU** and international level and influence the EU policymaking process.	**Collaborate with international initiatives** on both bilateral and multilateral levels.

SUPEERA

EERA
European Energy Research Alliance

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Karlsruhe Institute of Technology

SINTEF

VTT

Research and innovation for clean energy transition: political context in the EU

April 27, 2023
Brussels-Vilnius

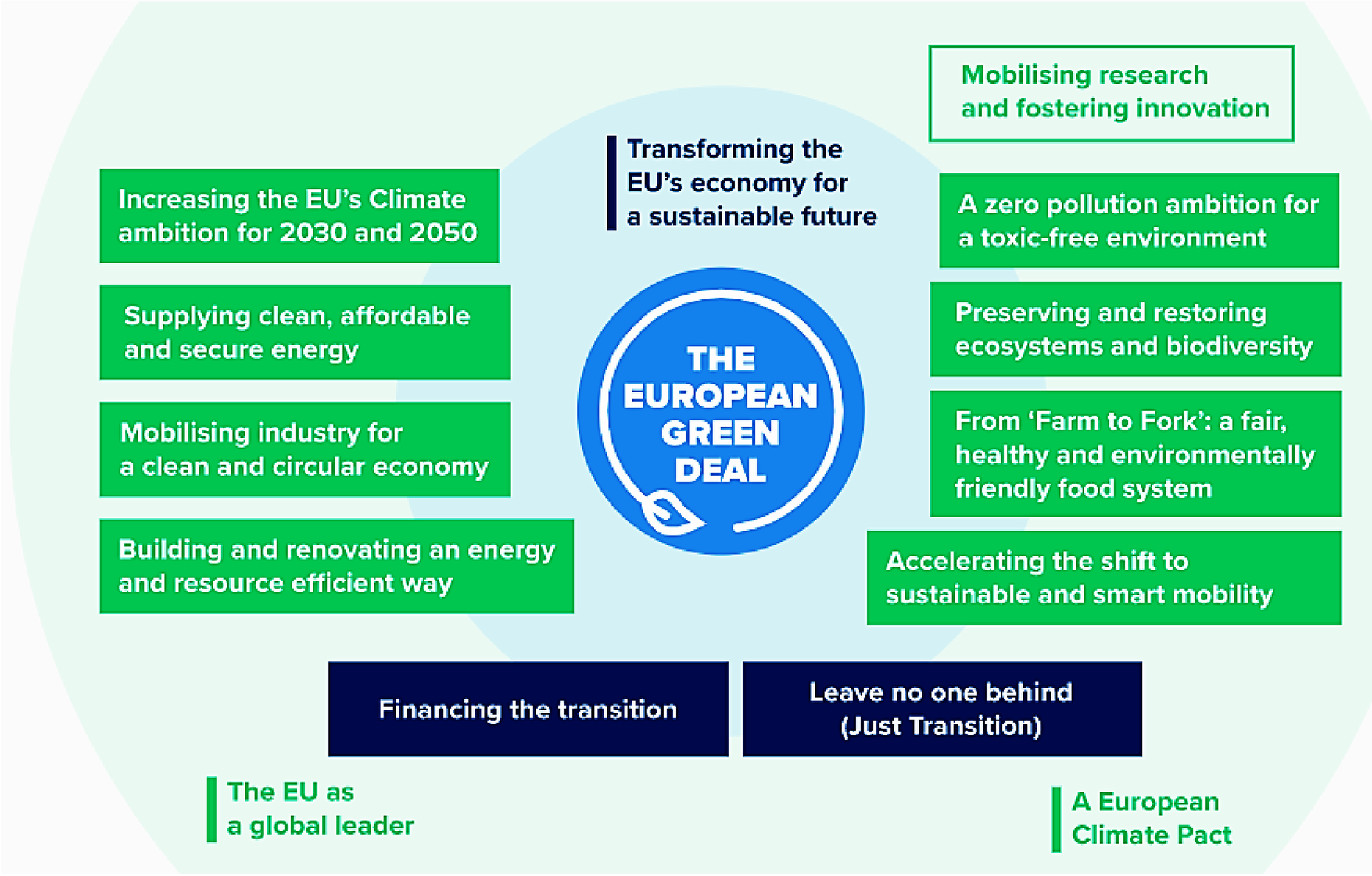
Dr Brigita Serafinavičiūtė
Research Attaché for Lithuania

Green Deal

Europe's future depends on a healthy planet.

EU countries are committed to achieving climate neutrality by 2050, delivering on the commitments under the Paris Agreement.

The European Green Deal is the EU's strategy for reaching the 2050 goal.



European Commission

https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal_en

European Council
Council of the European Union

The EU and its 27 countries are working on new common rules within the ‘Fit for 55 package’ with the objective to cut net greenhouse gas emissions by at least 55% by 2030.

1. Homes 2. Cars 3. Buildings 4. Industry 5. Appliances 6. Planes 7. Ships 8. Nature

https://www.consilium.europa.eu/en/8-ways-life-in-the-eu-is-becoming-greener/

Just a few EU wide initiatives

- Net Zero Industry Act

https://single-market-economy.ec.europa.eu/publications/net-zero-industry-act_en#files

- EURATOM and Small and Small Modular Reactors

April 4 - Declaration on 'EU SMR 2030: Research & Innovation, Education & Training'

https://research-and-innovation.ec.europa.eu/news/all-research-and-innovation-news/commission-declaration-eu-small-modular-reactors-smrs-2030-research-innovation-education-training-2023-04-04_en

- Hydrogen Strategy

https://energy.ec.europa.eu/topics/energy-systems-integration/hydrogen_en

March 1 - Joint Declaration on Hydrogen Valleys - Moving the hydrogen economy from niche to scale

https://research-and-innovation.ec.europa.eu/news/all-research-and-innovation-news/hydrogen-valleys-strategic-autonomy-eu-2023-03-01_en

- EU Chips Act

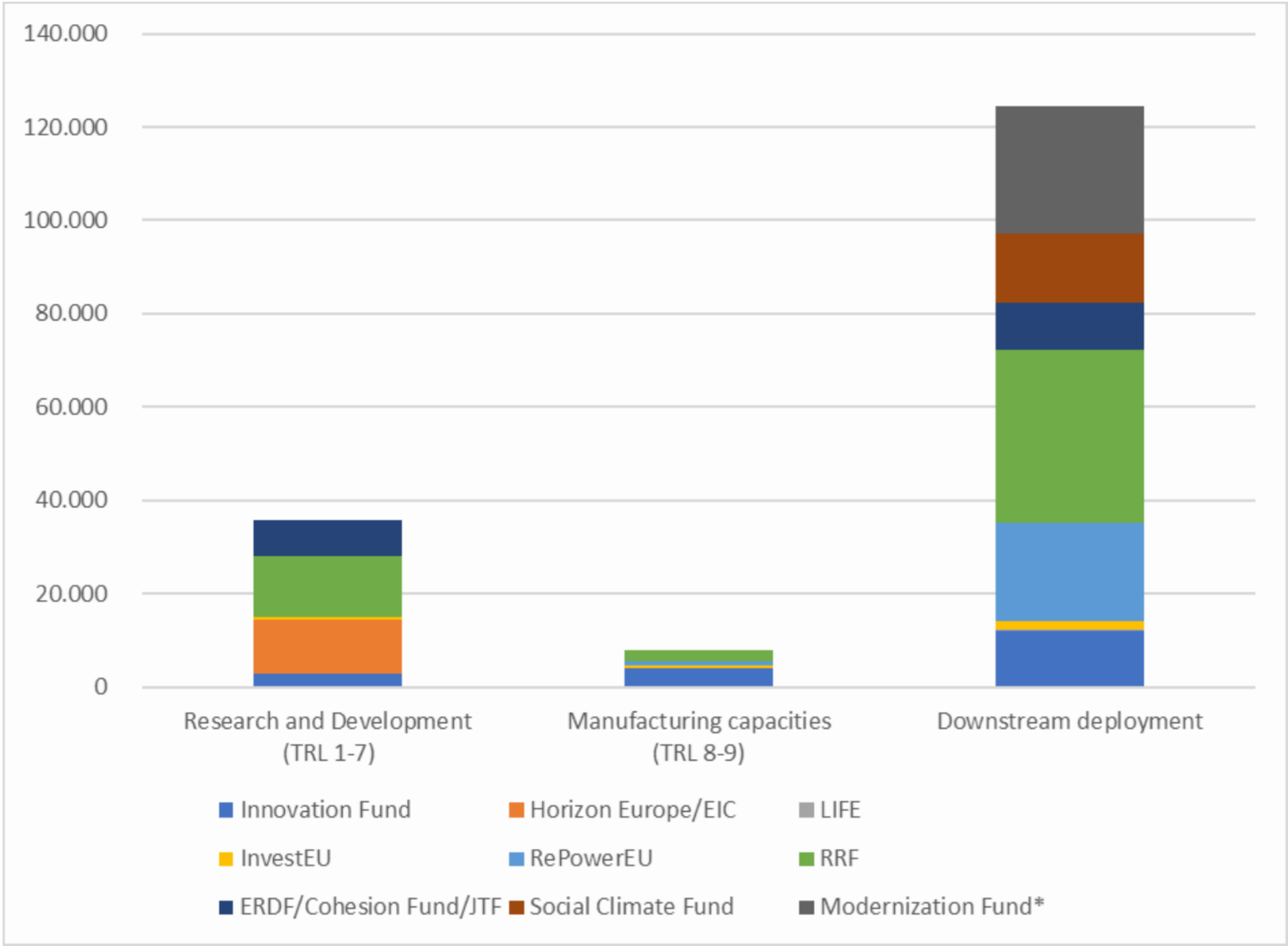
https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/europe-fit-digital-age/european-chips-act_en

- The New European Innovation Agenda (deep tech, regional innovation valleys, etc.)

https://research-and-innovation.ec.europa.eu/strategy/support-policy-making/shaping-eu-research-and-innovation-policy/new-european-innovation-agenda_en

Context of the Net Zero Industry Act

- The support from EU funds is concentrated on the development-phase, such as research and innovation, and on the deployment of net-zero technologies.
- A total of up to EUR 8 billion could be activated to support net-zero manufacturing capacities
- Main EU instruments supporting manufacturing capacities: **Innovation Fund**, **InvestEU**, **Recovery and Resilience Facility**.
- The current EU budget has insufficient possibilities for supporting the objectives of the Net-Zero Industry Act and for ensuring a level-playing field between Member States, relative to the identified public investment needs estimated to be at least in the range of EUR 16-18 billion



Estimated potential maximum support to different stages of net zero technologies by EU instruments between 2021 to 2027 (EUR million)

European Commission

Public opinion

"Almost all the respondents rated "climate change" (90%; 1 921) and "energy supply" (88%; 1 869) as an essential or high priority for the next 10 years."

R&I solutions for clean, sustainable and affordable energy production

Solutions to substitute fossil fuel dependency from external countries, making the EU self-sufficient for energy

Development of renewable energy solutions (e.g., wind energy)

R&I solutions for clean mobility (e.g., in aviation and shipping), energy storage solutions for mobility.

Energy-efficient solutions for advanced manufacturing and industrial processes

Sustainable energy solutions for the construction industry

Development of zero-emission solutions for the defence industry

R&I solutions to use green gases (hydrogen, biomethane).

Source: European Commission (2023), *Synopsis Report - Looking into the R&I future priorities 2025-2027*, Directorate-General for Research and Innovation, Publications Office of the European Union, 2023.

https://research-and-innovation.ec.europa.eu/news/all-research-and-innovation-news/results-public-consultation-future-eu-research-and-innovation-programmes-are-now-public-2023-04-19_en

To conclude:

- EU Green Deal – overarching long-term strategy
- Complex landscape
- Scarcity of resources
- Public support

P.S. Don’t forget ***to network!***

(c) Can Stock Photo)

Contact: brigita.serafinaviciute@smsm.lt

Updates of the Energy Technology Policy

Daumantas Kerežis

Adviser of the Innovations Group

MINISTRY OF ENERGY
OF THE REPUBLIC OF LITHUANIA

27 April 2023, Vilnius

PANTERA / SUPEERA joint workshop

National Energy Technology Ambitions

- **Europe is currently a net importer of net-zero energy technologies**, with about one-quarter of electric cars and batteries, and nearly all solar PV modules and fuel cells imported, mostly from China. For solar photovoltaic technologies and their components, this **dependency exceeds 90%** of products in certain upstream segments of the value chain.

- From a country importing energy technologies, Lithuania needs to become a country **creating and exporting energy technologies**.

MINISTRY OF ENERGY
OF THE REPUBLIC OF LITHUANIA

We Are a Part of SET-Plan Steering Group

- **Strategic Energy Technology-Plan** is the technology pillar of the EU's energy and climate policy
- Representatives from Lithuania‘s Ministry of Energy as well as Ministry of Education, Science and Sport are **members of SET-Plan Steering Group**
- SET-Plan is currently being **revamped**
- **Research and business stakeholders** – you are welcome to discover and engage in SET-Plan‘s **Implementation Working Groups (IWGs)!**

MINISTRY OF ENERGY
OF THE REPUBLIC OF LITHUANIA

International Energy Research Programmes

2022 Call themes:

1) **Optimised integrated European net-zero emissions energy system**
2) Enhanced zero emission power technologies
3) **Enabling climate neutrality with storage technologies, renewable fuels and CCU/CCS**
4) Efficient zero emission heating and cooling solutions
5) Integrated regional energy systems
6) Integrated industrial energy systems
7) Integration in the built environment

Areas of key interest:

- Decarbonisation of the transport sector
- Energy efficiency in buildings and industry
- Energy system analysis
- Challenges and opportunities for regional electricity grids

MINISTRY OF ENERGY
OF THE REPUBLIC OF LITHUANIA

THANK YOU !

MINISTRY OF ENERGY
OF THE REPUBLIC OF LITHUANIA

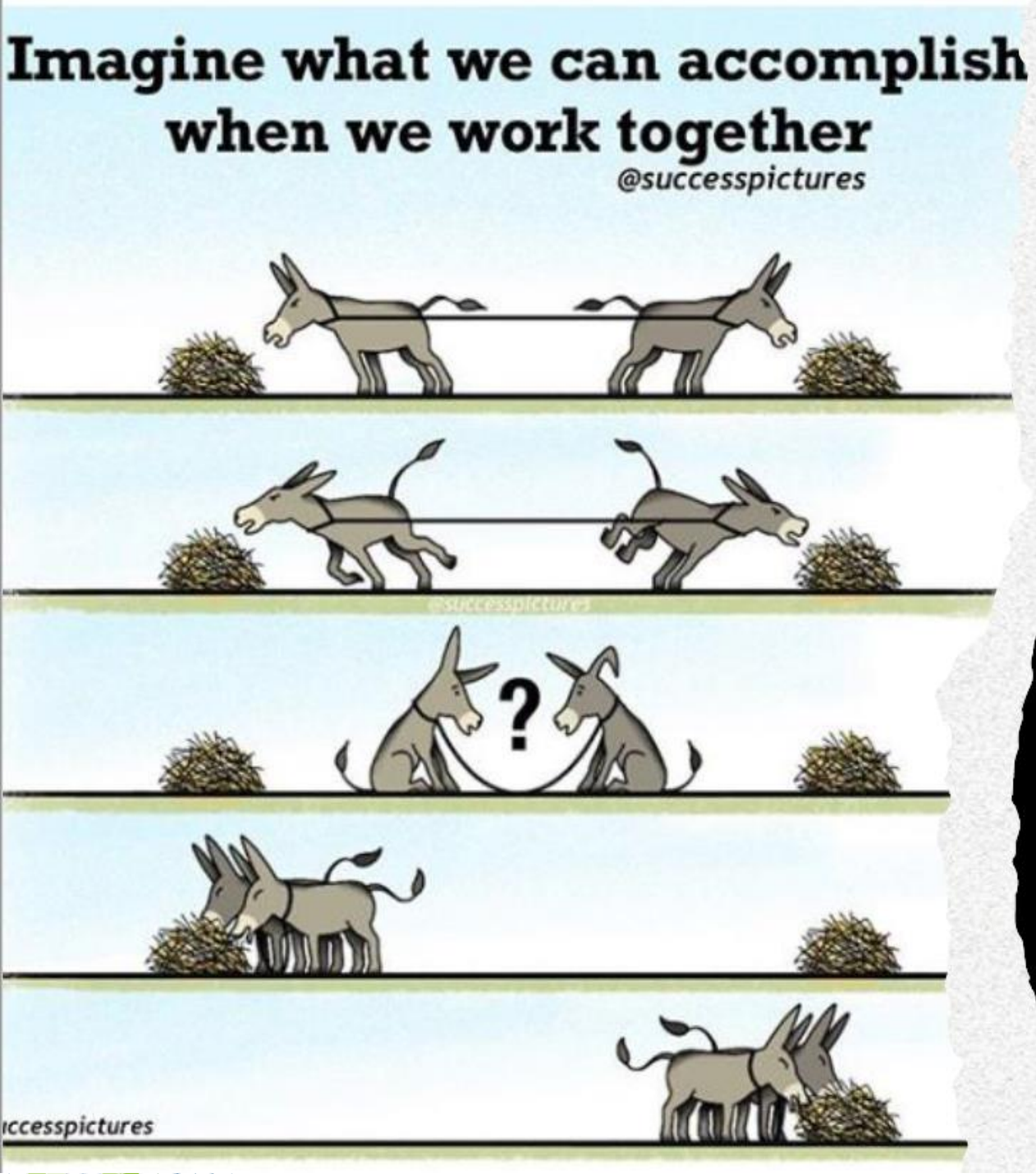
The Importance of Collaboration on the EU Level

Tadas Tumėnas, Head of LINO Office

LINO
Lithuanian RDI Liaison Office

Creating the future of Lithuania
2014-2020 Operational Programme for the European Union Funds Investments in Lithuania

Research Council of Lithuania



Separately
vs.
Together

"Individually, we are one drop. Together, we are an ocean." –

Ryunosuke Satoro

Belgium (Flanders)
Belgium (Wallonia-Brussels)
Cyprus
Czech Republic
Denmark
Estonia
Finland
France
Germany
Hungary

Latvia
Lithuania
Moldova
The Netherlands
Norway
Poland
Romania
Slovakia
Slovenia
Spain
Sweden

Network of Knowledge at the Service of Europe

LINO
Lithuanian RDI Liaison Office

Research Council of Lithuania

A platform for the participants of Lithuanian innovation ecosystem to engage and collaborate with other EU stakeholders and more...

If you want to go fast, go alone. If you want to go far, go together – *African proverb*

LINO
Lithuanian RDI Liaison Office
Creating the future of Lithuania
2014-2020 Operational Programme for the European Union Funds investments in Lithuania
Research Council of Lithuania

Thank you!

tadas.tumenas@lmt.lt

SUPEERA

Support to the coordination of national research and innovation programmes in areas of activity of the European Energy Research Alliance

Panel discussion

- Coffee break

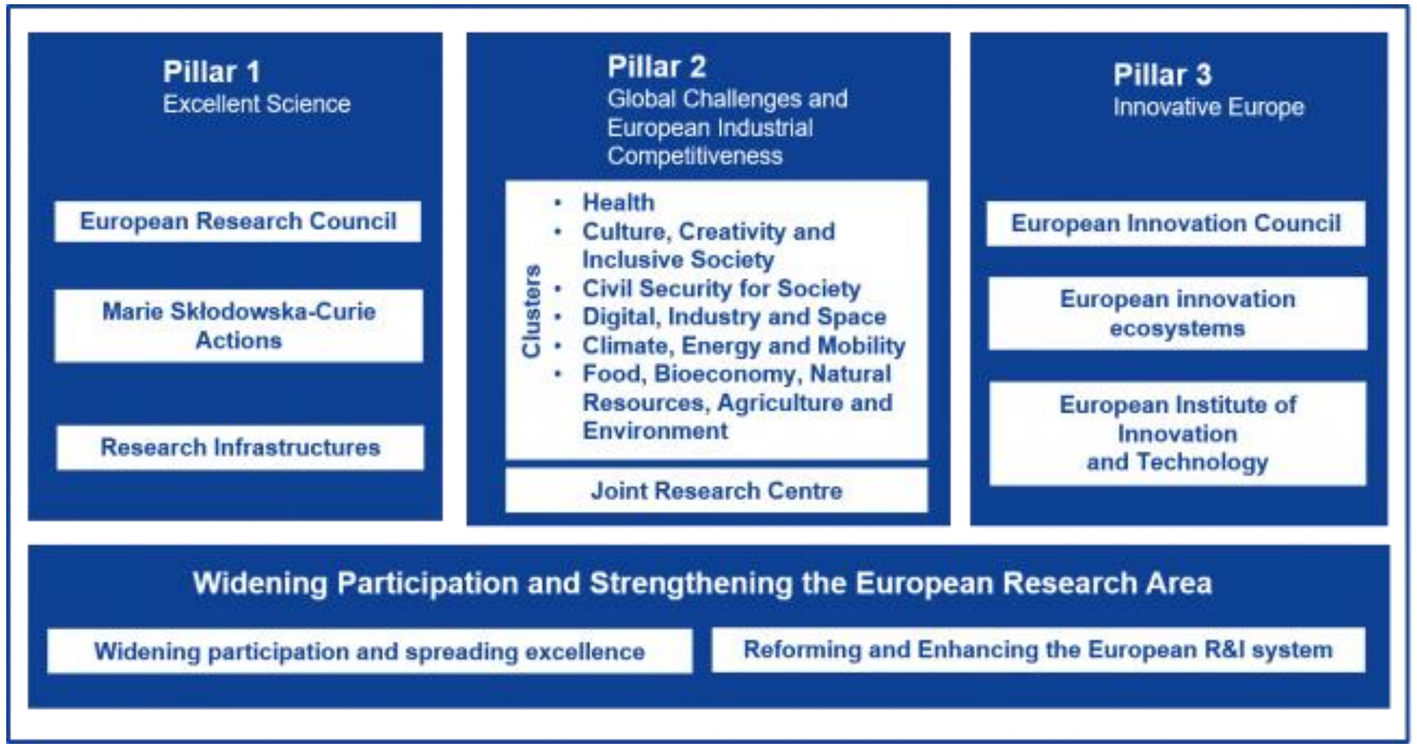
Restart at 12:25 (11:25 CEST)

R&I opportunities for collaboration and funding
Horizon Europe

Spyridon Pantelis, EERA Project Manager

Horizon Europe – General Overview

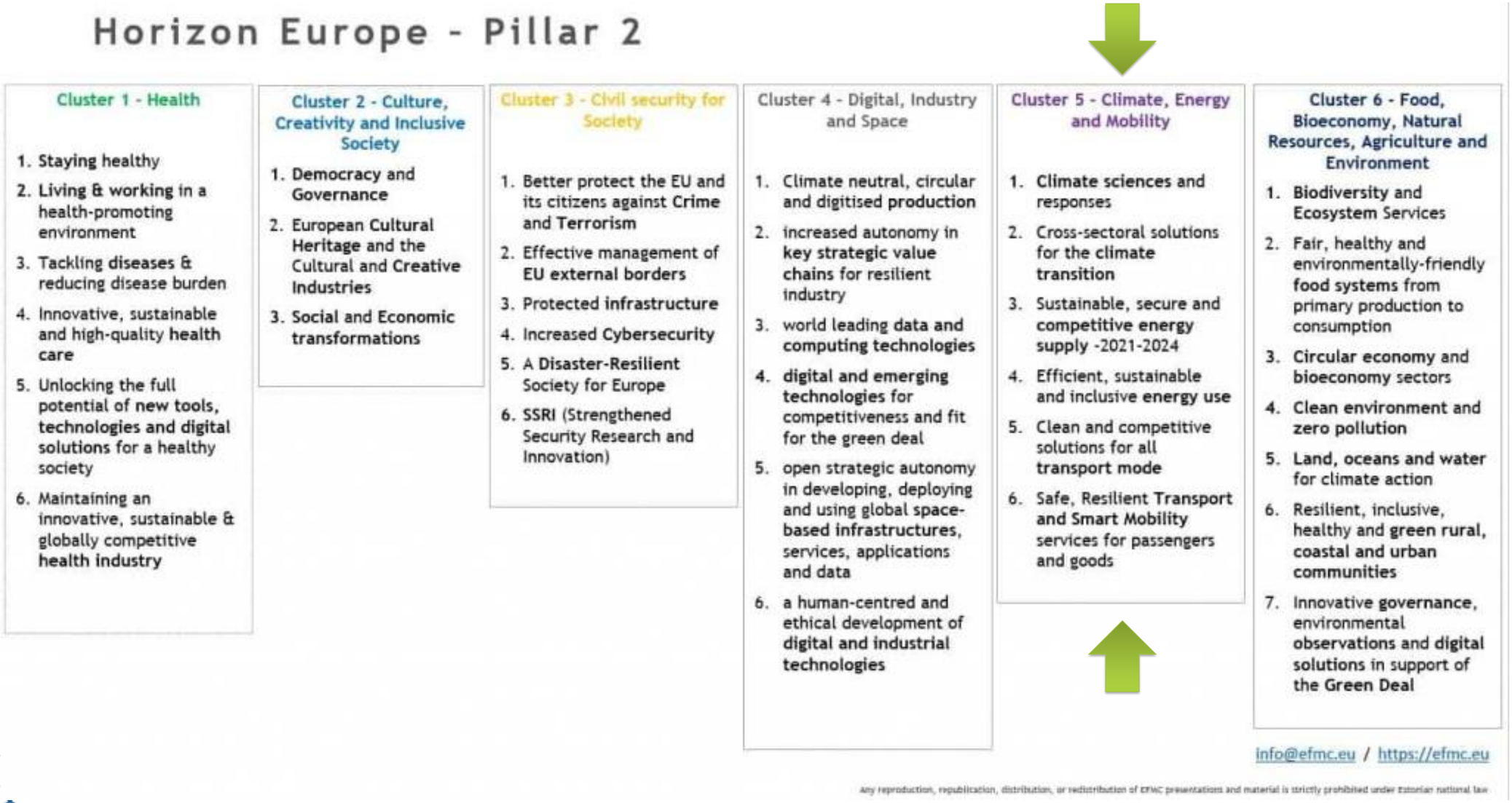
- EU's most ambitious R&I framework programme ever and largest transnational programme of its kind worldwide
- Budget **of EUR 95.5 billion** to be distributed between 2021 and 2027
- Provides new instruments such as the **European Innovation Council, Research Missions and Partnerships** to boost the EU R&I landscape.



Horizon Europe – General Overview

Cluster 5: Climate, Energy and Mobility

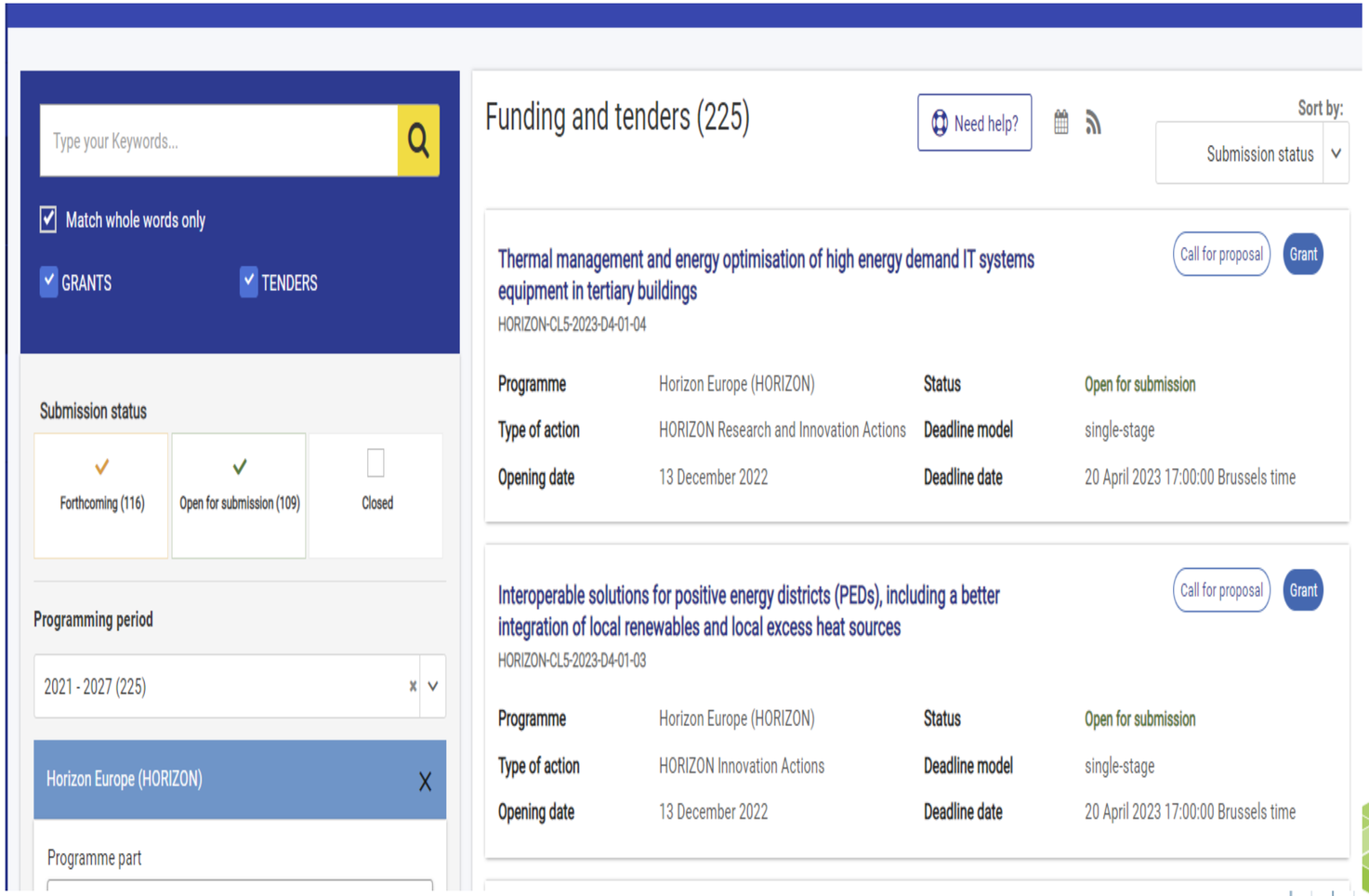
Horizon Europe – Detail on Clusters



Horizon Europe Calls
Cluster 5: Climate, Energy and Mobility

- **109 calls open for submission**
- **116 forthcoming calls**
- **Type of actions**: RIA, IA, CSA

More information on Tenders and Funding Portal (link)



Selected open calls

Call Reference	Type of Action	Budget available	Deadline
Development of near zero-emission biomass heat and/or CHP including carbon capture - HORIZON-CL5-2023-D3-02-01	RIA	8mio (2*4mio)	Open: 4 May Deadline: 5 Sept
Fast-tracking and promoting built environment construction and renovation innovation with local value chains (Built4People Partnership) - HORIZON-CL5-2023-D4-02-04	CSA	2mio (1 project)	Open: 4 May Deadline: 5 Sept
Supporting the creation of an accessible and inclusive built environment (Built4People Partnership) - HORIZON-CL5-2023-D4-02-05	IA	10mio (2*5mio)	Open: 4 May Deadline: 5 Sept
Industrial manufacturing for lower-cost solar thermal components and systems - HORIZON-CL5-2023-D3-02-03	IA	6mio (2*3mio)	Open: 4 May Deadline: 5 Sept
Operation, Performance and Maintenance of PV Systems - HORIZON-CL5-2023-D3-02-13	IA	10mio (2*5mio)	Open: 4 May Deadline: 5 Sept

Horizon Europe - Widening participation and strengthening the European Research Area

- **DESTINATION 1: IMPROVED ACCESS TO EXCELLENCE**
  - Aims at underpinning geographical diversity, building the necessary capacity to allow successful participation in the R&I process and promoting networking and access to excellence
- **DESTINATION 2: ATTRACTING AND MOBILISING THE BEST TALENTS**
  - Aims at reverting the brain drain from widening countries, emphasis on intersectoral mobility, better exploitation of existing research infrastructures
- **DESTINATION 3: REFORMING AND ENHANCING THE EU RESEARCH AND INNOVATION SYSTEM**
  - Four objectives: Prioritise investments and reforms, improve access to excellence, translate R&I results into the economy and deepen the ERA

DESTINATION 1: IMPROVED ACCESS TO EXCELLENCE

Open Calls

Excellence Hubs - HORIZON-WIDERA-2023-ACCESS-07-01

Twinning Green Deal - HORIZON-WIDERA-2023-ACCESS-02-02

Dissemination and Exploitation Support Facility - HORIZON-WIDERA-2023-ACCESS-05-01

Twinning Bottom-Up - HORIZON-WIDERA-2023-ACCESS-02-01

Pathways to Synergies - HORIZON-WIDERA-2023-ACCESS-04-01

Hop on Facility - HORIZON-WIDERA-2023-ACCESS-06-01

DESTINATION 2: ATTRACTING AND MOBILISING THE BEST TALENTS

Open Calls

ERA Talents - HORIZON-WIDERA-2024-TALENTS-03-01

ERA Chairs - HORIZON-WIDERA-2023-TALENTS-01-01

ERA Fellowships - HORIZON-WIDERA-2023-TALENTS-02-01

DESTINATION 3: REFORMING AND ENHANCING THE EU RESEARCH AND INNOVATION SYSTEM

Open Calls (6/12)

Capacity building on Intellectual Property (IP) management to support open science - HORIZON-WIDERA-2024-ERA-01-07

Programme level collaboration between national R&I policy-makers - HORIZON-WIDERA-2024-ERA-01-01

Strengthening researchers' skills for better careers – leveraging the European Competence Framework for Researchers - HORIZON-WIDERA-2024-ERA-01-04

European Excellence Initiative: Acceleration services in support of universities - HORIZON-WIDERA-2024-ERA-01-06

Support to the development and implementation of policies and practices for reproducibility of scientific results - HORIZON-WIDERA-2024-ERA-01-09

Policy coordination to support all aspects of inclusive Gender Equality Plans and policies in the ERA - HORIZON-WIDERA-2024-ERA-01-10

Hop On Facility (HORIZON-WIDERA-2023-ACCESS-06-01)

- The Hop On Facility integrates **one additional participant** from a Widening country to an ongoing project under Pillar 2 **OR** the European Innovation Council pathfinder scheme
- Especially encouraged: Applications with activities that contribute to **the policy objective** of the **transition** towards a **green and digital economy**
- Applications must demonstrate the **R&I added value** of the new partner and present a visible and distinct work package for the acceding partner

Conditions for the Call			
Type of action	RIA	**Total Budget**	40.00 (EUR million)
Deadline	28 Sep 2023	**EU contribution per project**	0.10 – 0.60 EUR million
No of projects	160		

More information on WIDERA programme in this Link

Do you want to know more?

- Link to the webinar page
- Link to YouTube recording

SUPEERA

EERA
European Energy Research Alliance

cea

DTU

KIT
Karlsruhe Institute of Technology

SINTEF

VTT

Iceland Liechtenstein Norway grants

Norway grants

The EEA and Norway Grants

Working together for a green, competitive and inclusive Europe

Petter Støa, Vice President Research, SINTEF Energy Research

27 April 2023, Vilnius

EEA Agreement – Art 115-117

… the Contracting Parties… agree on the need to reduce the economic and social disparities between their regions…

Protocol 38c

The EEA/EFTA States “shall contribute to the reduction of economic and social disparities in the European Economic Area and to the strengthening of their relations with the Beneficiary States”

We work through funding periods

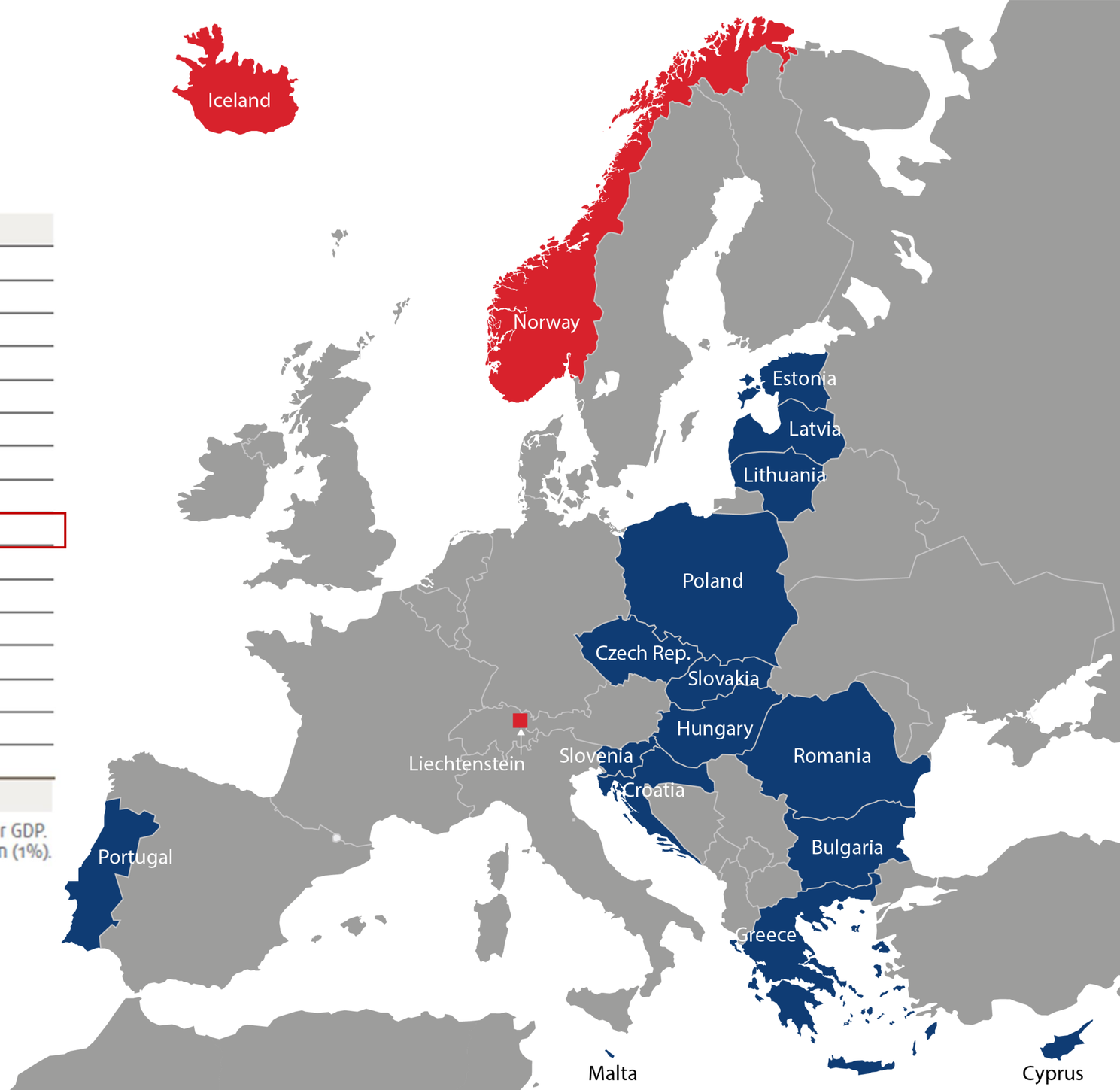
2004-2009 = €1.3 billion
2009-2014 = €1.8 billion
2014-2021 = €2.8 billion

2022-2024 → last funded projects to be implemented

Beneficiary countries (€ million) 2014-2021

Country	EEA Grants	Norway Grants	Total
Bulgaria	€115.0	€95.1	€210.1
Croatia	€56.8	€46.6	€103.4
Cyprus	€6.4	€5.1	€11.5
Czech Republic	€95.5	€89.0	€184.5
Estonia	€32.3	€35.7	€68.0
Greece	€116.7	-	€116.7
Hungary	€108.9	€105.7	€214.6
Latvia	€50.2	€51.9	€102.1
Lithuania	€56.2	€61.4	€117.6
Malta	€4.4	€3.6	€8.0
Poland	€397.8	€411.5	€809.3
Portugal	€102.7	-	€102.7
Romania	€275.2	€227.3	€502.5
Slovakia	€54.9	€58.2	€113.1
Slovenia	€19.9	€17.8	€37.7
Regional Funds	€55.2	€44.8	€100.0
Total	**€1 548.1***	**€1 253.7**	**€2 801.8**

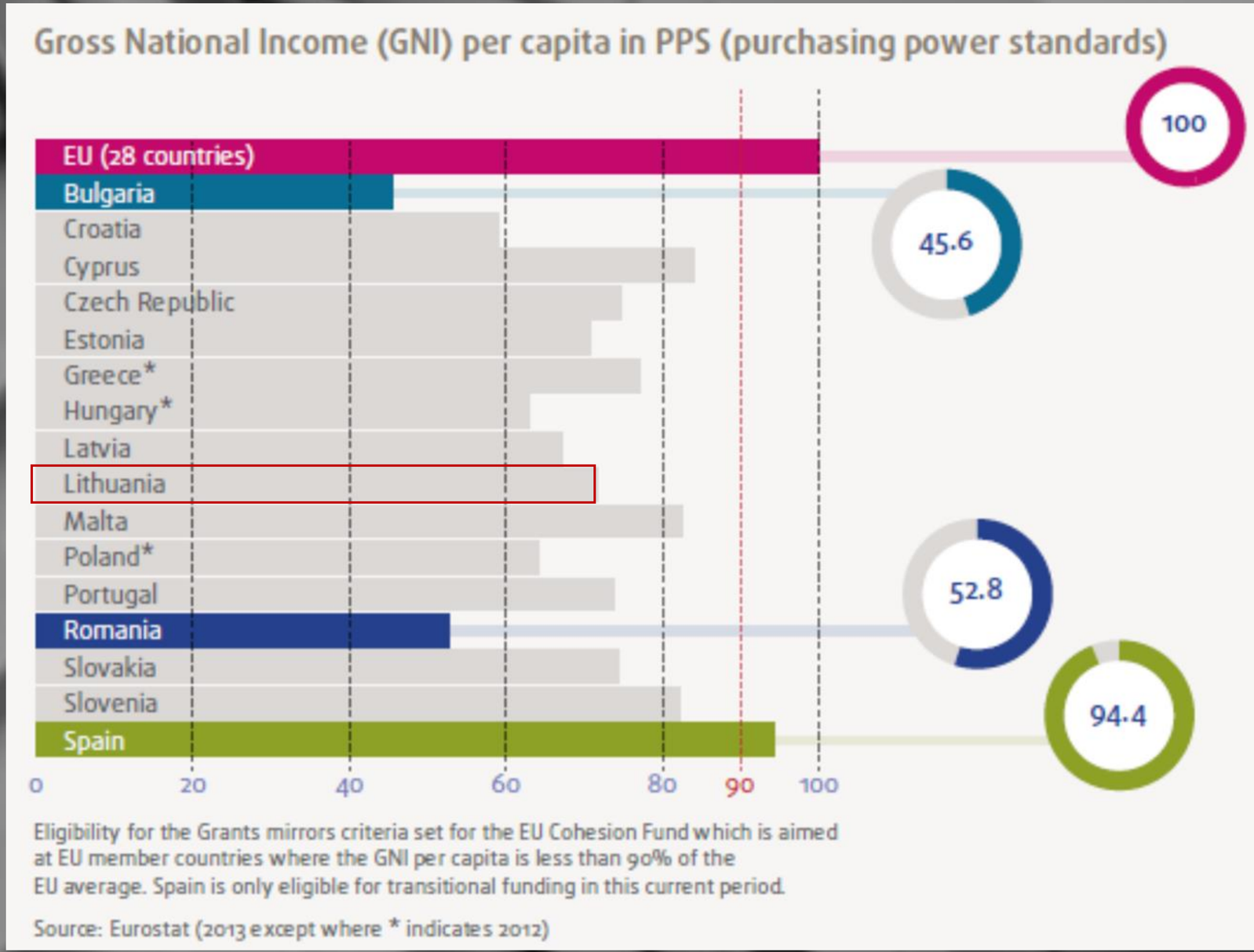
*The EEA Grants are jointly financed by all three donors, where contributions are based on their GDP. The estimated share of contributions equates to: Norway (96%), Iceland (3%) and Liechtenstein (1%).



Eligibility criteria

Mirror EU
Cohesion Funds

GNI less than 90%
of EU average



Programme design process

Negotiations on political priorities between donor and beneficiary states

MoU

Concept note

- Stakeholder consultations
- Alignment with EU and national policies and regulations
- Results-based
- ‘Participatory’
- Use available analysis

- Legally binding
- Sets results frameworks and provisions for modalities, selection, reporting, payments etc.

Programme Agreement

Implementation

Implementation of projects identified through competition (main rule) or pre-definition (exception)

The EEA and Norway Grants' programme targets contributing to the Green Deal

- Priority Sector 'Environment, energy, climate change and low carbon economy' consists of:

Programme Area 11

Ecosystems, air quality, circular economy, water management

Programme Area 12

Energy efficiency in buildings and industry and renewable energy in connection with energy measures

Programme Area 13

Climate change mitigation and adaptation activities, awareness raising

Ongoing Environment, Energy and Climate programmes are expected to lead to:

Emissions reductions: More than 1 million ton of CO2 eq. per year

Energy savings: 897 000 MWh/year

Renewable energy production: 118 000 MWh/year

Restoration of ecosystems: 600 000 m2 of wetland etc.

Promotion of a circular economy: 17 pilot projects etc.

Environmental awareness-raising

New infrastructure for alternative fuels

EEA/Norway Grants 2014-2021 in Lithuania

- Areas of support
  - Modernising the public sector through cooperation between local authorities and public institutions in Lithuania and Norway
  - Strengthening judicial reform, including the wider use of alternatives to prison
  - Fighting cross-border and organised crime
  - **Promoting green industry innovation and entrepreneurship**
  - Halting the loss of biodiversity and protection of ecosystems
- Relevant Programmes (among others)
  - Business Development, Innovation and SMEs
  - Environment, Energy, Climate Change
  - Research
- Main focus areas
  - Improved Energy Efficiency
  - Database on final energy users established
  - Competences on effective energy usage and alternative energy sources created

https://eeagrants.org/countries/lithuania

Only 1 project on energy in Lithuania during 2014-2021

Project title : Creation of an interactive platform for efficient and balanced energy generation planning
Project Promoter: Ministry of Energy of the Republic of Lithuania
Donor Project Partner: Navigo SLF (IS)
Project eligible expenditure: ~ 1 M€ (whereof 845 k€ from the Norwegian Financial Mechanism)
Project implementation period: 2020-2023

The project aims to fulfil the obligation stemming from the EU Directive to develop an assessment study of the **national heating and cooling potential**, a database and an interactive map

The results will provide **better tools for public and private entities in planning future investments** in **energy infrastructure**; increase skills and competence of staff and contribute to improved awareness among end-users about energy investment needs.

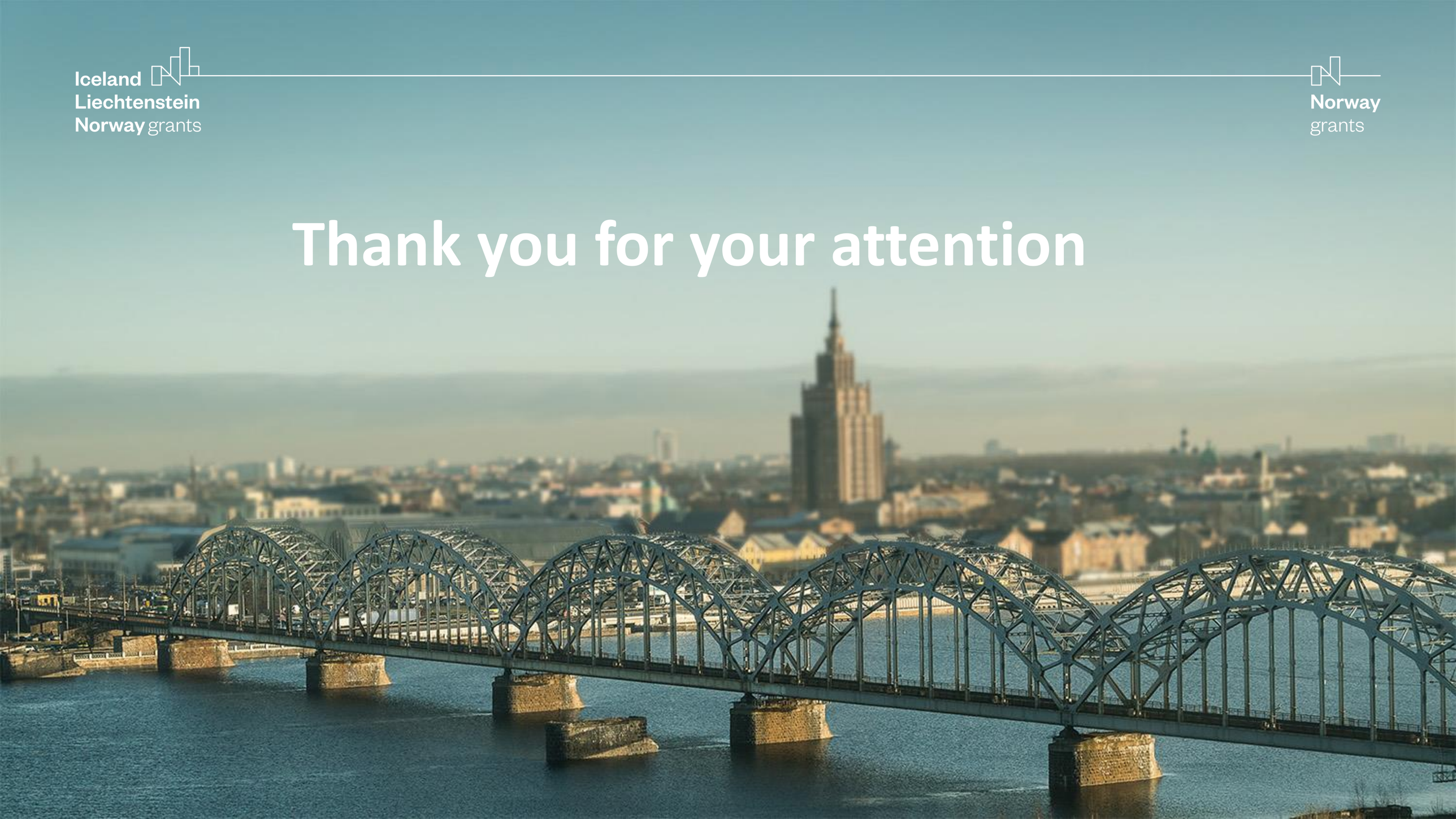
Target groups of the project are: Ministry of Energy of the Republic of Lithuania, the Lithuanian Energy Agency, municipalities, business entities, small and medium enterprises, associations, society.

https://www.eeagrants.lt/en/programmes/projects/program/28

Iceland Liechtenstein Norway grants

Norway grants

Thank you for your attention



Support to the coordination of national research and innovation programmes in areas of activity of the European Energy Research Alliance

International research collaboration opportunities: fostering EU Clean Energy transition in Lithuania

SUPEERA and PANTERA joint workshop

EIC funding opportunities for Clean-tech technologies

27th April 2023

Francesco Matteucci

EIC Programme Managers on Advanced Materials for Energy and Environmental Sustainability

European Innovation Council

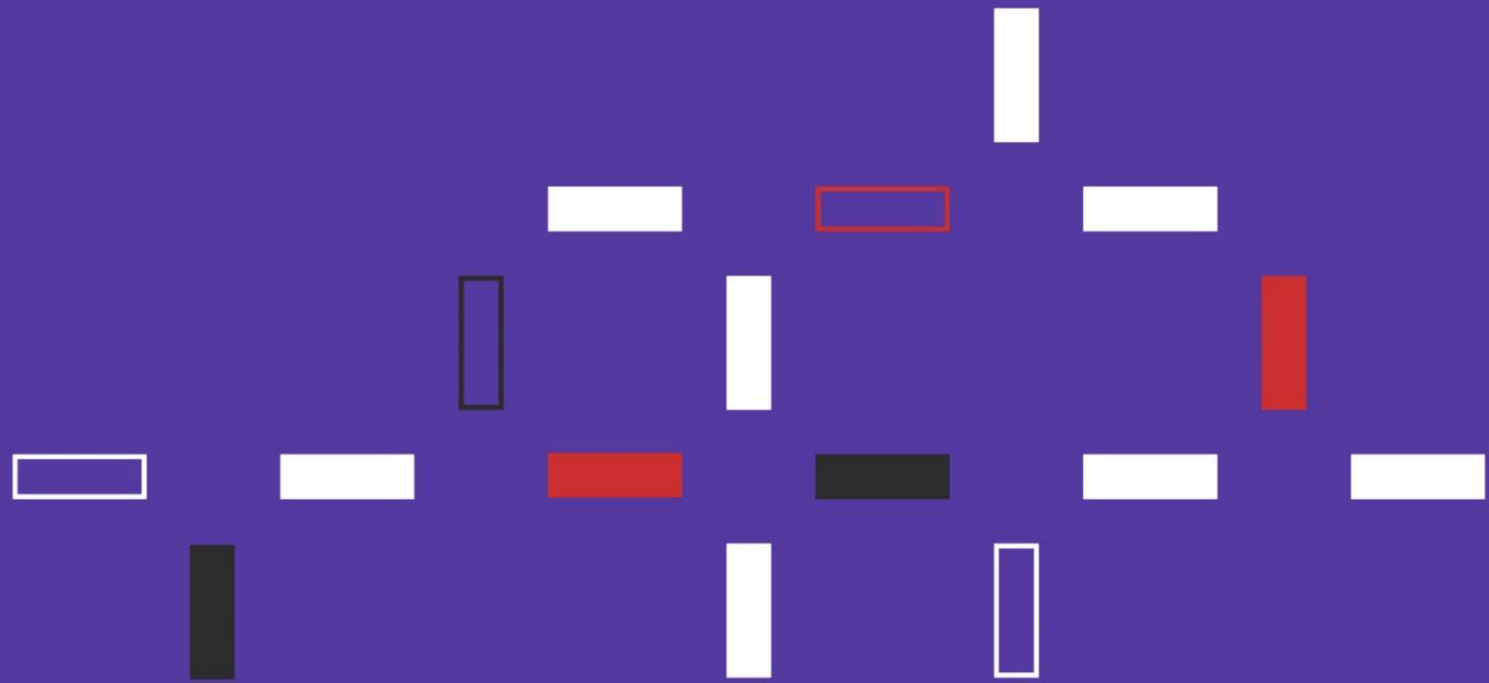
Index

1. The European Innovation Council – why, what, how?
2. EIC strategic approach in Cleantech
3. EIC funding opportunities for Cleantech

European Innovation Council

The European Innovation Council

why, what and how?



EU Research & innovation programme 2021–27

European Innovation Council

HORIZON EUROPE

EURATOM

SPECIFIC PROGRAMME: EUROPEAN DEFENCE FUND

Exclusive focus on defence research & development

- Research actions
- Development actions

SPECIFIC PROGRAMME IMPLEMENTING HORIZON EUROPE & EIT*

Exclusive focus on civil applications

Pillar I
EXCELLENT SCIENCE

- European Research Council
- Marie Skłodowska-Curie
- Research Infrastructures

Pillar II
GLOBAL CHALLENGES & EUROPEAN INDUSTRIAL COMPETITIVENESS

Clusters
- Health
- Culture, Creativity & Inclusive Society
- Civil Security for Society
- Digital, Industry & Space
- Climate, Energy & Mobility
- Food, Bioeconomy, Natural Resources, Agriculture & Environment

Joint Research Centre

Pillar III
INNOVATIVE EUROPE

- European Innovation Council
- European innovation ecosystems
- European Institute of Innovation & Technology*

WIDENING PARTICIPATION AND STRENGTHENING THE EUROPEAN RESEARCH AREA

- Widening participation & spreading excellence
- Reforming & Enhancing the European R&I system

EURATOM

- Fusion
- Fission
- Joint Research Center

* The European Institute of Innovation & Technology (EIT) is not part of the Specific Programme

Deeptech

European Innovation Council

Problem and Hardware oriented

Multidisciplinary

High risk, high fund needed

Open innovation approach (ecosystem of innovation)

investments include private investments, minority stakes, initial public offerings and M&A

Source: Boston Consulting Group and Hello Tomorrow

The main EIC Support Schemes

European Innovation Council

Pathfinder

For advanced research on breakthrough / game-changing technologies

Pathfinder Open: bottom-up approach; no predefined topics

Pathfinder Challenges: top-down challenge-driven calls for tackling specific issues by portfolios of projects

Transition

For transforming research results into innovation opportunities; follow up results from EIC Pathfinder and ERC Proof of Concept

Transition Open: no topic prescription

Transition Challenges: selected challenges

Accelerator

For individual companies to develop and scale up breakthrough innovations with high risk and high impact

Grant Funding

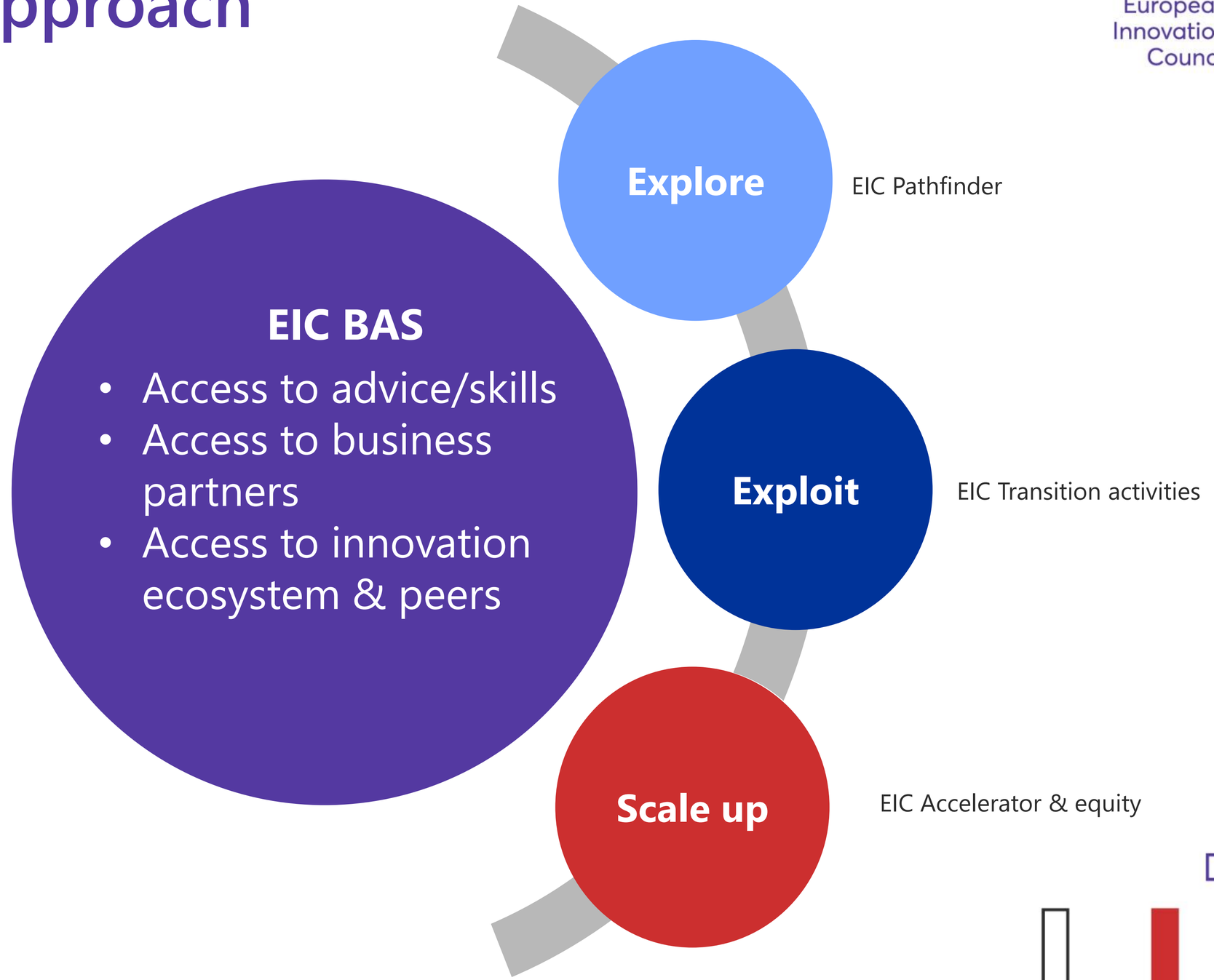
Equity Funding

Business Acceleration Service

EIC Fund: VC fund – EC shareholder / Bridging equity funding gap at early stage / Crowding in other investors

Business Acceleration Service: access to advice, to business partners and to innovation ecosystems & peers

Hands on approach



Hands on approach

European Innovation Council

Identify emerging challenges for Europe's deep-tech roadmap

Science and innovation intelligence activity

Hands-on approach

Strategic assessment and clustering of projects

Building strategic intelligence portfolios

Scientific / Business portfolios management

EIC Ambassador

Networking with other programmes and with innovation ecosystem communities

Outreach and organization of events, participation to national events / workshops

EIC Proactive Management

The EIC Programme Managers

https://eic.ec.europa.eu/eic-communities/eic-programme-managers_en

Carina Faber

Renewable energy conversion and alternative resource exploitation

Samira Nik

Quantum tech and electronics

Isabel Obieta

Responsible electronics

Antonio Marco Pantaleo

Energy systems and green technologies

Francesco Matteucci

Advanced materials for energy and environmental sustainability

Stella Tkatchova

Space systems and technologies

Iordanis Arzimanoglou

Health and biotechnology

Enric Claverol-Tinturé

Medical technologies and medical devices

Ivan Stefanic

Food chain technologies, novel & sustainable food

Franc Mouwen

Architecture engineering construction technologies

Thematic Portfolios & content-wise approach

European Innovation Council

Some of the **EIC Cleantech Thematic portfolios**

- **Renewable Hydrogen** (production, storage, logistics, end use)
- **Energy storage** (electrical, thermal, chemical, mechanical and electrochemical)
- **Solar conversion technologies** (solar-to: thermal, fuel, electricity)
- **Ocean technologies** (wave, tidal, offshore wind, etc.)
- **Sustainable Materials**
- **Climate and Environment** (air/water/soil monitoring/depolluting, environmental intelligence)

EIC Cleantech challenges

European Innovation Council

EIC Challenges 2021

	Pathfinder	Transition	Accelerator
Cleantech	• Novel routes to green hydrogen production (Portfolio kick off meeting October 2022)	• Energy harvesting and storage technologies	• Green Deal innovations for the economic recovery

	Pathfinder	Transition	Accelerator
Cleantech	• Carbon dioxide & Nitrogen management and valorisation (final retained list end March 2023) • Mid-long term, systems-integrated energy	• Process and system integration of clean energy technologies • Green digital devices for the future	• Technologies for 'Fit for 55'

EIC Challenges 2023

	Pathfinder (32.7mln Euro)	Transition (20mln Euro)	Accelerator (100mln Euro)

Portfolio content-wise approach in the different EIC funding schemes

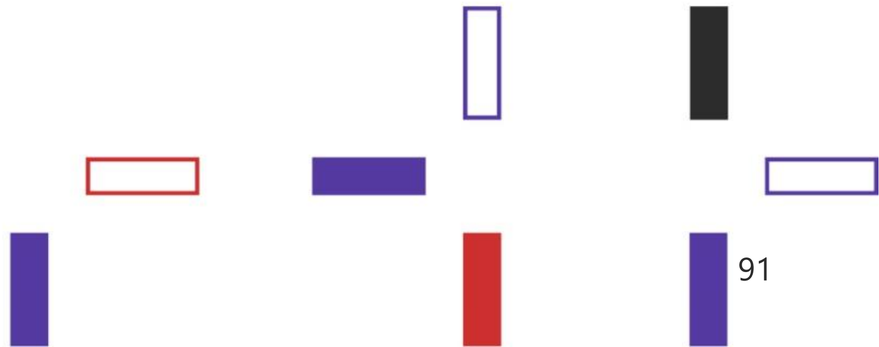
A portfolio is a coherent set of projects aligned to a common “challenge” or “thematic area

The EIC portfolio approach is aimed at facilitating the projects innovation journey via:

1. **Exploring:** competing approaches or complementary aspects of the Challenge;
2. **setting up** multidisciplinary interactions and exchanges for synergies;
3. **contributing** to an overarching medium to long-term business goal and technology-based strategic plan.

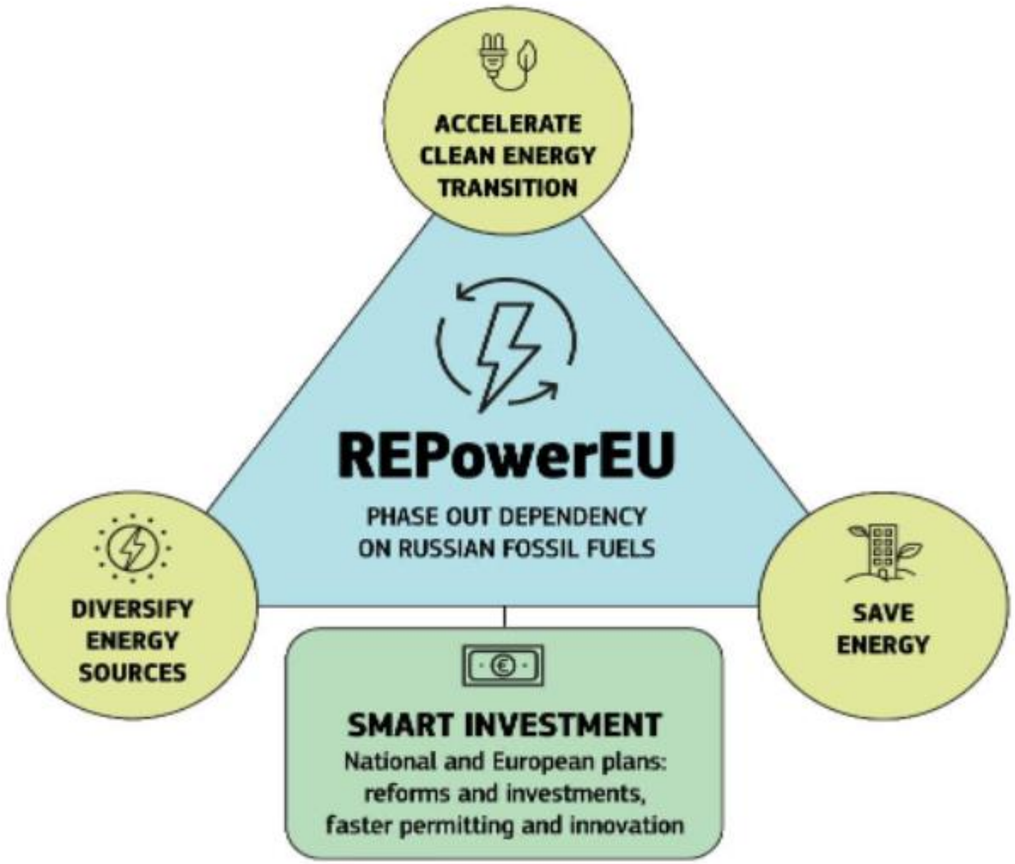
European Innovation Council

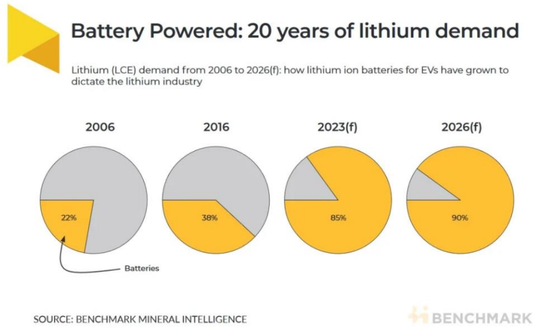
Accelerator Challenge



START FROM WHY

European Innovation Council





MATERIALS TRANSITION

In 2006 Li was primarily used by the glass, ceramics, and grease industries.

UP AND RE SKILLING

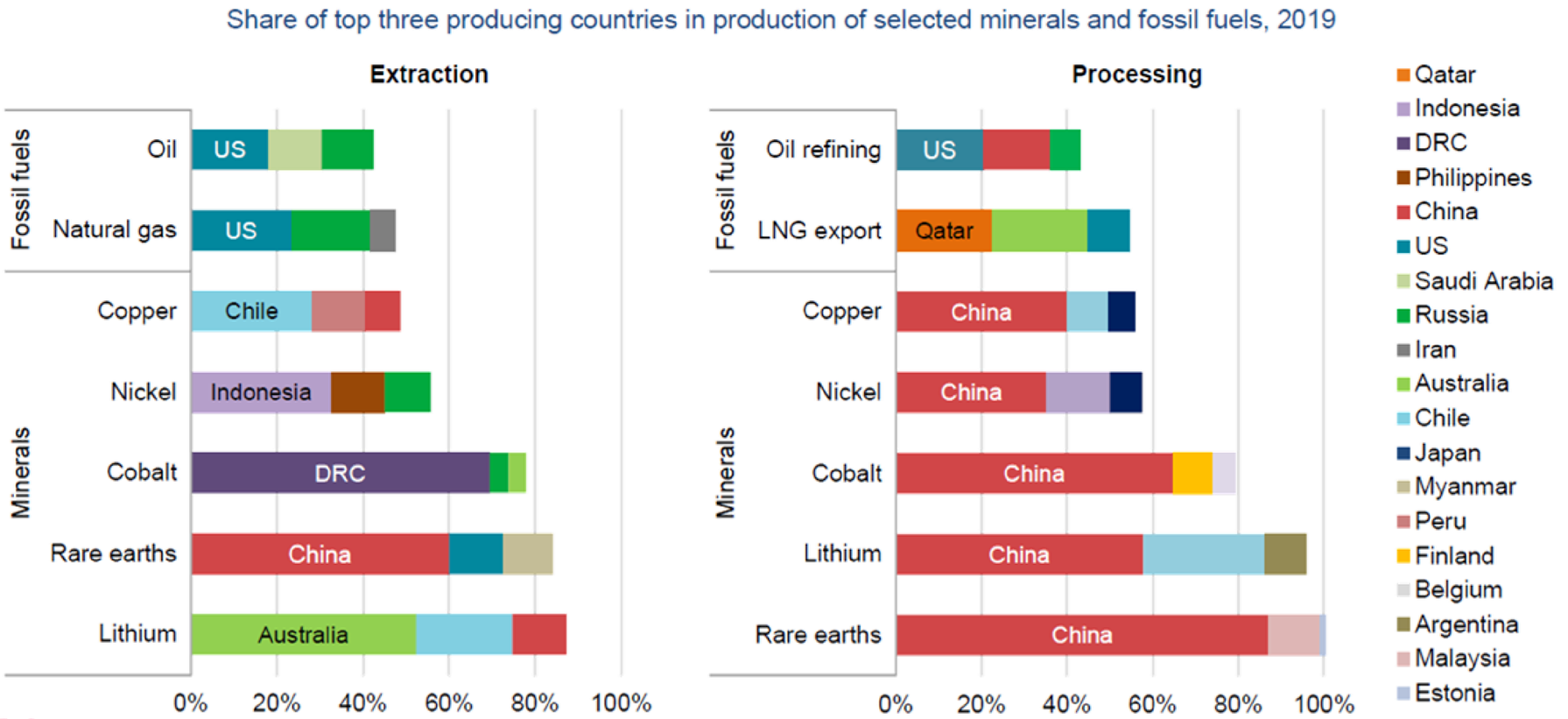
Also training for innovation managers and scientific entrepreneurs.

DIGITAL ENERGY TRANSFORMATION

Smart grid management, energy system flexibility

European Innovation Council

Production of many energy transition minerals



CNR ISMN
ISTITUTO PER LO STUDIO DEI MATERIALI NANOSTRUTTURATI

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Inventing the sustainable batteries of the future. Research Needs and Future Actions, BATTERY 2030+ Roadmap.
On the Implementation of the Strategic Action Plan on Batteries: Building a Strategic Battery Value Chain in Europe, Brussels, 9.4.2019 COM(2019) 176 final

Background and Scope

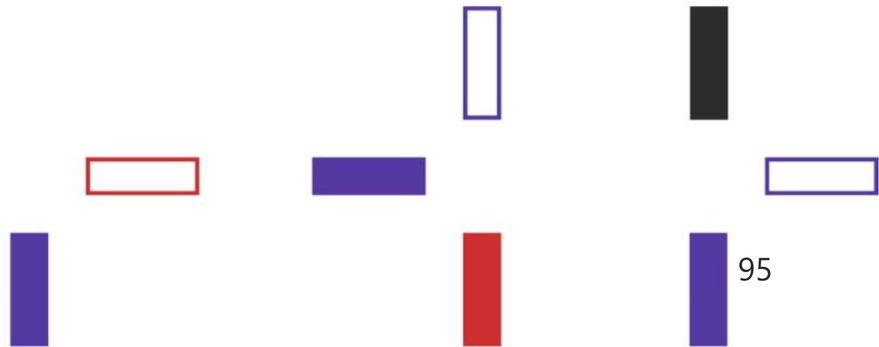
European Innovation Council

- The aim is to develop of breakthrough technologies able to store **electrical or thermal energy at low cost, high density, high charging/discharging efficiency, without the use of critical raw materials (CRM) or demonstrating the full re-use or recycle of CRM** at different scales, duration and uses including their hybridization.
- To reach these goals, it is crucial to develop a **range of breakthrough solutions for electrical and thermal energy storage** (chemical, electrical, electrochemical, mechanical, thermal, combined) **minimising their carbon footprint** measured through a life-cycle analysis. The integration of technologies in products and services shall embrace circular and **life cycle thinking approach** supporting the transition to a circular economy.
- Technologies could also address the **smart operation and control of storage assets**, their integration with demand response strategies, **predictive maintenance**, load forecasting and **decentralised renewable energy technologies, and novel business models** (i.e. storage as a service) to increase energy systems flexibility and facilitate the integration of energy storage.

Environmental intelligence

European Innovation Council

Transition Challenge



ENVIRONMENTAL INTELLIGENCE

European Innovation Council

February 28, 2017
By Jessica Rohde

Feedback from the Jury Members

European Innovation Council

Applicants must provide clarity on aspects related to

- Technical **milestones**,
- **IPR** ownership,
- budget and allocation of resources,
- **technical** and **business** risks,
- current and expected **TRLs** at the end of the project,
- **interdependence** of work packages and tasks,
- the **future exploiting team**, and
- the **credibility of the business objectives**.

What is next

- EIC Info day link: https://eic.ec.europa.eu/events/european-innovation-council-online-info-day-work-programme-2023-13-december-2022-2022-12-13_en

European Innovation Council

Thank you!

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@EUeic

#Eueic

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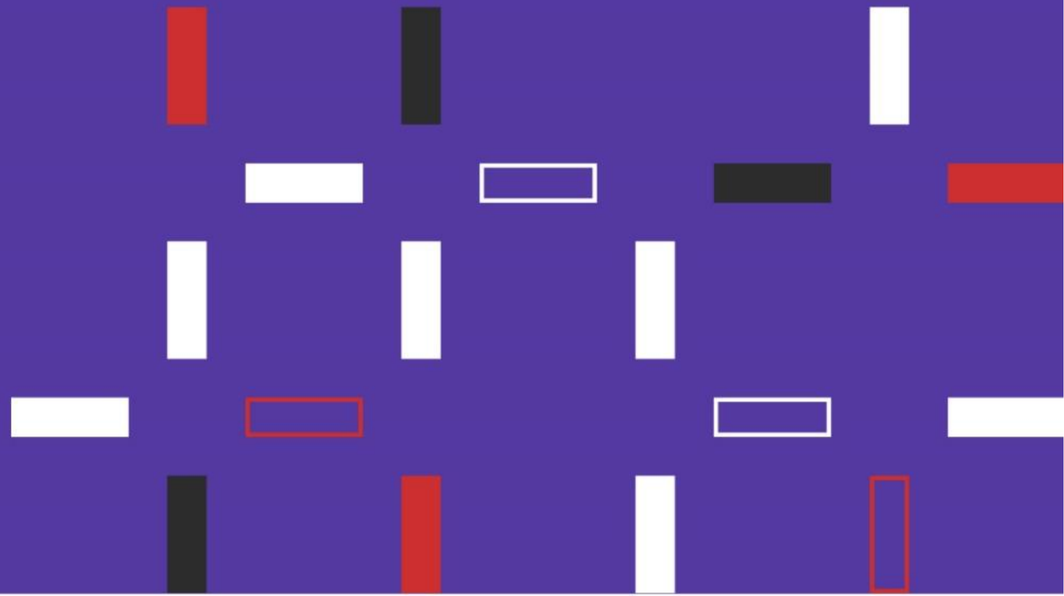


MINISTRY OF EDUCATION,
SCIENCE AND SPORT
OF THE REPUBLIC OF LITHUANIA

Lithuanian incentive package to facilitate participation in Horizon Europe

2023-04-26, Vilnius

Dr. Aistė Vilkanauskytė
Advisor at the Technology and Innovation unit
Ministry of Education, Science and Sport of the Republic of Lithuania

Incentives to facilitate participation in Horizon Europe (HE)

MINISTRY OF EDUCATION, SCIENCE AND SPORT OF THE REPUBLIC OF LITHUANIA

International networking

- Support for participation in international networks, associations
- Support for participation in European R&I infrastructures

Competences and awareness raising

- NCP network
- LINO office activities
- Science and Innovation Advisors network
- Training of HE applicants
- Promotion of ERA principles and support to their implementation

Project funding

- European Partnerships
- High-quality HE projects not selected for funding (ERC, MSCA)
- HE projects awarded Seal of Excellence (MSCA, EIC)
- Co-funding of HE projects, including TEAMING

- Transfer of ERDF funds to HE!

MINISTRY OF EDUCATION,
SCIENCE AND SPORT
OF THE REPUBLIC OF LITHUANIA

Thank you!

Support to the coordination of national research and innovation programmes in areas of activity of the European Energy Research Alliance

Challenges and opportunities for Widening countries' participation in Horizon Europe programme

Aurelija Povilaikė, Head of NCP Unit and
Coordinator, WIDERA NCP

Lithuanian Confederation of Industrialists:

Participation in European Partnerships

2023-04-27

Lithuanian Confederation of Industrialists

LPK – the most powerful business organization in Lithuania

56 branch associations

7 regional associations

22 largest non-associated enterprises and corporations

~4000 medium and large enterprises from various public and private sectors

LPKs' members generate:

83 % of Lithuanian export production

46 % of GDP

Lithuanian Confederation of Industrialists

Interino Lt project

Project Objectives

- Increase awareness of Lithuanian R&D&I potential abroad (i.e. other EU Member States)
- Provide business with advice on: joining international value chains (EU research proposals, B2B), finding international partners in R&D&I (Research and Innovation Programs such as H2020, Horizon Europe and etc.)

The main activities

- Presentation of Lithuanian R&D&I potential abroad
- International partner search for transfer / provision of innovation and / or R&D&I services and / or joining international R&D&I value chains.

Lithuanian Confederation of Industrialists

LPK partnerships within INTERINO project

Partnerships = European Commission + Associations

MADE IN EUROPE

CCAM
CONNECTED, COOPERATIVE & AUTOMATED MOBILITY

PROCESSES4PLANET

Associations

EFFRA
EUROPEAN FACTORIES OF THE FUTURE RESEARCH ASSOCIATION

CCAM
CONNECTED, COOPERATIVE & AUTOMATED MOBILITY

SPIRE
Sustainable Process Industry through Resource and Energy Efficiency

Processes4Planet: a co-programmed Partnership in Horizon Europe

PROCESSES4PLANET

ASPIRE

10 Process Industry Sectors

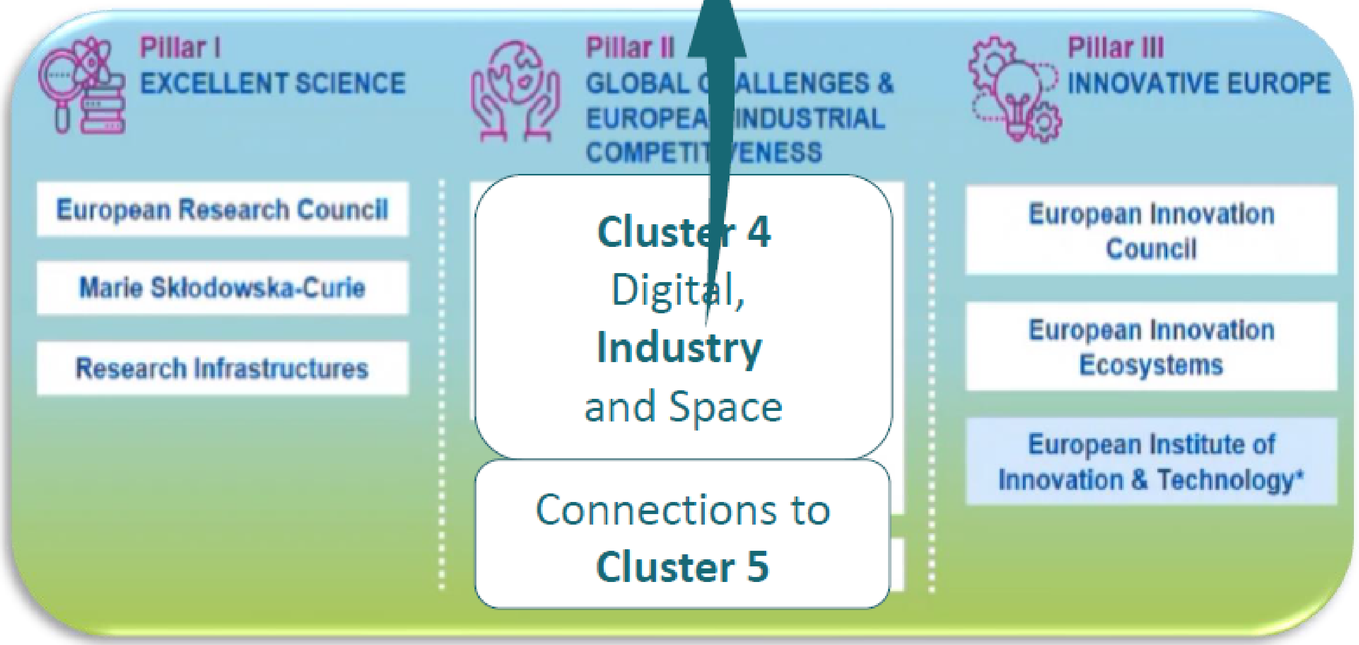
+SMEs
+ RTOs,
+ Universities
+ NGOs
+ Innovation agencies
et al...

European Commission

DG RTD
DG Grow

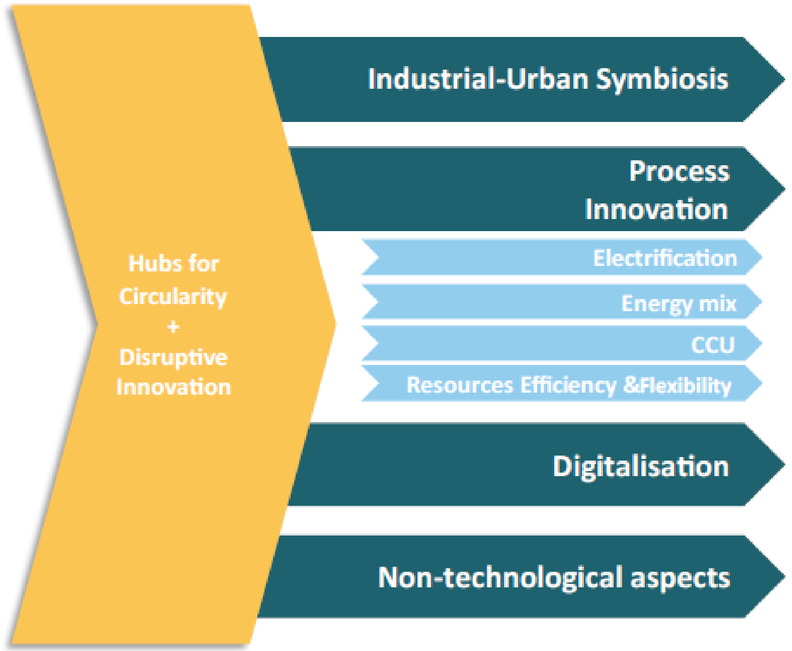
Co-programmed Partnership

MoU signed



SRIA 2050: P4PLANET'S STRATEGIC RESEARCH AND INNOVATION AGENDA

ASPIRE



Innovation area	Progress up until milestone year[1] 2024	2030	2040	2050
Renewable energy integration				
Heat reuse				
Electrification of thermal processes				
Electrically-driven processes				
Hydrogen integration				
CO_2 capture for utilisation				
CO_2 utilisation in minerals				
CO_2 & CO utilisation in chemicals and fuels				
Energy and resource efficiency				
Circularity of materials				
Industrial-Urban symbiosis				
Circular regions				
Digitalisation				
Non-technological aspects				

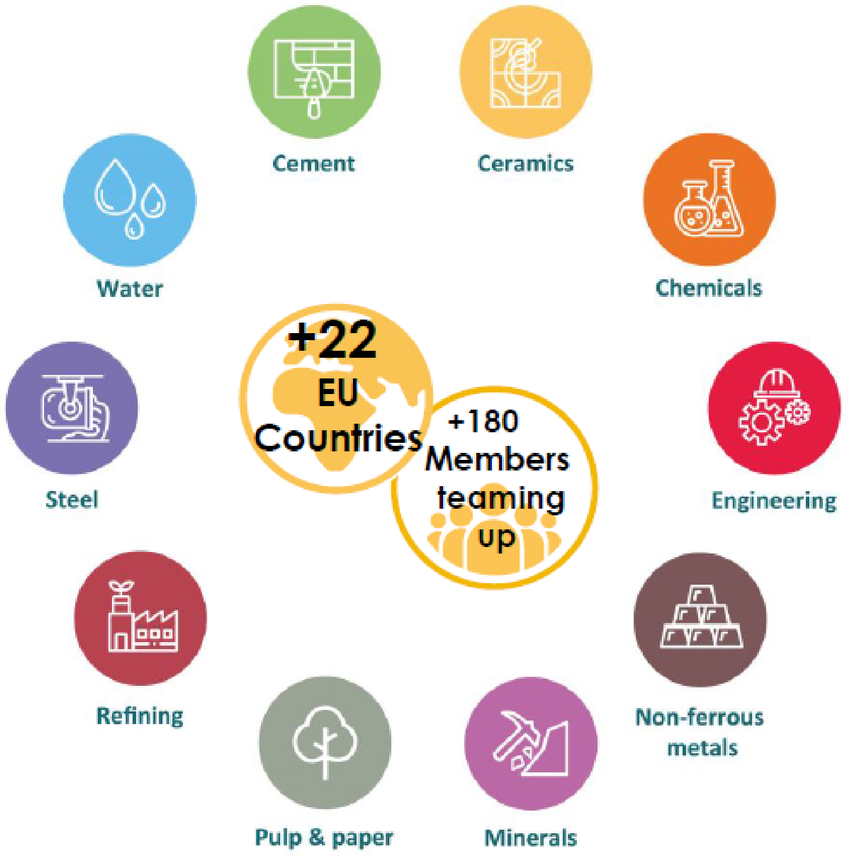
[1] Progress is depicted here as % of total TRL9 projects programmed in each area, and for circular regions, digitalisation, and non-technological aspects % of total investment needs until 2050

36 innovation programmes to FILL the GAP

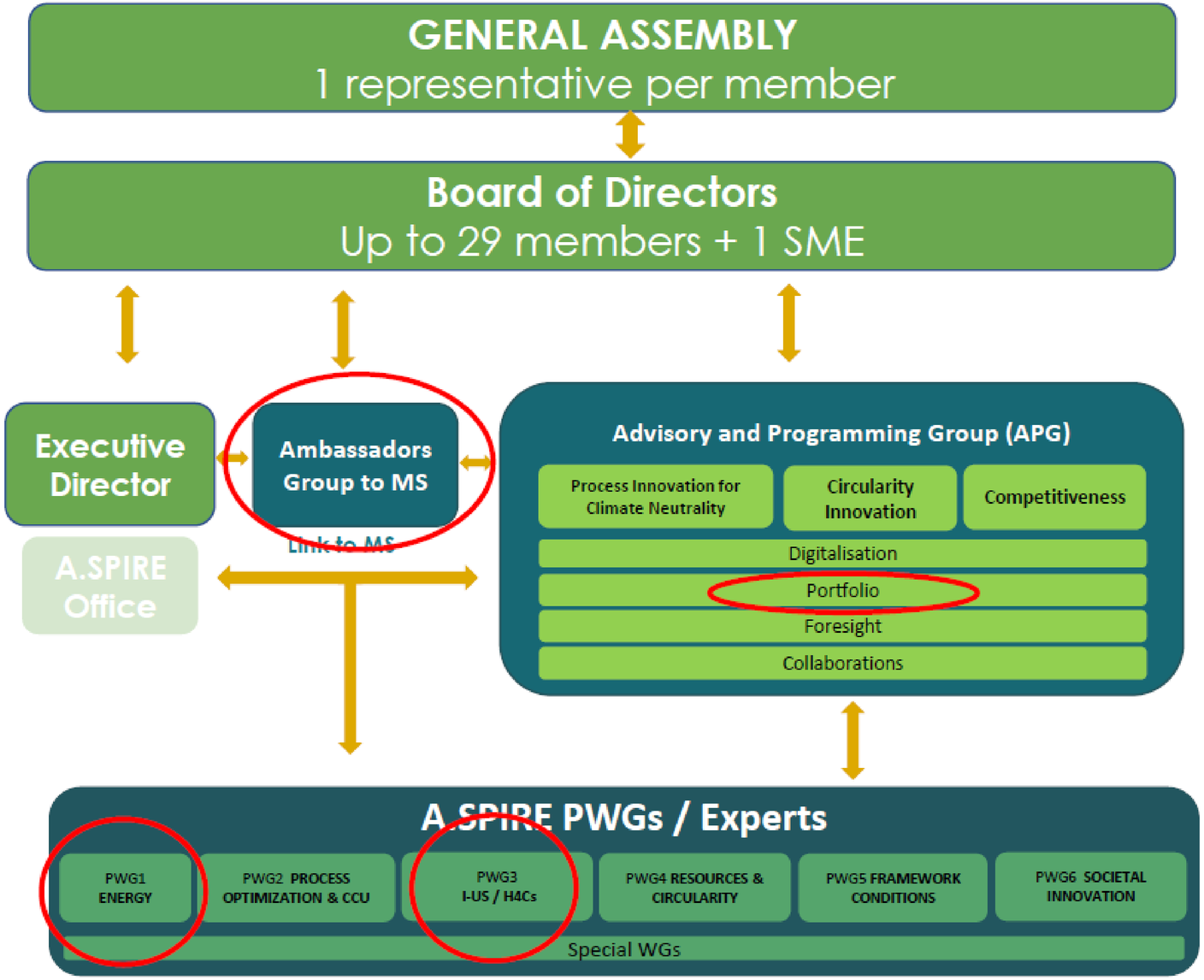
\+

Skills, Jobs, Competitive gap analysis, Framework/Standards

The A.SPIRE association



- 6.3 million direct jobs
- 19 million indirect jobs
- 450,000 enterprises
- €1,8 trillion/y turnover
- 4.7% OF EU28 GDP



The benefits of being within partnership

Shape the future of process industry

- Contribute to **shape the European R&I working programmes** and the next calls for projects.
- **Align the priorities of your organization**with the challenges and ambitions of the sector in Europe.
- **Define the roadmap of Processes4Planet** to help drive innovation inresource & energy efficiency in the European process industry.

Network. Get visibility. Find partners

- Benefit from **synergies among different sectors&** cooperate with entire**value chains**
- **Find partners** from research, industry & academia in the European A.SPIRE **network events** reserved **only for members** such as the **Brokerage**
- **Get involved**in the discussions with**stakeholders & policy makers**

Access information, knowledge and talent

- Receive the **first novelties on EU programmes, agenda and funding.**
- Access to**information on technological and non-technological developments**in the A.SPIRE community
- Share **best practices.**
- Receive and participate in regular communications of the association: **newsletters and bulletins.**
- Discover new events and promote yours.

Lithuanian Confederation of Industrialists

Horizon Europe - Work Programme 2023-2024 Digital, Industry and Space (Processes4Planet partnership)

- HORIZON-CL4-2023-TWIN-TRANSITION-01-31: Energy efficiency breakthroughs in the process industries (RIA)
- HORIZON-CL4-2023-TWIN-TRANSITION-01-33: Electrification of high temperature heating systems (IA)
- HORIZON-CL4-2023-TWIN-TRANSITION-01-36: Modelling industry transition to climate neutrality, sustainability and circularity (RIA)
- HORIZON-CL4-2023-TWIN-TRANSITION-01-37: Hubs for circularity for near zero emissions regions applying industrial symbiosis and cooperative approach to heavy industrialized clusters and surrounding ecosystems (IA)
- HORIZON-CL4-2023-TWIN-TRANSITION-01-40: Sustainable and efficient industrial water consumption: through energy and solute recovery (RIA)
- HORIZON-CL4-2023-TWIN-TRANSITION-01-42: Circular economy in process industries: Upcycling large volumes of secondary resources (RIA)
- HORIZON-CL4-2024-TWIN-TRANSITION-01-32: Optimization of thermal energy flows in the process industry (IA)
- HORIZON-CL4-2024-TWIN-TRANSITION-01-34: Renewable hydrogen used as feedstock in innovative production routes (RIA)
- HORIZON-CL4-2024-TWIN-TRANSITION-01-35: Turning CO2 emissions from the process industry to feedstock (IA)
- HORIZON-CL4-2024-TWIN-TRANSITION-01-38: Hubs for circularity for industrialised urban peripheral areas (IA)
- HORIZON-CL4-2024-TWIN-TRANSITION-01-41: Breakthroughs to improve process industry resource efficiency (RIA)

Lithuanian Confederation of Industrialists

The Made In Europe partnership is **the voice and driver for sustainable manufacturing in Europe**.
It boost European manufacturing ecosystems towards global leadership in technology, towards circular industries and flexibility. The Partnership contributes to a **competitive, green, digital, resilient and human-centric manufacturing industry in Europe**.
https://www.effra.eu/

Lithuania is represented by
Gintaras Vilda
Lithuanian confederation of Industrialsts
International innovation expert
gintaras.vilda@interino.lt
+370 686 13581

CCAM

CONNECTED, COOPERATIVE & AUTOMATED MOBILITY

The goal of CCAM is **to create a more user-centered and inclusive mobility system**, increasing road safety while reducing congestion and environmental footprint.

More collaborative research, testing and demonstration projects in order to accelerate the innovation pace and implementation of **automated mobility**.

Working together at European level to help remove barriers and contribute to the acceptance and **efficient rollout of automation technologies and services**.
https://www.ccam.eu/

Lithuania is represented by
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Partner for Development and Projects
of Transport Innovation Association
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+370 602 30561

Sustainable Process Industry through Resource and Energy Efficiency

A.SPIRE brings together **cement**, **ceramics**, **chemicals**, engineering, minerals and ores, **non-ferrous metals**, **pulp and paper**, refining, steel and **water sectors**, several being world-leading sectors operating from Europe.

The mission of A.SPIRE is to ensure the development of **enabling technologies** and best practices along all the stages of large scale existing value chain productions that will contribute to a **resource efficient process industry**.
https://www.aspire2050.eu

Lithuania is represented by
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THANK YOU!

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Vilniaus g. 31, Vilnius

lpk.lt

Lithuanian
Confederation
of Industrialists

SUPEERA

Support to the coordination of national research and innovation programmes in areas of activity of the European Energy Research Alliance

Panel discussion

- Lunch break

Restart at 13:45 (14:45 CEST)

The PANTERA project

SUPEERA and PANTERA projects joint workshop *"International research collaboration opportunities: fostering EU Clean Energy transition in Lithuania"*

Vilnius - 27 April 2023

Mattia Cabiati (RSE)

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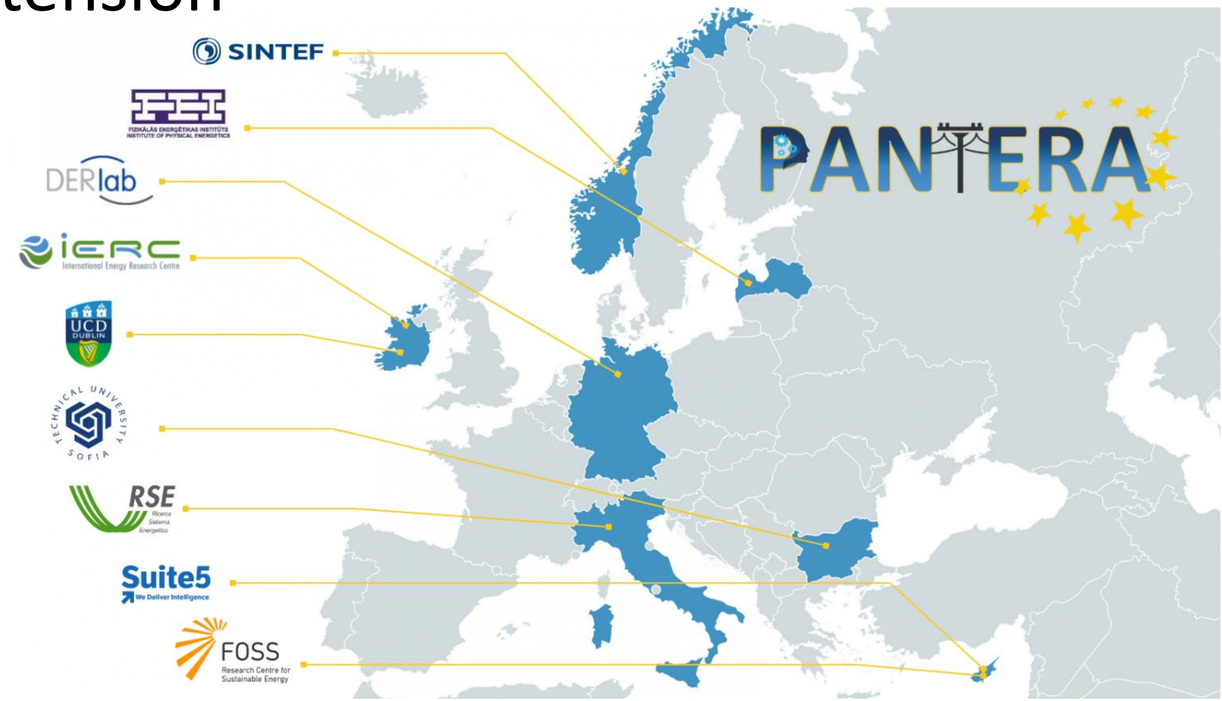
EU H2020 Programme GA No. 824389

General information

- **Type of Action:** Coordination and Support Actions (CSA)
- **Duration:** 48 months + 6 months extension
- **Starting date:** 1 January 2019
- **Total Budget:** 3.9 Million Euro
- **Coordinator:** FOSS Research Centre for Sustainable Energy
- **Consortium:**



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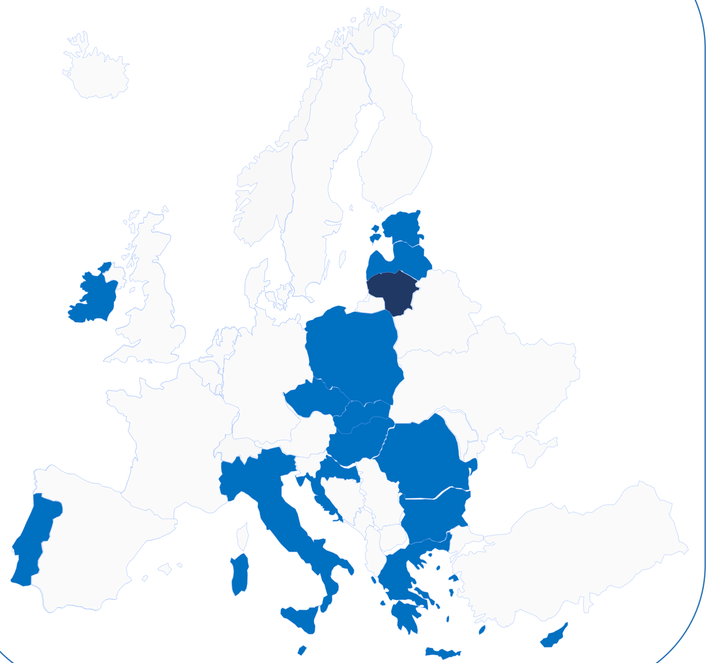
PANTERA Mission

PAN European **T**echnology **E**nergy **R**esearch **A**pproach (PANTERA) is an EU H2020 project aimed at **setting up a European forum composed of Research & Innovation stakeholders** active in the fields of smart grids, storage and local energy systems, including policy makers, standardization bodies and experts in both research and academia, **representing the EU energy system**.

The project's main goal is to bridge the gaps in research and innovation in the energy field that exists between EU member states.

PANTERA key countries



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Regional desk approach

- **Six regional desks** addressing PANTERA target countries
- One **best-practice desk** elaborating on good experiences in projects and R&I governance from more successful countries
- Link R&I with regional priorities and competences
- Understand local context and suggest best practices

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Discussion with stakeholders:

Some of the workshops organized:

- July 2019 – workshop in **Sofia**
- December 2019 –workshop in **Dublin**
- February 2020 – workshop in **Athens**
- June 2020 – Virtual meeting at **EUSEW**
- November 2020 – **Cyprus** virtual workshop
- July 2021 – workshop in **Crete**
- August 2021 – workshop in **Varna**
- September 2021 – workshop in **Croatia** at the SpliTech conference
- November 2021 – booth at **ENLIT** conference – Milano
- June 2022 – workshop in **Italy** at MELECON 2022
- October and Novembers 2022 workshops in **Hungary**
- March 2023 - workshop **in Romania**

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Feedbacks from the survey

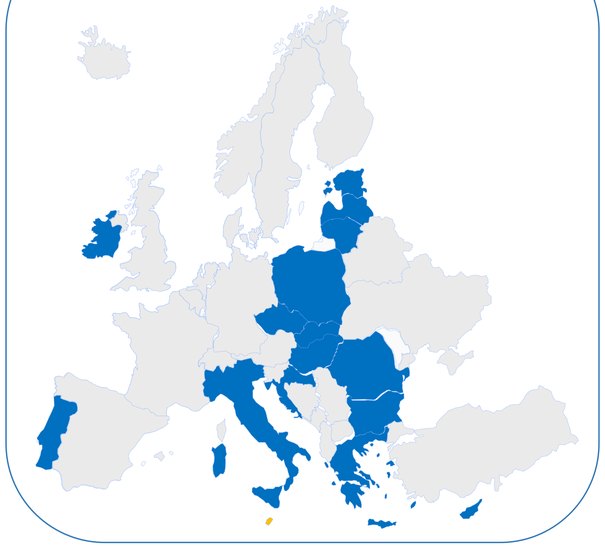
What kind of benefits and/or support do you expect from PANTERA?

- **Firsthand insight** into interesting smart grid projects, results, ideas and initiatives
- **Networking** and potential partnerships
- **Learning from others experience** (especially in practice-oriented projects)
- Cross-cutting information about different project initiatives
- Policy recommendations

What are the ***main*** barriers, gaps which limit the funding and development of R&I in the energy field?

Lack of responsive networking facilities	●●●●●
Limited monetary resources	●●●●
Limited human resources	●●●●
Limited national policy in support of R&I activity	●●●

PANTERA key countries



We are still collecting feedbacks at the following link!

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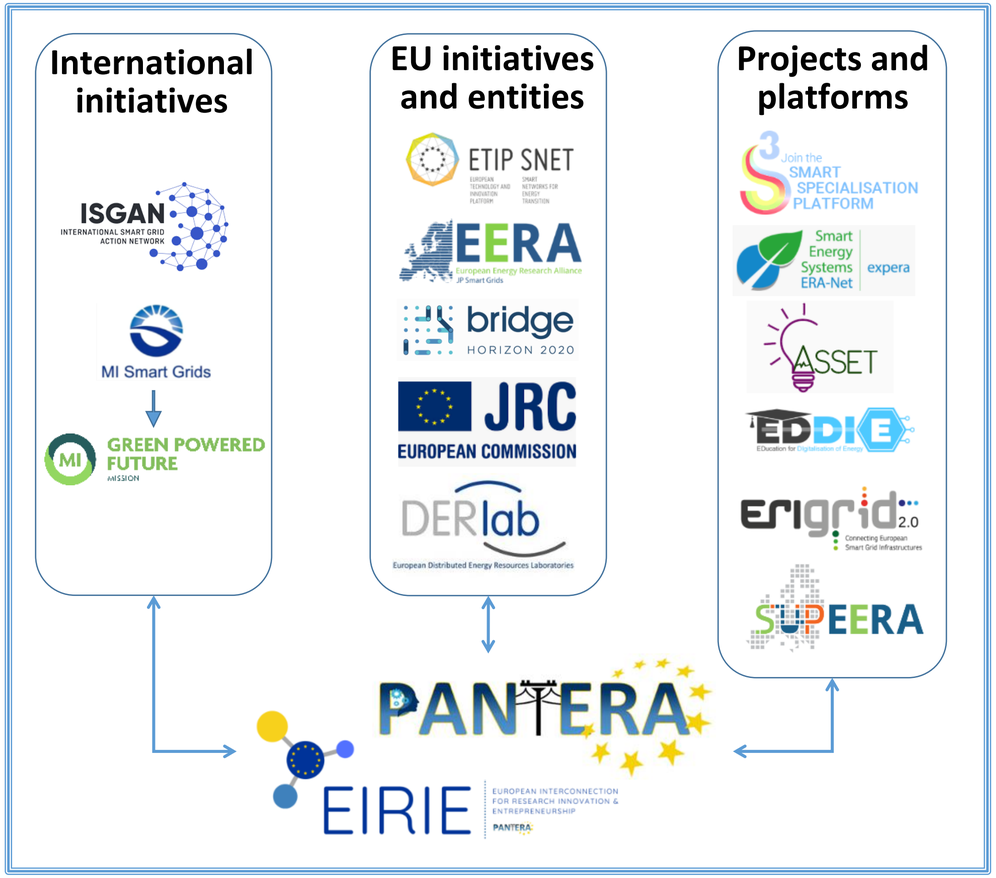
PANTERA: links and collaborations with internationals initiatives and projects



Thanks to the deep involvement of PANTERA partners in international initiatives, **good collaboration has been established with international consortia and other projects**.

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Mission Innovation

Mission Innovation is a global initiative catalysing a decade of action and investment in research, development and demonstration to make clean energy affordable, attractive and accessible for all. This will accelerate progress towards the Paris Agreement goals and pathways to net zero.

Existing Missions: Wave 1 and Wave 2

MISSION INNOVATION

GREEN POWERED FUTURE MISSION

The Goal: To demonstrate that by 2030 power systems in different geographies and climates are able to effectively integrate up to 100% variable renewable energies in their generation mix and maintain a cost-efficient, secure and resilient system.

ZERO-EMISSION SHIPPING MISSION

The Goal: For ships capable of running on zero-emission fuels to make up at least 5% of the global deep-sea fleet by 2030.

GLOBAL MARITIME FORUM

CLEAN HYDROGEN MISSION

The Goal: To increase the cost-competitiveness of clean hydrogen by reducing end-to-end costs to USD 2 per kilogram by 2030.

CARBON DIOXIDE REMOVAL MISSION

The Goal: Enable Carbon Dioxide Removal technologies to achieve a net reduction of 100 million metric tons of CO_2 per year globally by 2030.

URBAN TRANSITIONS MISSION

The Goal: By 2030, deliver at least 50 large-scale, integrated demonstration projects in urban environments around the world, providing a pathway for all cities to adopt net-zero carbon solutions as the default option.

GLOBAL COVENANT of MAYORS for CLIMATE & ENERGY

INTEGRATED BIOREFINERIES MISSION

The Goal: Develop and demonstrate innovative solutions to accelerate the commercialization of integrated biorefineries, with a target of replacing 10% of fossil-based fuels, chemicals and materials with bio-based alternatives by 2030.

NET-ZERO INDUSTRIES MISSION

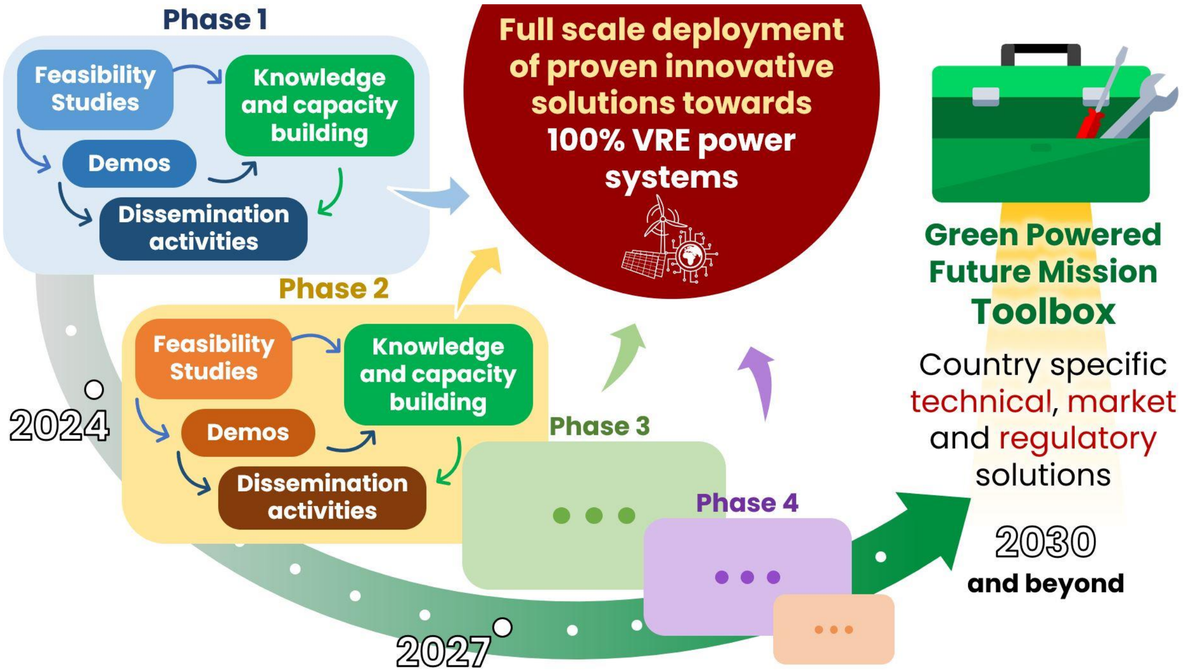
The Goal: Develop and demonstrate cost competitive solutions for the efficient decarbonization of energy intensive industries by 2030.

Scope and Objectives

The **Green Powered Future Mission** aims to demonstrate that **by 2030** power systems in different geographies and climates, are able to effectively integrate **up to 100% variable renewable energies**, like wind and solar, in their generation mix and maintain a cost-efficient, secure and resilient system.

How?

- **Demonstrating** innovative technical solutions
- **Analysing** policy, market and regulatory aspects
- **Generating** the tools, data and networks needed to enable more people and areas to be powered by affordable and high-levels VRE



The Coalition: Public - Private Partnership

GREEN POWERED FUTURE MISSION

alperia

nationalgrid

enel

areti

ena energynetworks association

bsi.

GSE Gestore Servizi Energetici

IB1 Icebreaker One

GOLDWIND

LONGi

Terna Driving Energy

IRENA International Renewable Energy Agency

iea International Energy Agency

WORLD BANK GROUP

Green Powered Future Mission

R&I Themes

GREEN POWERED FUTURE MISSION

Pillar 1

Affordable and Reliable VRE

1.1 Novel photovoltaic
1.2 Offshore wind power
1.3 Integrated renewable energy
1.4 Off grid systems
1.5 Energy storage supply chains, recycling and re-use
1.6 Technologies for system stability

Pillar 2

System Flexibility and Market Design

2.1 Flexible generation
2.2 Grid flexibility
2.3 System stability and flexible operation
2.4 Energy storage integration
2.5 Demand side flexibility and EV
2.6 Advanced planning for flexible systems
2.7 Market design, business models & regulatory framework
2.8 Flexibility from energy sectors integration

Pillar 3

Data and Digitalisation for System Integration

3.1 Standards for interoperability
3.2 Secure and resilient digital energy systems
3.3 Integrated platforms

Green Powered Future Mission
Action Plan 2022-2024

- Pathway on **how** the Mission goal will be reached
- Detailed plan for **3 years** of the **10 years Mission's timeframe**
- Selection of the **50 most urgent Innovation Priorities** to be tackled in the next years
- Two ambitious **Flagship Projects** (FP):
  - FP1: ***5 Demos in Five Continents***
  - FP2: ***Multilateral Research Programme***

*Officially released at the **Global Clean Energy Action Forum**, Pittsburgh, PA 23 September 2022*

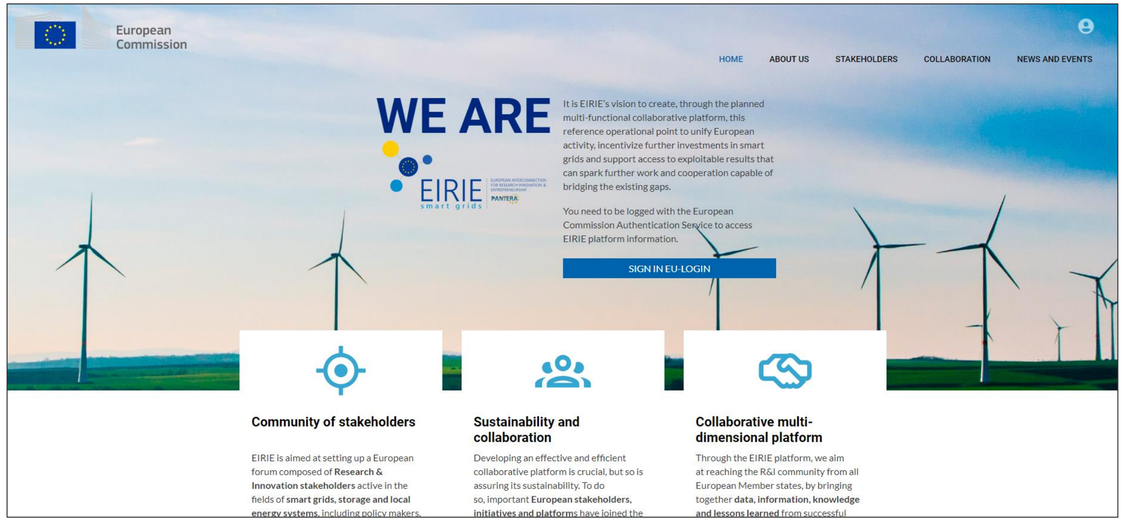
The Action Plan 2022-2024 is available at:
www.mission-innovation.net/missions/power

Connection with the MI SGIA Platform

SGIA is an open knowledge sharing platform created to boost clean energy technologies deployment

www.mi-sgiaplatform.net

EIRIE, developed by PANTERA, it's aimed to be the **reference point to share results from R&I activities** on energy systems



www.EIRIE.eu

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Test facilities: collaboration opportunities

Test facilities:

- ❖ Are needed to test innovative solutions and results from low TRL projects
- ❖ Are costly both in set up and maintenance
- ❖ Require skilled personnel

Not easy to built test infrastructures

Collaboration initiatives can support the development of local facilities and help projects in testing their results

Initiatives implementing a network of collaborative smart grid testing facilities

DERlab

ISGAN
INTERNATIONAL SMART GRID ACTION NETWORK

ERIGRID 2.0
Connecting European Smart Grid Infrastructures

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DERLab

DERLab is an association of over thirty institutes from Europe and U.S. performing testing and research related to Smart Grids and grid integration of DER

- Accredited **testing of DER-units and SG-equipment**
- **Support of SG development** and integration of Renewable Energies
- Information and **knowledge exchange**
- Contribution to **standardisation** activities

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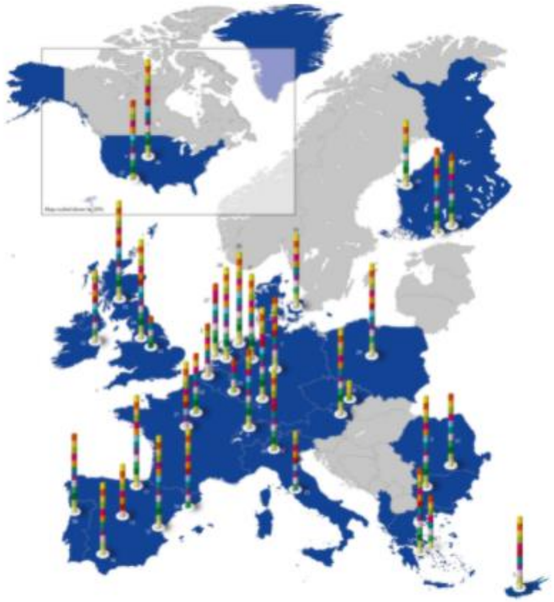
DERLab - database

The Database of DER and Smart Grid Research Infrastructure **contains systematic information on research infrastructure and related assets, testing capabilities** and services of research institutes and organisations worldwide focusing on DER and Smart Grids.



	High Voltage & High Power	Microgrids & Distribution Network	Power Electronics	Power Quality & EMC	PV Systems	Wind Systems	Biomass / CHP Systems	Fuel Cell Systems	Storage Systems	E-Mobility	Smart Buildings	ICT	Cybersecurity	HIL / Co-simulation	Education & Training
1 Austrian Institute of Technology (AT)	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
2 Lemcko of Ghent University (BE)		■		■	■	■			■	■	■				■
3 Technical University of Sofia R&DS (BG)	■	■	■	■	■	■		■	■	■	■	■	■	■	■
4 HES-SO Valais (CH)		■	■	■	■			■	■	■	■	■	■	■	■
5 FOSS of the University of Cyprus (CY)	■	■	■	■	■		■		■	■	■			■	■
6 Brno University of Technology (CZ)	■		■	■											
7 Fraunhofer IEE (DE)		■	■	■	■	■	■		■	■	■			■	■
8 Karlsruhe Institute of Technology (DE)	■	■	■	■	■		■	■	■	■	■	■	■	■	■
9 RWTH Aachen (DE)	■	■	■	■	■	■			■	■	■	■	■	■	■
10 DTU Electrical Engineering (DK)	■	■	■		■	■			■	■	■	■		■	■
11 CRES (EL)		■	■	■	■				■		■	■			■
12 NTUA (EL)		■	■	■	■	■	■		■	■	■	■	■	■	■
13 CIEMAT (ES)	■	■	■	■	■	■	■				■				
14 EES-US Group of the University of Seville (ES)	■	■	■	■	■	■			■	■	■			■	■
15 ITE (ES)	■	■	■	■	■	■		■	■	■	■	■	■	■	■
16 SEER (ES)	■	■	■	■	■	■	■	■	■	■	■	■			
17 TECNALIA (ES)	■	■	■	■	■	■		■	■	■	■	■	■	■	■
18 VTT Technical Research Centre of Finland (FI)		■	■	■	■	■		■	■	■	■	■	■	■	■
19 TUAS (FI)		■	■	■	■				■	■	■	■	■	■	■
20 University of Vaasa (FI)	■	■	■	■					■		■	■	■	■	■
21 CEA-INES (FR)	■	■	■	■	■	■	■	■		■	■				
22 EDF (FR)		■	■		■				■	■	■	■	■	■	
23 Enel (IT)			■	■	■	■	■	■		■	■	■			
24 RSE (IT)	■	■	■	■	■		■		■	■	■	■	■	■	
25 SnT (LU)		■			■				■		■			■	
26 KEMA (NL)	■	■	■	■	■	■		■	■	■	■	■	■	■	■
27 TNO (NL)		■			■	■	■	■	■	■	■	■	■	■	■
28 TU Delft (NL)	■	■	■	■	■	■		■	■	■	■	■	■	■	■
29 TU Lodz (PL)	■	■	■	■	■	■	■	■	■	■	■	■		■	■
30 INESC Porto (PT)		■	■	■	■	■			■	■	■	■	■	■	■
31 MicroDERlab Group (RO)		■	■	■	■		■	■			■	■	■	■	■
32 University College Dublin (IE)			■	■	■	■	■	■	■	■	■	■			■
33 Keele University (UK)		■						■			■	■	■		
34 University of Manchester (UK)	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
35 University of Strathclyde (UK)	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
36 NREL (US)	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
37 Sandia DETL (US)		■	■	■	■	■		■	■	■	■	■	■	■	■

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International Smart Gris Action Network

ISGAN's vision is to accelerate progress on key aspects of smart grid policy, technology, and investment through voluntary participation by governments and their designees in specific projects and programs. Its activities center foremost on those aspects of the smart grid where governments have regulatory authority, expertise, convening power, or other leverage, focusing on five principal areas:

- Policy standards and regulation
- Finance and business models
- Technology system development
- Workforce skills and knowledge
- Users and consumers engagement

ISGAN facilitates dynamic knowledge sharing, technical assistance, peer review and, where appropriate, project coordination among its Contracting Parties.

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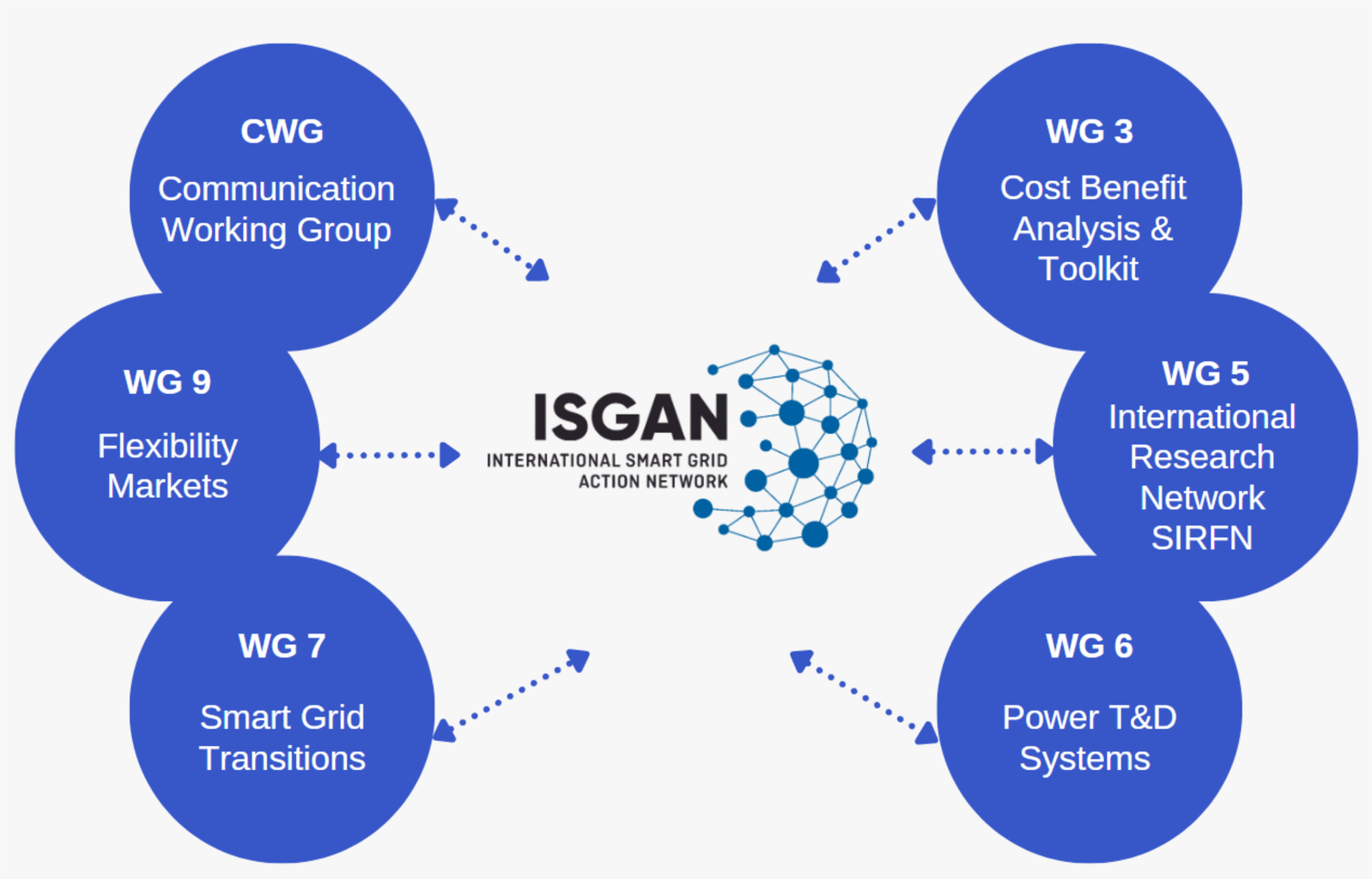
ISGAN working groups



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ISGAN value proposition

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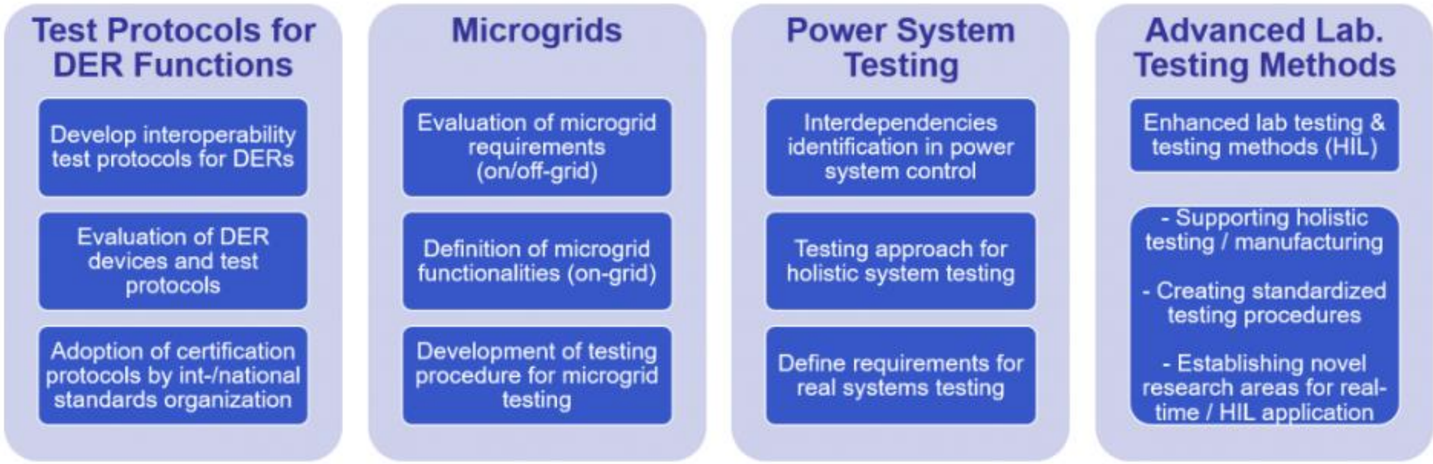
ISGAN Annex 5: SIRFN

Smart Grid International Research Facility Network (SIRFN) builds a framework for proposing, selecting and implementing projects that matches evaluation needs with testing capabilities and shares non-proprietary results for the improvement of smart grid technologies, protocols, and standards.



Four focus areas

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ERIGrigrid 2.0 EU project

ERIGrid 2.0 is an EU project that, based on the results of ERIGrid-1, will expand the research services and tools of European research infrastructures for validating smart energy networks with the electric power grid as the main backbone.

The ERIGrid project is providing transnational laboratory access and education to engineers working in the domain of smart grids and DER in 9 most advanced first-class European Laboratories in 11 EU countries.

PANTERA and ERIGrid 2.0 projects started a collaboration with, among other, the objective of fostering the interaction with local stakeholders

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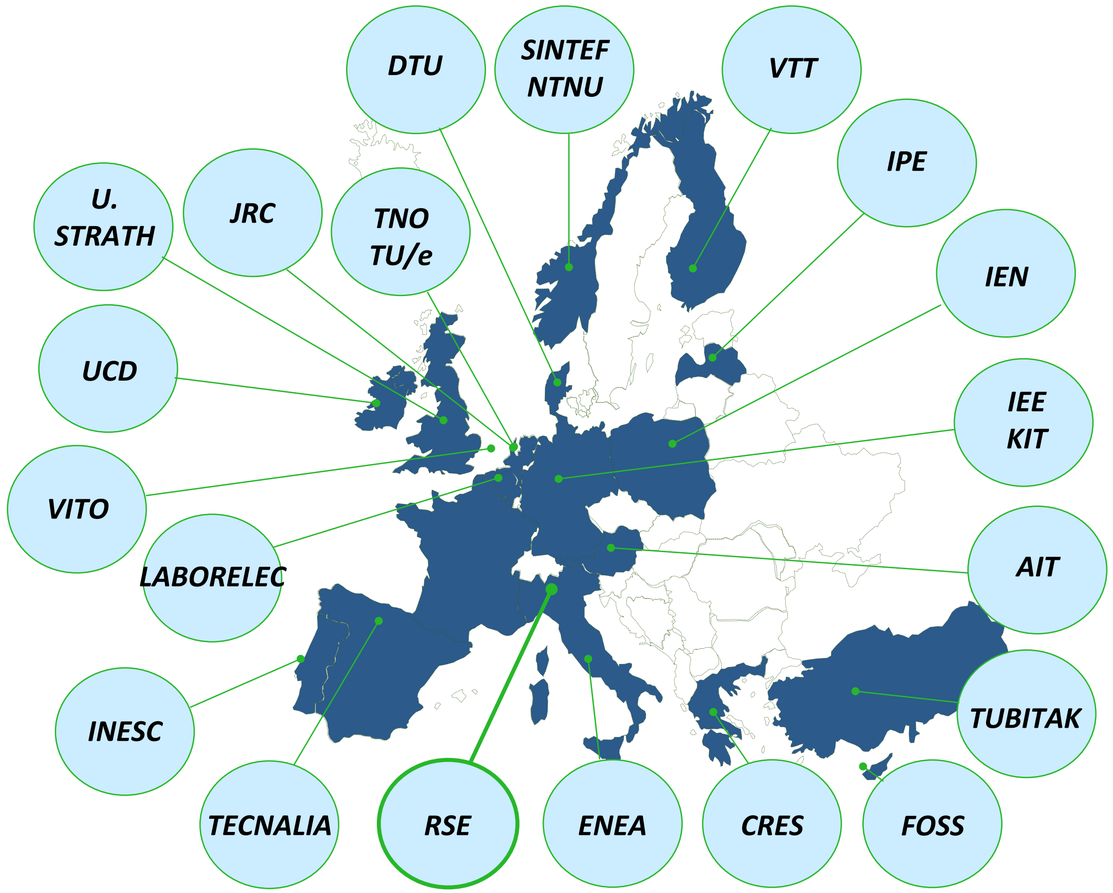
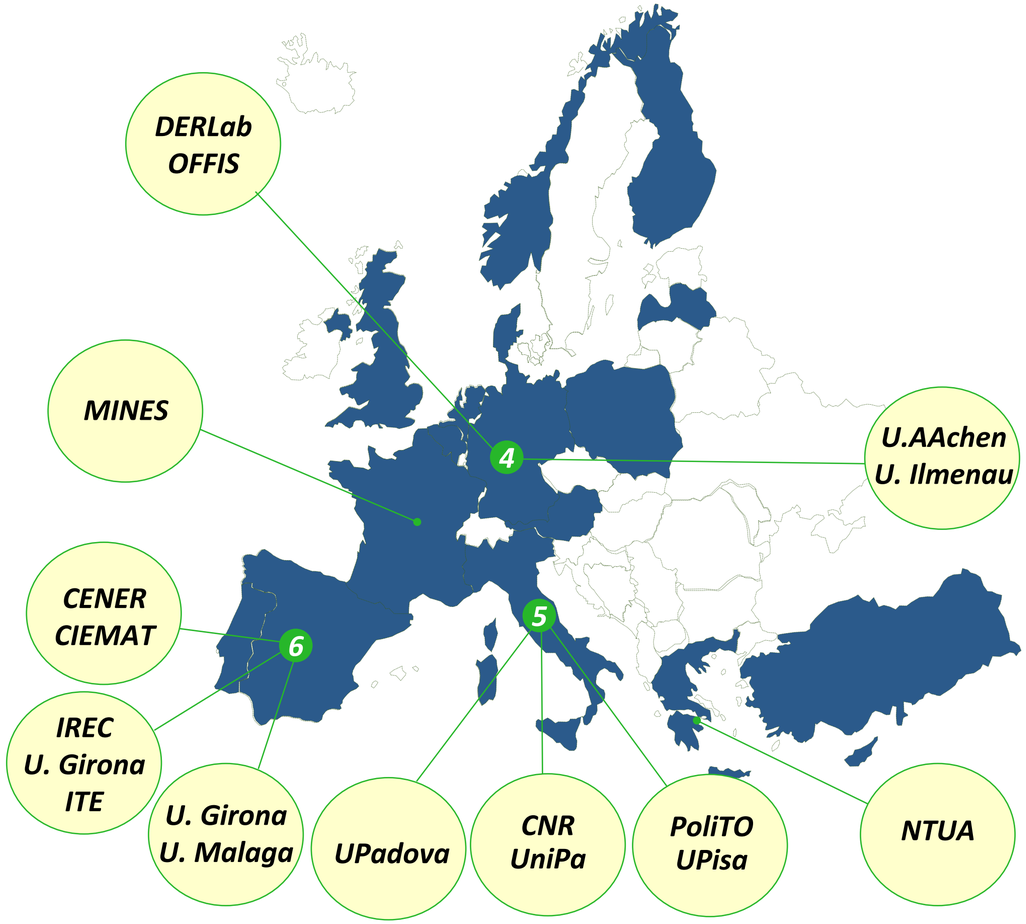
EERA JP Smart Grids Participants

Full participants



Associated participants



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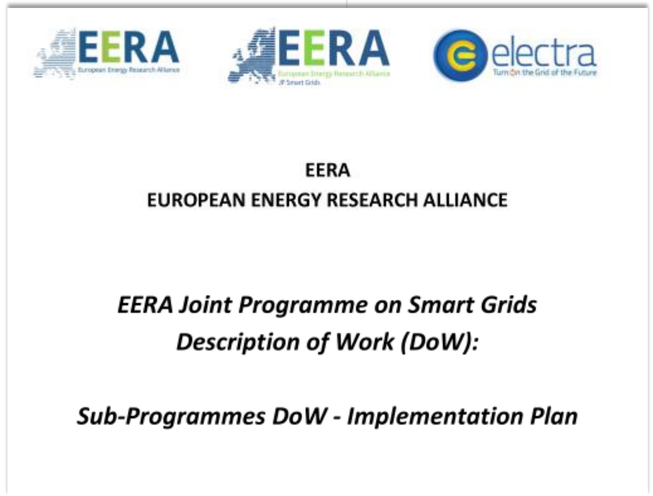
EERA JP Smart Grids – Sub-Programmes

- **SP1** – Technologies and tools for the management of future power systems (coordinated by DTU)
- **SP2** – Storage integration (coordinated by VTT)
- **SP3** – Distribution Network Flexible operation (coordinated by FOSS)
- **SP4** – Consumer and Prosumer activation and Engagement through digitalization and ICT (coordinated by VITO)
- **SP5** – Flexible transmission network (coordinated by SINTEF)



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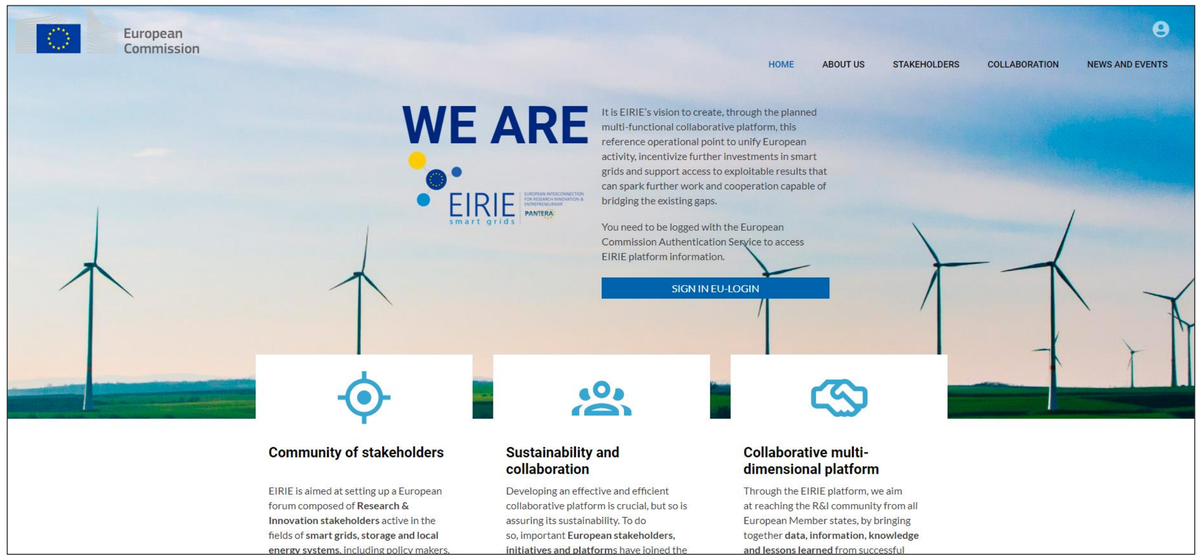
The EIRIE platform

*"**E**uropean **I**nterconnection for **R**esearch **I**nnovation and **E**ntrepreneurship"*

EIRIE's vision is to become a **reference operational point** to unify European activity, **incentivize further investments in smart grids** and support access to key exploitable results. We believe **pan-European cooperation, enabled by the right tools**, will help bridging the existing gaps.



www.EIRIE.eu

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Get in touch

www.pantera-platform.eu

www.eirie.eu

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EIRIE platform: In support of the R&I European ecosystem

Objectives and opportunities: EIRIE's functionalities and tools facilitating the work of stakeholders

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Dr Anna Mutule
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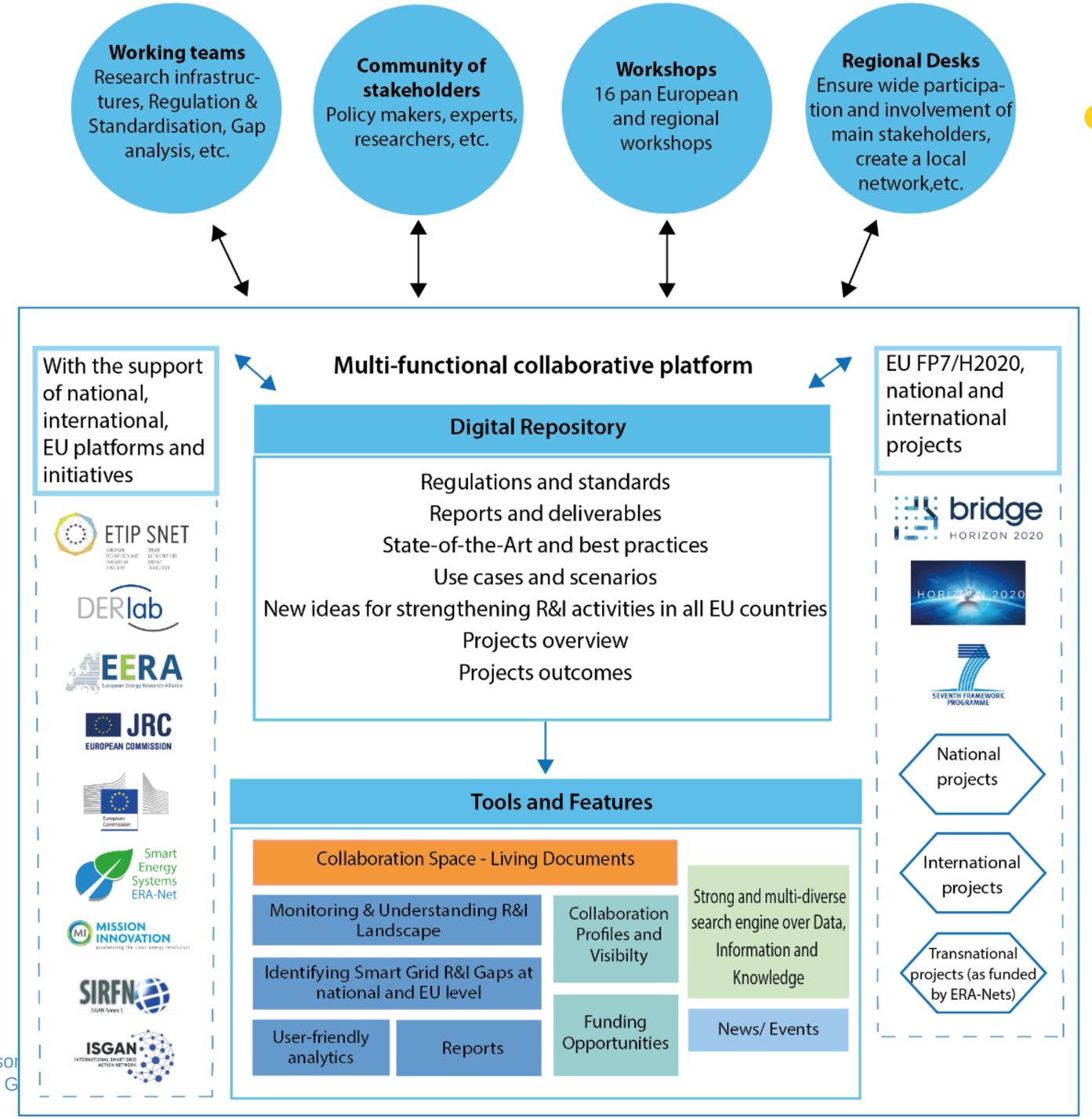
The Concept



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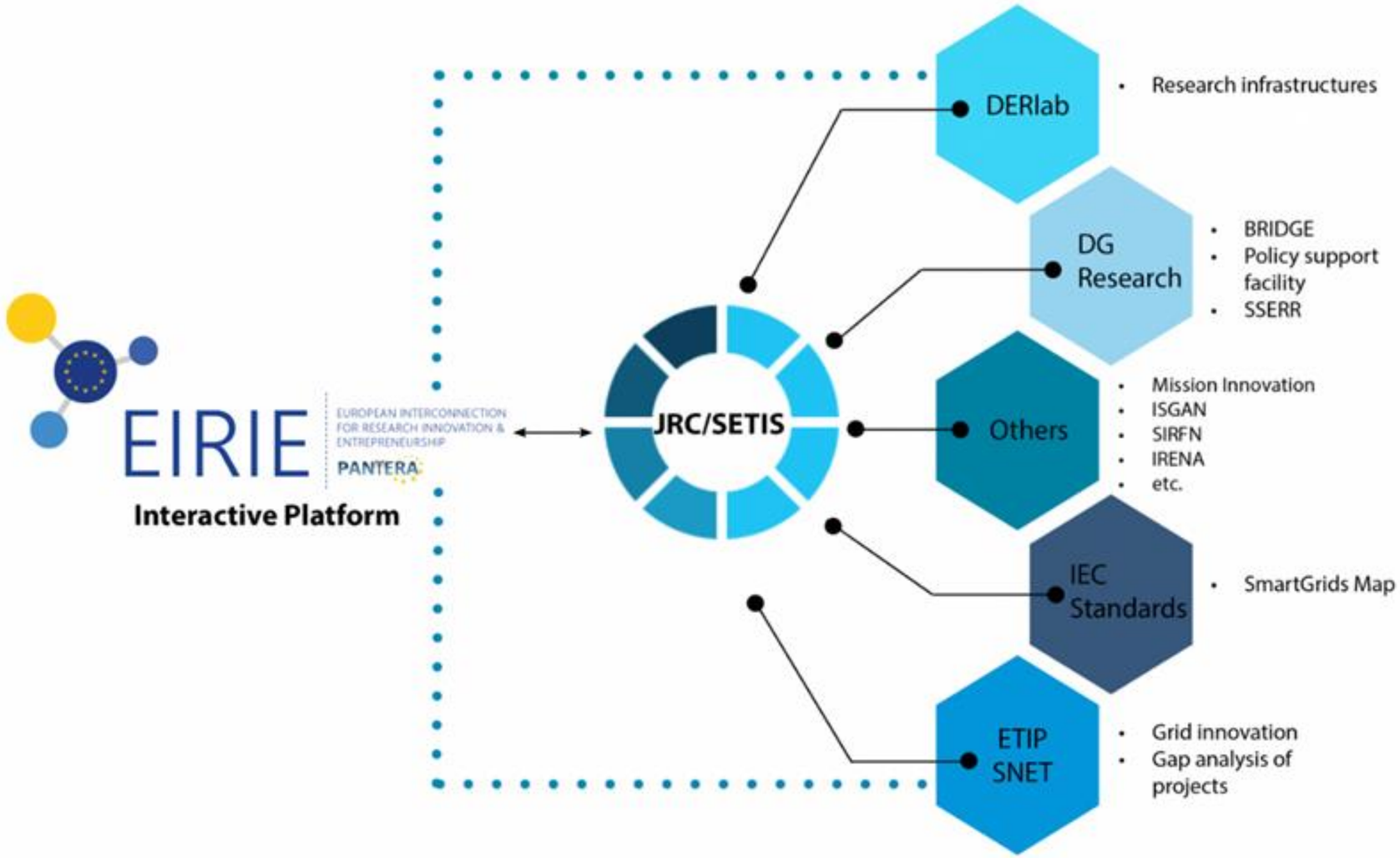
The Connectivity



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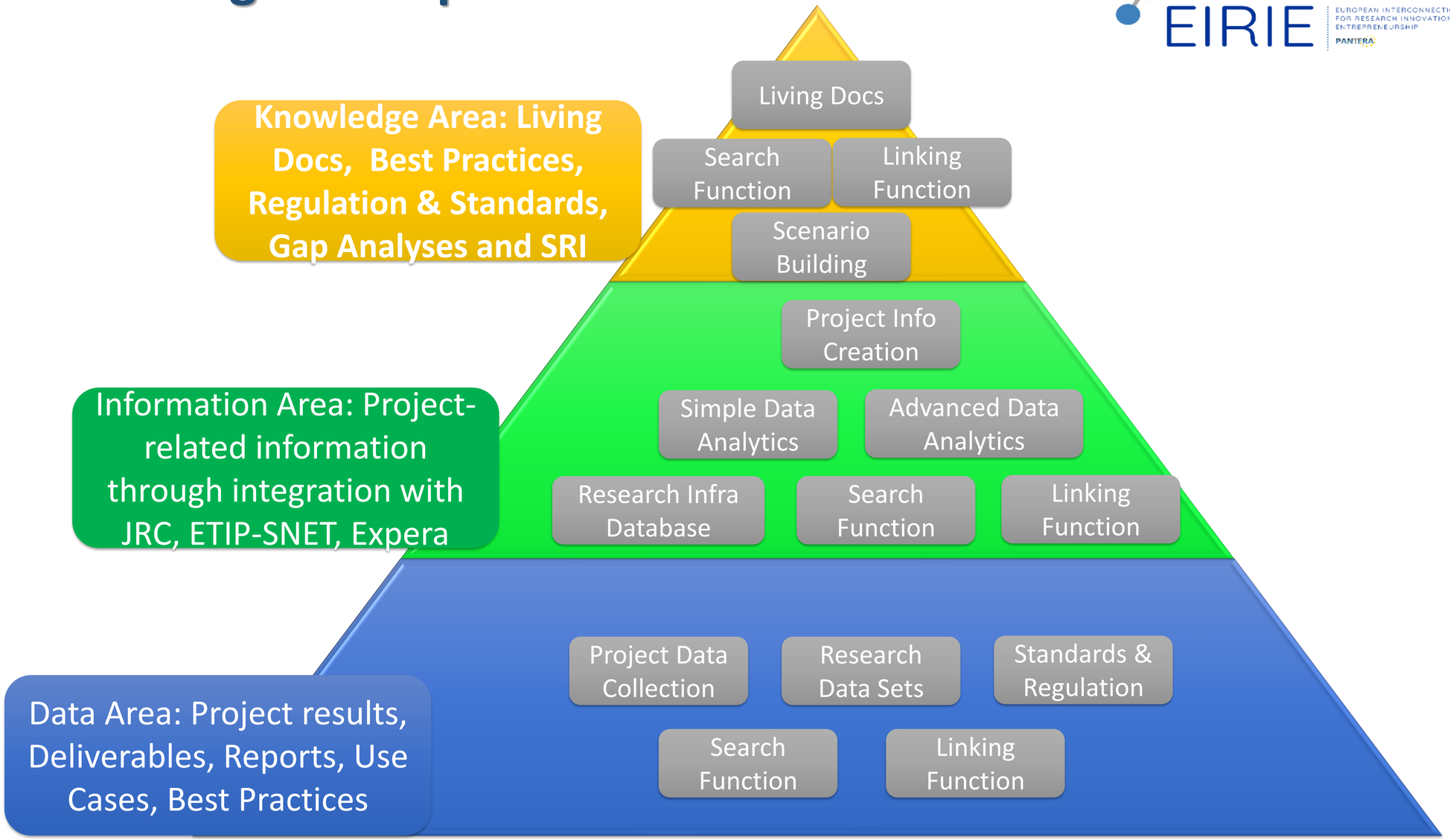
PANTERA Platform Data Provisions and Design Principles



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EIRIE Platform Design Principles

- ✓Interoperability: Integration with external platforms and information sources, defined data model and adaptable taxonomies that can be updated to address evolving transformations happening across Smart Energy Systems
- ✓Extendibility: Addition of new features and functionalities in the future, ensure the delivery of new services to existing users and other ones to address the needs of new types of users that may engage with the platform
- ✓Modularity: Extension or maintenance of specific platform features
- ✓Scalability: High performance, usability and availability, to accommodate increased volumes of data and numbers of users
- ✓Security: Safeguard user trust to the platform

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Login and Roles.

- Login through EU-Login in the following link:

  https://ses.jrc.ec.europa.eu/eirie/cas

- **Roles :** Different Roles to manage the content.
  - Role1: Users from other platforms we integrate with
  - Role2: PANTERA project Users / Platform users / Partners
  - Role3: External users split into the following groups (i.e. 'EU Research Community')
  - Role4: Content Manager
  - Role5: Platform Administrator (Super User)
  - Role6: Anonymous user

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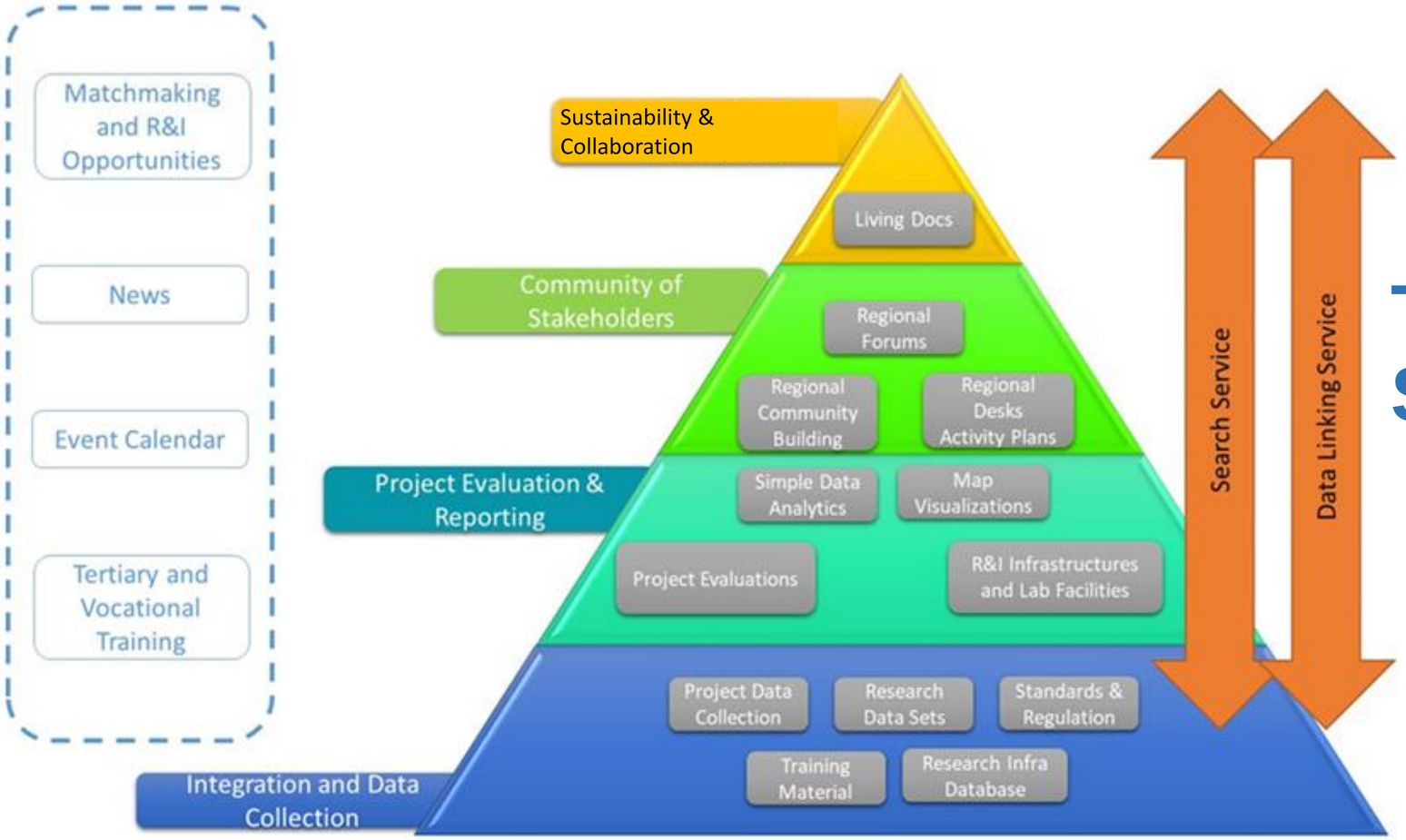
The EIRIE Platform Structure



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EIRIE Platform target groups and Value Prepositions

- Given the interdependence of the many activities undertaken, in order to maximize the EIRIE Platform's impact and visibility, it was critical to identify early on, the prospective target groups for whom EIRIE had a value proposition, such as Researchers, R&I organizations and Policy Makers. As for researchers, the main value prepositions provided by the EIRIE platform is mainly focused on:
  - Access to a pan-European data base with analytical and exploitable information on smart grid projects
  - Information about best practices in R&D sector
  - First-hand insights into interesting smart grid projects, results, ideas, initiatives
  - Exchange of know-how with other R&I actors
  - Access to SotA Training Material and Education Programmes
- Also, through the EIRIE Platform, R&I Organizations are expected to realize the following value prepositions:
  - Potential cross-promotion opportunities
  - Promoted synergies with projects and initiatives through information sharing and highlighting key achievements as best practices
  - Possibility for organizations from the low spending, in R&I, countries to be engaged in a more active manner in EU R&I activities
- The EIRIE Platform provides Policy Makers with the capability to:
  - Define inefficiencies of R&I activities at national, regional and EU level and prioritization of policy actions towards advancing R&I in low performing thematises
  - Pool together different available instruments into one platform, in such a way that it will effectively contribute to the increase of knowledge, coordination of R&I activities and networking.

Knowledge Area Search Functionality
Knowledge Area Linking Functionality

- A strong and versatile search engine (classic filtering and list-based results) is featured. Based on the tagging used on the living documents and forums, the user has the possibility to filter and customize the search results.
- Linking functionality between available data items enables the simultaneous presentation of project-relevant information (project page) and best practice information together with the corresponding information about:
  - Project(s) page link(s)
  - Applicable regulatory framework
  - Applied and relevant standards
  - Best practices available in the data area.
  - Relevant discussion forum topics
  - Incentives documentation

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The PANTERA / EIRIE RICAP process

- The R&I status and Continuous gAP analysis (RICAP) is the core process of the PANTERA in support of future R&I work captured in the work programmes, the ten-year plan and Implementation Plan of ETIP SNET
- The main outcome of this process feeds the knowledge area of the EIRIE platform and sends clear feedback for the maturity of the technologies, the R&I needs and the priorities under the prism of a wide and holistic spectrum. This way, RICAP evaluates in a quantified manner the past work while it safeguards continuity in the years ahead.
- Within the RICAP process, all incoming data and information are classified, categorized, enriched and processed before the evaluation results are presented in quantifiable indexes that can drive future developments and achieve
  - Uniformity of results
  - Better monitoring of the projects and their results
  - Better monitoring and use of technologies through the financed projects
  - Better identification of R&I needs.

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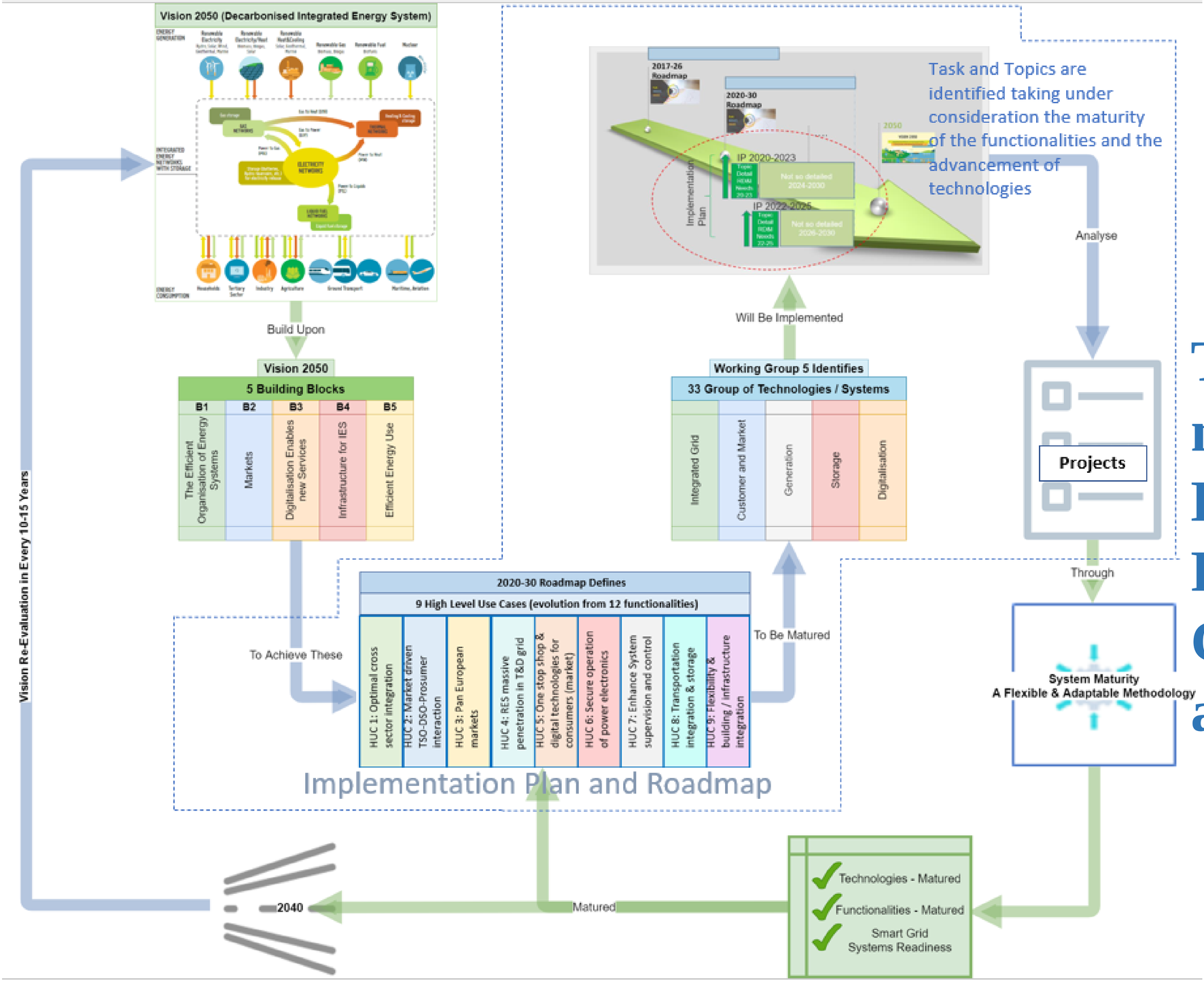
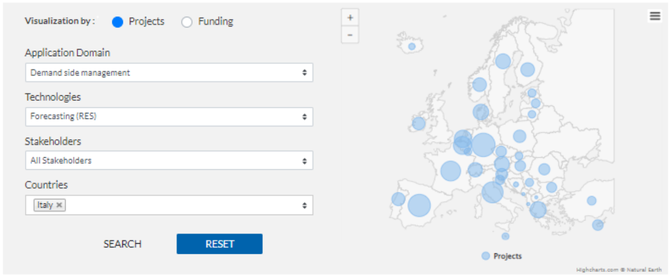
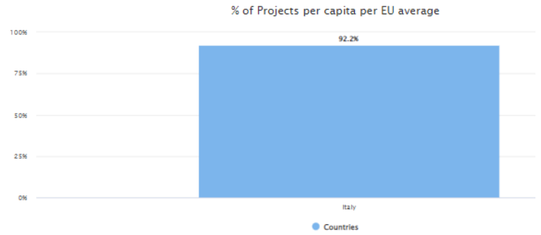


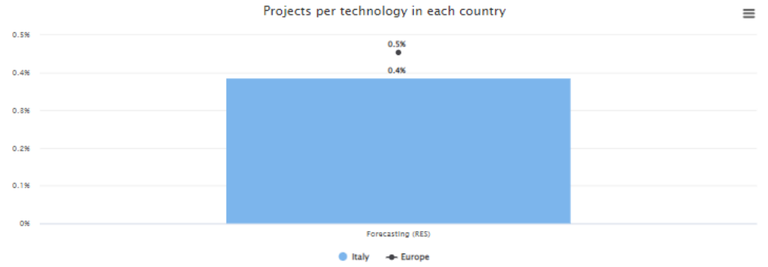
The supporting methodology of the ETIP SNET vision R&I status and Continuous gap analysis

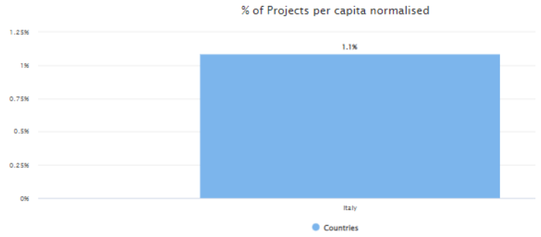
Simple Data Analytics

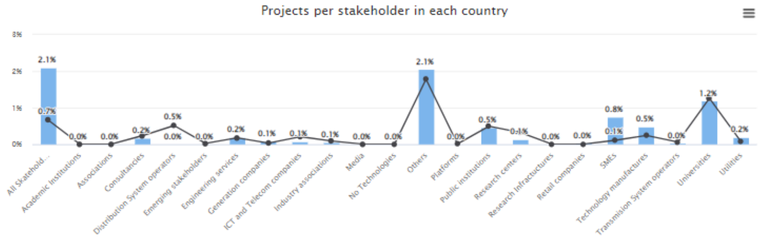
- Enabling the map-based visualization of the distribution of Smart Grid/ Smart Energy Systems projects awarded across the EU through National, Regional and EU programmes.
- Apart from the visualization of aggregated project data, the map offers an interactive environment that allows for further drilling in and analysing the project-related information available in EIRIE with the use of a wide variety of filters (e.g., application domain, technology deployed, etc).
- Through the map the user is to be also able to further analyse project-related information with the use of dedicated bar diagrams appropriately correlating pairs of data elements such as:
  - Number of projects per technology deployed in each country
  - Number of projects per stakeholder type in each country
  - Funding amount per technology deployed in each country
  - Funding amount per stakeholder type in each country
- Heatmap visualizations offer an alternative analysis means for visualizing the aforementioned data and demonstrating key figures for each country (number of projects, funding), while allowing for further analysis through the utilization and combination of a variety of filtering criteria.











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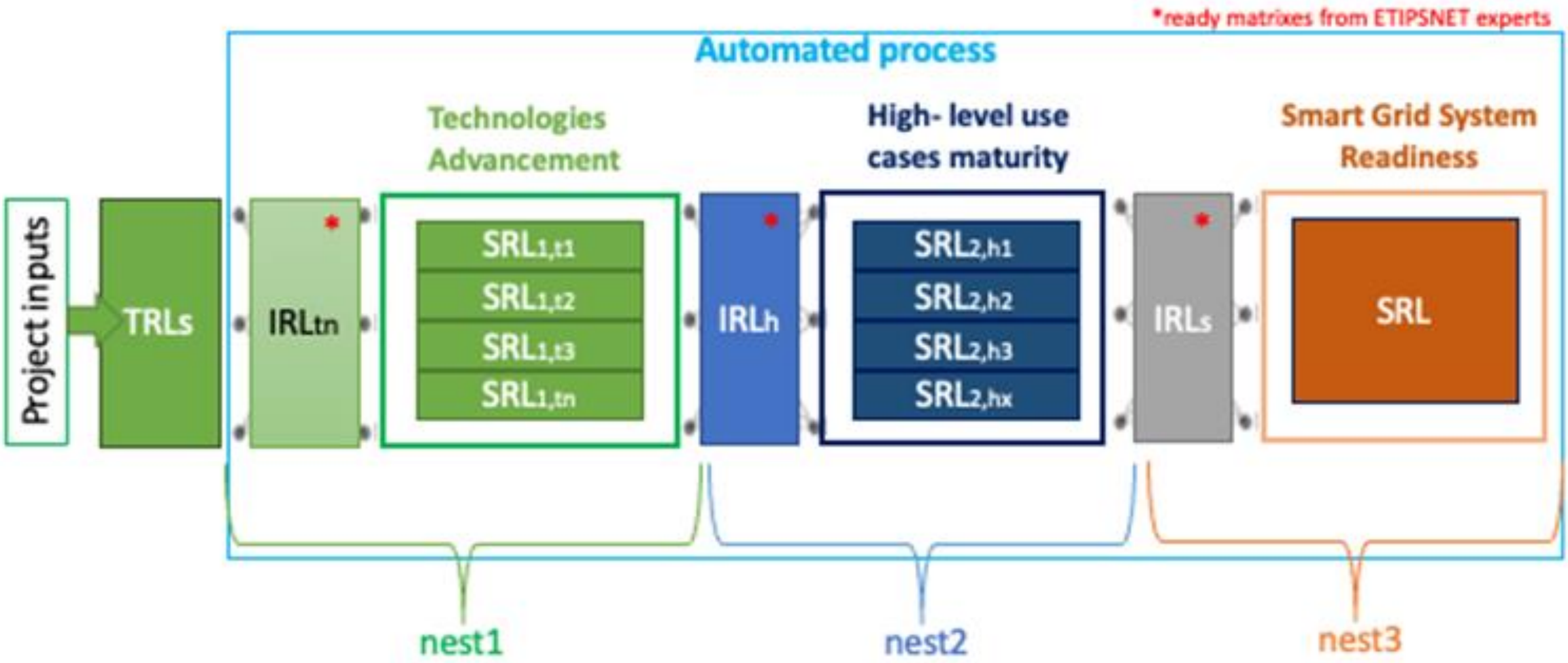
The methodology for smart grid system readiness through the contribution of projects



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BRIDGE Collaboration area can grow

- As indicated above collaboration is possible through EIRIE / CONFLUENCE offering a functional environment for contacting:
- Meetings and minutes
- Building material of whatever content requiring collaborative input
- Working in a structured environment that has the privacy and protection required by team work
- Completed work can be made visible through EIRIE as indicated above
- **Currently working with WG Data to develop a universal repository for Use Cases** based on the corresponding standards for facilitating interoperable data spaces.
- This can be extended to any other group seeking collaborative work.

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BRIDGE projects have a home

- Every project can have its own private area of working but reporting of mature work is public for everyone to see and utilise, using the functionalities indicated above.
- Consortia of projects can be given Content Manager credentials to manage their input and this is highly beneficial for reporting achieved results in the form of TRLs achieved, data collected, reports drafted and KERs attained. **Current examples are the eNeuron project and the SmartBuild4EU.**
- Project Consortia will be required to enter the achieved progress in technologies, systems and solutions in the form of achieved TRLs to facilitate the evaluation of Maturity indices (see following slide) of Technologies, High Level Use Cases and System as a whole.

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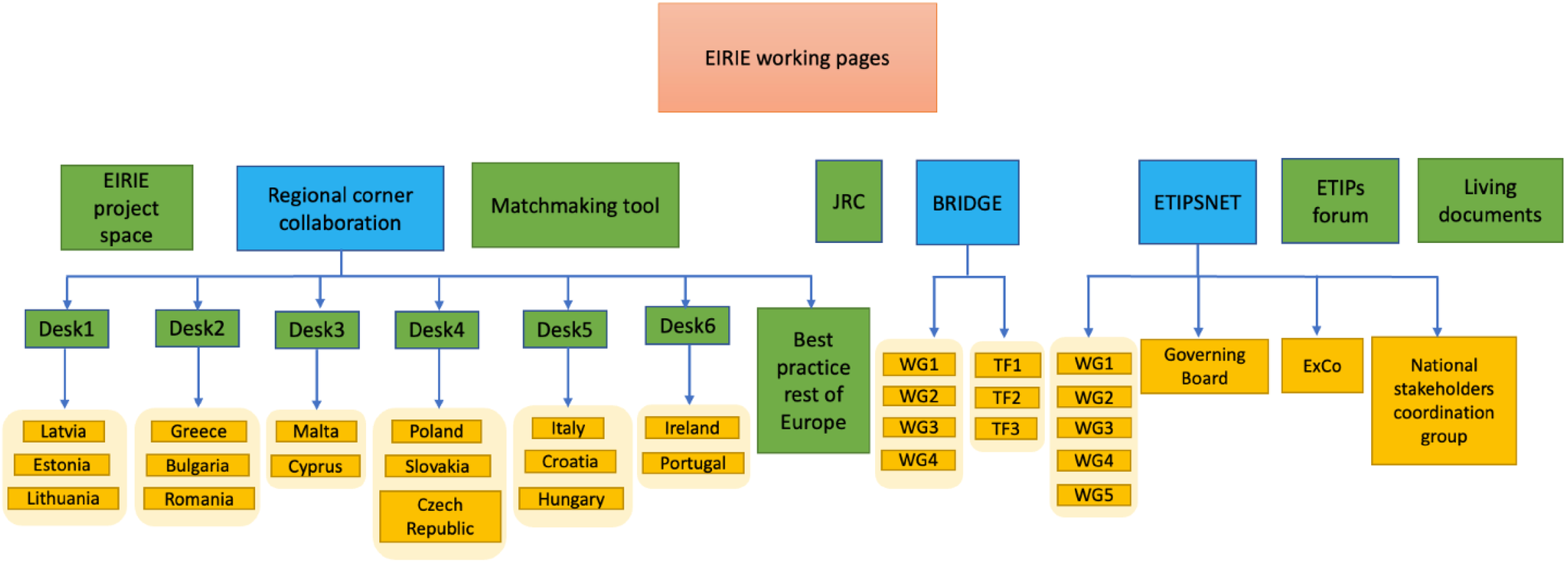
Structure of the EIRIE Collaboration Space in Confluence

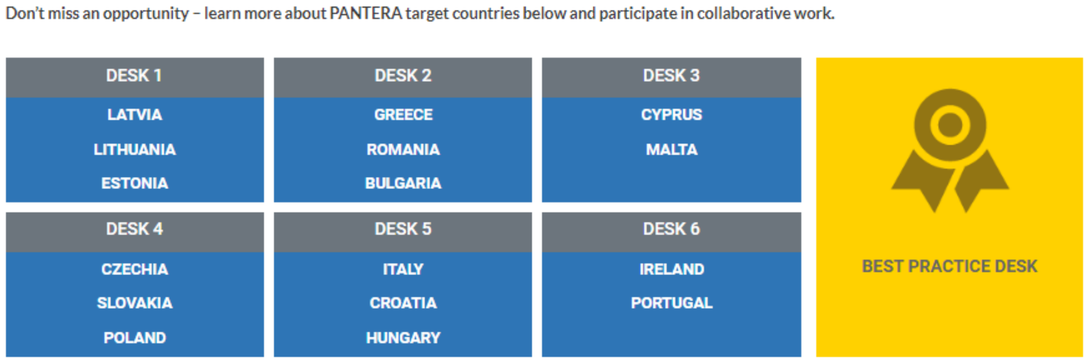


LEGEND

- Collaboration page
- Child page
- Parent page

PANTERA 6+1 Approach

STAKEHOLDERS / Access to regional activity >>
PANTERA DESKS



- **PANTERA 6+1** approach aims to organize and synchronize efforts of different actors to strengthen national participation rate in smart grid R&I activities and investment
- Flexible, scalable, focused on countries

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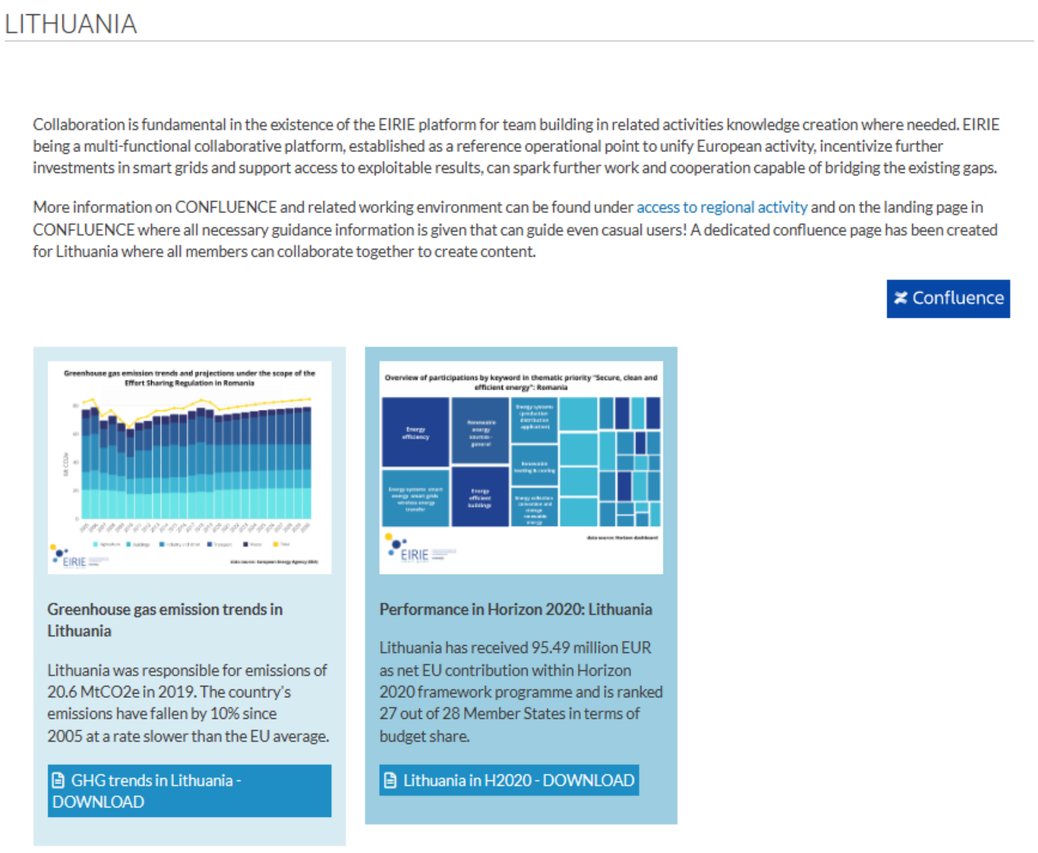
Country pages



STAKEHOLDERS / Access to regional activity >> PANTERA DESKS >> COUNTRY (MALTA)

- Scalable place for publishing results of collaborative work

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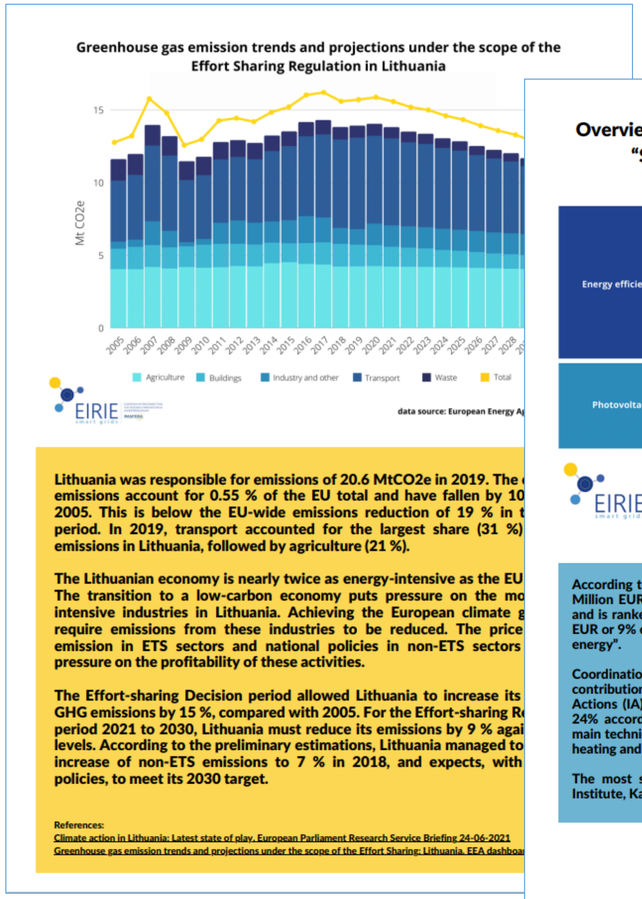
Country highlights



STAKEHOLDERS / Access to regional activity >> PANTERA DESKS >> COUNTRY

- Reports and factsheets prepared by PANTERA team

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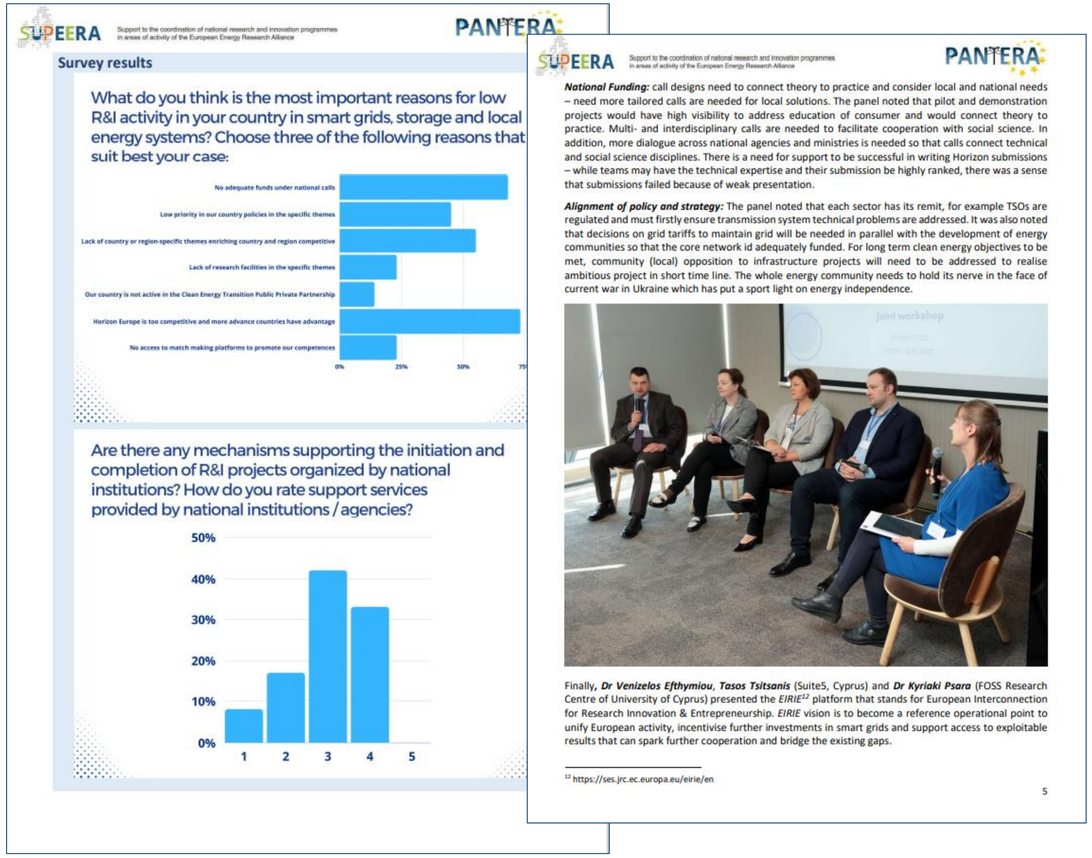
Workshop reports



STAKEHOLDERS / Access to regional activity >> PANTERA DESKS >> COUNTRY (LATVIA)

- Feedback from stakeholder engagement activities

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Best practice examples and studies

STAKEHOLDERS / Access to regional activity >> PANTERA DESKS >> BEST PRACTICE DESK

- Best Practice Desk objective is to explore and identify different well-functioning mechanisms, which contribute to increased R&I activities, so this experience can be considered and replicated in other countries.

funding mechanisms

support on national level sandboxes

….

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A place to collaborate

- **Confluence** is a team workspace where knowledge and collaboration can flourish by creating, collaborating, and getting organized in one place.
- Dedicated **Confluenc**e pages have been created for each Desk and Country, as well as one common page for all stakeholders.
- Links to **Confluence** can be found on relevant Desks' and Countries' pages.

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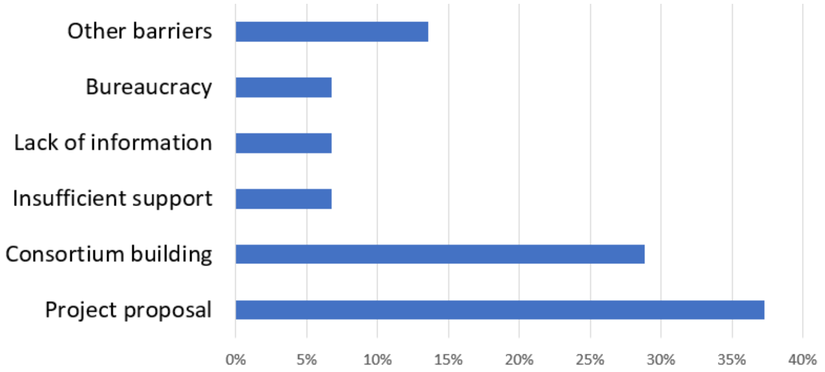
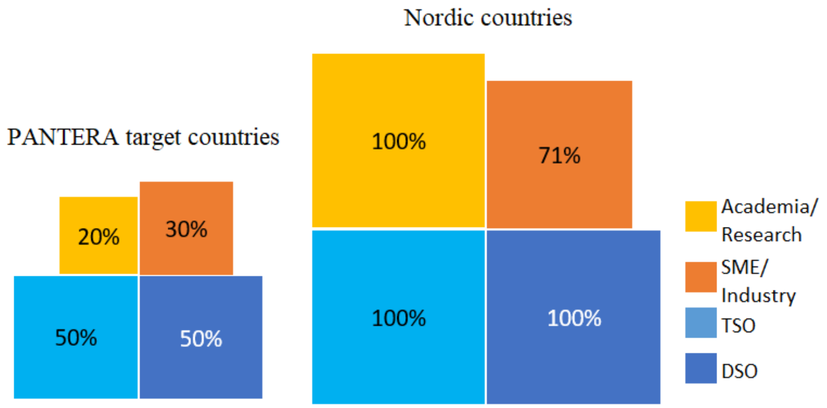
Highlights from PANTERA Desk survey





Main outcomes:

- Issues related to project proposal and consortium building, are considered as major barriers for project success
  - DSOs/TSOs do not refer to any issues with consortium building and solely refer to complicated project proposal preparation process
- Insufficient local support is considered as one the important challenges in broadening R&I activities
  - it is specifically true for lagging countries
  - almost one third of respondents from lagging countries indicated that they have not received any national support
  - TSOs/DSOs receive better national support
- Academia/research organisations from lagging countries more often face difficulties in establishing cooperation with industrial actors, as well as international networking

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Survey and Q&A

Join at slido.com

#PANTERA

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Thank you

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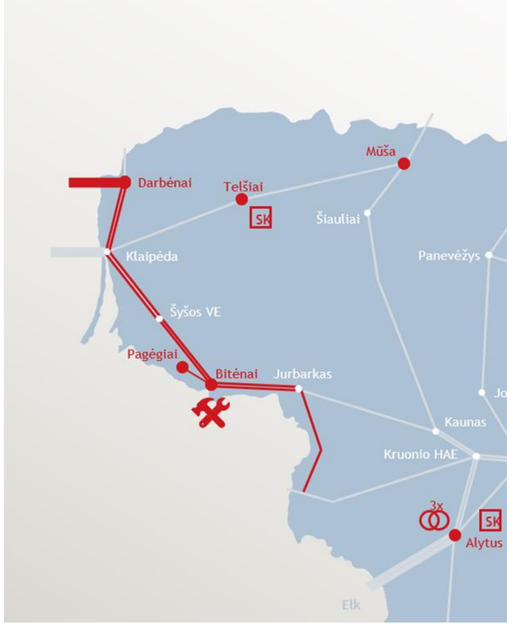
About us

Services

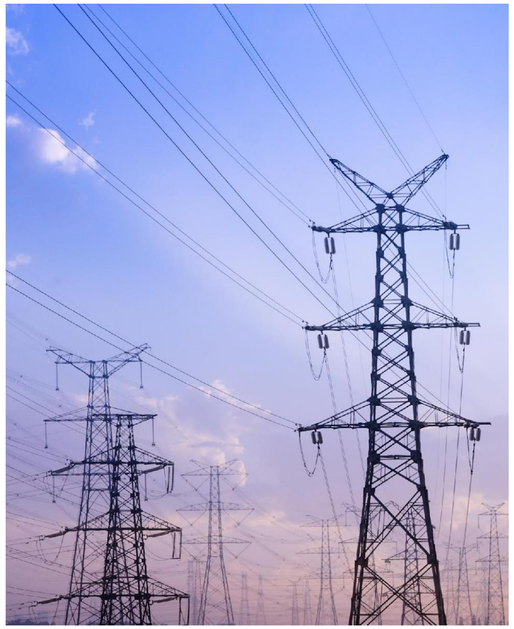
LITGRID, Lithuanian electricity transmission system operator

- Electric energy transmission 110-400 kV
- System reliability
- Balancing services of Lithuanian PS
- RES integration, synchronization to CEN, R&D

RES integration, synchronization to CEN, R&D



Reinforced Bitėnai - Jurbarkas overhead line enables integration of 700 MW of offshore wind in Lithuania

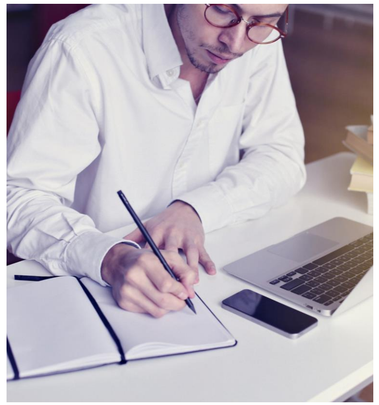


Harmony Link will enable the integration of additional 1000 MW in the region

3 synchronous condensers to ensure network reliability and stability

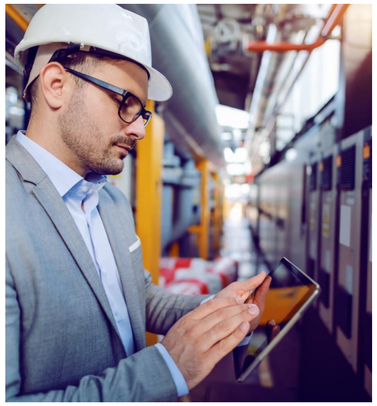
Battery parks will contribute to balancing and flexibility in the system

Why is collaboration important?



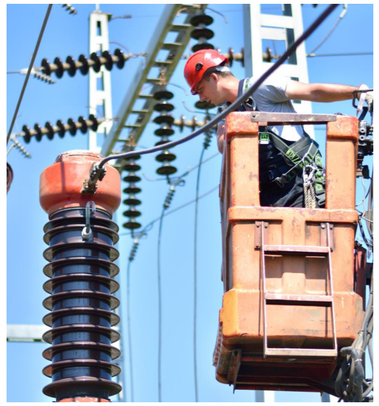
1

All parties benefit – learn something new



2

Opens up the business to more opportunities that facilitate growth



3

Sharing risk, administrative expenses

4

Can help achieve strategic goals

Facilitating international collaboration

Litgrid is part of the ENTSO-E task force “Demonstration & Innovation Coordination” (TF DIC), which aims to facilitate the collaboration of TSO’s

European Space Agency project to develop tools that allow to use satellite images for identifying changes in the protected zone of the transmission grid (ENTSO-E, 9 TSO’s, 3 vendors)

entsoe

esa

ONENET
one network for Europe

HORIZON EUROPE

Enabling national and regional collaboration

ignitis gamyba

Market Parties

GREEN GENIUS

Fusebox

1MW BEKS Innovation Platform

BESS Developers

FLUENCE
A Siemens and AES Company

Scientific Organisations

ktu 1922 kauno technologijos universitetas

Let's meet on Linkedin

Mečislovas Kaulakis
Innovation project manager
Litgrid AB

Outcomes of PANTERA interaction with the stakeholder: challenges and barriers for R&I activities in the Smart Grids domain

International research collaboration opportunities: fostering EU Clean Energy transition in Lithuania: SUPEERA/PANTERA Joint Workshop

Vilnius, 2023-04-27

Andrei Morch, SINTEF Energy Research (Norway)

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The purpose and method for activity "Identification of gaps and missing subjects"

The activity aims to uncover the main topics limiting R&I activities in the domain of Smart Grids, Storage and Distributed energy with a special focus on the identified countries with limited R&I activity i.e., the target countries.

The activity identifies the the gaps and provide directions on missing subjects or aspects.

Outcomes of the activity is used as input to further studies in PANTERA e.g. case studies and configuration of the EIRIE platform, including the “Best Practices” section

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The main scope of PANTERA project

- Bulgaria (BG)
- Croatia (HR)
- Hungary (HU)
- Poland (PL)
- Slovakia (SK)
- Estonia (EE)
- Romania (RO)
- Lithuania (LT)
- Latvia (LV)
- Italy (IT)
- Czech Republic (CZ)
- Malta (MT)
- Cyprus (CY)
- Greece (GR)
- Ireland (IE)
- Portugal (PT)

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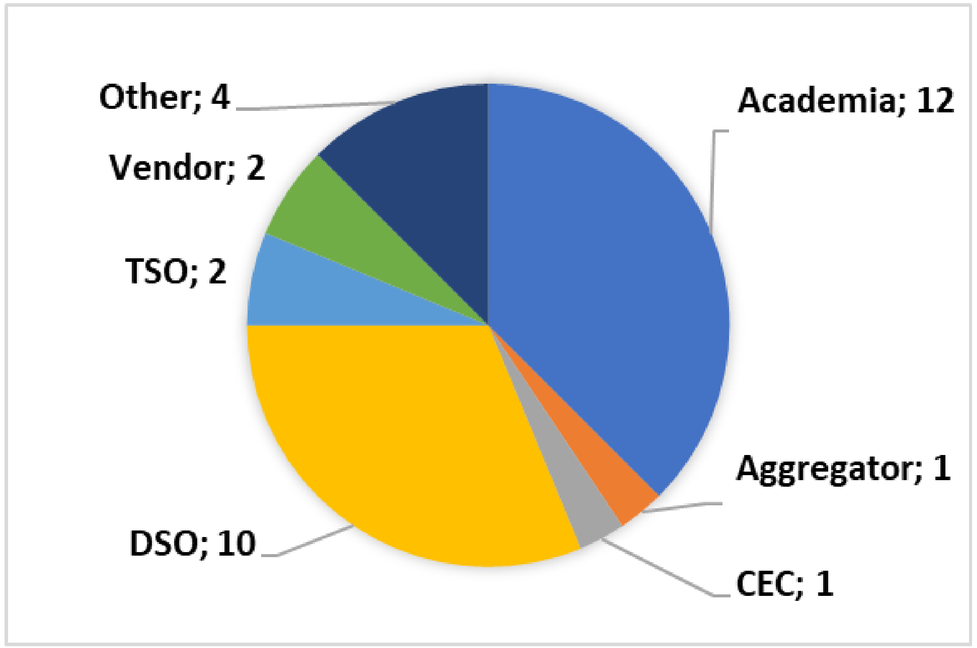
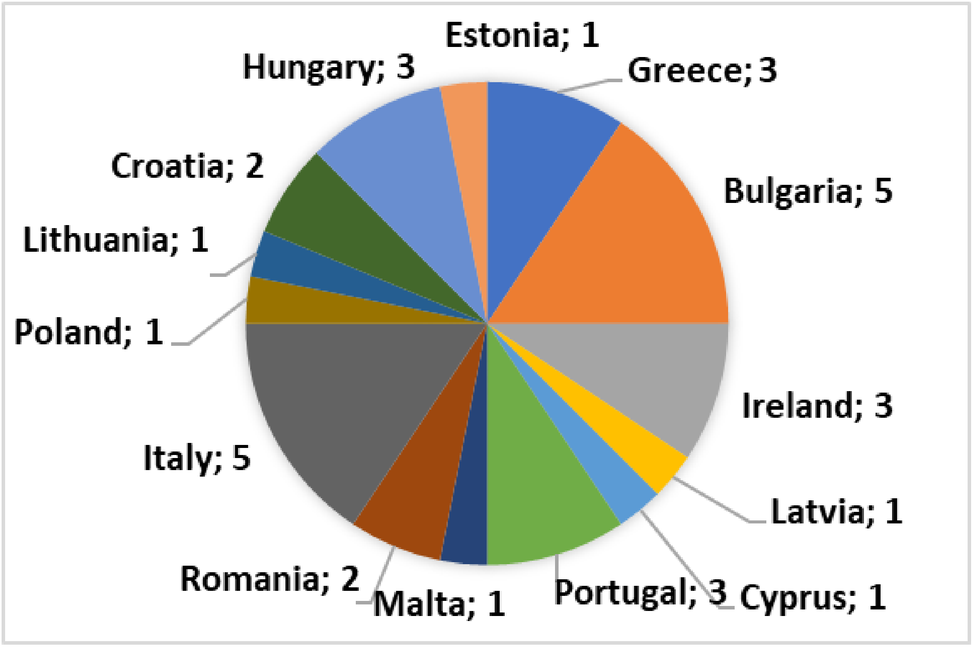
Direct interaction with the stakeholders: individual interviews and surveys





More than 30 semi-structured interviews and surveys have been conducted so far to establish an open dialogue and identify specific stakeholder needs and expectations.

The interviews include persons representing different types of key stakeholders as for example DSOs, TSOs, vendors, academia, citizens energy communities (CECs) and aggregators.

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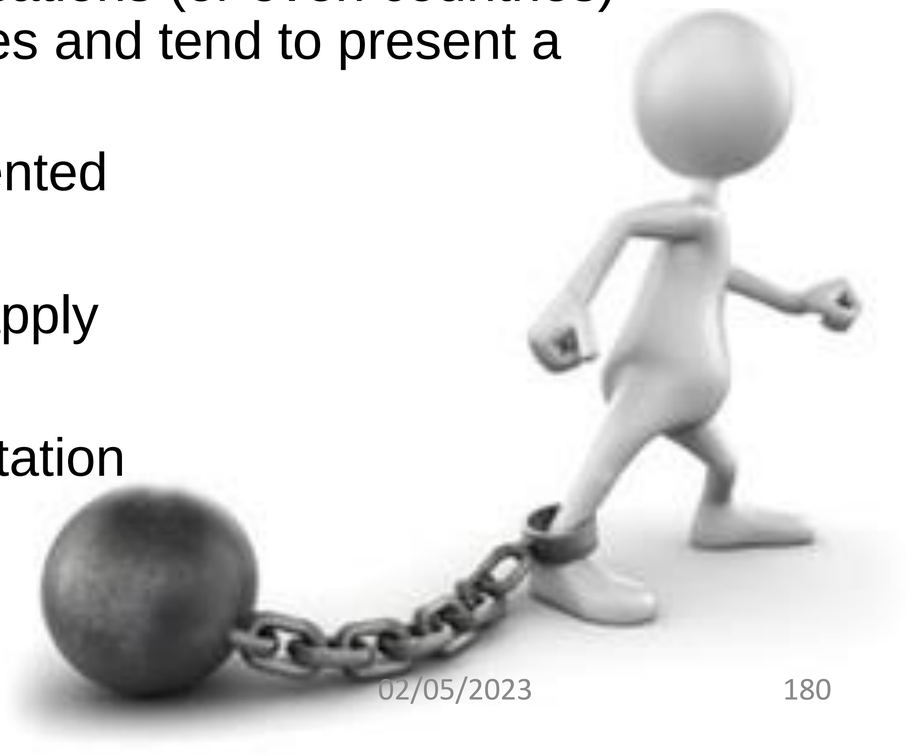
Limitations of the method

- The selected approach presents rather indicative than precise results, showing the most obvious gaps and shortages
- The interviewed and surveyed stakeholder represent different actors, belonging to the SmartGrid domain, and their views and opinions vary accordingly
- Several respondents have worked in several types of organisations (or even countries) throughout their carrier and accumulated different experiences and tend to present a consolidated view
- There is a certain level of personal opinions, which are presented at the interviews
- Since the number of interviews is limited, it is impossible to apply statistical methods for data analysis
- Compliance with GDPR brings several limitations on presentation of the results



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Challenges requiring implementation of Smart Grid Technologies

Implementation of Smart Grid Technologies is not an ultimate goal itself, but rather a tool to resolve certain challenges.

- **Massive introduction of distributed Renewable Energy Sources (RES):** The main challenge is high variability in production and limited controllability of electricity based on renewables.
- **Deployment of electric mobility**, especially in the major European cities
- Growing necessity for **consumers' empowerment and engagement.**
- Necessity to **improve the economics within the power sector**, making it more targeted, and to facilitate reliability and security of energy supply.
- **Optimal use of the existing assets** and avoiding stranded assets.

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Specific challenges requiring implementation of Smart Grid Technologies

Implementation of Smart Grid Technologies is not an ultimate goal itself, but rather a tool to resolve certain challenges.

- **Isolated systems:** Difficulties in operation of none-interconnected power systems at islands or need for increase of system's flexibility due to limited interconnection to other countries.
- **Legacies from the past:** Power systems in several focus countries, were initially developed as consistent parts of bigger energy systems

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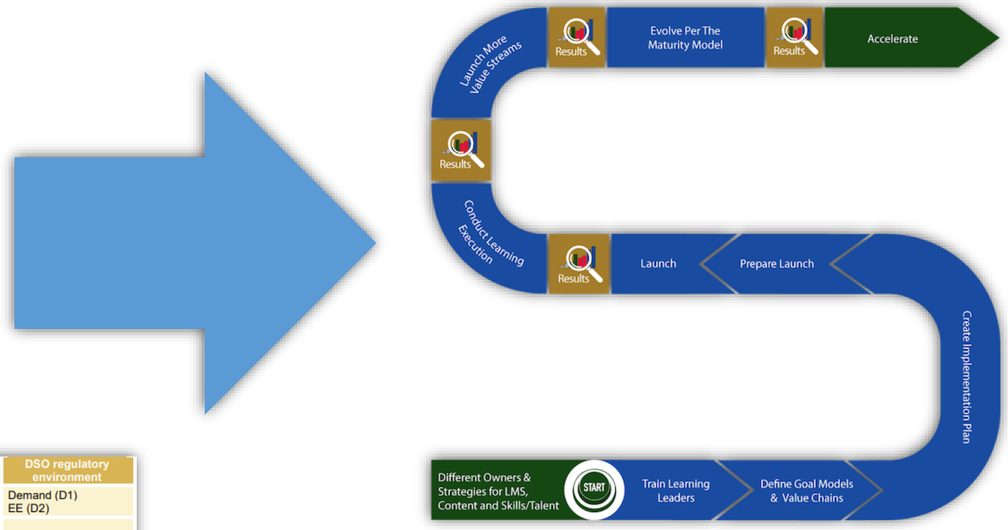
Technical priorities for Smart Grid Technologies: from a list to roadmap

Cluster	FO	Common topics: TSO/DSO collaborations
C1 – Modernization of the network	T1	DSO identified as contributors (investment signals to be sent to DSOs, i.e. delivery of planning tools for network development including TSO-DSO system development).
	T4	DSO identified as contributors.
C2 – Security and system stability	T5	Enhance the TSO/DSO communication interface and design new architecture for data exchanging and processing at various system levels and in different time frames, from short-term to long term (from real time operational planning to network planning).
	T6	DSO identified as contributors.
	T8	DSO identified as contributors: joint TSO / DSO approach for defence plans involving DER and micro-grids (expected RES in-feed of DSO at reconnection).
	T9	DSO identified as contributors: new ancillary services with more active contribution from demand and units connected at DSOs networks and from DSO facilities.
C3 – Power system flexibility from generation, storage, demand and network	T10	DSO identified as contributors.
	T11	DSO identified as contributors: integrate demand response at DSO level into TSO operations.
	T12	DSO identified as contributors.
	T14	DSO identified as contributors.
C4 – Economic efficiency of power system	T17	DSO identified as contributors.
C5 – Digitalization of power system	T18	DSO identified as contributors: develop together with TSOs protocols for data transfer

Cluster	Func	
C1 – Integration of smart customers and buildings	D1	Active demand r
	D2	Energy efficiency buildings
C2 – Integration of decentralised generation, demand, storage and networks	D3	System integrati
	D4	System integrati
	D5	Integration of sto
	D6	Infrastructure to transport
	D7	Integration with
	D14 **37** **38**	Integration of flexible decentralised thermal power generation
C3 – Network operations	D8	Monitoring and control of LV network
	D9	Automation and control of MV network
	D10	Smart metering data processing and other big data
C4 – Planning management		

	Upgrading of the network	Power System Flexibility	Power system reliability	ICT and digitalization	Market design	DSO regulatory environment
C1	Demand (D1) EE (D2)	Demand (D1) EE (D2)	Demand (D1) EE (D2)	Demand (D1) EE (D2)	Demand (D1) EE (D2)	Demand (D1) EE (D2)
C2	Small DER (D3) Medium DER (D4) Storage (D5) EV (D6) Integration of other energy networks (D7)	Small DER (D3) Medium DER (D4) Storage (D5) EV (D6) Integration of other energy networks (D7)	Small DER (D3) Medium DER (D4) Storage (D5) EV (D6) Integration of other energy networks (D7)	Small DER (D3) Medium DER (D4) Storage (D5) EV (D6) Integration of other energy networks (D7)	Small DER (D3) Medium DER (D4) Storage (D5) EV (D6) Integration of other energy networks (D7)	Small DER (D3) Medium DER (D4) Storage (D5) EV (D6)
C3	LV Monitoring (D8) MV Automation (D9) Smart metering (D10) Cyber security (D11	MV Automation (D9) Smart metering (D10) Flexible decentralised thermal generation (D14)	LV Monitoring (D8) MV Automation (D9) Smart metering (D10) Cyber security (D11)	LV Monitoring (D8) MV Automation (D9) Smart metering (D10) Cyber security (D11)	LV Monitoring (D8) MV Automation (D9) Smart metering (D10)	
C4	Planning (D12) Asset (D13)	Planning (D12) Asset (D13)	Asset (D13)	Asset (D13)	Planning (D12) Asset (D13)	



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Summary: Technical priorities or implementation path for addressing the future challenges

- **Advanced Metering Infrastructure (AMI), as a mandatory enabler of the next steps.** Proper utilisation of its potential however requires a set of actions, including standardisation, regulatory and administrative conditions, allowing to use and exploit the data
- **Enabling observability and controllability functions for DSOs**, which allow handling RES and deployment of EVs without compromising the overall reliability of the system
- **Enabling flexibility and Big Data technologies** for enhancing the planning and operation of the grid

- **Technical barriers:**
  - Strong concerns about standardisation issues and called for more research activities in this area
  - Potential lack of technical (electric power engineering) expertise in the close future

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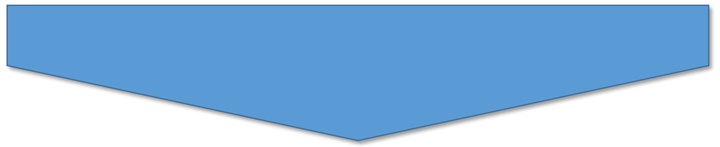
Non-technical part:
Incentives for involvement into R&I activities

- Variable regulatory practice towards System Operators across Europe (ref. Eurelectric). Some of the regulatory models encourage System Operators to get involved into R&I activities.
- Almost all countries have some kind of fiscal incentives related to R&I activities e.g., tax breaks (on VAT or labour) or tax credits on R&I activities



Necessity for having targeted incentivising support schemes, which will focus on specific technical areas, which need more R&I activities and comply with the NECP goals.

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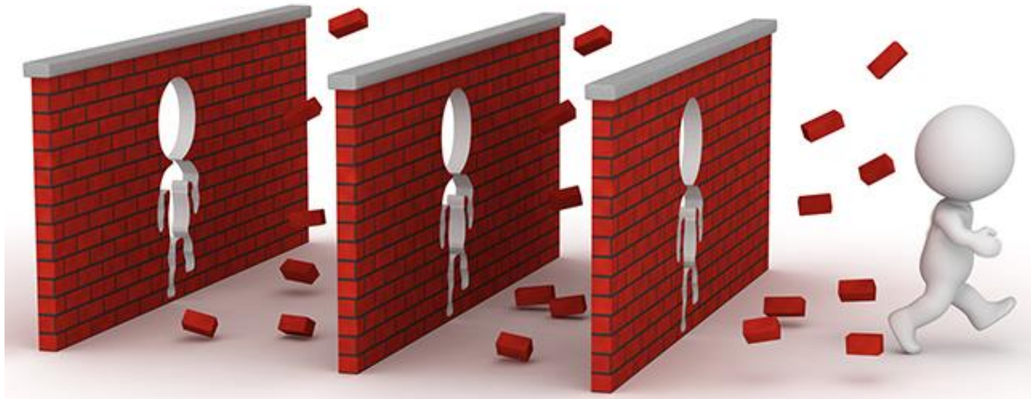
None-technical part:
Obsolete market design

- Need for **technology neutral markets**: many of the present market mechanisms are specific to a certain technology and can act as a barrier for entrance and implementing new technologies
- The present market design for electricity trading is based on **marginal production costs**
- Marked design for **flexibility products** is still missing, very few (if any) flexibility markets are operational



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None-technical part: other challenges

- National legislations:
  - Slow transposition of European Directives into national legislations
  - Need for more efficient and operational "sandboxes" in the Member states
- National decision-making and financing:
  - High level of bureaucracy, combined with low digitisation give delays in granting approvals and permissions
  - National funding programmes in some countries have very complicated and sometimes contradicting structure
  - Demanding application procedures at national levels
- Change of mindset both at industry and customer side is required so the new technology will be selected instead of conventional

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The role of the National Contact Points

- The EC defines a set of minimum standards for the NCPs giving MSs freedom to adapt and extend the NCPs role according to the national circumstances
- No negative feedback, NCPs carry out activities according to their mandates
- NCPs in general focus exclusively on support related to preparation of proposals and initiation of projects
- Proposals to:
  - Modify the existing scope of support services from NCPs, to be more pro-active involvement and focuses on specific areas
  - Support for running the European projects, especially when it comes to administrative and reporting tasks
  - NCPs will function much better if they are duly and constantly updated about the ongoing status R&I activities

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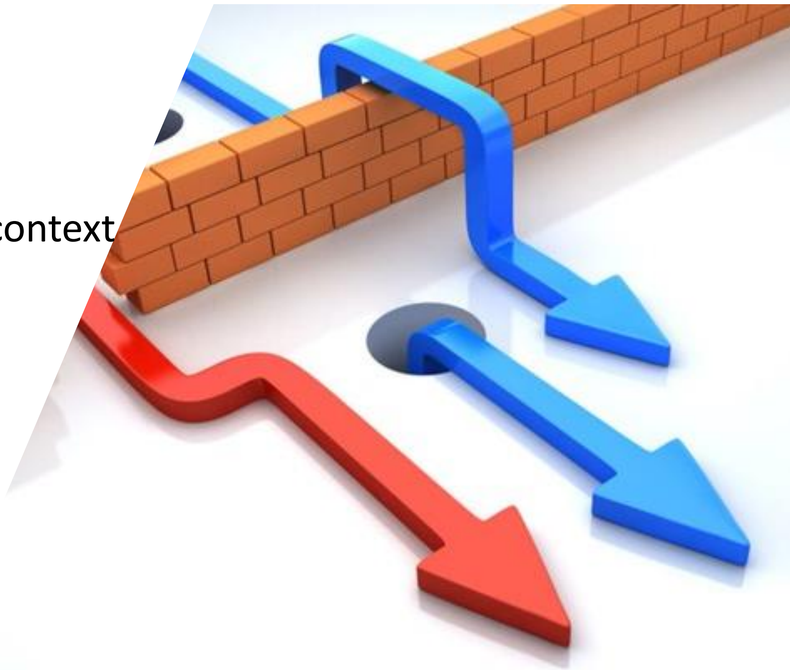
Overcoming the barriers: Best practices

- **Commonly financed R&I activities:**
  - Pooling resources from several industrial organisations for solving specific challenges is a well-established practice.
- **Mixed financing of R&I activities**
  - Combination of grants from the funding agencies wit industrial financing allows research with low TRL
- **Regional cooperation**
  - Allows more efficient replication of technologies and knowledge transfer among countries. Example: Nordic countries

- **Creation of regulatory "sandboxes"**
  - Regulatory sandboxes are defined as concrete frameworks which, by providing a structured context for experimentation, enable where appropriate in a real-world environment the testing of innovative technologies, products, services or approaches



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Creation of EIRIE – European Interconnection for Research Innovation & Entrepreneurship platform

- EIRIE's vision is to become a reference operational point to unify European activity, incentivize further investments in smart grids and support access to key exploitable results.
- The platform is hosted by JRC and cooperates with several other institutions
- Addressing the needs of countries that have lower R&I activities / investments

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Thank you for listening!

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Panel discussion: Opportunities to increase participation in joint R&I activities

International research collaboration opportunities: fostering EU Clean Energy transition in Lithuania: SUPEERA/PANTERA Joint Workshop

Vilnius, 2023-04-26

Andrei Morch, SINTEF Energy Research (Norway)

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Participants the Panel Discussion

- Mečislovas Kaulakis, LITGRID AB
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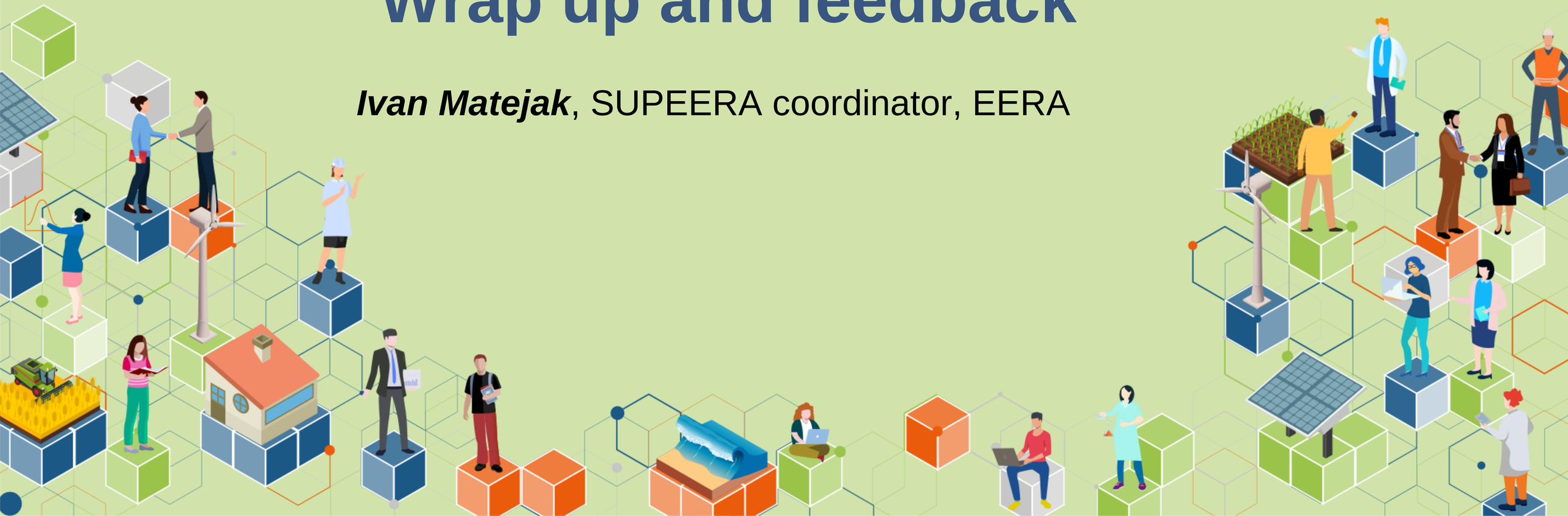
Wrap up and feedback

Ivan Matejak, SUPEERA coordinator, EERA