



# International research collaboration opportunities: fostering EU Clean Energy transition in Hungary

26 October 2022  
09:00 - 17:00 CEST

Location: Budapest University of Technology and Economics [Room: Pécsi Eszter]

Ivan Matejak, EERA

## ► Agenda 1/3

Time (EEST)	Topic	Speaker
9:00 – 9:30	Registration and coffee	
9:30 – 9:35	Welcome address	János Levendovszky, Vice-Rector for Science and Innovation
9:35 – 09:55	<p>The SUPEERA project: Mobilization of EU-13 national public research resources in the Clean Energy Transition: challenges and opportunities</p> <ul style="list-style-type: none"> <li>• SET Plan and CET - benefits and engagement possibilities</li> </ul> <p>Investment and reform measures for Hungary for CET</p>	Ivan Matejak, SUPEERA coordinator, EERA
09:55 - 11:00	<p>Panel discussion:</p> <ul style="list-style-type: none"> <li>• R&amp;I activities supporting clean energy transition in Hungary</li> <li>• Hungary's participation in EU funded projects</li> <li>• Hungary's involvement in the SET Plan</li> </ul>	<ul style="list-style-type: none"> <li>• Representative from the Hungarian Ministry of Economics/Energy/Environment</li> <li>• Kuttel Horsolia</li> <li>• Mr Akos Horvath</li> <li>• Mr Zsolt Bertalan</li> </ul> <p><b>Moderator: Ivan Matejak</b></p>

## ► Agenda 2/3

<b>11:00 – 11:15</b>	<b>Coffee break</b>	
<b>11:15 – 11:30</b>	R&I opportunities for collaboration and funding: Horizon Europe <ul style="list-style-type: none"> <li>- Clean Energy Transition Partnership</li> <li>- Widening Calls</li> </ul>	<b>Spyridon Pantelis</b> , Project Manager, EERA
<b>11:30 - 12:20</b>	Panel discussion: Opportunities to increase participation in join R&I activities	<ul style="list-style-type: none"> <li>• Daniel Horn – Centre of Economics and Regional Studies</li> <li>• Borbála Schenk - Chief European research Funding advisor</li> <li>• Chadvar Ivanov – Managing Director at gridDigt</li> </ul>
<b>12:20 - 13:45</b>	<b>Lunch and networking</b>	



## ► Agenda 3/3

13:45 - 14:15	<b>PANTERA project and EIRIE</b>  The EIRIE platform in support of the R&I community in Hungary: Objectives and opportunities Functionalities and tools facilitating the work of stakeholders • Actively participating & contributing on the EIRIE platform: The Hungary corner and its role in bringing together the stakeholders that matter most for Hungary and its R&I community	<b>Mattia Cabiati (RSE - PANTERA Project)</b>
14:15 - 14:35	Interactive session	<b>Mattia Cabiati (RSE - PANTERA Project)</b>
14:35 - 15:05	Outcomes of PANTERA interaction with the stakeholder: challenges and barriers for R&I activities in the Smart Grids domain	<b>Andrei Morch, PANTERA project, SINTEF</b>
	Open discussion and Q&A	<b>Andrei Morch (PANTERA, SINTEF) &amp; Rad Stanev (PANTERA, TU Sofia)</b>
15:05 - 15:35	Wrap up and feedback	<b>Ivan Matejak, SUPEERA coordinator, EERA, Belgium</b>
15:45 - 17:00	Networking	

## ► 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.

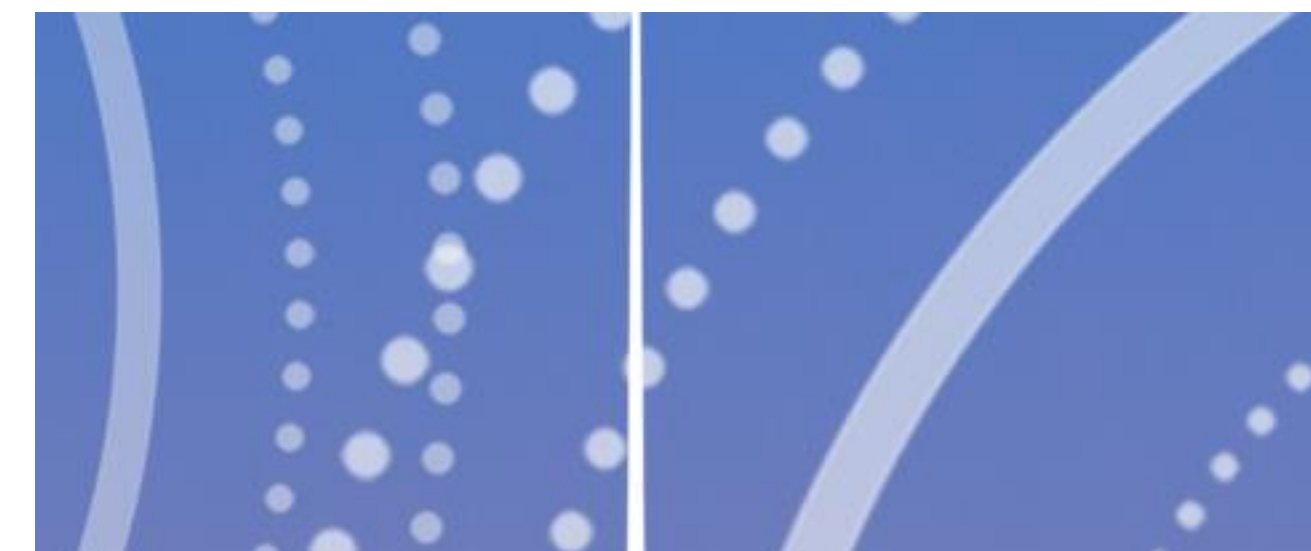
LOW- CARBON  
TECHNOLOGIES



MATERIALS



SYSTEMIC  
TOPICS





## 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.**



## ► The new European/World Context

Revamping SET Plan

REPower EU

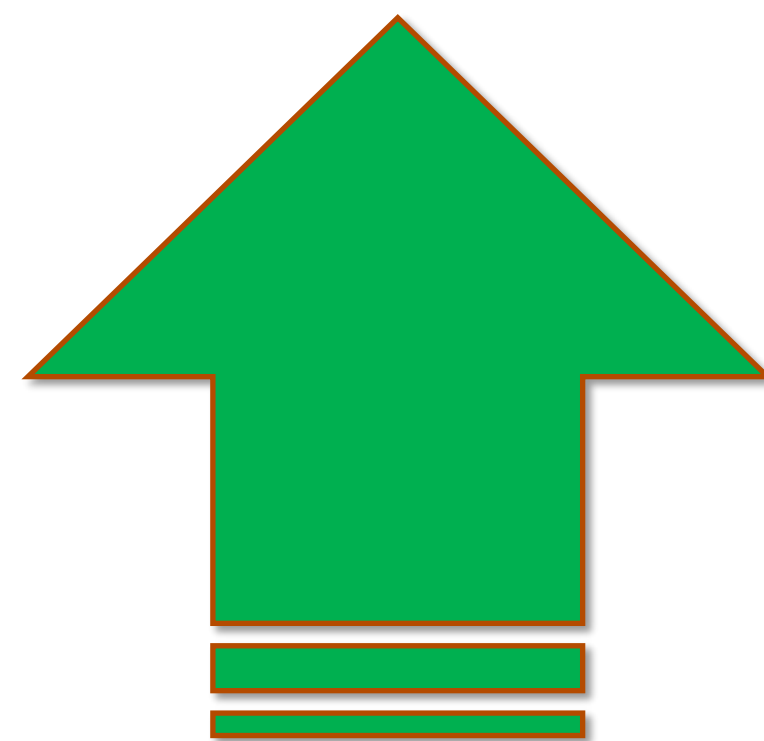
EU Green Deal

Energy crisis emergency

New Energy Paradigm

EU Strategic Autonomy

New Geopolitical Order

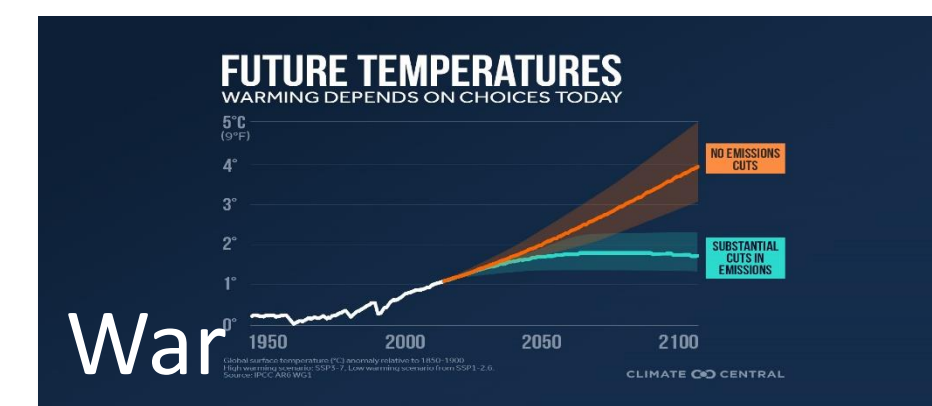


200 – 700 M migrants 2050

2° in 2050, 3°-4° in 2100

Rebound Fossil invest.

Increasing emissions





## Strategic Energy Technology (SET) Plan

Established in 2007 (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 innovations 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

- #1 Performant renewable technologies integrated in the system
- #2 Reduce costs of technologies

- #3 New technologies & services for consumers
- #4 Resilience & security of energy system

- #5 New materials & technologies for buildings
- #6 Energy efficiency for industry

- #7 Competitive in global battery sector and e-mobility
- #8 Renewable fuels and bioenergy

- #9 Carbon capture storage / use

- #10 Nuclear safety

### 13 implementation working groups

- Offshore wind
- Photovoltaics
- Deep geothermal
- Ocean energy
- Concentrated solar power / Solar thermal electricity

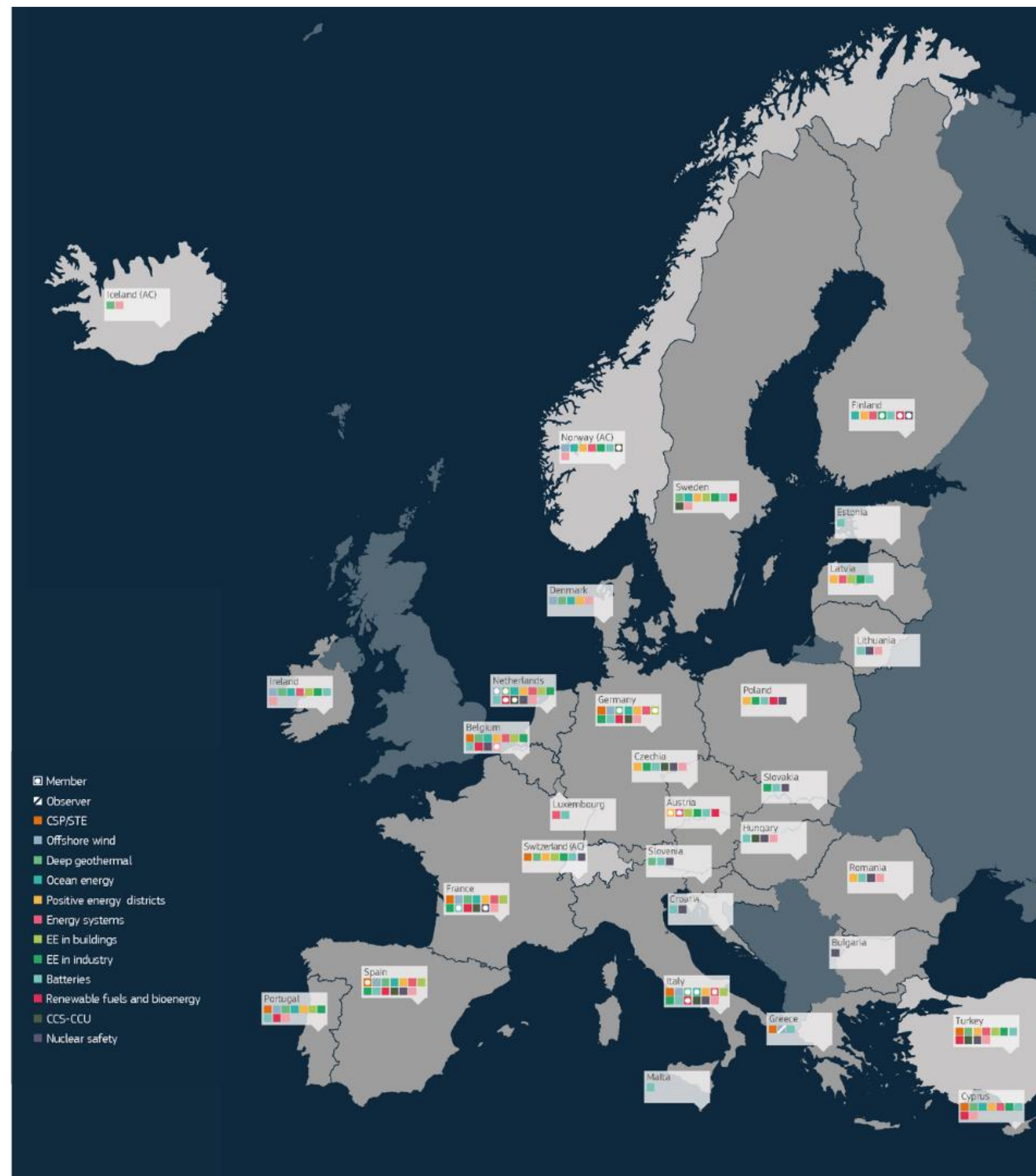
- Energy systems
- Positive energy districts

- Energy efficiency in buildings
- Energy efficiency in industry

- Batteries
- Renewable fuels and bioenergy

- Carbon capture and storage
- Carbon capture and utilisation (CCS – CCU)

- Nuclear safety



## ► The gap in relation to the SET Plan

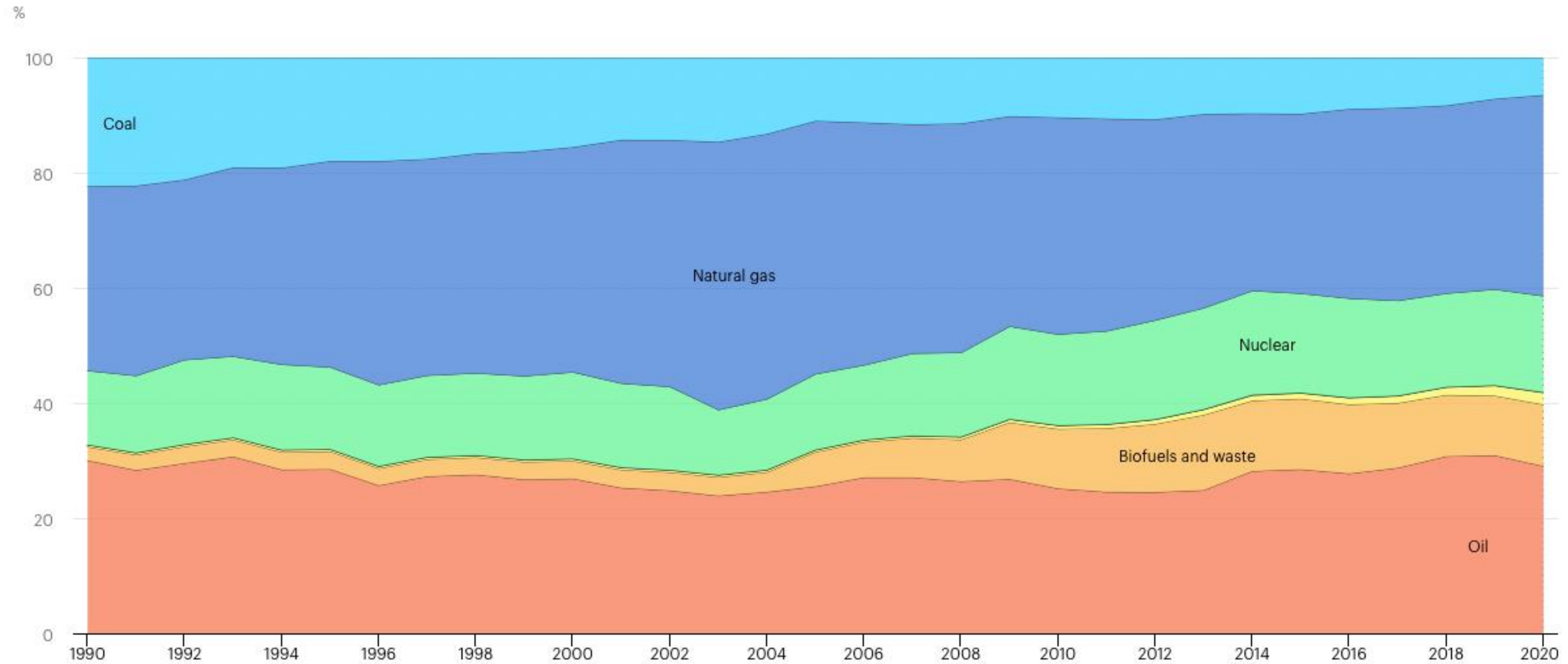
### EU13 participation to SET Plan Implementation Working Groups (IWGs)

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					

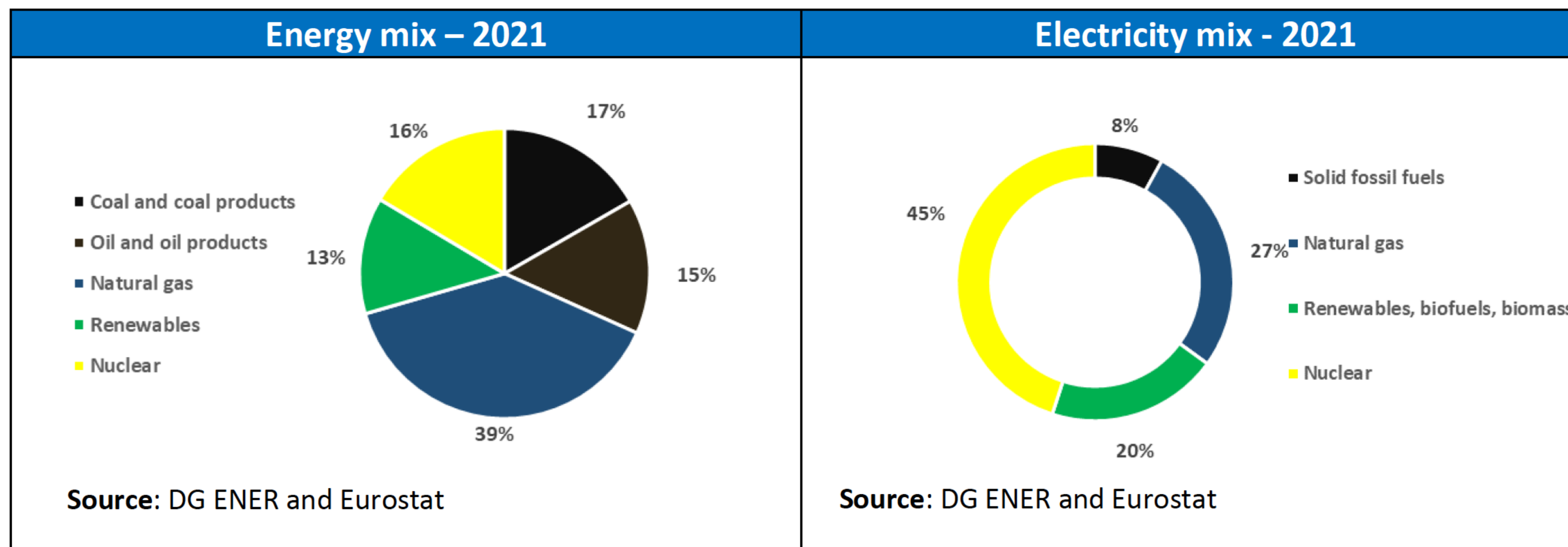
All EU13 countries participate in the SET IWGs, with Cyprus being the most active country.

EU13 involvement is mostly circumscribed to nuclear safety, batteries, energy efficiency in industry and positive energy districts.

## ► Hungary's energy sector, total energy supply (TES) by source



## ► Hungary's energy sector, energy/electricity mix and dependencies



### Dependency from Russian fossil fuels (2020) <sup>(c)(d)</sup>

	Gas	Oil	Coal
EU27	44%	26%	54%
HU	95%	61%	22%

Source: Eurostat (nrg\_ti\_sff, nrg\_ti\_oil, and nrg\_ti\_gas)

## ► Main background information on Hungary's energy sector

### Renewable energy

- HU became one of the first countries in Central Europe to put a carbon neutrality goal for 2050
- Share of renewable energy sources in gross final energy consumption increased rapidly since 2017 to reach 12.6% in 2019 and 13.9% at the end of 2020, exceeding the 13% target that Hungary had for 2020, but below 2030 ambition of 21%
- HU is aiming for 90% of its electricity generation to come from low-carbon sources by 2030

### Energy crisis

- Hungary declared a state of energy emergency in July 2022
- Increase of domestic gas and coal production, additional gas imports from Russia (RU accounted for 61% of crude oil imports and 95% of gas imports in 2020) and increase of output of the Mátra coal power plant
- Under consideration the extension of the lifetime of the four reactors



## ► Hungarian in the SET Plan and CET

### SET Plan

- HU participates in four Implementation Working Group: Nuclear Safety, HVDC,, CCS-CCU and Batteries (withdrawal from PV)
- HU's NECP marginally mentions the SET Plan "Where applicable, cooperation with other Member States in this area, including, where appropriate, information on how the SET plan objectives and policies are being translated to a national context ...", same wording as in BG

### CET in the Recovery Plan

- Hungary is the last EU member state whose National Recovery and Resilience Plan (NRRP) to fund post-pandemic recovery has not yet been approved by the EC. Unless the plan is approved before the end of 2022, Hungary could lose access to 70% (EUR 4.1bn) of EUR 5.9bn allocated to implement the plan.





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 Hungary in H2020

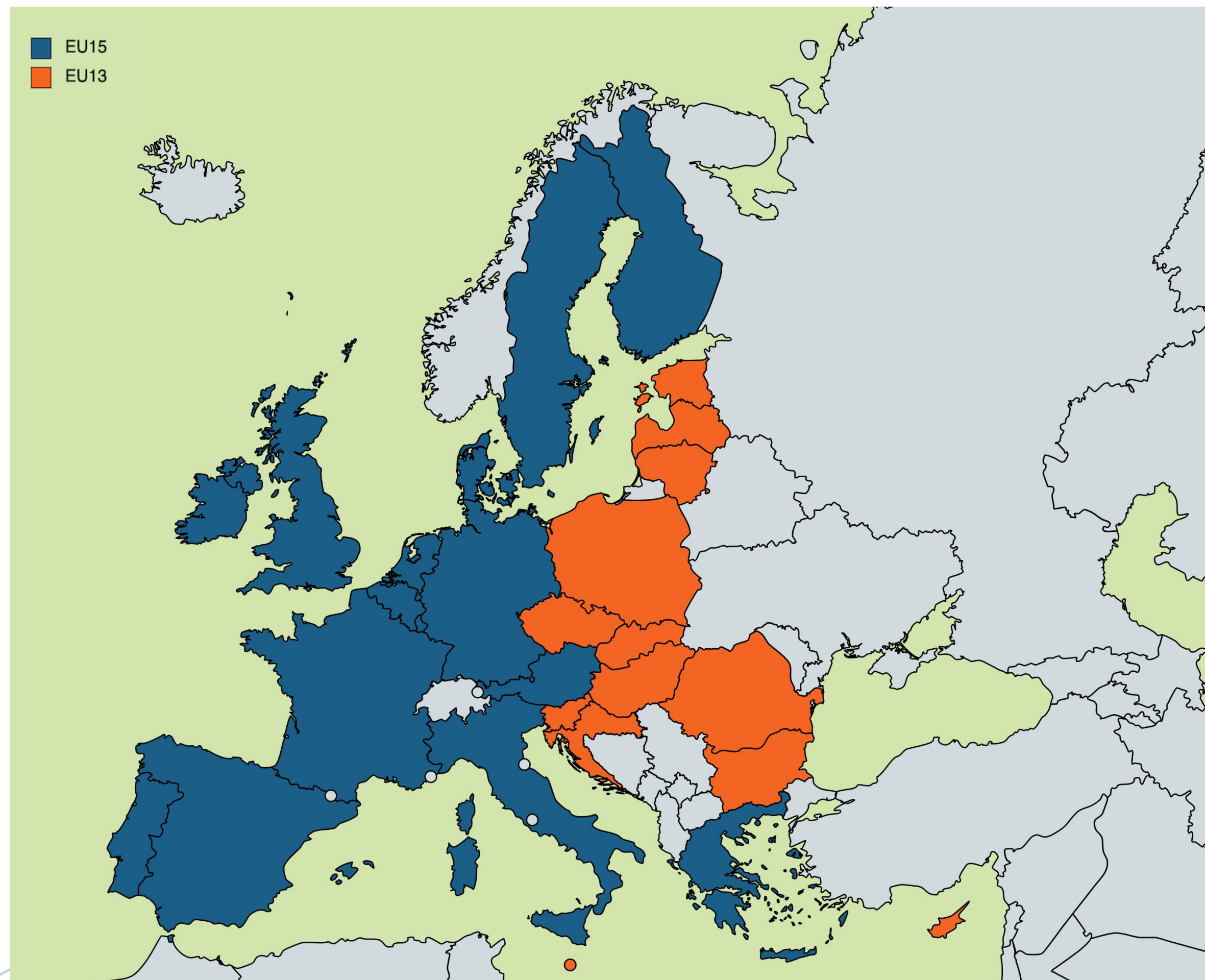


# ► Introductory note

The research and innovation gap between EU13 and EU15 Member States



## ► The R&I gap between EU13 and EU15 Member States

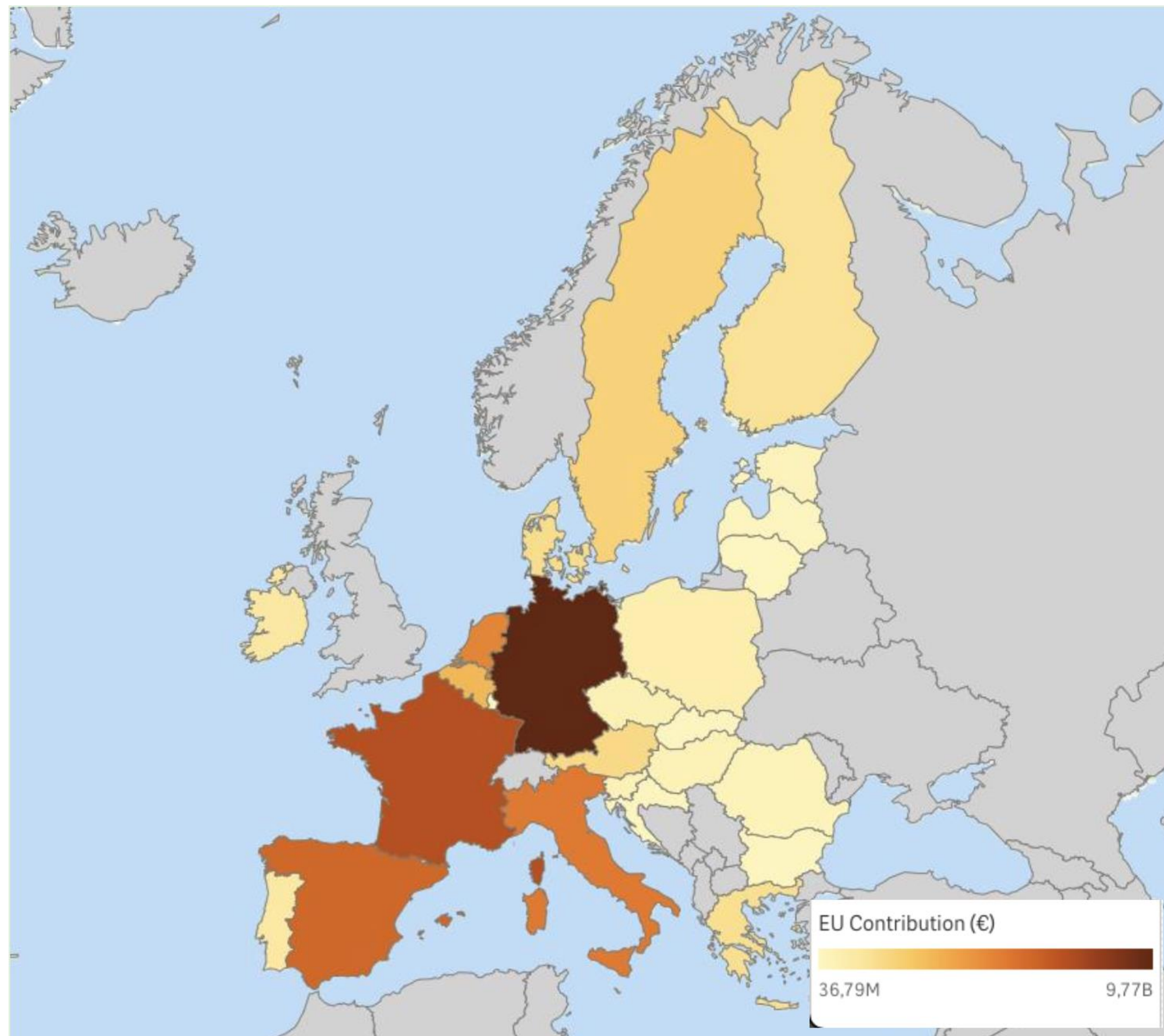


The **research and innovation (R&I) gap** in the EU is a pressing **challenge**, especially in consideration of the **2030** and **2050 climate goals**.

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



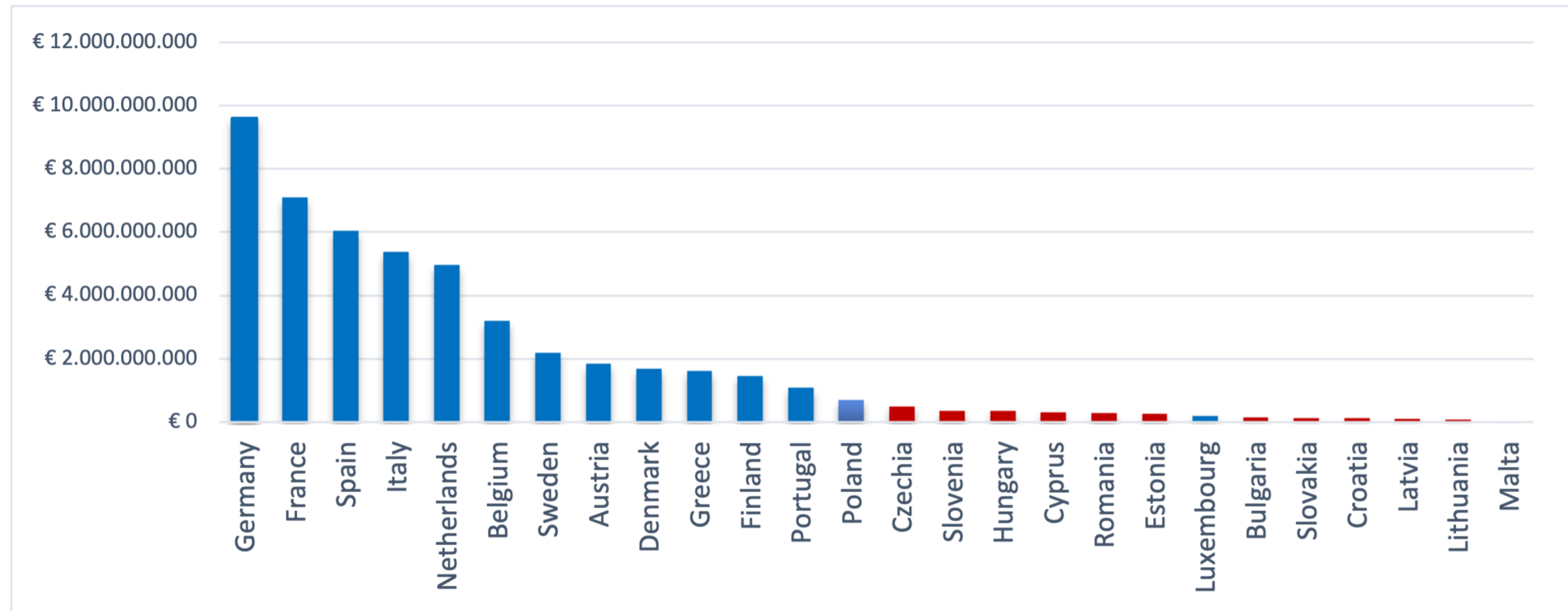
The limited commitment to the SET Plan reflects in **low H2020 performance**.

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.

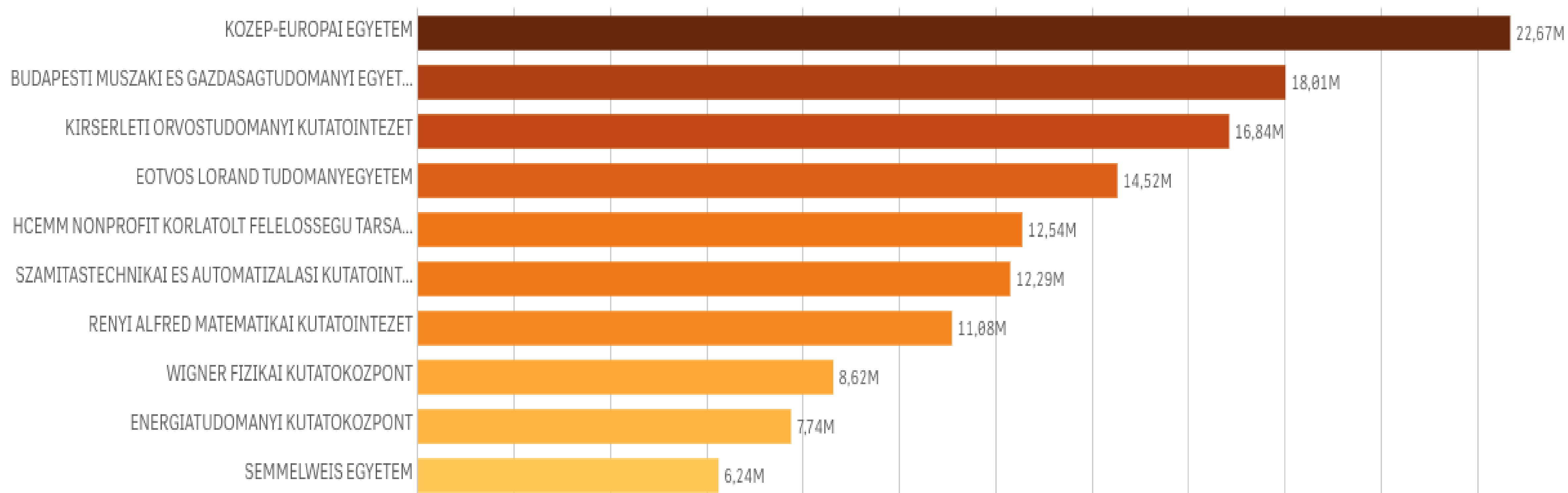
→ Among the EU15 countries, **Luxembourg** is the country receiving the lowest share from Horizon 2020 (EUR **189 million**), while **Germany** receives the highest contribution of EUR **9 600 million**



## ► Hungary's H2020 performances

Sample	H2020 signed grants	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)
Hungary	1.144,00	1.552,00	0,99%	370,80	0,60%
EU total	37.719,00	156.647,00	100%	61.660,00	100%
EU13 total	6.366,00	15.182,00	9,69%	3.590,00	5,82%
EU15 total	31.353,00	141.465,00	90,31%	58.070,00	94,18%

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



## ► Hungary's Horizon Europe performances

Sample	H2020 signed grants	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)
Hungary	137,00	169,00	0,90%	40,78	0,55%
EU total	4.051,00	18.879,00	100%	7.481,70	100%
EU13 total	846,00	2.099,00	11,12%	521,70	6,97%
EU15 total	3.205,00	16.780,00	88,88%	6.960,00	93,03%

# ► 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

Build a pan-European expert network to share knowledge and develop leading-edge expertise in the field of clean energy.

2

Participate in the structuring of the research field by creating critical mass, avoiding duplication, and leveraging the best R&I capabilities.

3

Gain visibility at EU and international level and influence the EU policymaking process.

4

Collaborate with international initiatives on both bilateral and multilateral levels.



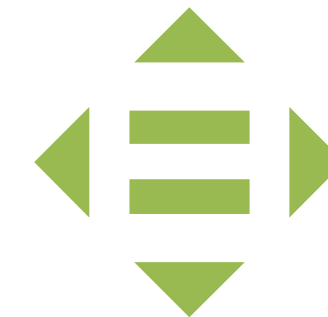
As part of the process of becoming a trusted advisor to the EU on the Clean Energy Transition, we are strengthening our 18 Joint Programmes to develop them into European Centres of Excellence with the purpose of achieving:



Higher level of cross-border collaboration.



Higher integration with existing/planned national strategies & funding.



Higher focus on EU strategic technologies and CET priorities.



Higher integration with industry / European Industrial Alliances.







# International research collaboration opportunities: fostering EU Clean Energy transition in Hungary

26 October 2022  
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Location: Budapest University of Technology and Economics [Room: Pécsi Eszter]

**International research  
collaboration opportunities  
fostering EU Clean Energy  
transition in Hungary –  
PANTERA / SUPEERA joint  
workshop**

Budapest, November 26, 2022



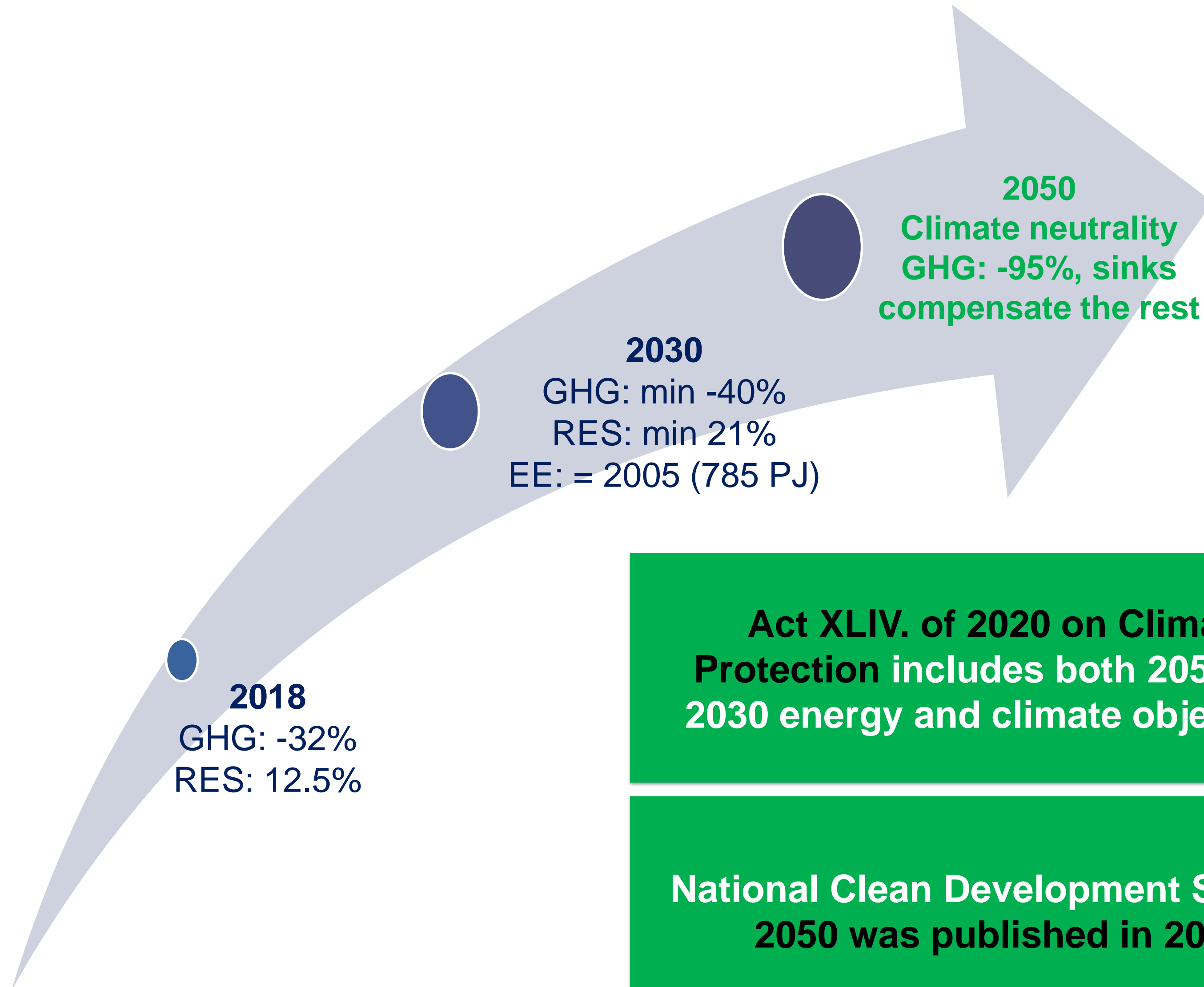
# **Towards a carbon neutral Hungary**

**Dr. Péter Kaderják**

Head of Zero Carbon Hub at the Budapest University of Technology and Economics  
Managing Director, Hungarian Battery Association (HUBA)



# Towards 2050 climate neutrality: long- and midterm energy & climate targets



**Act XLIV. of 2020 on Climate Protection includes both 2050 and 2030 energy and climate objectives**

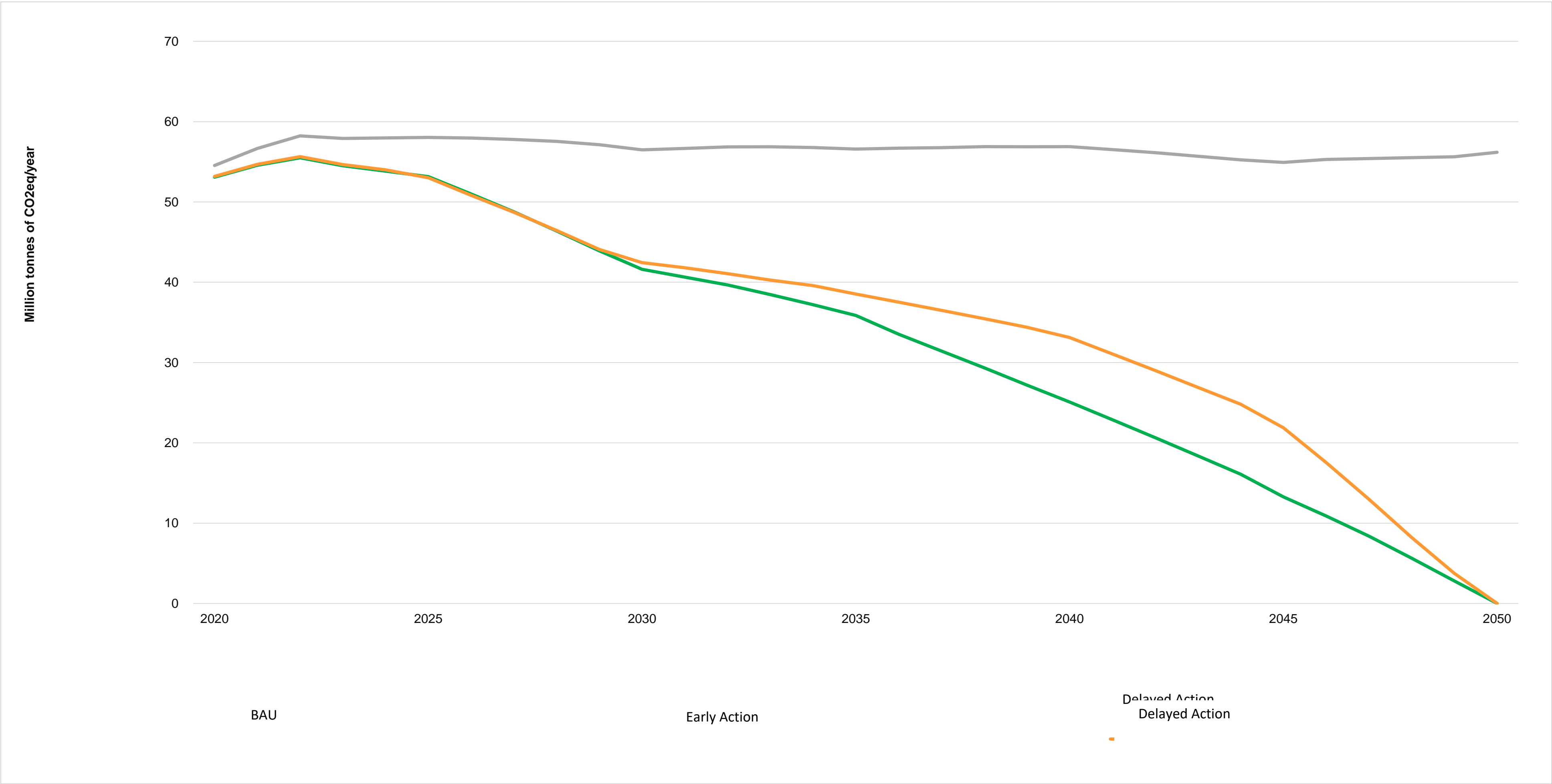
**National Clean Development Strategy 2050 was published in 2021**

2030 objectives are under revision to comply with Fit for 55

# Reaching net zero by early action in Hungary requires € 2.4 Bn/y additional annual investment over three decades



## Net Greenhouse Gas (GHG) emission scenarios for Hungary, CO2eq/y



**2019 net energy import bill of Hungary: € 5 Bn!**

**Early Action**  
(frontloading of green investments)  
**brings the highest societal benefits**

# Green Economic Development Agenda of Hungary



Electrification and electricity sector decarbonisation

Greening the transport sector

Developing the market for energy efficiency

Promoting renewable heat solutions (e.g. geothermal)

Developing the hydrogen economy

Developing the battery value chain

Carbon Capture, Use and Storage (CCS/CSU)

Digitalization and AI to promote decarbonisation

Greening the financial market (e.g. green bonds)

Agriculture and LULUCF reform

Circular economy

Promoting green jobs, R+D+I and local supply chain

# About BME Zero Carbon HUB (ZKK)



**The mission of BME ZKK** is to serve Hungary as an interdisciplinary knowledge hub to reach climate neutrality by 2050

**BME ZKK believes** that green transition is a long term economic development program with technology and business innovation in its focus

**BME ZKK contributes to green transition** by high value added solutions from original research and research cooperation with government, industry and international partners

**BME ZKK was established** at the Budapest University of Technology and Economics (BME) by the initial support of the Ministry for Innovation and Technology in April, 2021

## ZKK seeks to promote the use of green innovations in the following main areas:



Decarbonisation and  
digitalisation of the  
electricity sector



The greening of transport



Energy efficiency market



Hydrogen economy



Battery industry



Renewable energy  
technologies



Green investment



Green Industrial  
Development

**Thank you for your attention!**

zerocarbonhub.hu  
kaderjak.peter@bme.hu

**ZKK** — knowledge centre for the  
development of the Hungarian green  
economy





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# Hungary's Horizon Europe performance in the field of energy

**Küttel Orsolya**

**National Research Development and Innovation Office**

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

SUPEERA and PANTERA joint workshop

Budapest, 26/10/2022

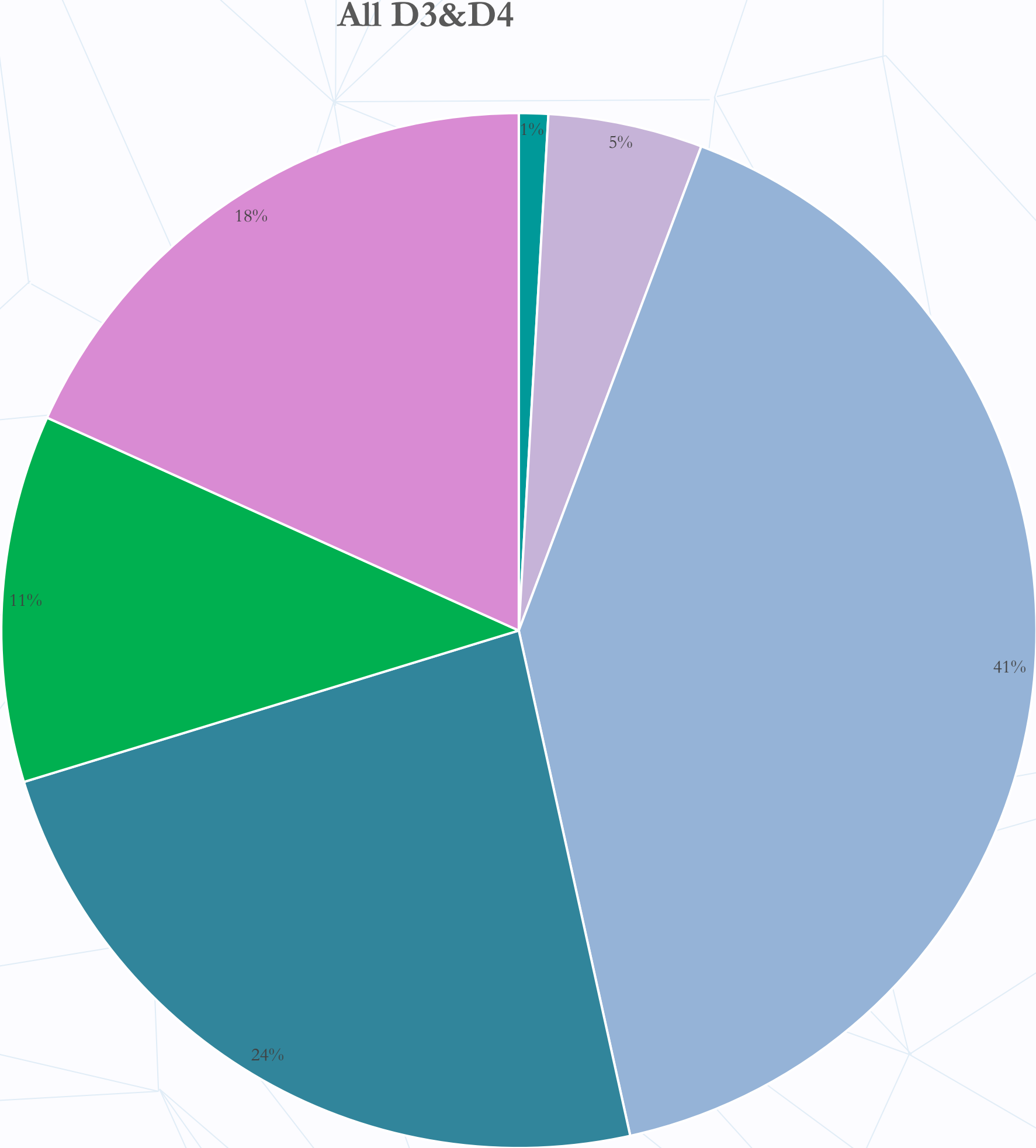
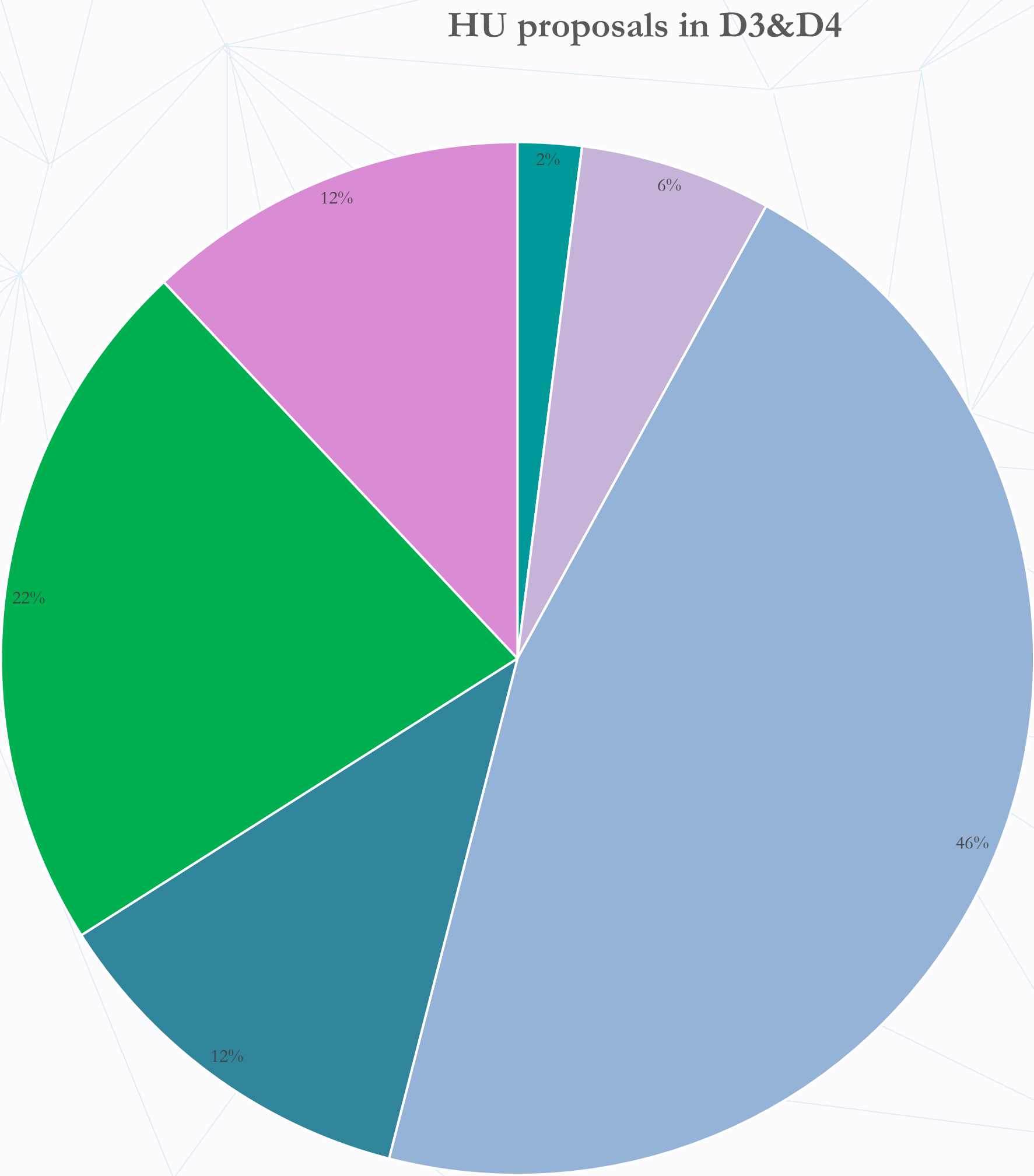


# Horizon Europe Cluster 5 | Dest. 3 & 4 proposals overview

			HU results (# of proposals)						# of submitted proposals	# of mainlisted projects
	Deadline	Budget (M EUR)	Inadmissible	Ineligible	Below threshold	Below available budget	Reserve list	Main list		
HORIZON-CL5-2021-D3-01	2021/10/20	108	-	-	-	-	-	1*	11	7
HORIZON-CL5-2021-D3-02	2022/01/05	230,8	-	-	6	1	2	1	180	42
HORIZON-CL5-2021-D3-03	2022/02/23	280	-	1	13	3	2	-	292	49
HORIZON-CL5-2022-D3-01	2022/04/26	381	1	1	2	1	6	1	196	35
HORIZON-CL5-2021-D4-01	2021/10/19	66	-	1	2	-	-	-	55	9
HORIZON-CL5-2021-D4-02	2022/01/25	38	-	-	-	1	1	3	34	5
Total		1 103,8	1	3	23	6	11	6	768	147

*\*Co-funded Clean Energy Transition Partnership*

# Horizon Europe Cluster 5 | Dest. 3 & 4 highlights I



- Inadmissible
- Ineligible
- Below threshold
- Below available budget
- Reserve list
- Main list

# Horizon Europe Cluster 5 | Dest. 3 & 4 highlights II



# NCP support system

**Extended network of  
National Contact Points  
(NCPs)**

**Trainings**

**Financial and legal advise**

**Evaluators' forum**

**Promotional activities  
(events, website)**

**University Innovation  
Ecosystem**

**Network of international  
coordinators in National  
Laboratories**

**HE support schemes (grants,  
national funding)**

**Liaison office in Brussels  
*(to be set up)***

# Incentives in the Hungarian RDI system



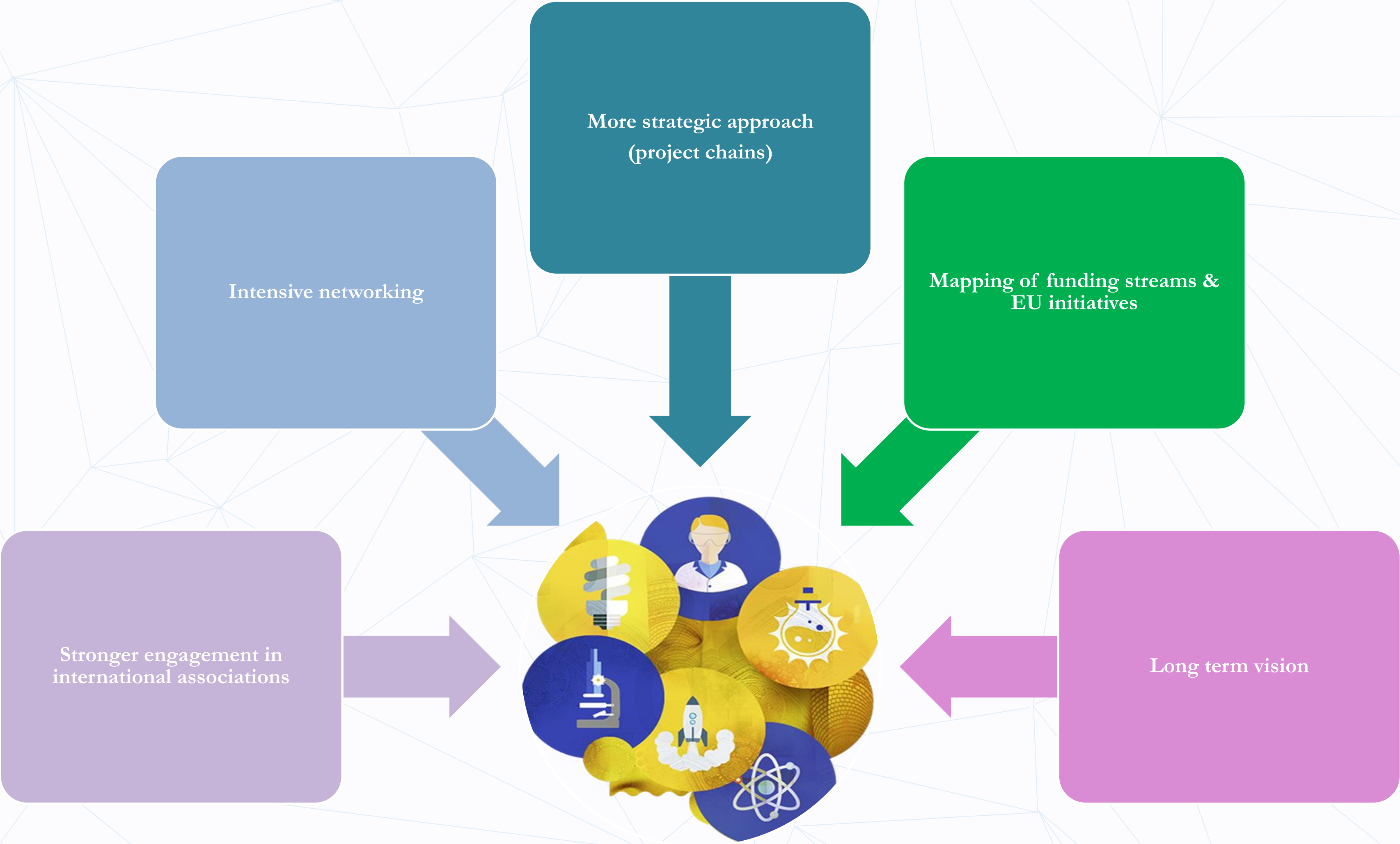
Domestic calls for proposals targeting innovative firms - rewarding successful HE activity with extra points

Introduction of KPIs and binding commitments under the HE programme in domestic calls for proposals targeting HES, research institutes, National Laboratories and Science Parks

Encourage consortia - joint university-company - applications to the HE programme through the University Innovation Ecosystem programme

More extensive use of HE evaluation criteria and application procedure for domestic RDI CfPs and more extensive use of English language applications

# Room for improvement



2027: 2,18 %

# Thanks for your attention.

[orsolya.kuttel@nkfih.gov.hu](mailto:orsolya.kuttel@nkfih.gov.hu)

National Research, Development and Innovation Office

[www.nkfih.gov.hu](http://www.nkfih.gov.hu)

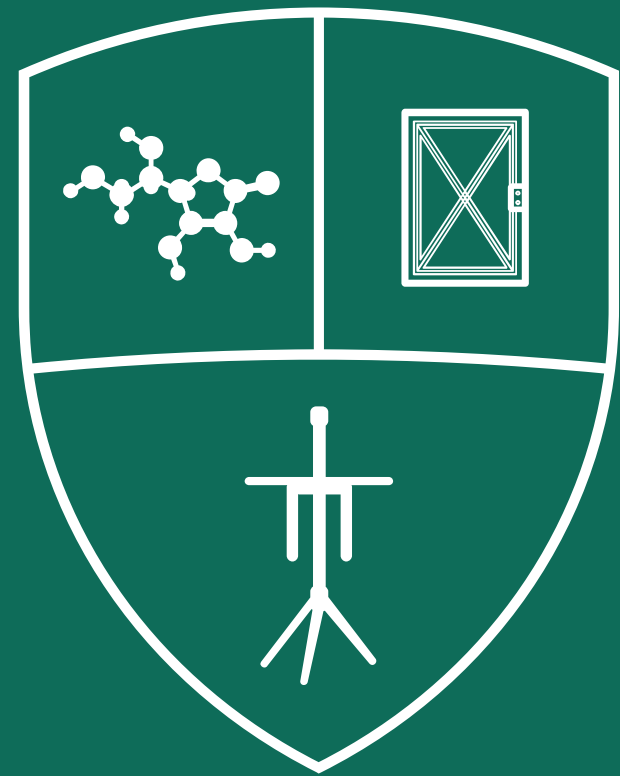
<https://www.horizonteuropa.nkfih.gov.hu/>



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**ELKH**

Eötvös Loránd  
Kutatói Hálózat



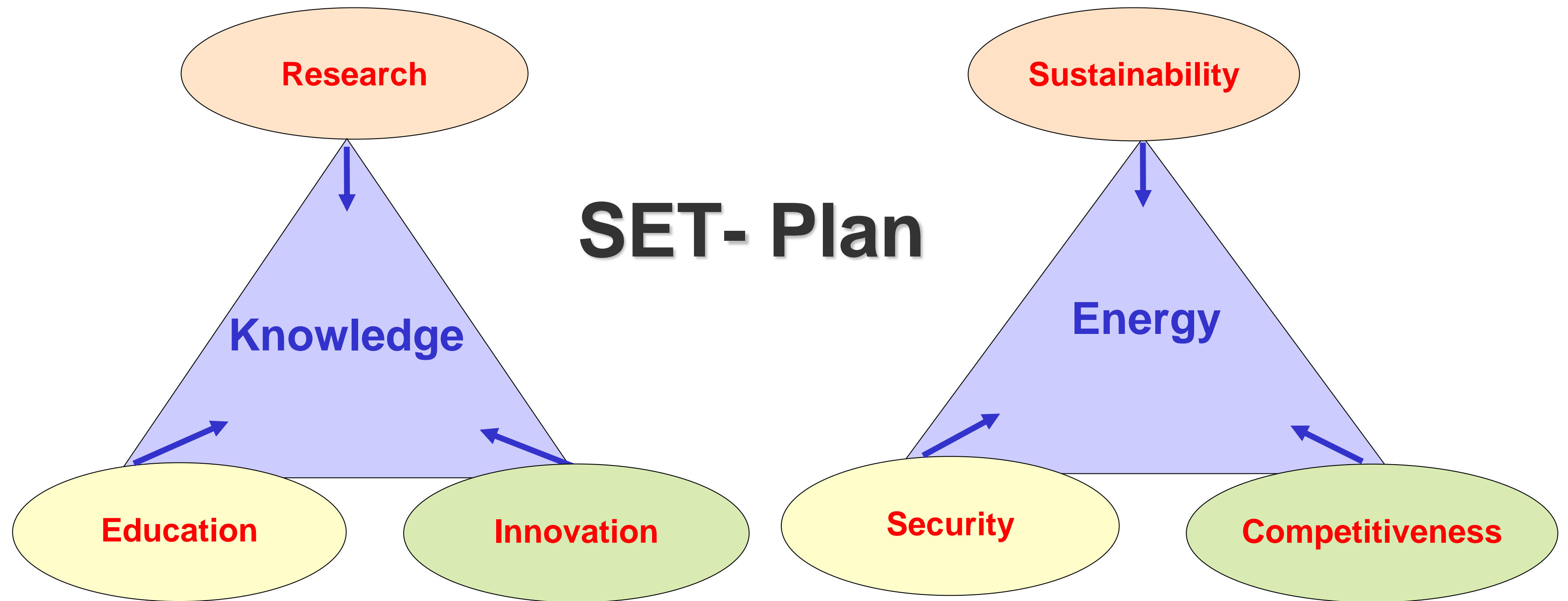
Centre for  
Energy Research

**Dr. Ákos Horváth**  
Director general

# SET Plan objectives and the Hungarian Nuclear Energy R&D Program

# The Strategic Energy Technology Plan

## Coupling energy and knowledge



**Research - Development  $\longleftrightarrow$  Demonstration – Deployment**

**Has nuclear energy a role to play ?**

# Nuclear energy in the SET-plan

## ➤ **Key EU technology challenges to meet 2020 targets**

- ✓ Maintain competitiveness in fission technologies, together with long-term waste management solutions



## ➤ **Key EU technology challenges to meet 2050 vision**

- ✓ Complete the preparations for the demonstration of a new generation (Gen-4) of fission reactors for increased sustainability

## ➤ **Priority initiatives launched from 2008 onwards**

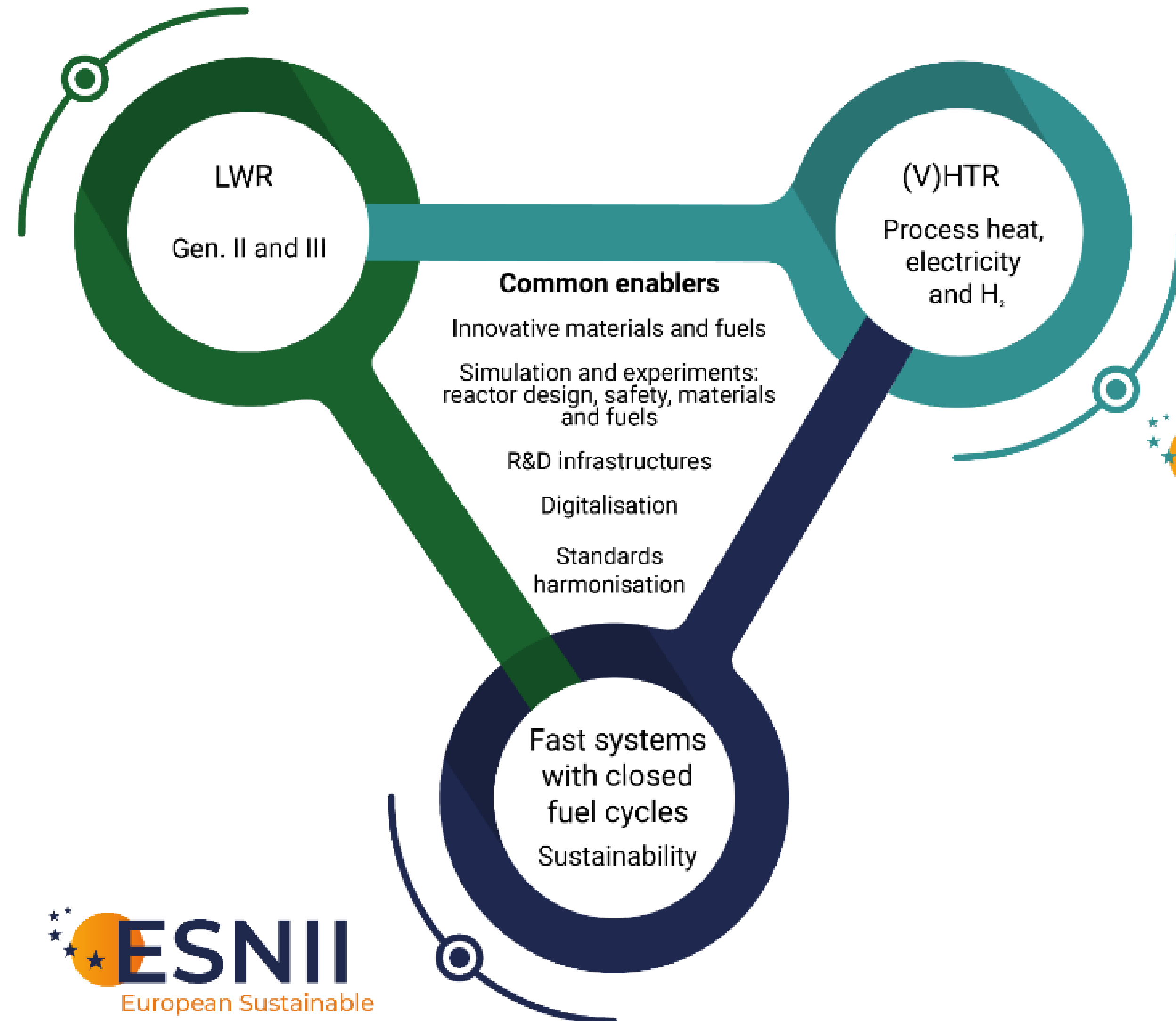
- ✓ Sustainable nuclear fission initiative focusing on the development of Generation-4 technologies

# Sustainable Nuclear Energy Technology Platform (SNETP)

- SNETP was set up in 2007 under the auspices of the European Commission with the goal to **support technological development for enhancing safe and competitive nuclear fission in a climate-neutral and sustainable energy mix.**
- In line with the objectives of the SET-Plan and the European Green Deal, SNETP aims to contribute to:
  - Lowering European greenhouse gas emissions
  - Assuring security of energy supply for Europe
  - Stabilizing electricity prices in Europe
- The association gathers various types of stakeholders: industry, research centres, safety organisations, universities, non-governmental organisations, SMEs, etc.



# Three Pillars



# SNETP members



# The Hungarian nuclear R&D program

Nuclear energy is part of the National Energy Strategy of Hungary with  $\approx 40\%$  share in electricity production.

Hungary operates four VVER440 units at Paks. The operating licence of the existing NPPs will be extended until 2030 .

The Government decided (in 2009) to build new units in order to replace the old ones. In connection with the new nuclear units the **Hungarian Sustainable Nuclear Energy Technology Platform** was founded in 2010 with all important stakeholders in the country.

The Technology Platform created the Vision report and the Strategic Research Agenda of the Hungarian Nuclear R&D program. The SRA has been updated recently in 2021.



The Centre for Energy Research (EK or CER) is the largest Hungarian institute in nuclear studies: nuclear safety, security and fusion engineering are in the portfolio.

EK operates the Budapest Research Reactor since 1959.

EK is the main consultant of Paks Nuclear Power Plant in nuclear safety related matters and one of the Technical Support Organisations of the Hungarian Atomic Energy Authority

EK is a Collaborating Centre in Nuclear Forensics for International Atomic Energy Agency.





## Nuclear Safety

Research on the safety of Paks NPP: coupled code development, OECD NEA related projects

Closing the fuel cycle (long term international projects), ALLEGRO (Euratom)

Fusion energy (Diagnostics, plasma physics research), ITER (Eurofusion), JT-60SA, Wendelstein

## Energy storage, hydrogen economy

Cathalitic water splitting, methane dry reforming (H<sub>2</sub> and synthetic fuel)

Energy storage in the grid, stability of the electric network

Electric network topology analysis, study of transients

## Materials sciences and energy saving

Sensor development on physical, chemical, biological phenomenon

Functional materials (think layers, 2D materials), ERA-NET

Heritage science (supporting museums with analytical capabilities), H2020

## Environment chemistry

Sewage water cleaning with advanced oxidation technology

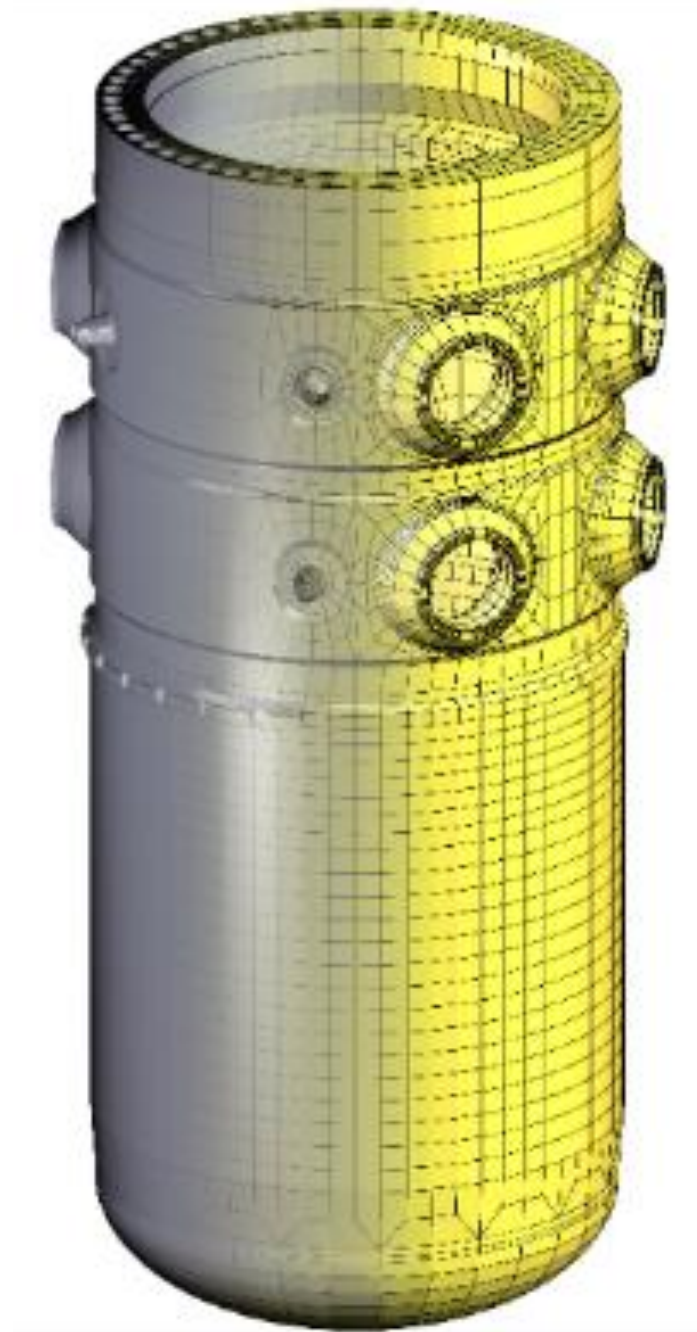
Safe storage of radioactive waste (Euratom)

## Space research (space dosimetry)

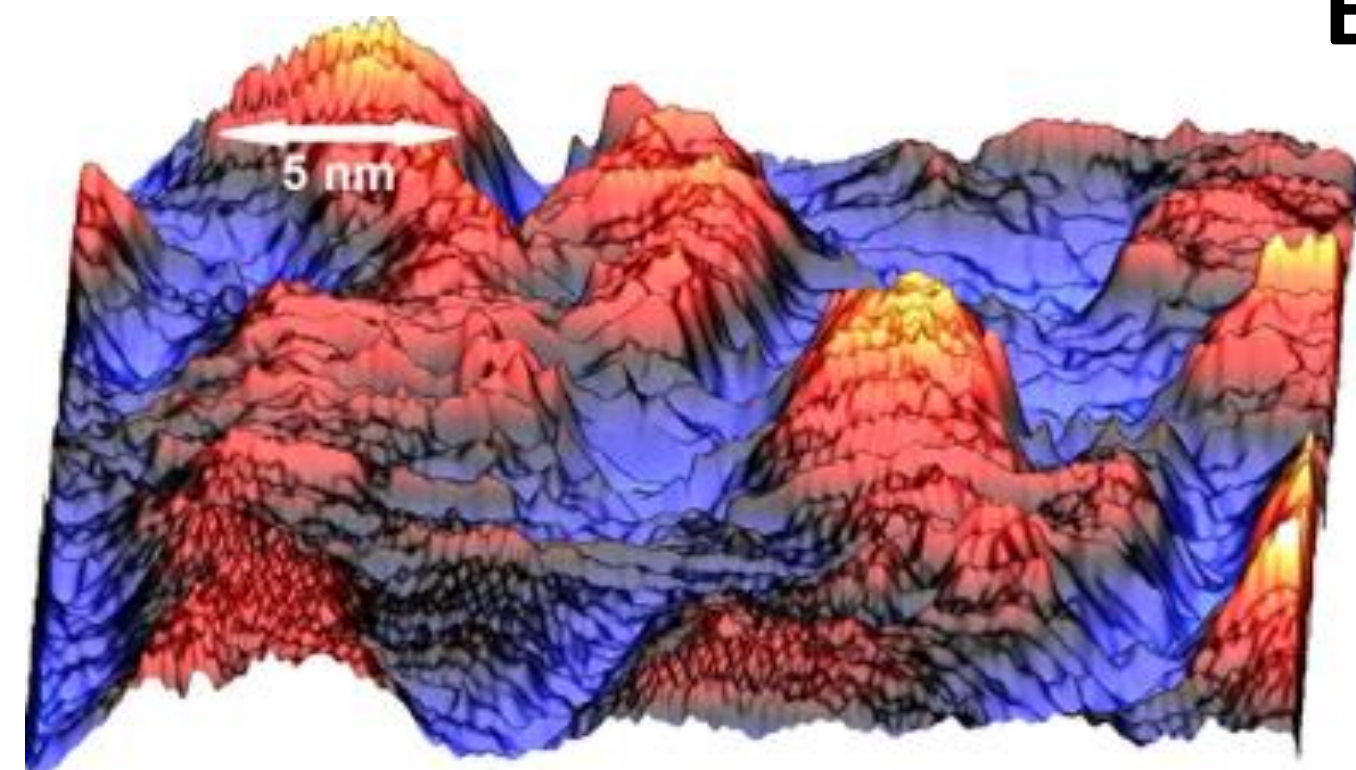
Development of radiation sensors and space weather, ESA

Power supply and I&C for satellites

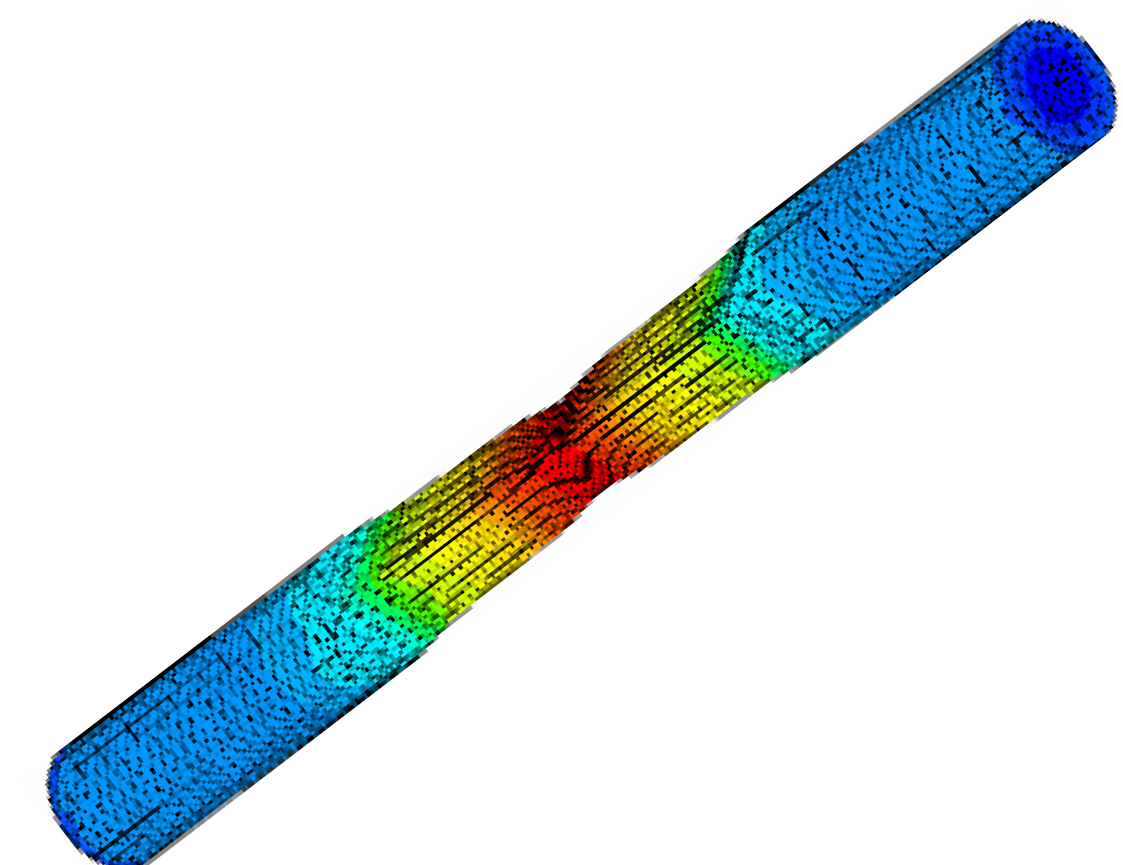
Preparing the Hungarian astronauts for space mission

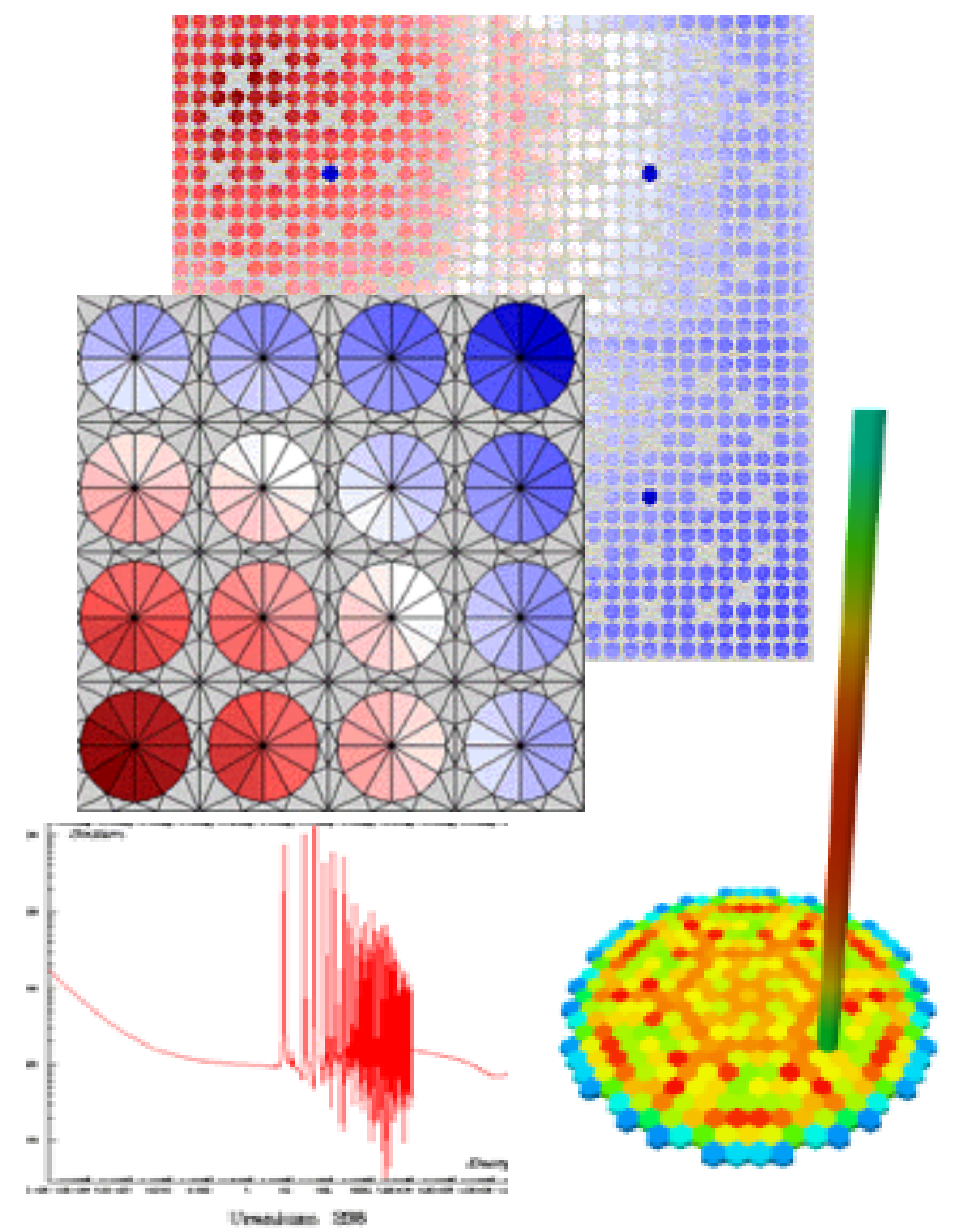


Reactor pressure  
vessel structural  
integrity

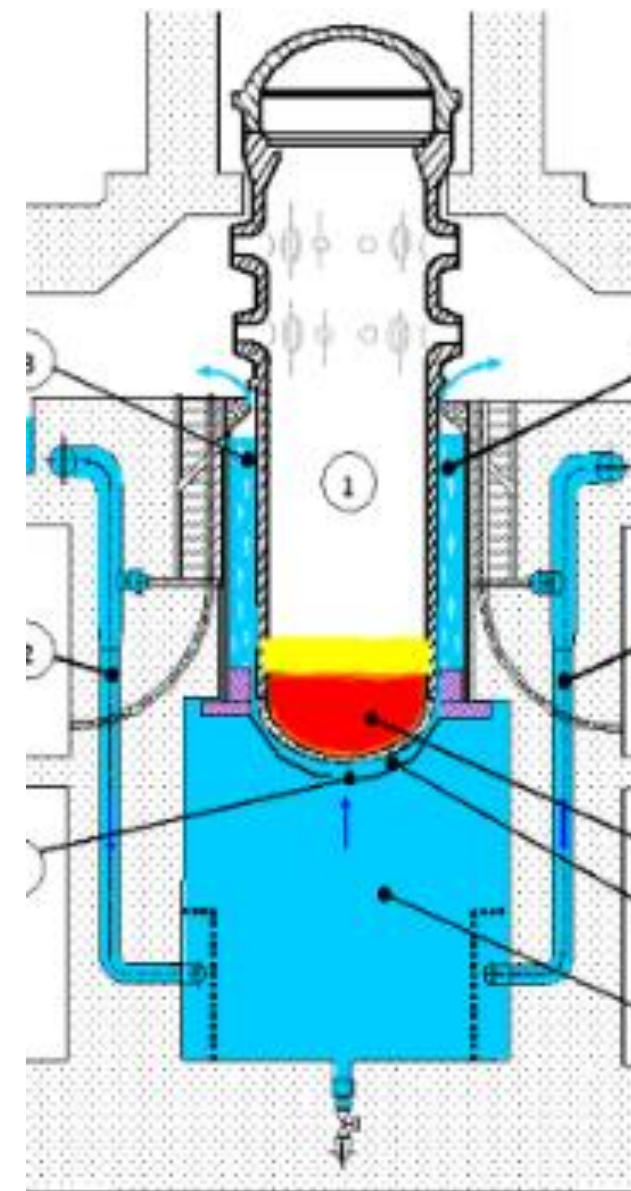


Graphene nanoengineering

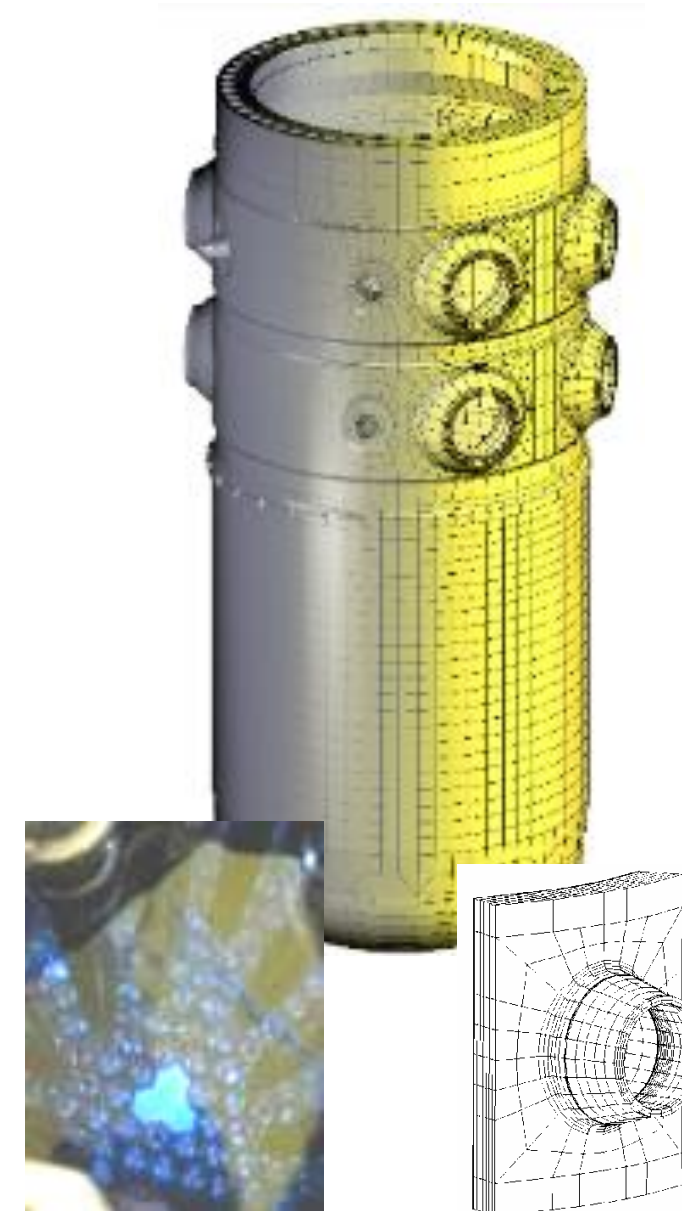




Reactor physics,  
 Neutron transport  
 calculations,  
 Reactor core design  
 Subcriticality analysis  
 Multi physics hot  
 channel calculations



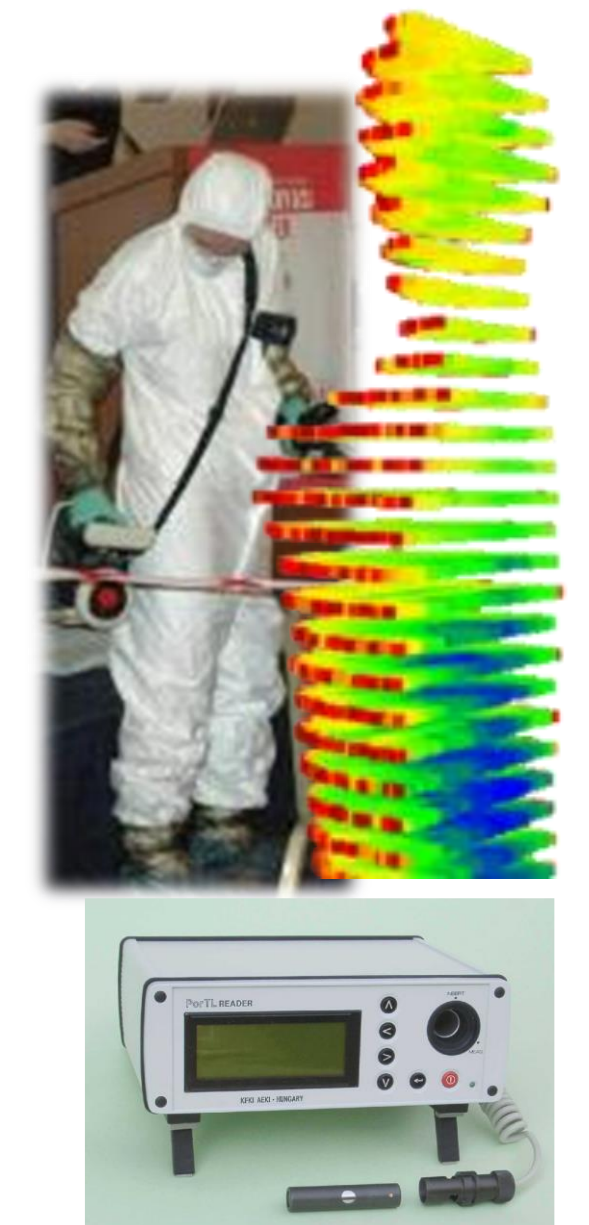
Thermal hydraulics,  
 Ex-vessel cooling tests  
 Computational Flow  
 Dynamics  
 Severe accident  
 simulations



Structure integrity  
 analysis,  
 Fuel cladding thermo-  
 mechanical properties,  
 Radiation damage  
 studies



Digital I&C systems  
 Human-machine  
 interface  
 Reactor training  
 simulator  
 Core monitoring



Radiation protection,  
 low dose effects,  
 atmospheric  
 dispersion,  
 environmental  
 monitoring

## Paks NPP – 4 Units VVER-440

- Operational licences extended until 2032-2036.

## Paks II. – Extending the nuclear energy capacities up to the end of the XXI.century

- Rosatom will build two VVER-1200 units

## Budapest Research Reactor and Budapest Neutron Centre (BNC)

- Installed in 1959, licence will expire in 2023, licence extension is planned +10yrs
- Operated by Centre for Energy Research, owner is the Hungarian Academy of Sciences
- The research reactor is mainly used for beamline science (neutron physics, materials sciences).  
The facility is a member of the E-RIHS, CERIC, LENS networks.
- Fresh fuel supply secured for the next 4-5 years, (TVEL, 2020.)
- Roadmap is prepared for the future use of BNC

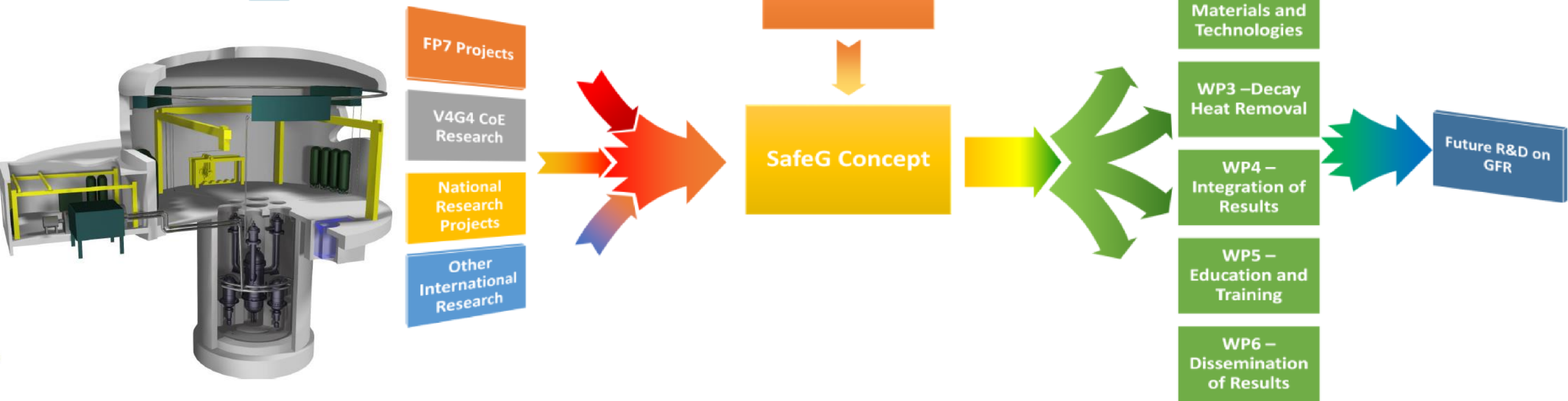
## Training reactor at the Technical University (BME NTI)

- Installed in 1971, 100kW power, (still using the original fuel assemblies)





DESIGN  
THERMODYNAMICS  
CORE DESIGN



V4 Collaboration

**Thank you for your attention!**

**ELKH** | Eötvös Loránd  
Kutatói Hálózat



Centre for  
Energy Research



# International research collaboration opportunities: fostering EU Clean Energy transition in Hungary

26 October 2022  
09:00 - 17:00 CEST

Location: Budapest University of Technology and Economics [Room: Pécsi Eszter]

# MVM GROUP

Research, development and  
innovation at MVM Group

**Márton Pete**

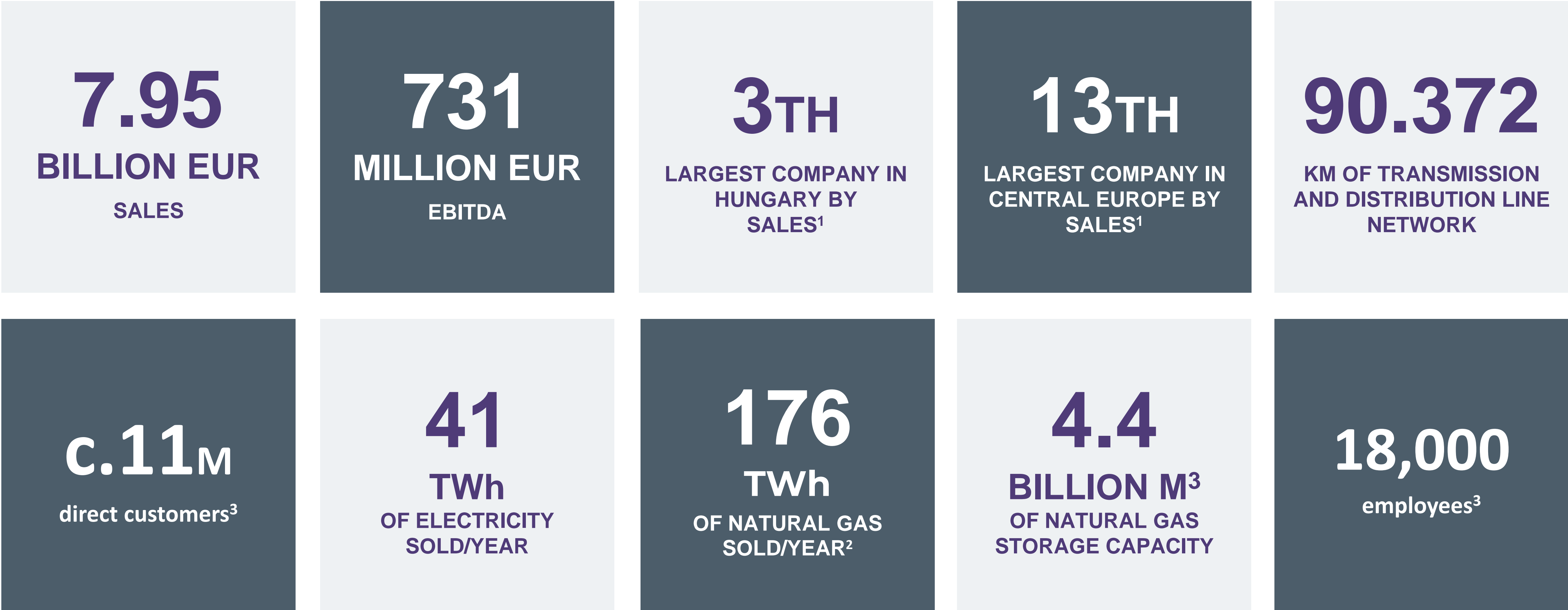
Senior Knowledge Management Expert

Budapest, 2022

**Providing energy**



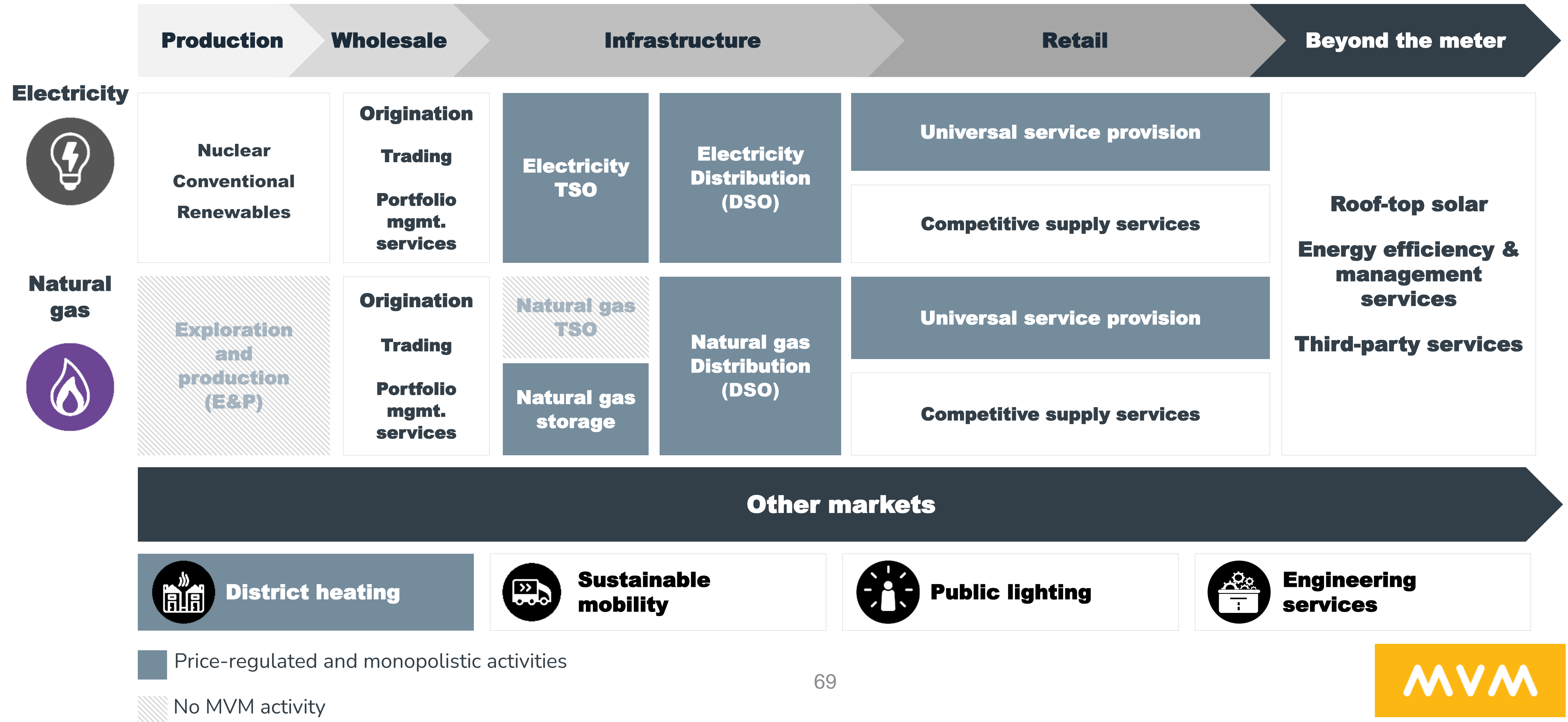
# MVM GROUP IS AN INDISPENSABLE PLAYER IN THE NATIONAL ECONOMY



Figures shown as of Dec 2021 unless otherwise stated  
Note: (1) Coface CEE TOP 500 Companies ( 2021); (2) Number of PODs , following the acquisition of the electricity USP customers of EON in April 2022  
Based on the annual average of MNB exchange rates (358,52)



# INTEGRATED UTILITY WITH LEADING POSITIONS ACROSS HUNGARY'S ENERGY VALUE CHAIN



# RESEARCH, DEVELOPMENT AND INNOVATION (RDI) ACTIVITIES



The development of new competences is required for MVM Group to achieve its strategic targets

RDI projects with MVM participation

- **3 H2020 & 10+ domestic projects in progress, with a total budget of EUR 21 M**
- **Focus fields: smart grids, energy storage, innovative behind-the-meter services**
- **Projects in progress**

- System integration of weather-dependent renewable energy: aggregation, energy community pilot (Keszthely), Black Start capability (Litér), hydrogen (Kardoskút), NaS storage pilot (Litér)

- IT developments: IoT platform supported with machine learning; Robotic Process Automation and Analytics (ERPA)



Research infrastructure and test bed

- **FIEK project – MVM laboratories at Budapest University of Technology & Economics**

- MVM SMART POWER LAB - HIL environment for innovative devices and control solutions in renewable digital power systems

- MVM CHP LABORATORY - Testing of combined heat and power production technologies



MVM SMART POWER LAB      MVM CHP LABORATORY

Start-up incubation – MVM Smart Future Lab

**First energy-focused business incubator / innovation service provider in Hungary since 2016**

- Incubation of energy related startups & ideas outside the MVM Group
- Innovation programs & service provider
- Product development based on design thinking methodology (innovation garage)
- Investment, idea- and business development
- Mentoring
- „Test-bed” opportunity at MVM Group locations



# **THANK YOU FOR YOUR ATTENTION!**

**Providing energy**

**MVM**

# MVM GROUP

Research, development and  
innovation at MVM Group

**Márton Pete**

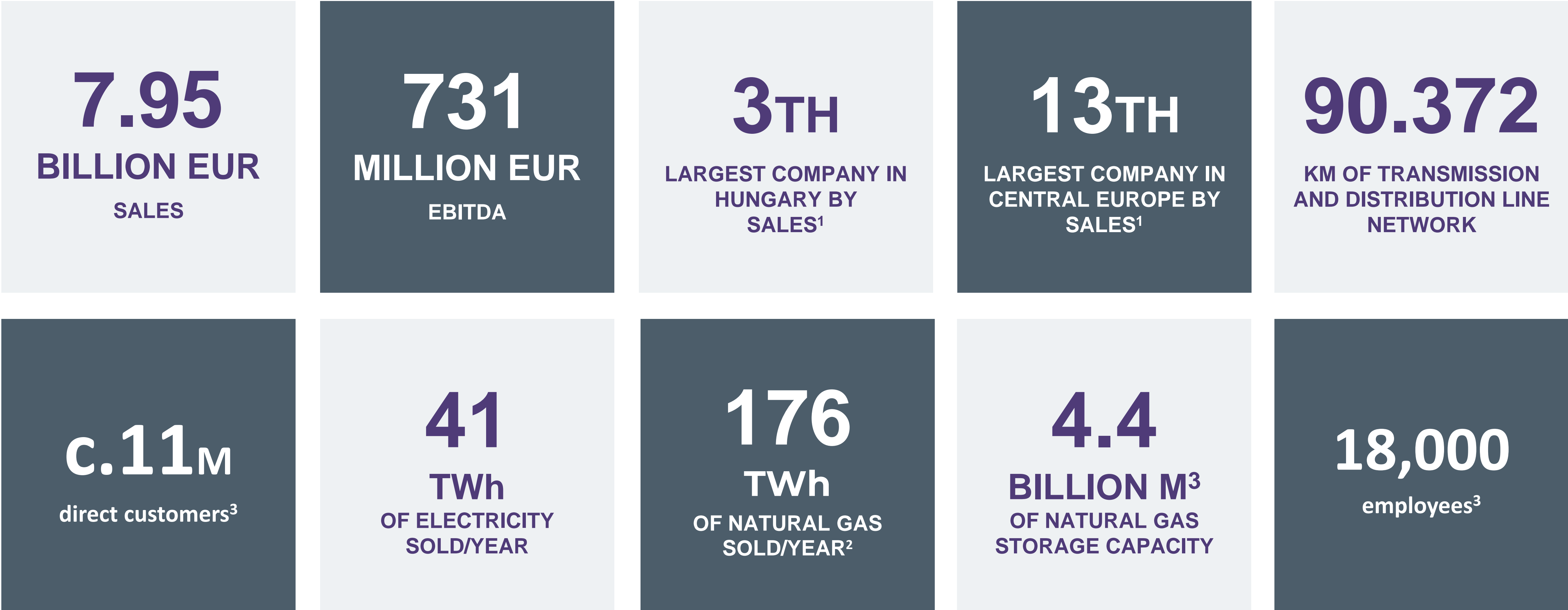
Senior Knowledge Management Expert

Budapest, 2022

**Providing energy**



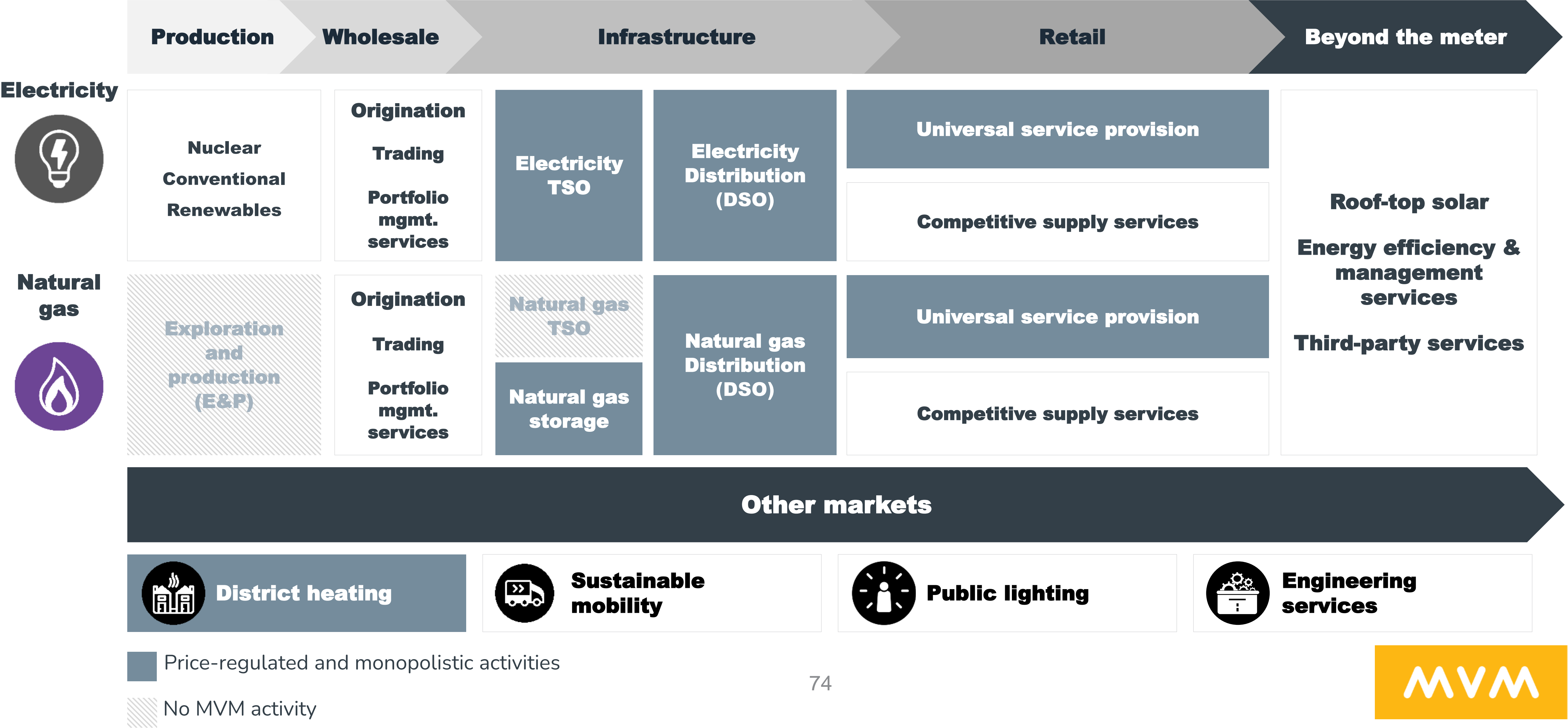
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MVM SMART POWER LAB

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# THANK YOU FOR YOUR ATTENTION!

Providing energy

MVM



## Panel Discussion

**Péter Kaderják**, Director of Zero Carbon Hub,  
Budapest University of Technology and Economics

**Orsolya Küttel**, Counselor/(Hungarian NCP),  
Department for International Affairs at National  
Research Development and Innovation Office

**Ákos Horváth**, Director General, Centre of Energy  
Research

**Márton Pete**, Senior Knowledge Management Expert,  
MVM



Coffee break

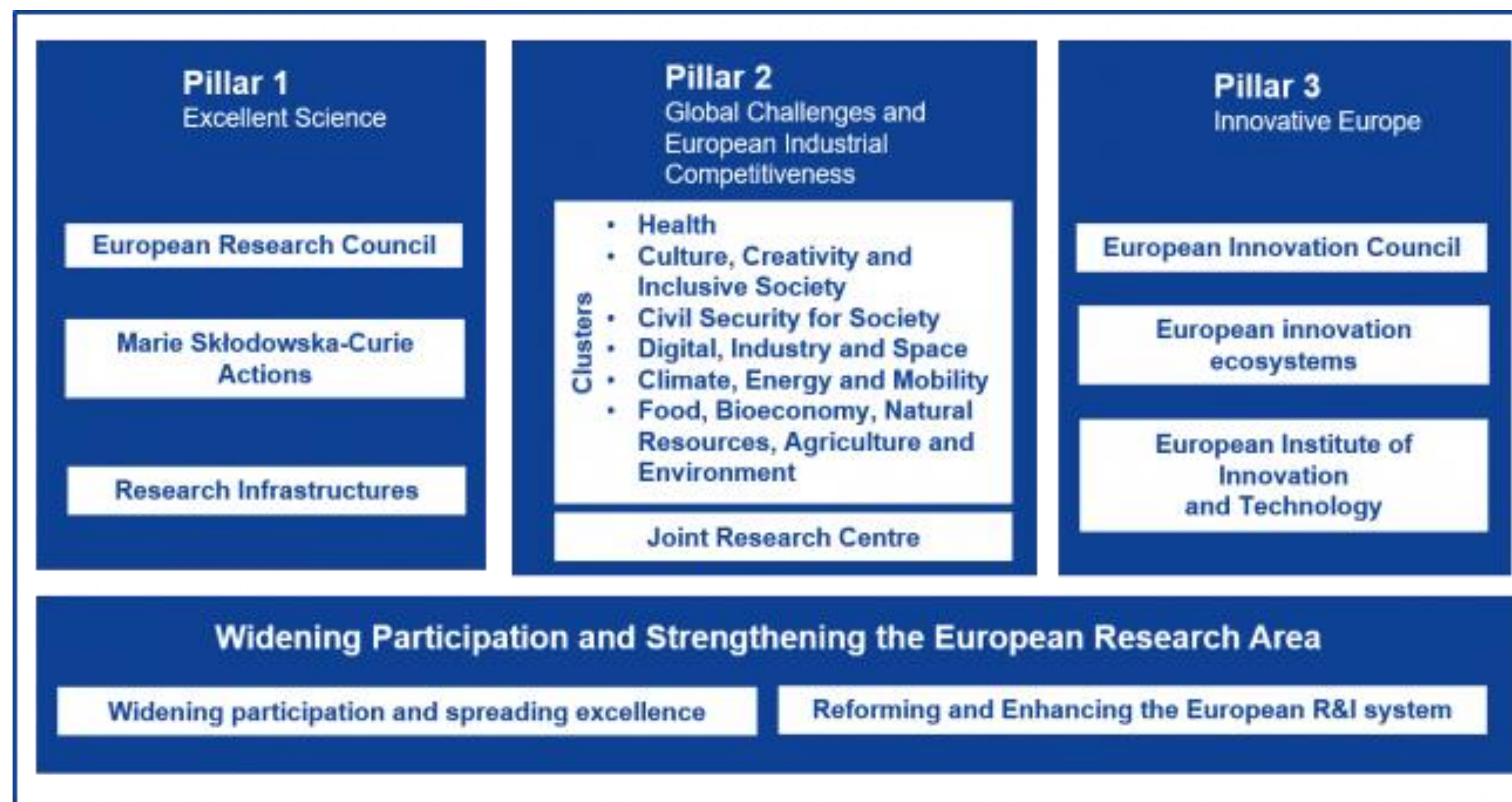
An isometric illustration depicting a clean energy transition. It features a grid of cubes in various colors (green, blue, orange, grey) connected by lines. On the cubes, there are various icons and figures: a solar panel, a wind turbine, a house, a tractor in a field, a person with a laptop, a person with a clipboard, a person with a hard hat, and a person with a graph. The background is a light green gradient.

## ► Clean Energy Transition and main funding opportunities

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.





## Clean Energy Transition Partnership (CETP)

- ▶ The Clean Energy Transition Co-funded Partnership is a **transnational joint programming initiative** to boost and accelerate the energy transition, pooling national and regional RDTI funding
- ▶ CETP builds upon the work of the **SET-Plan** Implementation Working Groups
- ▶ Involving all relevant **stakeholder groups**: ERA-NET, SET Plan Implementation Working Groups, EERA, ETIPs, representatives of MS/AC.
- ▶ Complementing the **Horizon Europe program** in selected areas of energy innovation and the implementation of the SET-Plan ➔ **Pillar II**: “Global Challenges and European Industrial Competitiveness”, **Cluster V**: Climate, Energy and Mobility.
- ▶ The CETP will enable Member States and Associated Countries and the EU to **align their RDI programmes** to maximise impact and to accelerate the up-take of cost-effective clean energy technologies



## Clean Energy Transition Partnership (CETP)

### 37 Countries

- All EU Member States (except LU) + many Associated Countries

### >50 Funding Partners

- Funding Agencies & Ministries

### 13 Coordination Units

- Coordinator: BMK/ FFG
- Co-coordinator: SWEA

### Annual Calls for RTDI Projects

- 143 EUR million/a (2021 – 2027)



## What is a TRI?

→ The Transition Initiatives are **thematic configurations** of CETP funding partners in order to work together on a specific **SRIA Challenge**.

→ TRIs are the **main acting bodies**, organising target group oriented stakeholder management and communication, developing thematic modules for the calls. Each of the TRIs is led by one of the CETP partners, known as the **TRI Lead**.

→ The CETP has established the following **7 TRIs** which address the seven CETP RTDI Challenges.



**TRI 1: Integrated Net-zero-emissions Energy System**



**TRI 2: Enhanced zero emission Power Technologies**



**TRI 3: Enabling Climate Neutrality with Storage Technologies, Renewable Fuels and CCU/CCS**



**TRI 4: Efficient zero emission Heating and Cooling Solutions**



**TRI 5: Integrated Regional Energy Systems**



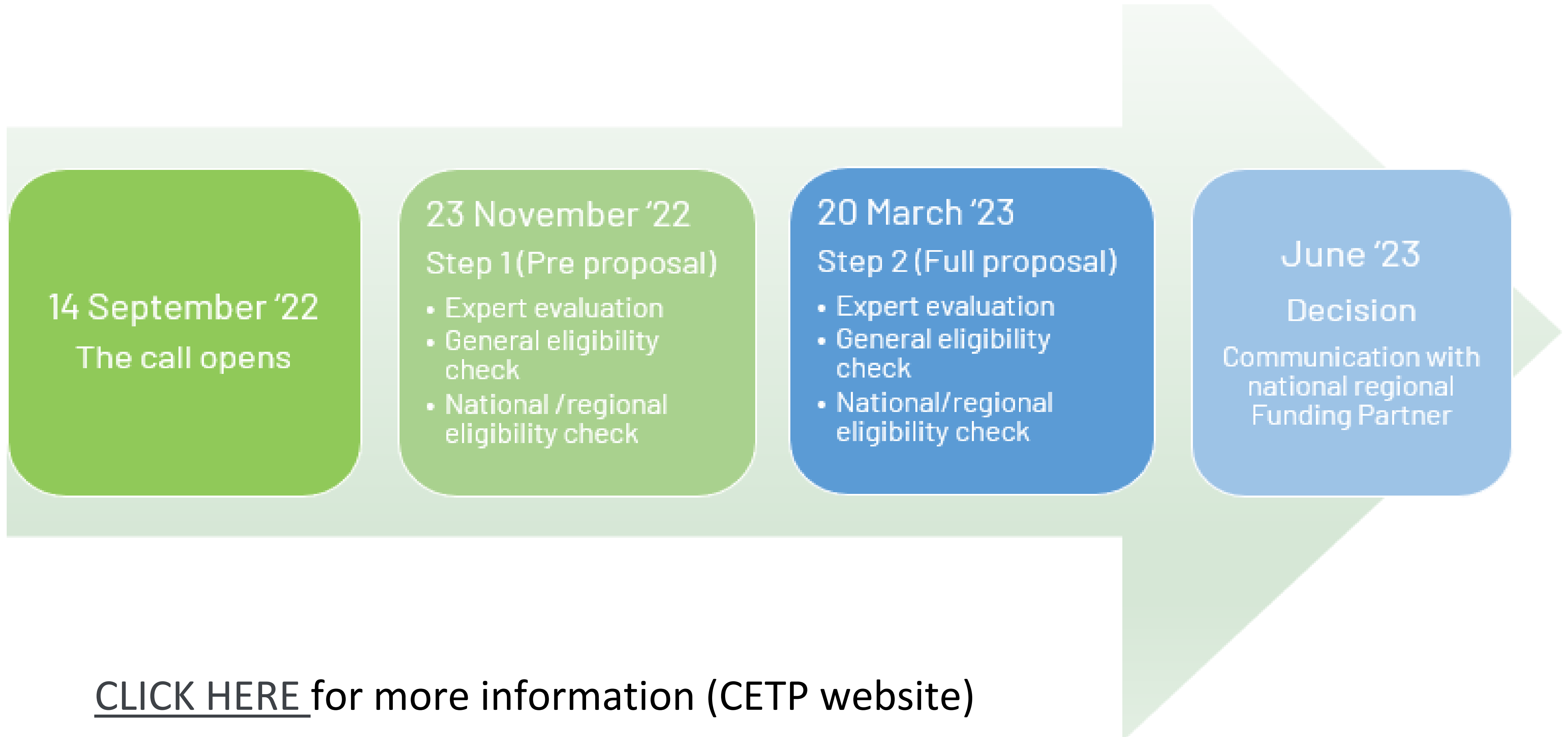
**TRI 6: Integrated Industrial Energy Systems**



**TRI 7: Integration in the Built Environment**



## Timeline for call procedure



[CLICK HERE](#) for more information (CETP website)

## General aspects

- ▶ **Two step procedure** – submission of a pre-proposal followed by an invitation to submit a full-proposal
- ▶ Sub-mission through **CETP Application System** only:
  - Choose one Call module per Proposal
  - Project Coordinator invite Project Partners through the submission system
  - Insert information about participants, budget etc. directly in the system
  - Upload project description in English as pdf
- ▶ Additional documents and/or local proposal submission may be requested by some funding partners
- ▶ Deadline pre-proposal **23 November, 14:00 CET**



## Pre-proposal – deadline 23 November 2022

- ▶ There will be **one separate evaluation procedure** per Call module
- ▶ In parallel with the **national/regional eligibility check**, each forwarded pre-proposal will be evaluated by at least **three independent experts**
- ▶ The cut-off for being invited to second stage (or considered for funding at full proposal stage) is a **score at or above 10** and **none of the criteria scoring below 3**
- ▶ The evaluation will result in a ranked list of project proposals per Call module
- ▶ Decision of invitation to full proposal will be based on the expert evaluation result and the national/regional eligibility check



## Full proposal – deadline 20 March 2023

- ▶ The full proposal **may not differ substantially** from the pre-proposal
- ▶ Changes **must be communicated** to the involved project partners and the relevant Funding Partners
- ▶ **Avoid changes** in the consortium composition, except if an ineligible partner can be replaced by a partner from undersubscribed countries/regions (must be approved by the relevant Funding Agency)
- ▶ Eligibility check according to both **general and national/regional requirements**
- ▶ Expert panel meetings resulting in a ranking list of proposals above cut-off
- ▶ Decision of funding is based on ranking list available and budget
- ▶ **Funding Partners provide funding for entities based in their country/region.** Funding arrangements will be made directly between the project partners and the national/regional Funding Partner to which they have applied.
- ▶ **Budget allocation from Funding Partners can differ between Call Modules.**



## Funding

- ▶ The total funding consists of **national/regional budgets** and **EC** contribution so-called **top-up**.
- ▶ National/regional Funding Partners will provide funding for entities based in their country/region while the EC contribution will be used to **top-up** project budgets **where national/regional funding has been exhausted**.
- ▶ The Funding Partners allocate their budget either **to the whole call or to the specific Call modules**. Funding Partners allocating their budget to the whole call will dedicate their budget to the specific Call modules **after the pre-proposal evaluation or after the full proposal evaluation**.
- ▶ Funding of eligible costs must comply with **EU/EEA State Aid rules**.



## Main project requirements (1/4)

### Project consortia

- ▶ Consortia may consist of **partners from organisations such as universities, companies, industry organisations, local/regional governments, research organisations and NGOs**. Some Call modules specify additional requirements or restrictions regarding the types of partners to be included.
- ▶ Project consortia must include **one project Coordinator** who is responsible for coordination of the project. Other consortia members are Partners, whereof there are two categories:
  - **partners eligible for direct funding by the Funding Partners** participating in the Joint Call 2022
  - **fully self-financed partners** from any country/region who bring their own secured budget



## Main project requirements (2/4)

### ► Technological readiness level (TRL)

- Most projects are expected to aim for solutions meeting **medium to high technology readiness levels (TRL 6-8)**, combining technologies, marked related solutions and stakeholder involvement
- In selected areas, concepts, and technologies may target a lower TRL level (3-6) on the basis of specific R&I needs as detailed in the related Call Module(s)

### ► Cross-cutting dimensions



- Cross-cutting dimensions, beyond technology and resources, need to be considered to ensure robust transition pathways that are driven by a multidisciplinary perspective
- The call text offers a framework (the three-layer research model) to approach cross-cutting dimensions and multidisciplinary aspects






## Main project requirements (3/4)

- ▶ Project proposals must include a **work package** considering project synergies with, and contributions to the CETP Knowledge Community
- ▶ Selected applicants will join the CETP community, whose spirit is characterized by a **solution-oriented approach**, focused on technology demonstration, adoption and market uptake
- ▶ Participation to knowledge community is **part of the project**. Knowledge community activities, organized together with Funding Partners and structured on digital collaboration platforms include:


### Formative evaluation

-  • Reporting
-  • Feedback uptake

### Working groups

-  • Thematic and cross-cutting working groups
-  • Living documents
-  • Joint communication and dissemination activities

### Deliverables

-  • Periodic reports, events and results presentation

## Main project requirements (4/4)

### ► Project duration

- Projects are required to start before **15 December 2023**
- The maximum project duration must **not exceed 36 months**
- National/regional limits regarding the duration of projects may apply

### ► Gender Equality Plan

- Having a GEP at organisational level is an eligibility criterion for funding in the CETP calls following the GEP requirements in Horizon Europe

### ► Open access

- Open access as required within Horizon Europe will be assessed as part of the project proposal's methodology under the Excellence Award Criterion



## Eligibility criteria (high level of complexity)

- ▶ At least **three independent legal entities** from **three different countries** participating in the CETP Joint Call 2022, of which at least two must be EU Member States or Horizon Europe Associated Countries
- ▶ The total effort of one **partner cannot exceed 60%** of the total project efforts
- ▶ The total effort of **partners from one country/region cannot exceed 75%** of the total project efforts. Efforts = person months
- ▶ Project consortia must also fulfil the **Call module specific requirements**
- ▶ Applicants must be **eligible for funding according to their Funding Partner's national/regional requirements**. Please consult the national/regional requirements (Annex B)



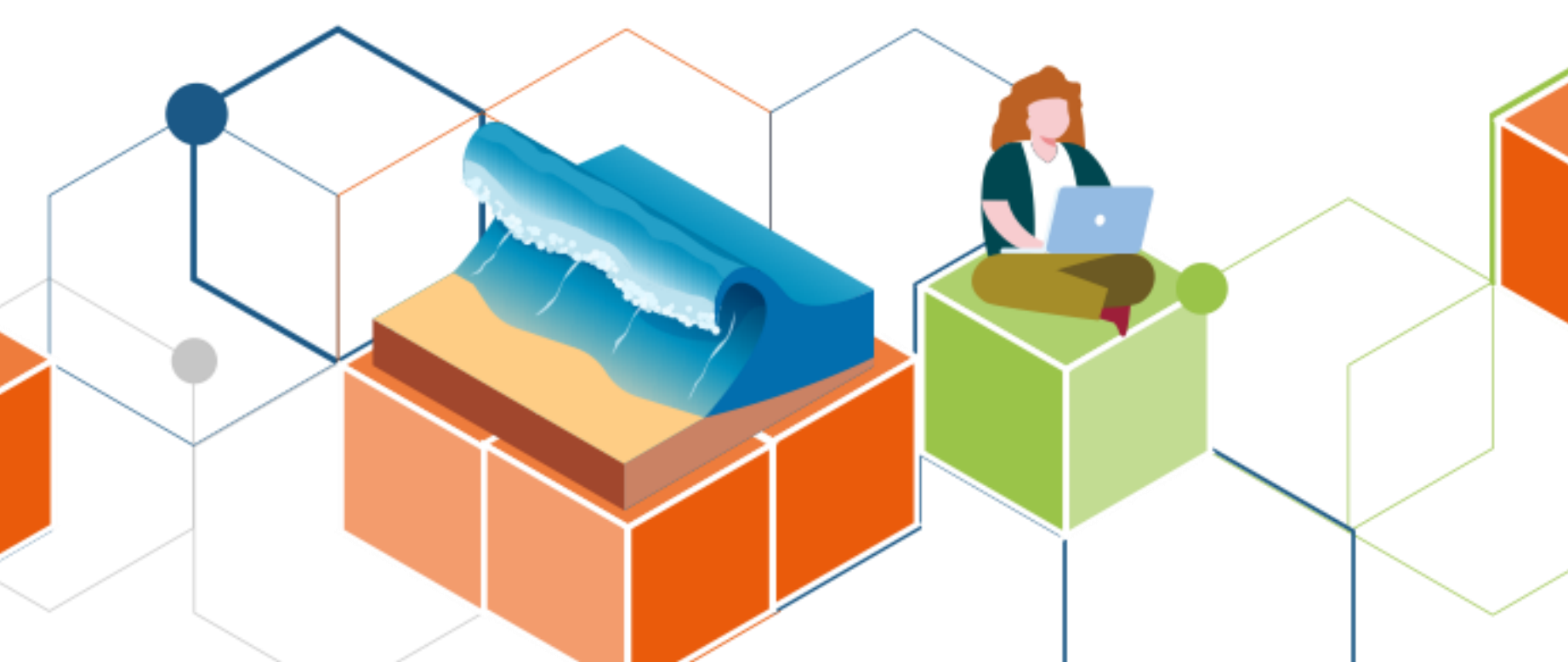
## Funding Matrix

<div>Estimated Total Budget: +140 M€</div>														
Organisation	Acronym	Country/ region	Funding	TRI1 PowerPlan ningTools	TRI1 RESDemPo werflex	TRI2 Advancing RE technologies for power production through cost reduction	TRI2 Breakthrough R&D to increase RE power technologies efficiency	TRI3 Enabling Climate Neutrality with Storage Technologies, Renewable Fuels and CCU/CCS	TRI3 Enabling Climate Neutrality with renewable fuels and hydrogen	TRI4 Heating & Cooling	TRI5 Integrated Regional Energy Systems for a Resilient, Secure, and Renewable Energy Supply	TRI6 Industrial energy systems	TRI7 R&I in clean energy integration in the built environment	TRI7 Solutions to energy transition in the built environment
Austrian Research Promotion Agency	FFG	Austria	5 900 000 €						2 000 000 €		1 800 000 €	2 100 000 €		
Fonds Innoveren en Ondernemen	FIO	Belgium/Flanders	1 000 000 €	x	x	x	x	x	x	x	x	x	x	x
Service public de Wallonie	SPW	Belgium/Wallonia	900 000 €	x	x	x	x	x	x	x	x	x	x	x
Emissions Reduction Alberta	ERA	Canada/Alberta	3 470 000 €					2 080 000 €	1 390 000 €					
Research and Innovation Foundation	RIF	Cyprus	3 000 000 €	x	x	x	x	x	x	x	x	x	x	x
Technology Agency of the Czech Republic	TA CR	Czech Republic	2 450 000 €	x	x			x	x		x		x	x
Energy Technology Development and Demonstration Programme	EUDP	Denmark	1 340 000 €		x									
Innovation Fund Denmark	IFD	Denmark	1 000 000 €			x							x	x
Ministry of Economic Affairs and Communications	MKM	Estonia	300 000 €	x	x	x							x	x
Estonian Research Council	ETAG	Estonia	150 000 €	x	x	x							x	x
Innovaatorahoituskuskeskus Business Finland	BF	Finland	5 000 000 €	x	x	x							x	x
Agence Nationale de la Recherche	ANR	France	3 000 000 €	x									x	
Agence de la transition écologique	ADEME	France	1 500 000 €	x	x			x				x		
Pays de la Loire Region Council	RPL	France/Pays de la L	1 000 000 €			1 000 000 €								
Forschungszentrum Jülich GmbH (on behalf of BMWK)	FZJ/PtJ	Germany	18 000 000 €	x	x	x	x	x		x	x	x		x
Forschungszentrum Jülich GmbH (on behalf of MWIDE)	FZJ/PtJ	Germany	1 428 571 €	x	x	x	x	x	x			x		
Saxon State Ministry for Science, Culture and Tourism	SMWK	Germany/Saxony	3 000 000 €	x	x	x	x	x	x	x	x	x	x	x
General Secretariat for Research and Technology	GSRT	Greece	500 000 €	x	x			x	x					
National Research, Development and Innovation Office	NKFIH	Hungary	1 000 000 €	x	x	x	x	x	x	x	x	x	x	x
The Icelandic Centre for Research	RANNIS	Iceland	1 000 000 €					x	x	x				
Department of the Environment, Climate & Communications/Geological Survey Ireland	GSI	Ireland	400 000 €							x				
Sustainable Energy Authority of Ireland	SEAI	Ireland	500 000 €	x	x	x	x	x	x	x	x	x	x	x
Ministry of National Infrastructure, Energy and Water Resources	MoE	Israel	600 000 €	x	x	x	x	x	x	x	x	x	x	x

Hungary participates to all TRIs with 1 mio euros



# Spyridon Pantelis, EERA Project Manager



# Horizon Europe – General Overview

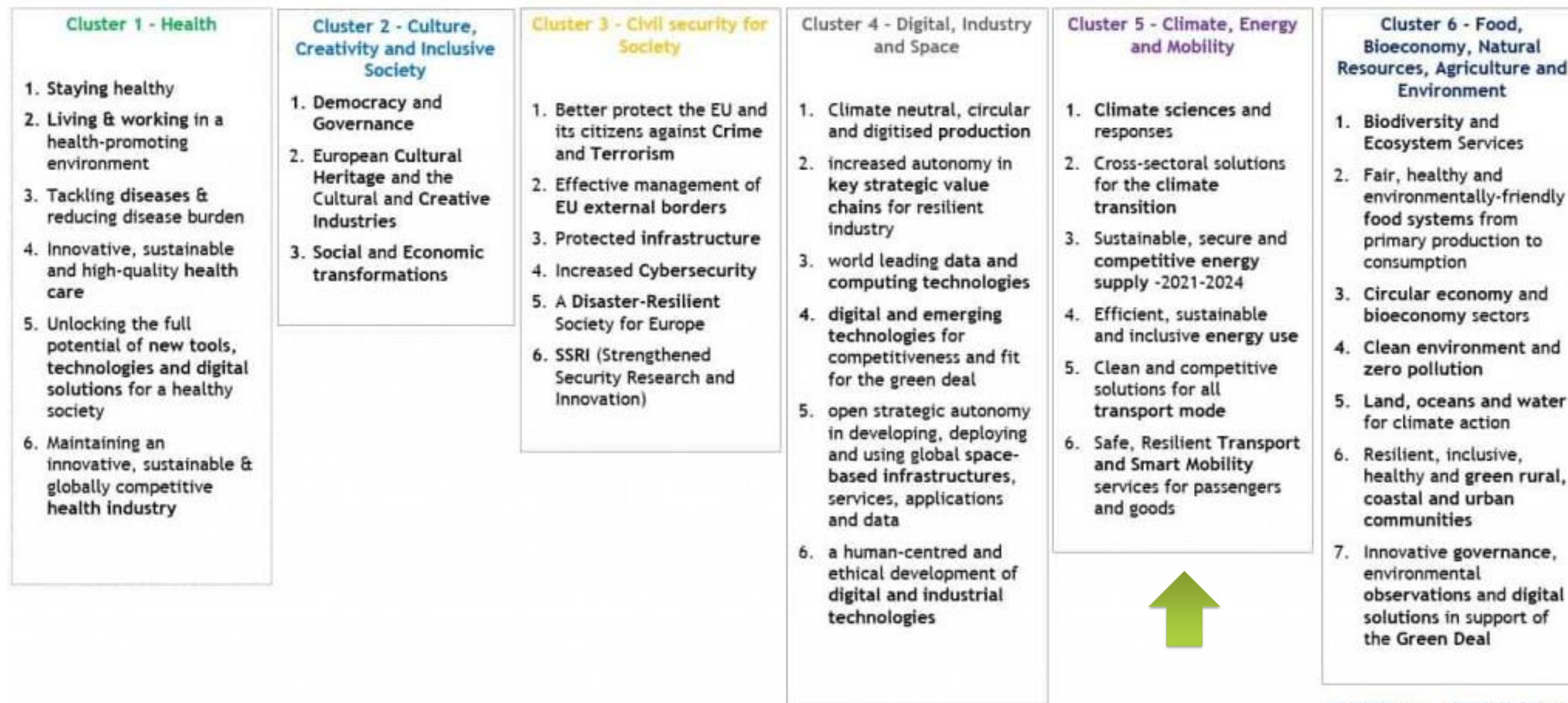


Cluster 5: Climate,  
Energy and Mobility



# Horizon Europe – Detail on Clusters

## Horizon Europe - Pillar 2



[info@efmc.eu](mailto:info@efmc.eu) / <https://efmc.eu>

## Horizon Europe Calls Cluster 5: Climate, Energy and Mobility

- **15 open calls** (closing in January 2023)
- **Type of actions:** Research and Innovation Actions (RIA) and Innovation Actions (IA)
- **Deadline model:** single-stage

Partner search

Type your Keywords...

☒ Match whole words only

☒ GRANTS
☒ TENDERS

Submission status

☒ Forthcoming

☒ Open for submission (25)

☐ Closed

Programming period

Select a Programme period...

Filter by Programme / Programme group

Select a Programme...

Need help?

Sort by:

Submission status

Best international practice for scaling up sustainable biofuels

HORIZON-CL5-2022-D3-03-02

Call for proposal

Grant

Programme

Horizon Europe (HORIZON)

Status

Open for submission

Type of action

HORIZON Research and Innovation Actions

Deadline model

single-stage

Opening date

06 September 2022

Deadline date

10 January 2023 17:00:00 Brussels time

Innovative components and/or sub-systems for CSP plants and/or concentrating solar thermal installations

HORIZON-CL5-2022-D3-03-01

Call for proposal

Grant

Programme

Horizon Europe (HORIZON)

Status

Open for submission

Type of action

HORIZON Innovation Actions

Deadline model

single-stage

Opening date

06 September 2022

Deadline date

10 January 2023 17:00:00 Brussels time

More information on Tenders and Funding Portal ([link](#))

## Selected open calls

Call Reference	Type of Action	Budget available	Deadline
Innovative components and/or sub-systems for CSP plants and/or concentrating solar thermal installations - <a href="#">HORIZON-CL5-2022-D3-03-01</a>	IA	16,5 (EUR million)	10 January 2023
Recycling end of life PV modules - <a href="#">HORIZON-CL5-2022-D3-03-09</a>	IA	20 (EUR million)	10 January 2023
Development of algal and renewable fuels of non-biological origin - <a href="#">HORIZON-CL5-2022-D3-03-07</a>	RIA	15 (EUR million)	10 January 2023
Integrated wind farm control - <a href="#">HORIZON-CL5-2022-D3-03-04</a>	RIA	18 (EUR million)	10 January 2023
Novel Thin Film (TF) technologies targeting high efficiencies - <a href="#">HORIZON-CL5-2022-D3-03-05</a>	RIA	20 (EUR million)	10 January 2023
Best international practice for scaling up sustainable biofuels <a href="#">HORIZON-CL5-2022-D3-03-02</a>	RIA	9 (EUR million)	10 January 2023

## Latest draft Programme 2023-2024

Call Reference	Type of Action	Budget available	Opening / Deadline
Development of near zero-emission biomass heat and/or CHP including carbon capture	RIA	8 (EUR million)	<b>Opening</b> 04 May 2023  <b>Deadline</b> 05 Sep 2023
Innovative components and configurations for heat pumps	RIA	6 (EUR million)	
Advanced exploration technologies for geothermal resources in a wide range of geological settings	RIA	8 (EUR million)	
Smart use of geothermal electricity and heating and cooling in the energy system	IA	15 (EUR million)	
Digital tools for enhancing the uptake of digital services in the energy market	IA	11 (EUR million)	<b>Opening</b> 04 May 2023  <b>Deadline</b> 10 Oct 2023

69 calls in “Destination 3:  
“Sustainable, secure and  
competitive energy  
supply”



Draft programme  
(deadline, budget, topics  
might change)!

Published by Science  
Business:

**Link to download!**





# R&I opportunities for collaboration and funding Horizon Europe (Widening calls)

Spyridon Pantelis, EERA Project  
Manager



## 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

- ▶ **Hop on Facility: HORIZON-WIDERA-2022- ACCESS-07 (10 Nov 2022)**

### Closed Calls

- ▶ **Teaming for Excellence: HORIZON-WIDERA-2022-ACCESS-01-01-two-stage**
- ▶ **Twinning: HORIZON-WIDERA-2021-ACCESS-03-01**
- ▶ **Excellence Hubs: HORIZON-WIDERA-2022-ACCESS-04**
- ▶ **Capacity building to strengthen networks of higher education institutions and cooperation with surrounding ecosystems: HORIZON-WIDERA-2021-ACCESS-05-01**



## Hop On Facility (HORIZON-WIDERA-2022-ACCESS-07-01)

- ▶ 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	10 Nov 2022	EU contribution per project	0.20 – 0.50 EUR million
No of projects	80		



**More information on WIDERA  
programme in this Link**



## DESTINATION 2: ATTRACTING AND MOBILISING THE BEST TALENTS

### Open Calls

- Fostering balanced brain circulation (BBC) - ERA Talents: HORIZON-WIDERA-2022-TALENTS-01 (15 Nov 2022)

### Closed Calls

- Sustainable Gender Equality Champions: HORIZON-WIDERA-2022-GENDER-Prize-01
- Fostering balanced brain circulation – ERA Fellowships: HORIZON-WIDERA-2022-TALENTS-04
- ERA Chairs: HORIZON-WIDERA-2022-TALENTS-01
- Fostering balanced brain circulation (BBC) - ERA Fellowships: HORIZON-WIDERA-2022-TALENTS-02



## Fostering balanced brain circulation (BBC) - ERA Talents: (HORIZON-WIDERA-2022-TALENTS-01)

- ▶ Attract more **R&I talents** of diverse expertise to entities in widening countries, by providing competitive grants and spreading attractive working and employment practices
- ▶ Specific or broad audience: **experienced** researchers, and/or other **R&I talents**, such as **research infrastructure experts** and operators, **R&I facilitators** in higher education institutions and research organisations such as **data stewards** and **knowledge brokers**, **research managers** and **administrators**, **junior researchers** in non-academic sector and **starting entrepreneurs**.

Conditions for the Call			
Type of action	CSA	Total Budget	24.00 (EUR million)
Deadline	15 Nov 2022	EU contribution per project	0.40 – 0.60 EUR million
No of projects	40		



More information on WIDERA  
programme in this [Link](#)



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

### Closed Calls

- ▶ **Support for policy makers – Programme level collaboration between national R&I programmes (HORIZON-WIDERA-2021-ERA-01-09)**
- ▶ **R&I intensive IP management: Scenarios for the future (HORIZON-WIDERA-2021-ERA-01-33)**
- ▶ **Global cooperation on FAIR data policy and practice (HORIZON-WIDERA-2021-ERA-01-41)**
- ▶ **Ensuring reliability and trust in quality of Research Ethics expertise in the context of new/emerging technologies (HORIZON-WIDERA-2021-ERA-01-91)**
- ▶ **A European competence centre for science communication (HORIZON-WIDERA-2022-ERA-01-60)**
- ▶ **Living Lab for gender-responsive innovation (HORIZON-WIDERA-2022-ERA-01-80)**



## Latest draft Programme 2023-2024 (All destinations)

Call Reference	Type of Action	Budget available	Opening/ Deadline
HORIZON-WIDERA-2023-ACCESS-02-02: Twinning - Green Deal	CSA	0.5-1.5 (EUR million)	25/04/23-28/09/23
HORIZON-WIDERA-ACCESS-03-1: European Excellence Initiative	CSA	5-8 (EUR million)	10/01/23-13/04/23
HORIZON-WIDERA-2023-ERA-01-01: Programme level collaboration between national R&I policy makers	CSA	-	14/12/22-15/03/23
HORIZON-WIDERA-ACCESS-07-1: Excellence Hubs	CSA	2-5 (EUR million)	28/09/23-07/03/24

34 calls  
in all three Destinations



Draft programme  
(deadline, budget, topics  
might change)!

Published by Science  
Business:

**Link to download!**







# International research collaboration opportunities: fostering EU Clean Energy transition in Hungary

26 October 2022  
09:00 - 17:00 CEST

Location: Budapest University of Technology and Economics [Room: Pécsi Eszter]

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# Education Economics Network

A H2020 twinning project

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Daniel Horn

SUPEERA/PANTERA workshop

26. October 2022

# Partners

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- The objective of the EdEN Twinning project was to stimulate and enhance the cooperation in education economics between three top ranked research institutes in EU-15 countries and a promising new group in a Widening Country - Hungary.



# In short

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- **Horizon 2020 Twinning project**
- **Cooperation between KUL, UM, PoliMi and KRTK**
- **project is between January 2016 and December 2018**
- **Many research activities within EdEN**
  - Kick-off meeting (Budapest),
  - Trainings (Milan and Maastricht),
  - Three scientific meetings (Maastricht, Leuven, Milan),
  - Grant writing workshop (Leuven)
  - 2 Summer Schools (Leuven, Budapest)
  - Final conference (Budapest)
- **Many more conference participations and research visits**
  - 84 funded travels over 3 years
- **10 research papers as deliverables**
  - and several more affiliated
  - 9 published in peer-reviewed international journals by 2019  
(one is to come)

---

# THANK YOU FOR YOUR ATTENTION!

---

 Daniel Horn  
 [kti.krtk.hu](https://kti.krtk.hu)  
 26. October 2022



# International research collaboration opportunities: fostering EU Clean Energy transition in Hungary

26 October 2022  
09:00 - 17:00 CEST

Location: Budapest University of Technology and Economics [Room: Pécsi Eszter]



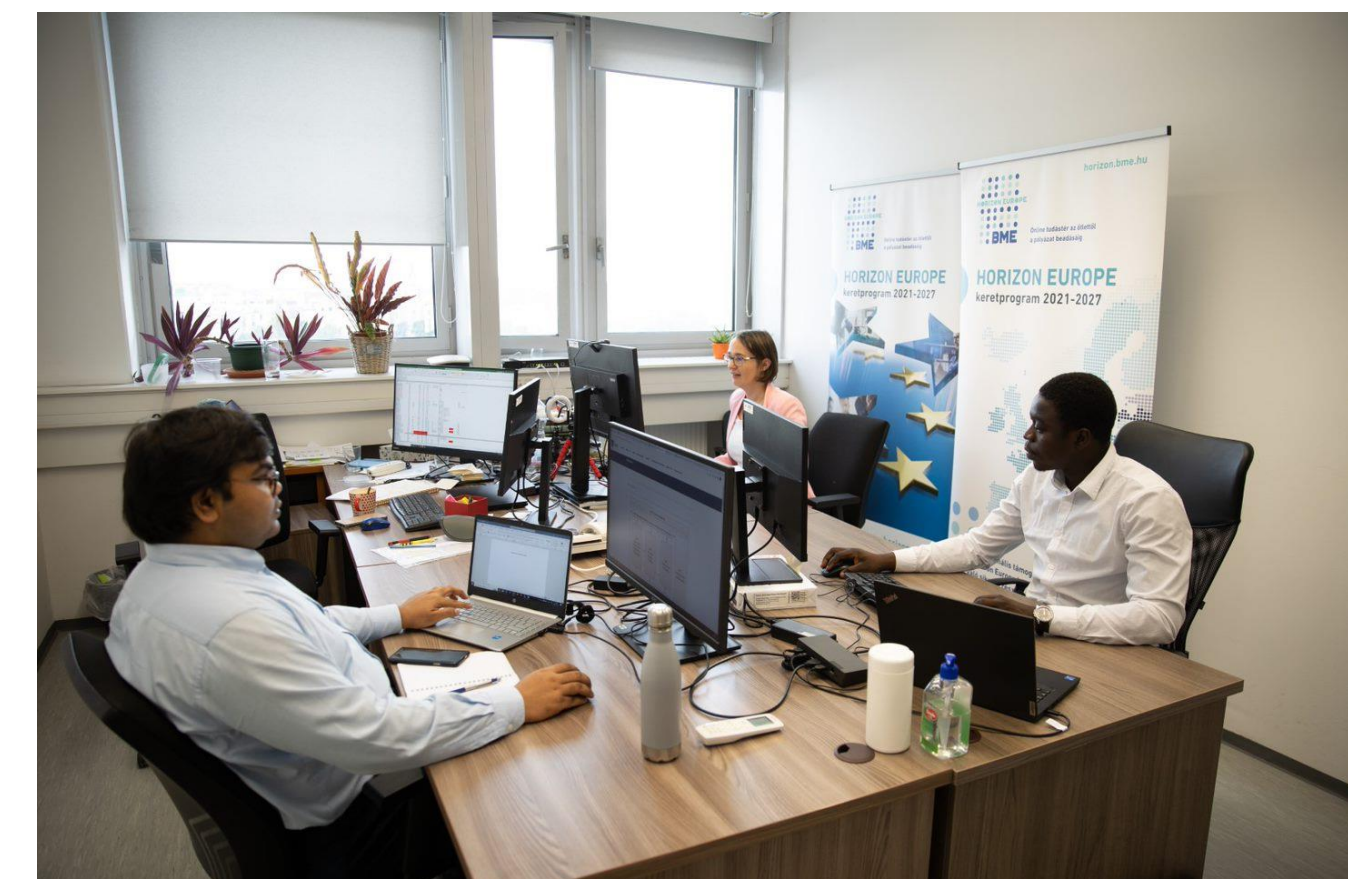
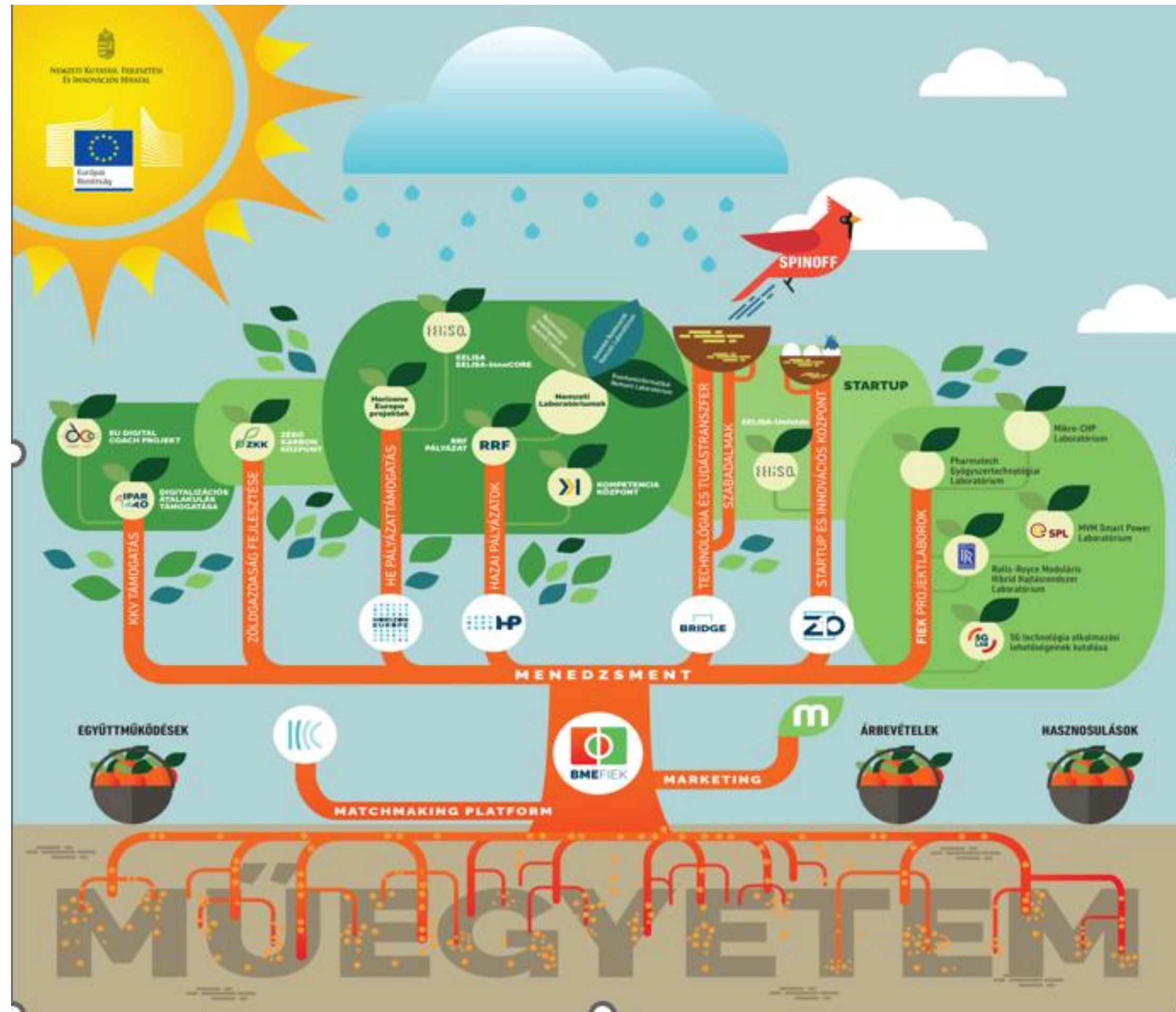
# Supporting researchers in successful participation in Horizon Europe – the practice of BME

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**SUPEERA-PANTEERA workshop October 26th, 2022**

**dr. Borbala Schenk, Chief European Research Funding Advisor,  
BME Competence Map editor**

# BME FIEK Horizon Europe support team



# What kind of support do researchers need in Horizon Europe?

---

1. Excellent idea is not enough – what does the funder want?
2. New strategy for partner search
3. Navigating in the wealth of information
4. Finding the grant that fits the idea
5. Confidence in implementing new solutions in research



# BME Horizon Europe support portfolio



## **From the idea to the proposal submission**

- Grant advocacy
- Understanding the calls
- Partner search and consortium building
- Administrative support
- Proposal development
- Pre-submission review
- Proposal-writing

## **Information and awareness-raising**

- Webpage + 10 thematic MS Teams channels
- Consultations
- Info events
- Management meetings
- Lectures and presentations

## **Training**

**Increasing international visibility of the researchers**

**Supporting BME in horizontal requirements**

**Participation in expert committees (WP development)**

# How to inform quickly and effectively?



HORIZON EUROPE HEALTH



HORIZON EUROPE URBAN



HORIZON EUROPE MOBILITY



HORIZON EUROPE SOCIETY



HORIZON EUROPE DIGITAL



HORIZON EUROPE  
MATERIALS,  
MANUFACTURING



HORIZON EUROPE  
CONSTRUCTION, BUILDINGS,  
DISASTER



HORIZON EUROPE  
BIODIVERSITY,  
ENVIRONMENT



HORIZON EUROPE  
EUROPEAN RESEARCH  
COUNCIL



HORIZON EUROPE CLIMATE  
AND ENERGY



Schenk Borbála 09. 20. 17:31

**NKFIH Info-nap**  
2022. szeptember 28.

A [Clean Energy Transition Partnerség \(CETP\)](#) és a [Driving Urban Transitions \(DUT\)](#) a Horizont Európa keretprogram közös finanszírozású partnerségi kezdeményezései, melyek 2022. évi 2022. június 1-jén indultak. A kezdeményezések célja a városi átmenet elősegítése. A kezdeményezések 2022. szeptember 28-án zárultak.

Válasz

Tegnap



Das Anjan Kumar Tegnap 13:17

**Recordings of Battery Innovation Days 2022**

The event was organized by BATT4EU, which is a Co-programmed Partnership established under Horizon Europe – the Framework Programme for Research and Innovation of the European Union- that aims to achieve a competitive and sustainable European industrial value-chain for e-mobility.

[Továbbiak megtekintése](#)



**Battery Innovation Days - YouTube**

After a successful first edition, the Battery Innovation Days event is finally coming back. Creating a seamless all-in-one experience, the second edition of t...

[www.youtube.com](https://www.youtube.com)

Válasz



Emmanuel Godwin Bandawa Tegnap 13:21

**DUT Call 2022 - Driving Urban Transitions to a Sustainable Future**

**CALL OPENING: 21 September 2022**

The first joint call of the DUT Partnership – the DUT Call 2022 – was opened on 21 September and offers opportunities for transnational and...

[Továbbiak megtekintése](#)

Válasz

# New research trends – start discussions



BME Horizon Hot Topics aims to create discussion on concepts and ideas that define novel avenues for the lively, dynamic world of the European Research Area as reflected in the Horizon Europe Framework Programme.

Streamed live weekly Mondays 1-1:45PM CET

Recordings available on the homepage

Open Science

Citizen Science

Societal impact

Research Ethics

Co-creation

[horizon.bme.hu/webinars](https://horizon.bme.hu/webinars)



## EELISA Innovation Talks:

Stimulating green technology and social innovation through European collaboration.

10:00-10:45 CEST  
online

### Speakers



**Alice Sheppard**,  
Community Manager at  
Extreme Citizen Science,  
Play(k) College  
London



**Peter Kaderjak**,  
Director, BME Zero  
Carbon Hub



**Koen Vervoort**,  
Network Builder,  
ENOLL – European  
Network of Living Labs

### Hybrid event

Matchmaking, networking,  
partnership-building.

**BME Competence Fair**

registration: [innovacio.bme.hu](https://innovacio.bme.hu)

### Moderator



**Borbala Schenk**,  
Chief European Research  
Funding Advisor, BME  
FIEK

Nemzeti Állásfoglalás  
a Nyílt Tudományról

Felhívás csatlakozásra

Open Science



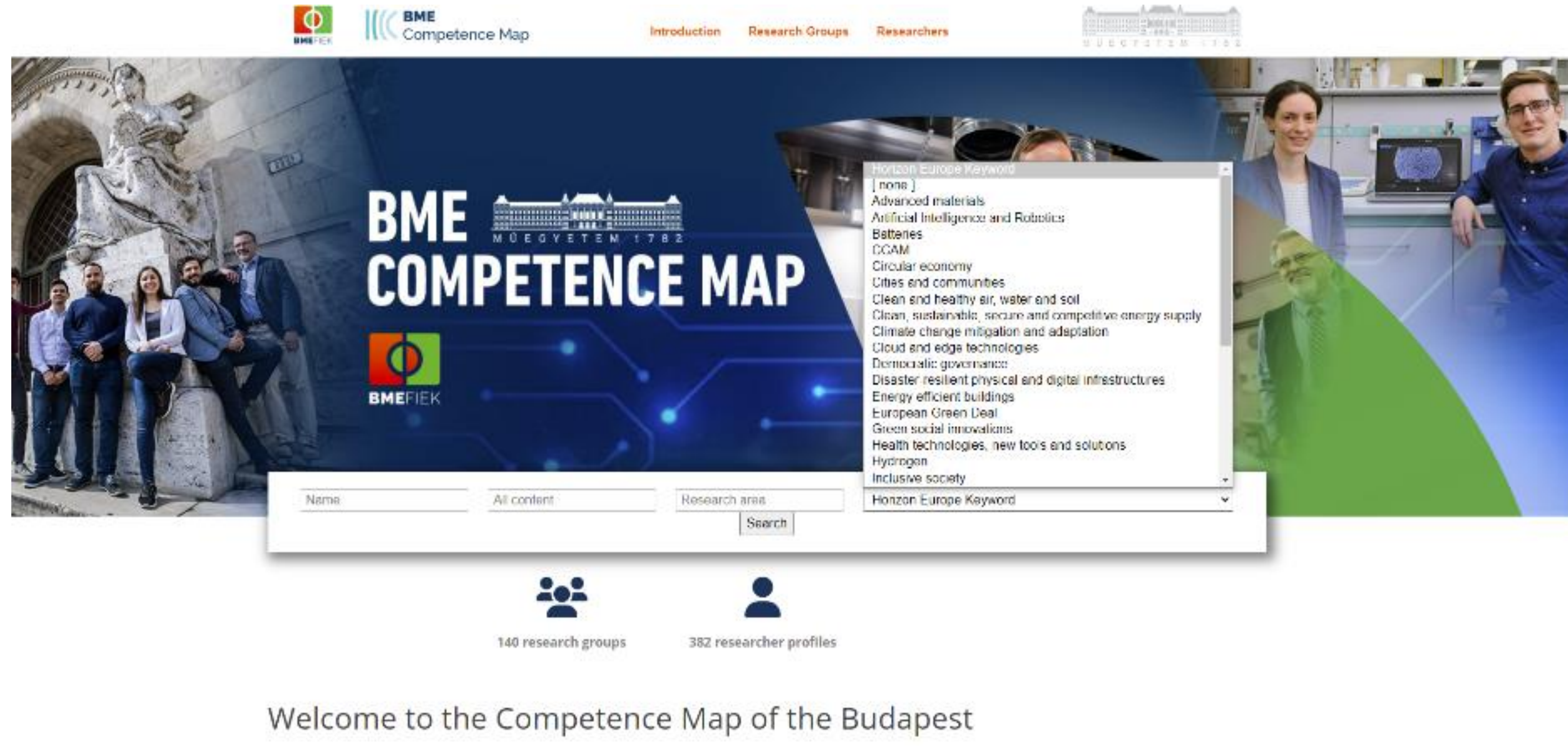
Workshop on 'Gender  
Dimension in Research'

SAVE THE DATE  
5 October, 2022  
10:00 h | 12:30 h CET

EELISA



# Competence Map – more than just competences



<http://competence.bme.hu>


# Research groups and researcher profiles

Research Centre of Quantitative Social and Management Sciences (QSMS)

Research keywords: · economics · business · political science · social sciences · game theory · social choice · industrial organization · finance · information economics · experimental economics

Horizon Europe keywords: · Artificial intelligence and robotics · Cities and communities · Climate change mitigation and adaptation · Democratic governance · Disaster-resilient physical and digital infrastructures · European Green Deal · Manufacturing technologies · Renewable energy · Smart and sustainable transport and mobility

Budapest University of Technology and Economics · Faculty of Economic and Social Sciences




Dr. László Á. Kóczy

Full Professor  
PhD, DSc

H-1117 Budapest, Magyar tudósok körútja 2.


+3614633023

koczy.laszlo@gtk.bme.hu




Dr. Gyula Zilahy

Full Professor




Dr. Leanne Streekstra

Postdoctoral Researcher




Dr. Luca Sandini

Postdoctoral Researcher




Dr. Arseniy Samsonov

Postdoctoral Researcher




Dr. Noemie Ceibau

Post doctoral Researcher




Dr. Dobos Imre

Full Professor




Imre Dimény

PhD candidate



Dr. Fatma Aalan

Postdoctoral Researcher



Robert Somogyi

Assistant professor

Introduction of the Research Group

The BME GTK Quantitative Social and Management Sciences Research Center is committed to addressing challenges in social and management sciences through the use of exact, quantitative methods. The different streams of research resting on a common methodological platform stimulate interdisciplinary approaches that go beyond the boundaries of thematic classifications and arches over fields such as network science, experimental economics, industrial organization and game theory. The Research Group strives beyond academic excellence to disseminate its results and expertise to the broader academic community, students, professionals and society via joint projects and public events.

ACHIEVEMENTS

PUBLICATIONS

AWARDS

JOURNALS

PROJECTS


INDUSTRY RELATIONS

CONFERENCES

- Postdoctoral research grant of Luca Sandini, titled "iCrowd: innovation, digital workforce and intellectual property rights", 2021

- MPU Stern's NET Institute Summer grant of Robert Somogyi for his paper "Deceptive Products on Platforms"

- QSMS is a research center with postdocs hired from the European Econ Job Market.



Full Professor

DR. BALÁZS BENYÓ

PhD, CSc

H-1117 Budapest, Magyar tudósok krt. 2., Building I, Room IB325

+3614631416

bbenyo@iit.bme.hu

GROUPS

Biomedical Informatics Research Group

FACULTY

Faculty of Electrical Engineering and Informatics

DEPARTMENT

Department of Control Engineering and Information Technology

Research keywords: · physiological system modelling,model-based medical diagnostic and treatment,medical imaging and image processing,mobile and contactless technologies

Horizon Europe keywords: · Health technologies, new tools and solutions

PUBLICATIONS

PROJECTS

CONFERENCES

PATENTS

Chase J. Geoffrey, Benyo Balazs, Desaive Thomas: Glycemic control in the intensive care unit: A control systems perspective, ANNUAL REVIEWS IN CONTROL 48: pp. 359-368, 2019; doi:10.1016/j.arcontrol.2019.03.007; Research field: Control and Systems Engineering; position: 23/251 (D1) Scopus ranking: journal position/length of list, IF 4.987

Knopp JL, Signal M, Harris DL, Marics G, Weston P, Harding J, Tóth-Heyn P, Hómlök J, Benyó B, Chase JG: Modeling intestinal glucose absorption in premature infants using continuous glucose monitoring data, COMPUTER METHODS AND PROGRAMS IN BIOMEDICINE 171: pp. 41-51, 2019; doi:10.1016/j.cmpb.2018.10.005; Research field: Computer Science Applications; position: 141/615 (Q1) Scopus ranking: journal position/length of list, IF 3.632

Stewart KW, Pretty CG, Tomlinson H, Thomas FL, Homlok J, Noemi SN, Illyes A, Shaw GM, Benyo B, Chase JG: Safety, efficacy and clinical generalization of the STAR protocol: a retrospective analysis., ANNALS OF INTENSIVE CARE 6: (1) 24, 2016; doi:10.1186/s13613-016-0125-9; Research field: Critical Care and Intensive Care Medicine; position: 9/90 (D1) Scopus ranking: journal position/length of list \*

Chase, J Geoffrey ; Preiser, Jean-Charles ; Dickson, Jennifer L ; Pironet, Antoine ; Chiew, Yeong Shiong ; Pretty, Christopher G ; Shaw, Geoffrey M ; Benyo, Balazs ; Moeller, Knut ; Safaei, Soroush et al.: Next-generation, personalized, model-based critical care medicine: a state-of-the art review of in silico virtual patient models, methods, and cohorts, and how to validate them, BIOMEDICAL ENGINEERING ONLINE 17 : 1 Paper: 24 , 29 p. (2018)

Balázs Benyó: Identification of dental root canals and their medial line from micro-CT and cone-beam CT records, BIOMEDICAL ENGINEERING ONLINE 11: (1) 81, 2012; doi:10.1186/1475-925X-11-81;

SUPEERA-PANTEERA WORKSHOP | 10/26/2022 | dr. Borbala Schenk

# I. BME Competence Fair, social media

Meet [Budapest University of Technology and Economics](#) research groups!

The BME Combustion Research Group has a principal focus on [#combustion](#), especially on [#renewable](#) liquid and gaseous [#fuels](#). They also have expertise in solving industrial problems with [#thermal](#) modelling and simulations. Their results have a wide range of industry applications from [#wind](#) [#turbines](#) and [#space](#) technology to [#medical](#) research.

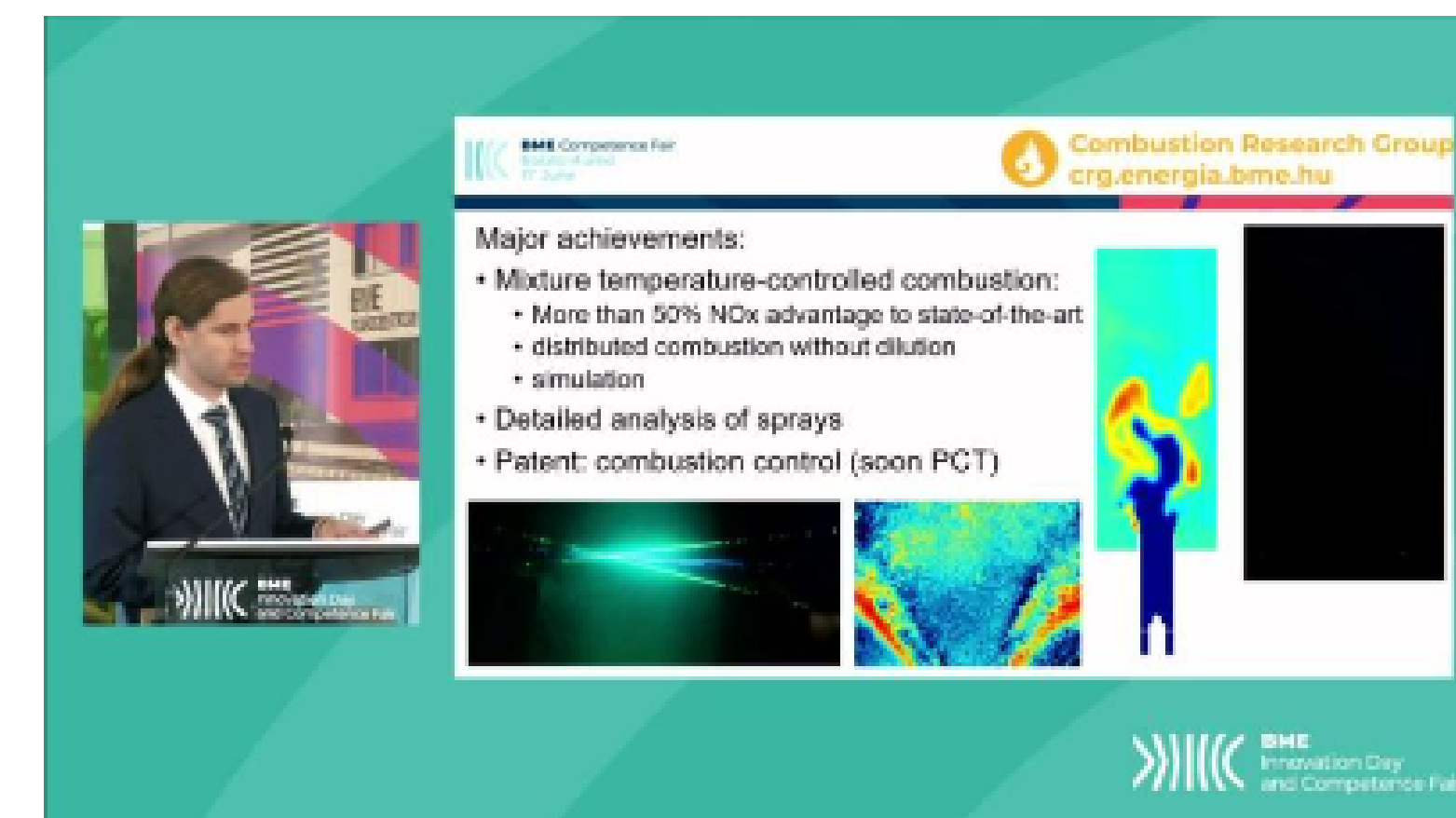
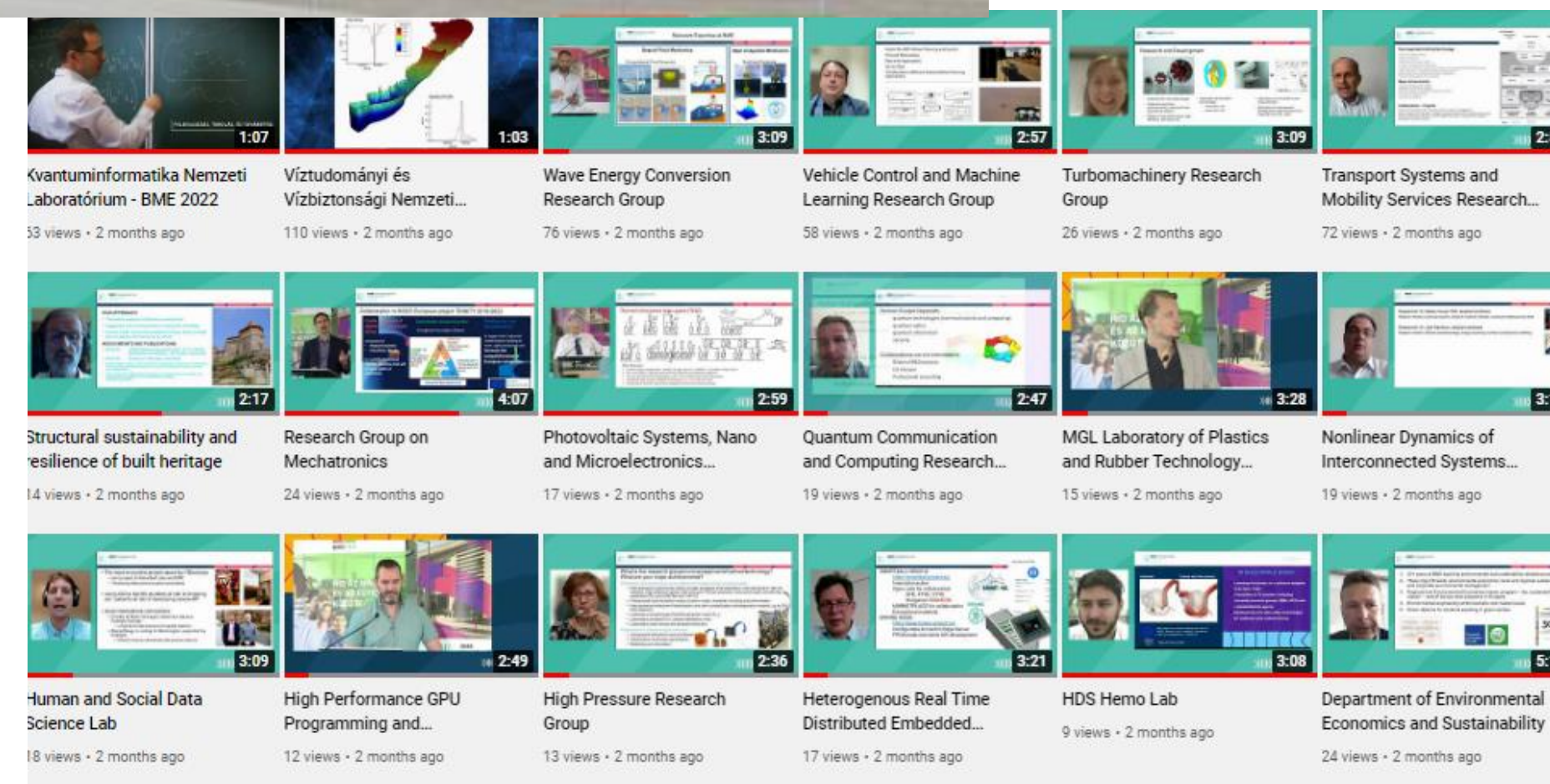
"Our most notable achievement is a mixture temperature controlled combustion with more than 50% NOx emission reduction compared to the state-of-the-art solutions without compromising the concentration of other pollutants." - says the leader of the research group [Viktor Józsa](#)

The BME Combustion Research Group is interested in Horizon Europe collaboration, especially in the fields of Clean, sustainable, secure and competitive [#energy](#) supply, [#climatechange](#) mitigation and adaptation, [#hydrogen](#) and [#renewableenergy](#).

For their detailed professional profile:  
watch their research pitch video at <https://lnkd.in/dHtErQSx>  
visit their profile page on the BME Competence Map: <https://lnkd.in/dsiiNrSA>

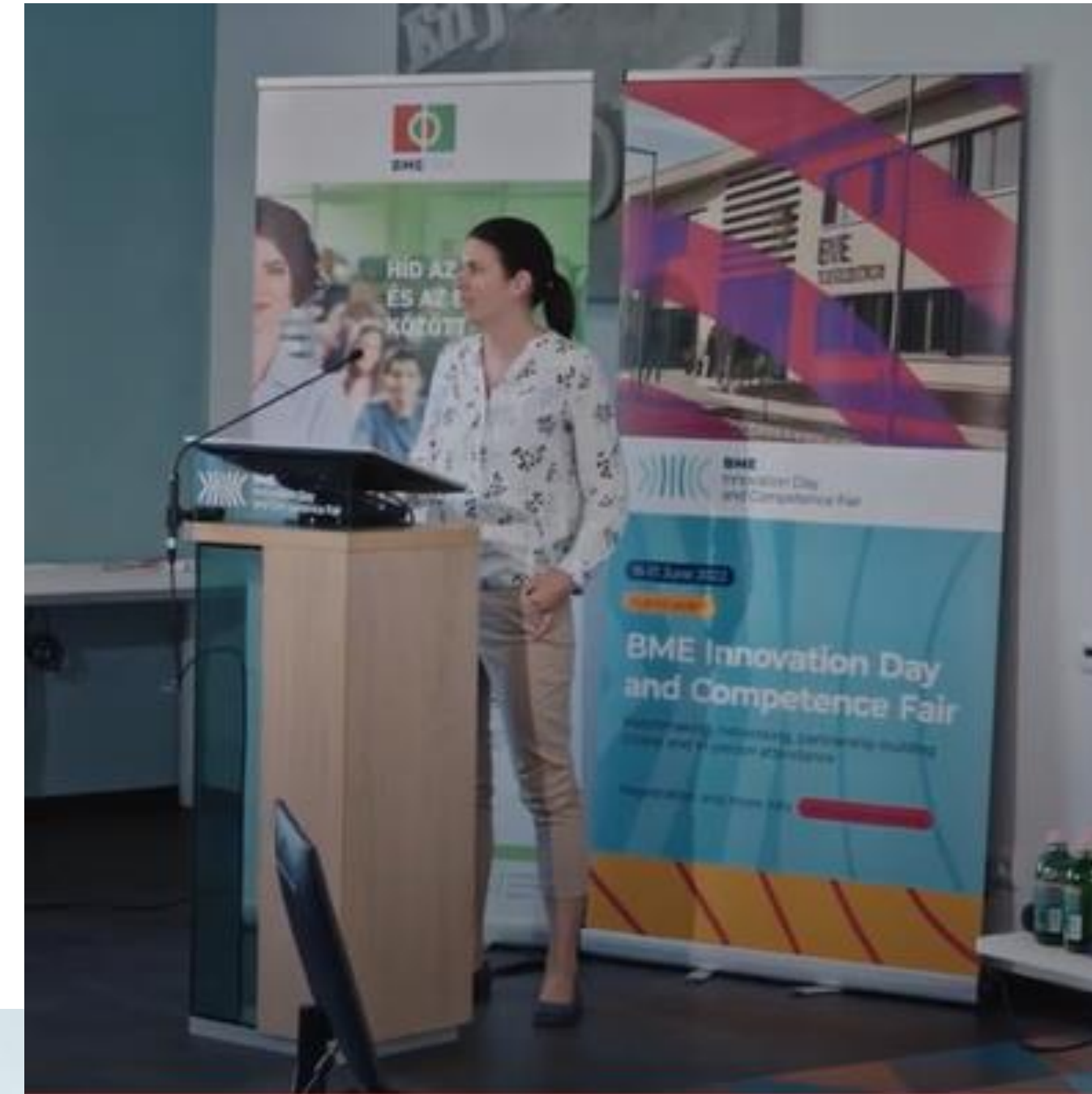
[#BMECompetenceMap](#) [#MeetBMEResearchers](#) [#horizoneurope](#) [#ExpertiseOffer](#)  
[#BMECombustionResearchGroup](#) [#matchmaking](#) [#engineering](#)  
[#FacultyofMechanicalEngineering](#)

Imre Norbert Orbulo Csaba János Hős



# Guiding principles of Horizon Europe support

1. Communication, proactivity, open door policy
2. Repositioning of EU calls
3. International visibility
4. Mindset-change
5. „Always something new”



# „Always something new”

Powered by  
**BME**  
Competence Map

# #batteries

## AKKUMULÁTORIPARI NEMZETKÖZI INNOVÁCIÓS PROJEKTEK TERVEZÉSE

**WORKSHOP** | HU & ENG | **2022. november 11.**

a BME FIEK és az EIT InnoEnergy HUB Hungary közös szervezésében

10:00-12:00 Z10-MNB Községi Tér  
Z épület Bertalan Lajos u. 2. 10. emelet

- találkozási lehetőség biztosítása a BME akkumulátortechnológiával foglalkozó kutatócsoportjai részére
- a témában várható 2023-24-es Horizon Europe és EIT InnoEnergy pályázati lehetőségek áttekintése
- az európai akkumulátoripari kutatás legújabb szakpolitikai irányainak áttekintése
- kapcsolódási pontok keresése a Magyar Akkumulátor Szövetség partnereivel
- a pályázati partnerkeresés segítése, értékJánlat és Expertise Offer készítése

Előadók:

**Dervalics Ákos**  
**Palotai Zoltán, Boldizsár Dóra**  
**Kaderják Péter**

**Schenk Borbála**

EIT InnoEnergy HUB Hungary  
Express Innovation Agency  
BME Zéró Karbon Központ –  
Magyar Akkumulátor Szövetség  
BME FIEK

MŰGYTEM 1782  
BME FIEK  
express innovation agency  
green brother  
HORIZON EUROPE  
MAGYAR AKKUMULÁTOR SZÖVETSÉG  
BME Competence Map  
NEMZETI INNOVÁCIÓS KÖZPONT  
AZ NKFI ALAPBÓL MEGVALÓSULÓ PROJEKT

Videos intriducing research groups

**PRODUCTION** Angol nyelvű bemutatkozó videók készítése BME-s kutatócsoportok részére

Eredmények, kompetenciák bemutatása  
Nemzetközi pályázati és ipari partnerkereséshez  
Kompetenciaterkép-profilhoz  
Kutatócsoport honlapjára  
LinkedIn, Facebook posztokhoz

**FELVÉTEL INDUL!**

**DIRECTOR** BME FIEK

**DATE** 2022. 10. 24.  
10-18 óra között

**BME Z épület**  
10. emelet

**RÉSZLETEK**

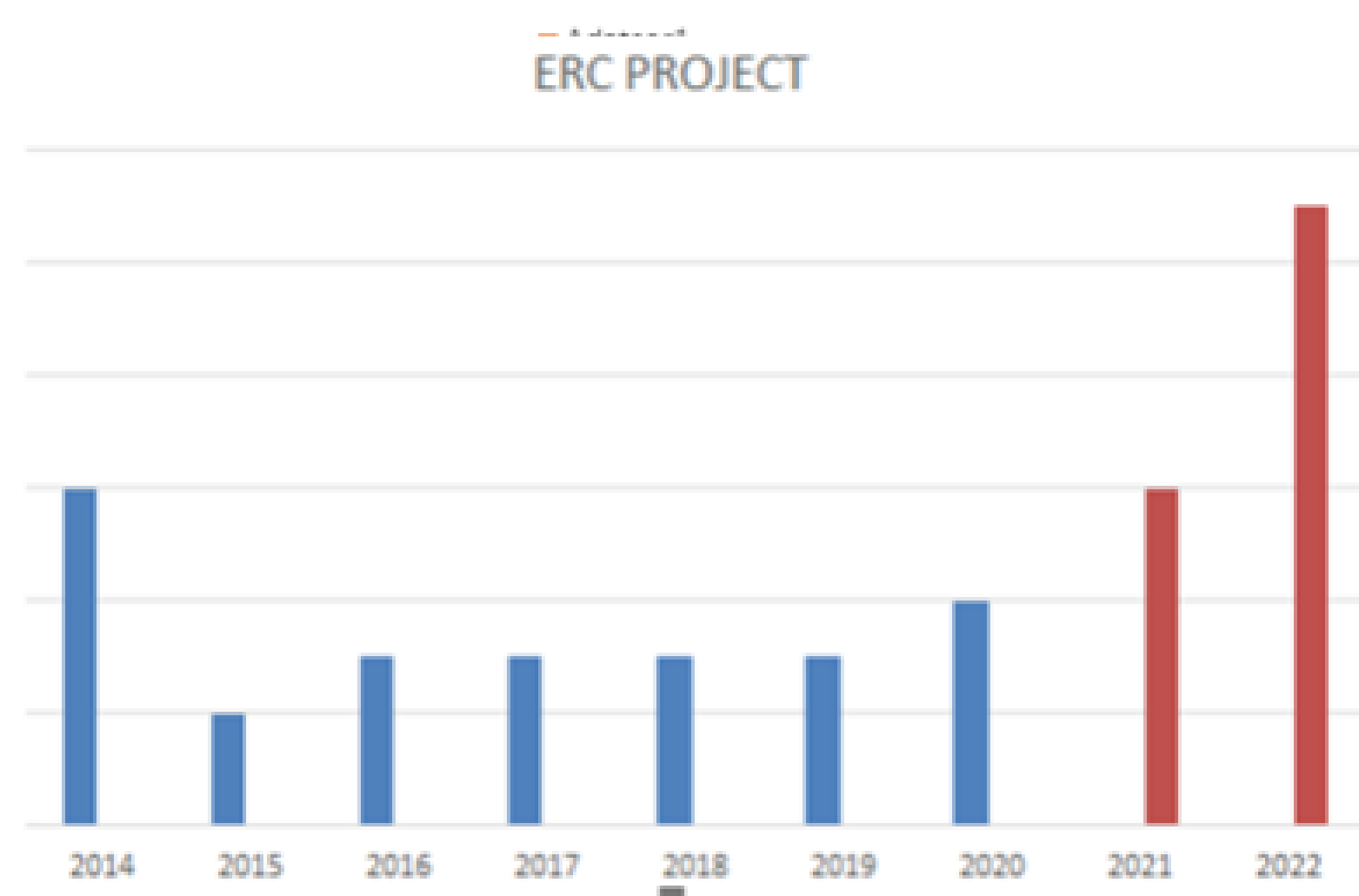
HORIZON EUROPE  
MŰGYTEM 1782  
BME FIEK  
NEMZETI INNOVÁCIÓS KÖZPONT  
AZ NKFI ALAPBÓL MEGVALÓSULÓ PROJEKT

Innovation workshops, internal matchmaking

# Results in words and numbers



- What qualifies as success?
- Organic development
- Coordinator roles



+2%

$\frac{1}{4} <$

20



NEMZETI  
KUTATÁSI, FEJLESZTÉSI  
ÉS INNOVÁCIÓS HIVATAL

# Thank you for your attention!



AZ NKFI ALAPBÓL  
MEGVALÓSULÓ  
PROJEKT

dr. Borbala Schenk, Chief European Research Funding Advisor, BME Competence  
Map editor

Budapesti Műszaki és Gazdaságtudományi Egyetem (BME) FIEK  
Budapest, Bertalan Lajos u. 2. 1111 Z 908.

Tel.: +3614631727

[schenk.borbala@bme.hu](mailto:schenk.borbala@bme.hu)

<https://www.linkedin.com/in/borbala-schenk-9b8078aa/>

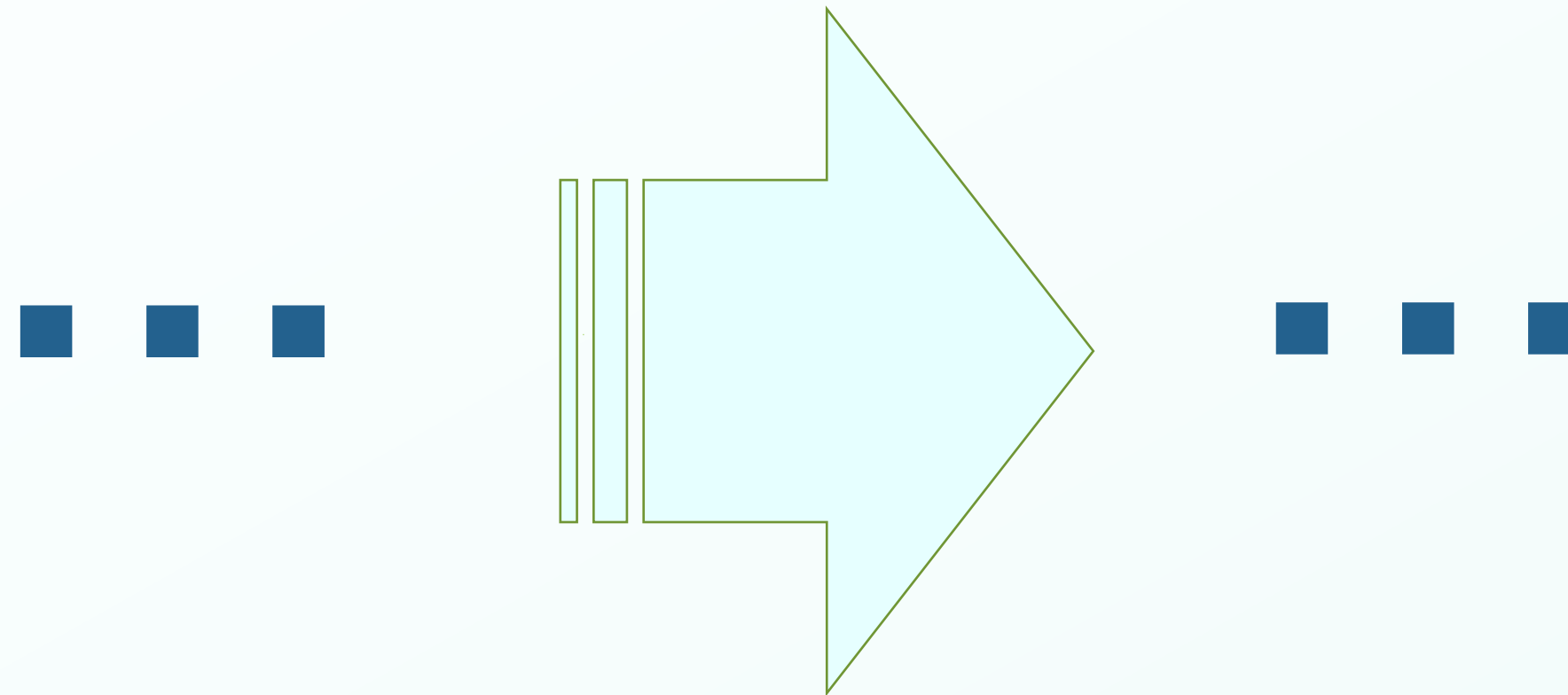
[horizon.bme.hu](https://horizon.bme.hu)



# International research collaboration opportunities: fostering EU Clean Energy transition in Hungary

26 October 2022  
09:00 - 17:00 CEST

Location: Budapest University of Technology and Economics [Room: Pécsi Eszter]



# SME experience in R&I ecosystem

Panel: Opportunities to increase participation in join R&I activities

**Chavdar Ivanov**

**Managing Director, gridDigIt**

26 Oct 2022, Budapest

**SUPEERA/PANTERA workshop**

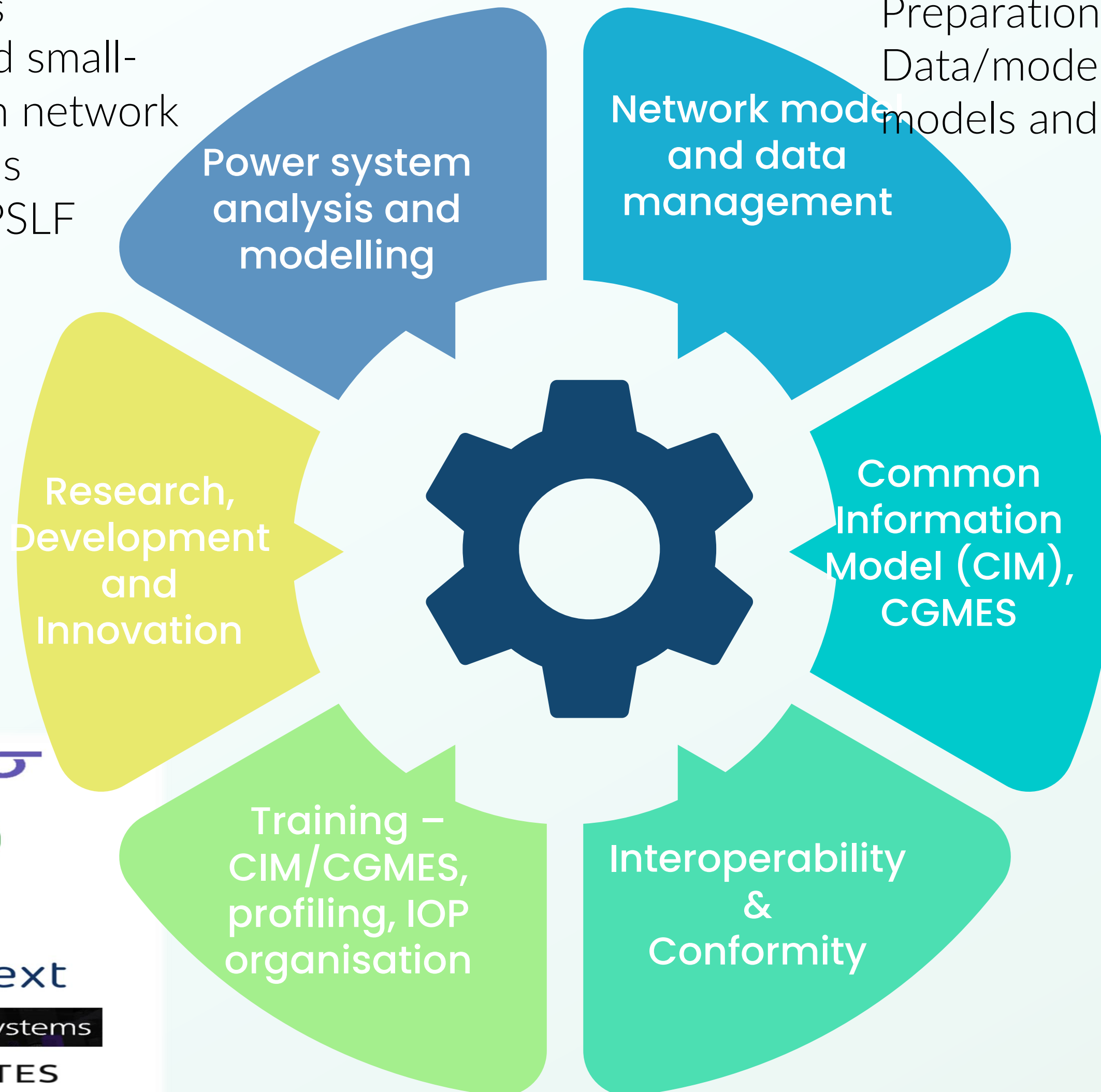
Budapesti Műszaki és Gazdaságtudományi Egyetem Budapest 1111, Műegyetem rakpart  
3. I. 93-95 – [Room: Pécsi Eszter]



# ABOUT gridDigIt

Feasibility/system development studies,  
Event analyses  
Preparation of power system models  
Main expertise in load flow, RMS and small-signal stability analysis. Proficiency in network modelling and studies in tools such as PowerFactory, PSS/E, PSS/ODMS, PSLF

Advising on state of the art  
Preparation of technical specifications  
Data/models preparation for testing network models and data management systems



Conformity of IEC CIM-related standards,  
Interoperability (IOP) aspects of grid models exchange,  
Organising and directing IOP tests

Preparation of project proposals,  
R&D roadmaps and implementation plans

**entsoe**  
Reliable Sustainable Connected

**tennet**

**elering**  
CONNECTING ENERGIES

**navitasoft**  
We digitalize energy.

**Harvey Nash.**

**PCIttek**

**coresta**

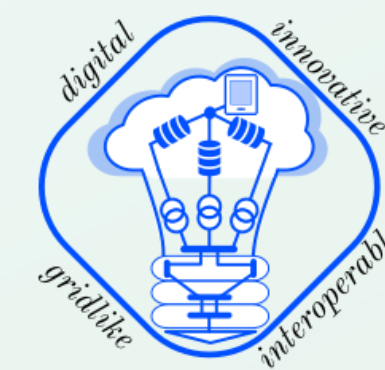
**MSZT**  
Hungarian  
Standardisation  
Board (MSZT)

**ontotext**

**Open Grid Systems**

**ASSOCIMATES**

**Open Systems International (OSI)**



**gridDigIt®**  
tools & solutions

# EXPERIENCE IN R&I INVOLVEMENT

- Past SC Member of European Electricity Grid Initiative (EEGI) and involved in the setup of ETIP SNET
- Involvement in various coordinating and support actions
- Contribution to the development of ENTSO-E R&D&I Implementation plan
- Member of ETIP SNET WG5 (Innovation implementation in the business environment) and co-Chair of WG4 (Digitisation of the electricity system and customer participation)
- Contribution to OneNet project as a subcontractor



# RECOMMENDATIONS AND OBSERVATIONS

- Get involved in the structures that discuss R&D efforts
  - Promote efforts to solve real life problems
  - Consider projects of different TRL level
  - Monitor open calls
- 
- Difficulties to get involved in projects – considering administrative effort
  - Long procedures
  - Consultants have the dilemma – get involved in a consultancy work vs contribution to R&D => subcontracting might be an option
  - Consultants may offer lower rates when contributing to R&D efforts or offering limited amount of resources

THANK YOU FOR YOUR ATTENTION!

**Contact info:**

**Chavdar Ivanov**

[Chavdar.Ivanov@griddigit.eu](mailto:Chavdar.Ivanov@griddigit.eu)



**info@griddigit.eu**



[www.griddigit.eu](http://www.griddigit.eu)



# International research collaboration opportunities: fostering EU Clean Energy transition in Hungary

26 October 2022  
09:00 - 17:00 CEST

Location: Budapest University of Technology and Economics [Room: Pécsi Eszter]



## Panel Discussion

**Daniel Horn**, Director, Institute of Economics - Centre for Economic and Regional Studies (KRTK)

**Borbála Schenk**, Chief European research funding advisor, Center for University-Industry Cooperation at Budapest University of Technology and Economics

**Chavdar Ivanov**, Managing Director, gridDigt



Lunch break & Networking



**PANTERA project:  
A Pan-European  
Technology Energy  
Research Approach**

# **PANTERA and the EIRIE platform**

***EIRIE in support of the R&I European ecosystem:  
Objectives and opportunities***

*“International research collaboration opportunities: fostering EU Clean  
Energy transition in Hungary”*

***SUPEERA and PANTERA projects joint workshop***

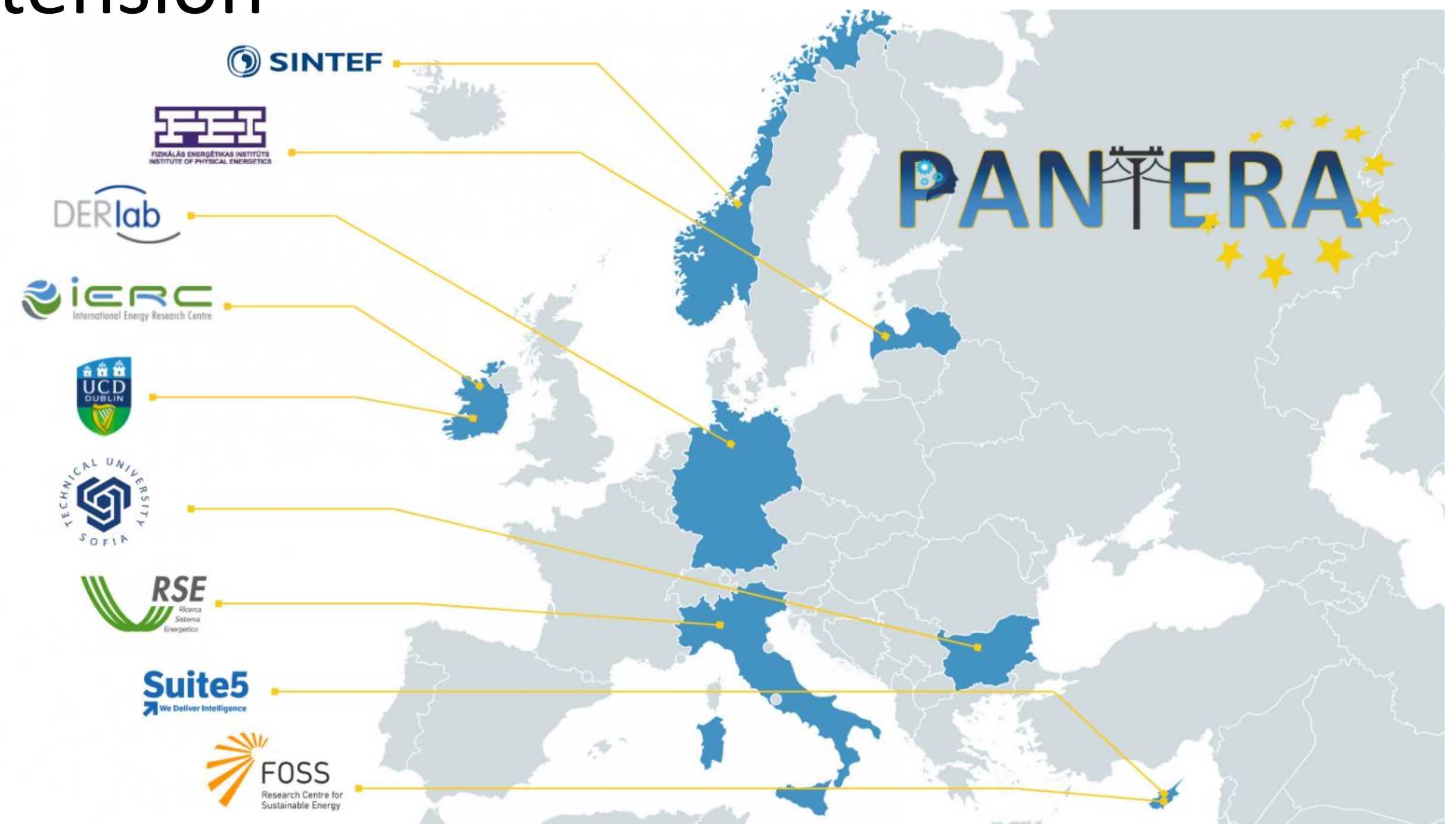
*Budapest - 26 October 2022*

**Mattia Cabiati**



# 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:**
- **Consortium:**



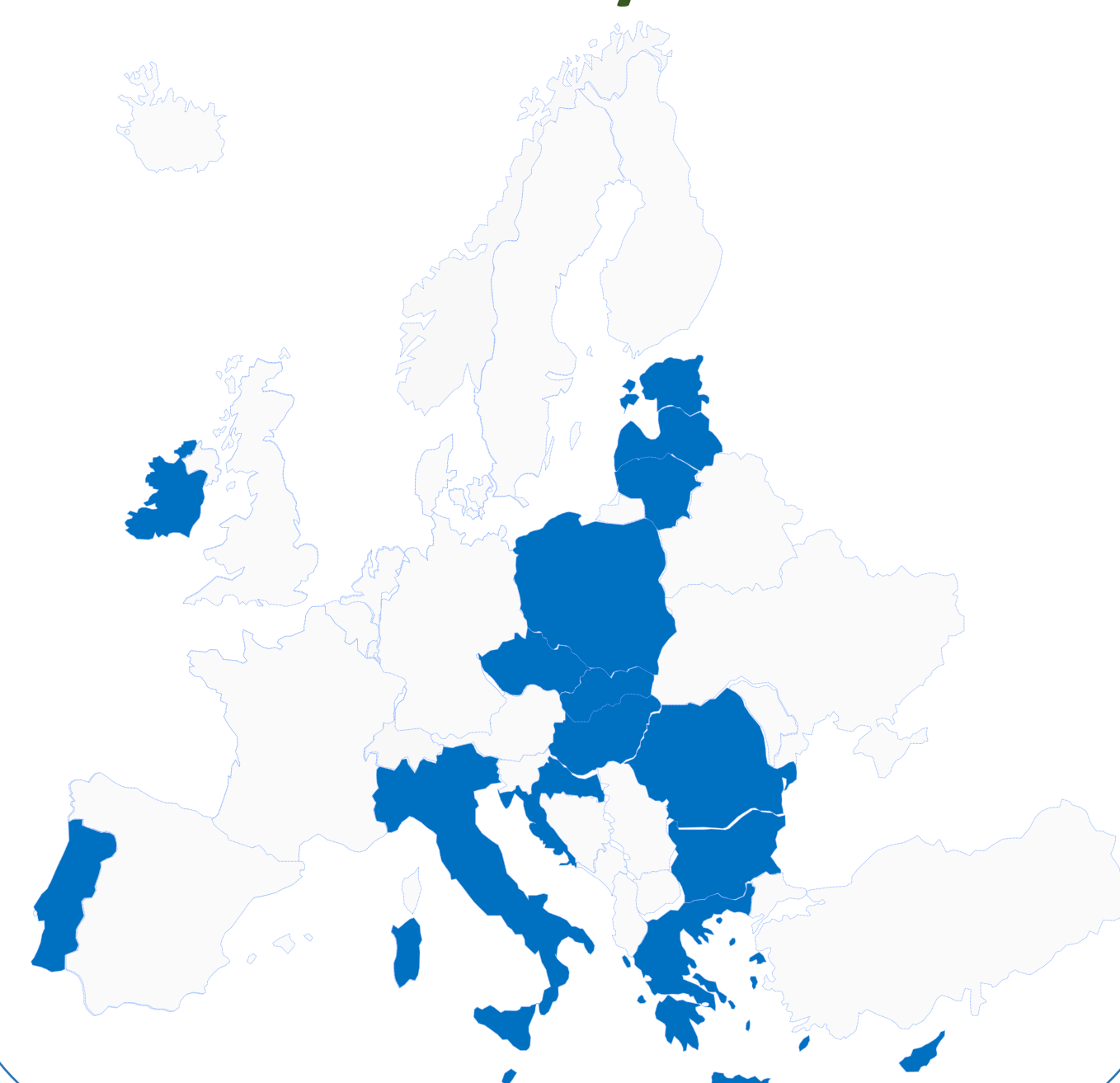
# PANTERA Mission



**PAN** European Technology Energy Research Approach (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



# 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

# Discussion with stakeholders:

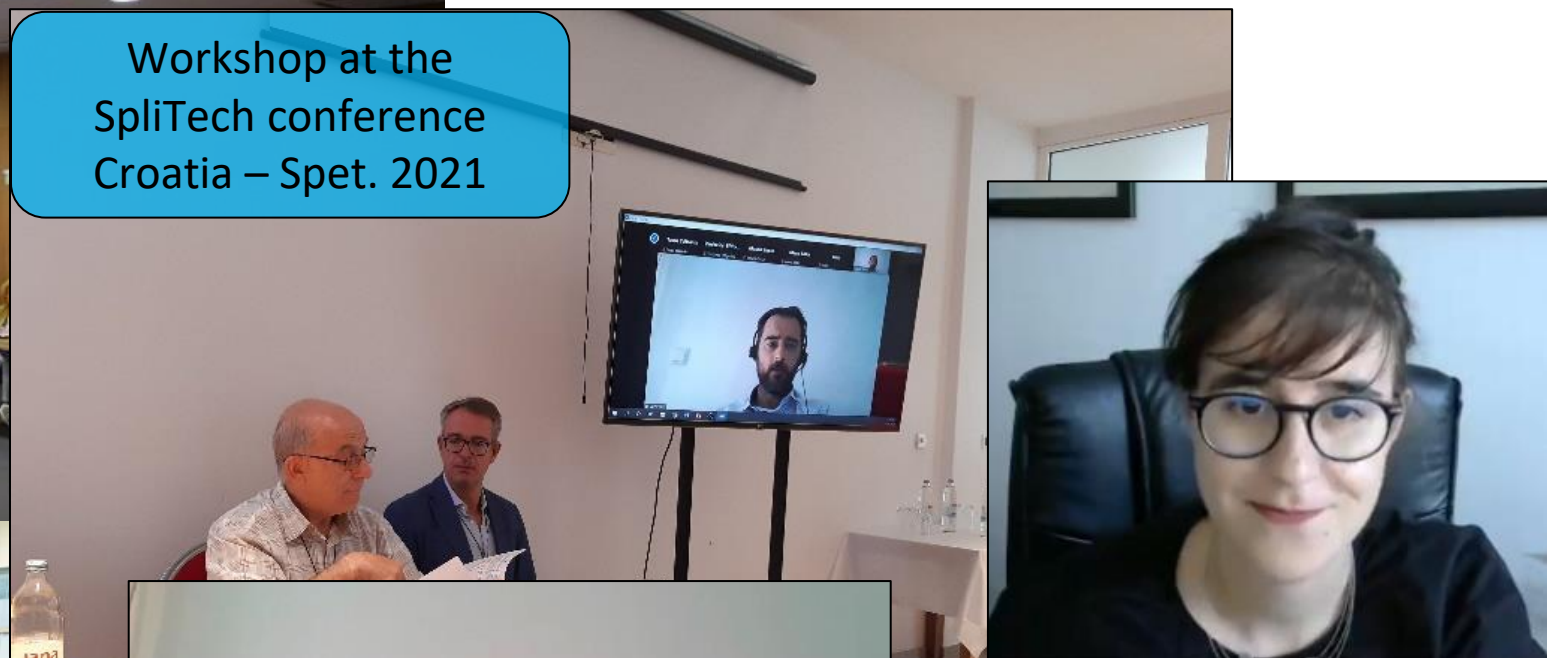
*Some of the workshops organized:*

- 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

July 2019 workshop  
in Sofia



Workshop at the  
SpliTech conference  
Croatia – Spet. 2021



December 2019  
workshop in Dublin



February 2020  
workshop in Athens



Boot at the ENLIT conference  
Milano Nov./Dec. 2021

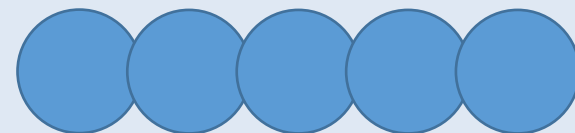
# Feedbacks from the survey

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

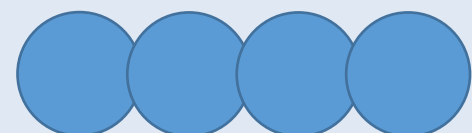
- ❖ **Firsthand insight** into interesting smart grid projects, results, ideas and initiatives
- ❖ **Networking** and potential partnerships
- ❖ **Learning from others experience** (especially in practice-oriented projects)
- ❖ Cross-cutting information about different project initiatives
- ❖ Policy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

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

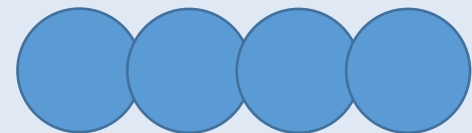
Lack of responsive networking facilities



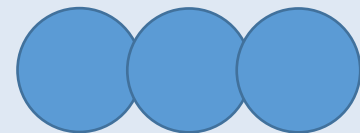
Limited monetary resources



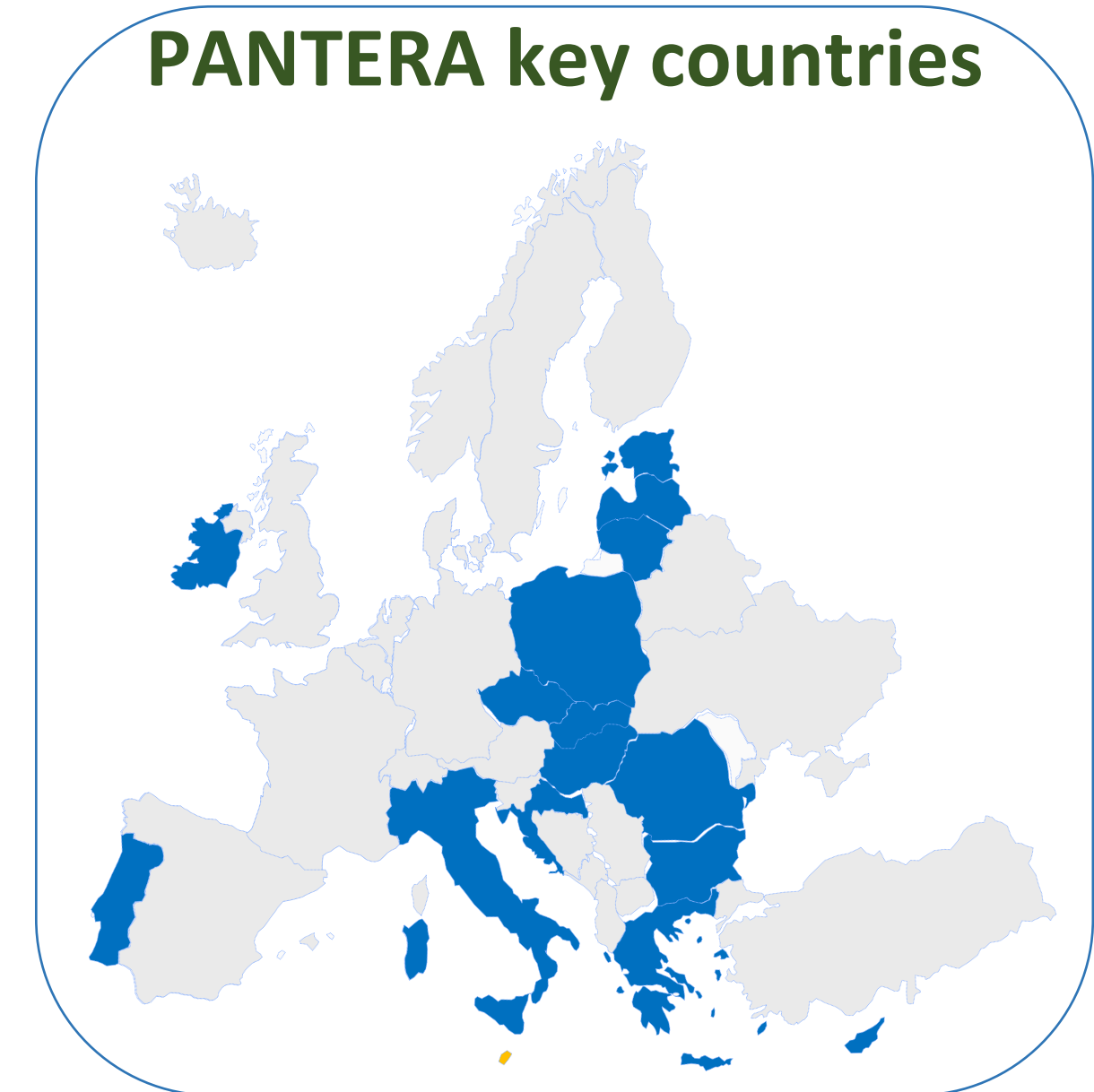
Limited human resources



Limited national policy in support of R&I activity

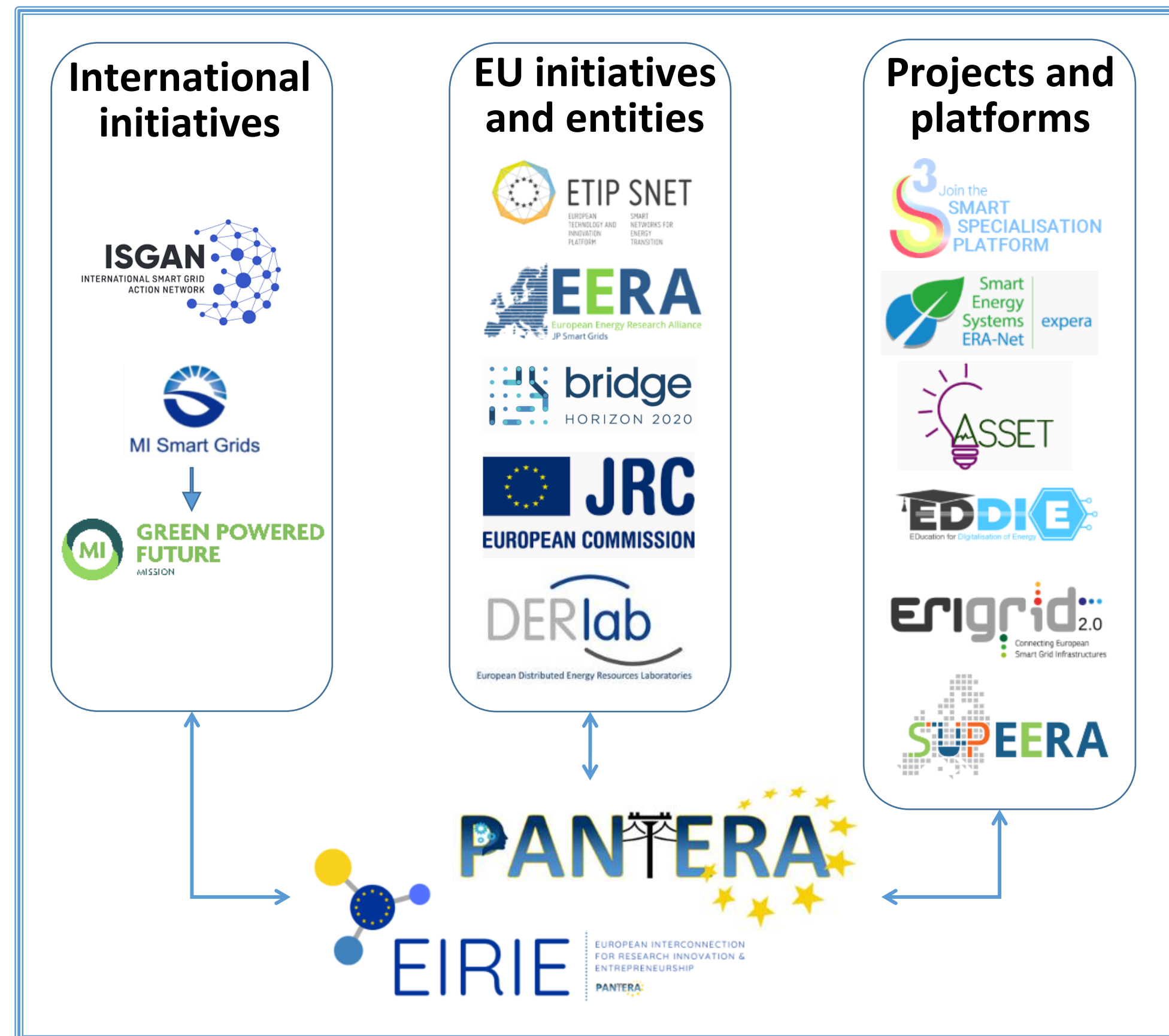


## PANTERA key countries



We are still collecting feedbacks at the following [link](#)!

# PANTERA: links and collaborations with international initiatives and projects



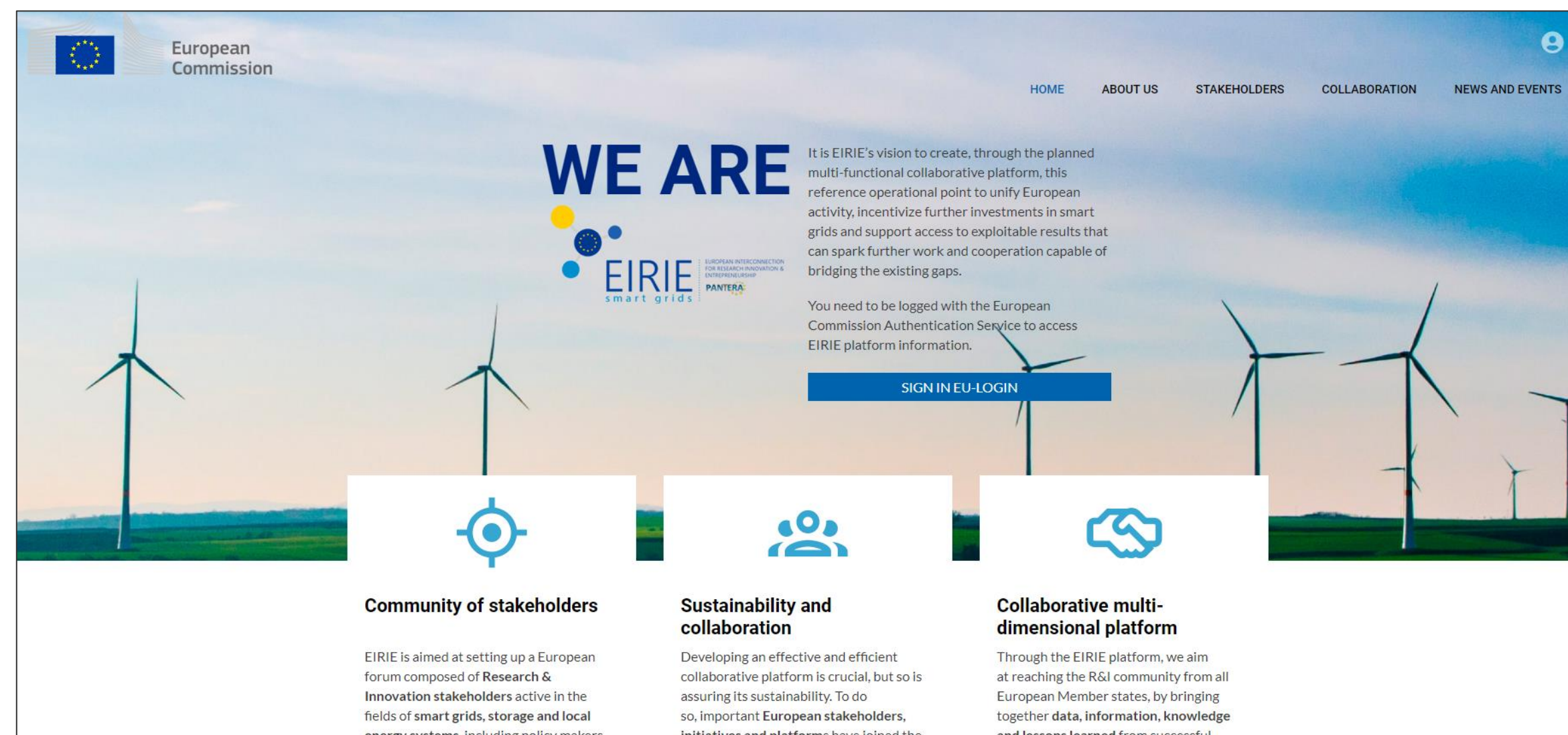
Thanks to the deep involvement of PANTERA partners in international initiatives, **good collaboration has been established with international consortia and other projects.**

# The EIRIE platform

*“European Interconnection for Research Innovation and Entrepreneurship”*



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.

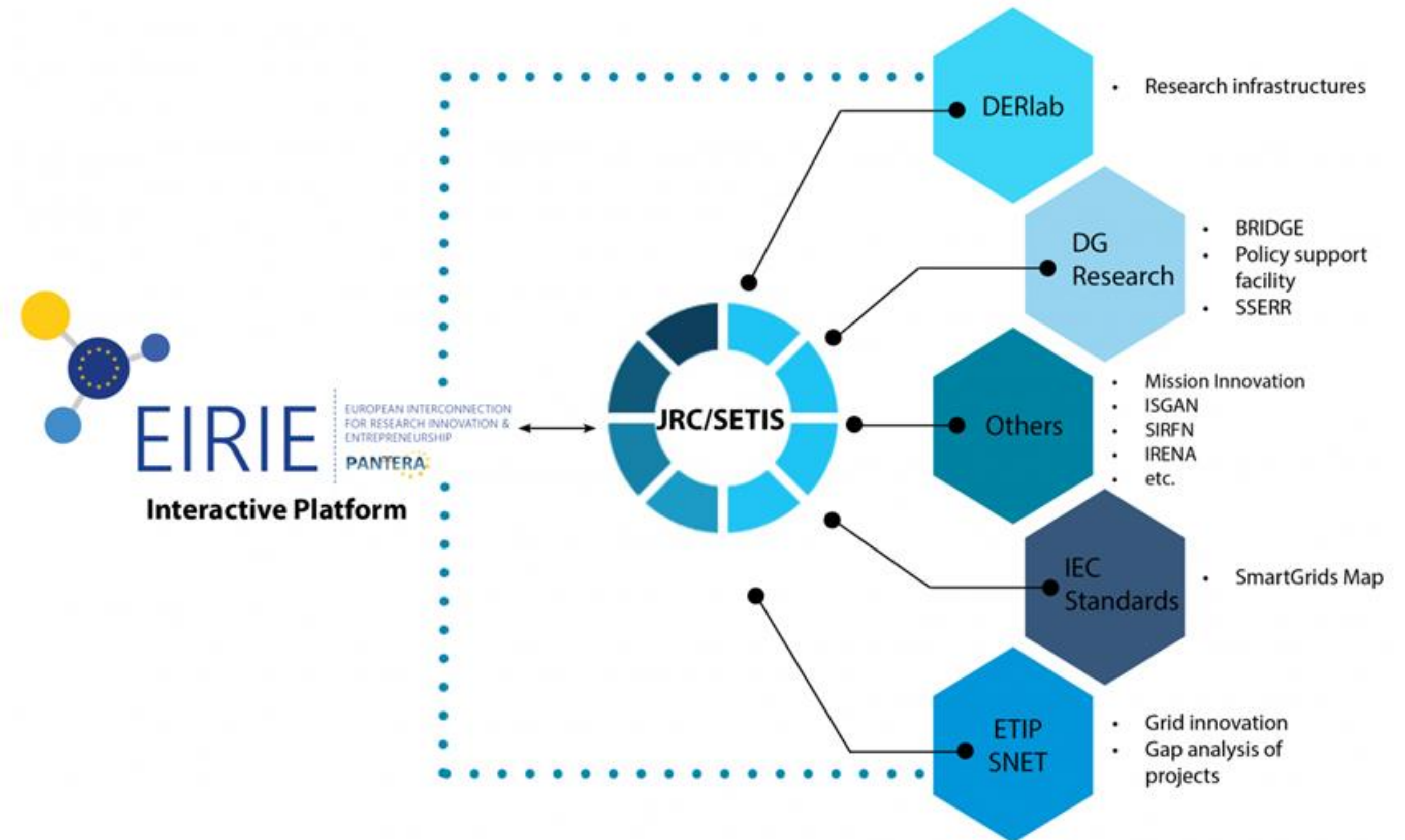


[www.EIRIE.eu](http://www.EIRIE.eu)



# The EIRIE platform

- Hosted in JRC's Smart Energy Systems environment
- **EU login credentials** for centralized authorization and verification
- State-of-the-Art **tools for the promotion of collaboration** between stakeholders at all different levels
- **Integrated with other relevant platforms**



# Why EIRIE?



EIRIE will help bridge the gaps that currently exist in the energy field in Europe between Member States, by bringing together the attractiveness of successful partnerships being national, regional or European.



EIRIE will act as THE meeting point of all actors active in the fields of smart grids, storage and local energy systems in Research & Innovation from all Europe and will contribute to the achievement of the envisioned carbon-free system of 2050.



Community of stakeholders



Sustainability and  
collaboration



Collaborative multi-  
dimensional platform

## Benefits of using the platform



An easy access to information on potential funding and consortium building,



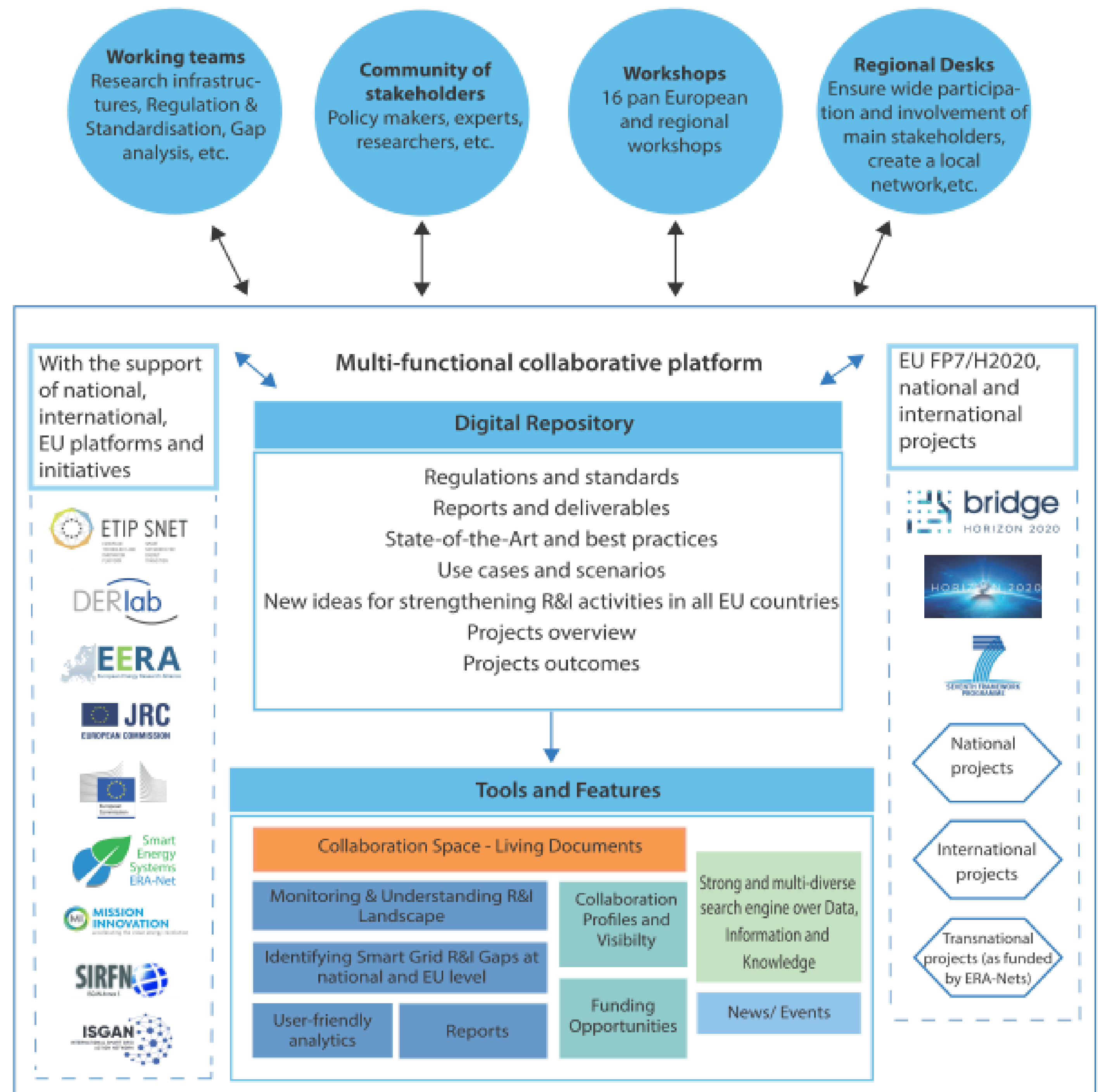
A central point for collaborating on the issues relevant for the energy sector



An active role in the community and a support in providing input to European policies,

# The EIRIE platform

- A sustainable and interactive multi-dimensional pan-European platform.
- Knowledge-sharing mechanisms that will help identify, discuss and structure key R&I challenges.
- Regional desks and ad hoc working groups to respond to R&I needs and tackle key topics identified in the project.

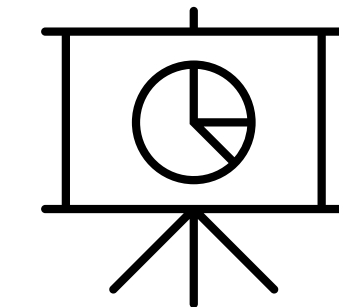


# EIRIE: Key areas and functionalities



## Data area:

- Projects data collection (results, and outcomes, best practices, reports and deliverables, etc.)
- Standards and regulations



## Information area:

- Projects related information through integration with JRC and CORDIS, Mission Innovation, ETIP SNET, BRIDGE, EXPERA, etc.



## Knowledge area:

- Living documents



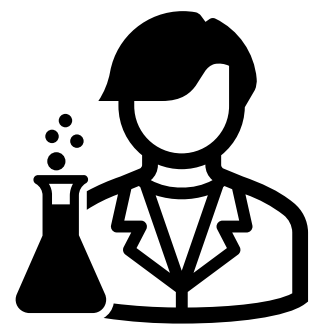
## Search and linking functions:

- Advanced search functionalities

# EIRIE: Value proposition

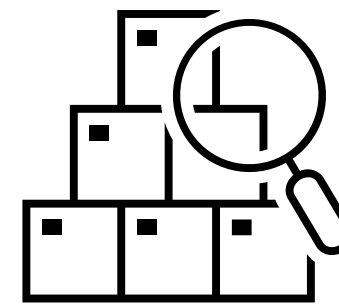
## For researches

- ✓ Exploitable information from **smart grid projects**
- ✓ Information about **best practices** in the R&D sector
- ✓ **First-hand insights** into interesting smart grid projects, results, ideas, initiatives
- ✓ Access to **training material** and education programs



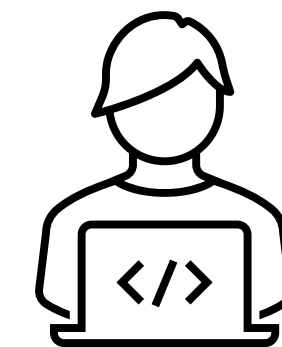
## For R&I Organizations

- ✓ **Networking opportunities**, encouraging synergies with projects and initiatives
- ✓ **Information sharing** and promotion opportunities through highlighting key achievements
- ✓ **Fostering the engagement** of low R&I spending countries in EU level activities



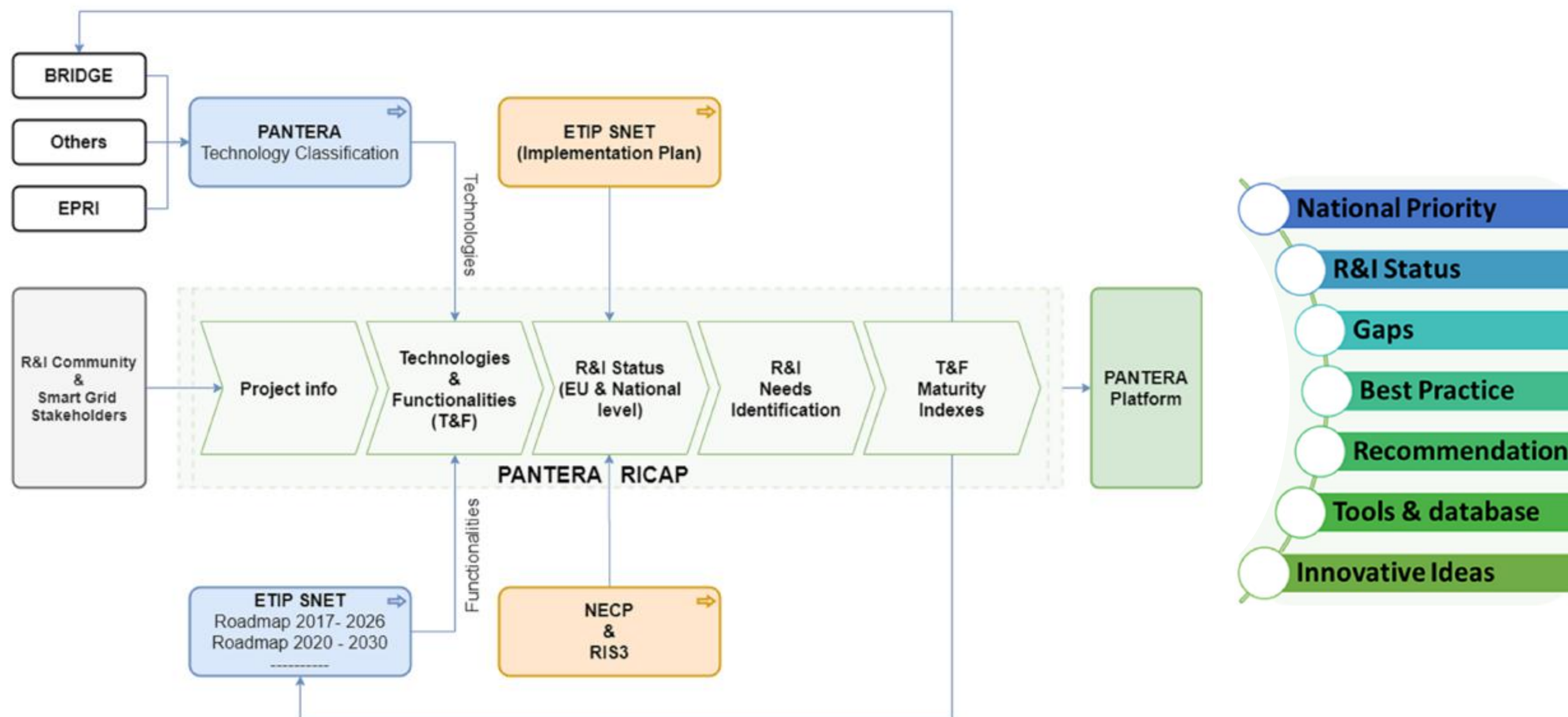
## For Policy Makers

- ✓ Insights about R&I activities at **EU and national level**
- ✓ Policies fostering **R&I activities advancing**
- ✓ **Pooling together** different available instruments
- ✓ **Coordination** of R&I activities and networking



# The RICAP process

Through the R&I status and Continuous gAP analysis (RICAP), the PANTERA project provides a methodology for EU initiatives' activities (such as the development of the ETIP SNET Implementation Plan and BRIDGE task forces) to focalize the efforts and promote the connection with Stakeholders.



# Supporting the ETIP SNET

Group of Technologies	Nº	Technology/Systems	
Integrated grid	IG1	Flexible ac transmission systems (FACTS)	
	IG2	Models, Tools, Systems for the operation analysis, control and the development of the integrated grid including cost elements	
	IG3	HVDC	
	IG4	Forecasting (RES)	
	IG5	Asset management	
	IG6	Outage management, fault finding and associated equipment (including protection)	
	IG7	Equipment and apparatus of the integr	
	IG8	Equipment, sensing, monitoring, meas analysis and solutions and control	
	IG9	Advance distributed control	
	IG10	Feeder auto-restoration / self-healing	
	IG11	Smart metering infrastructure	
Generation	Ge24	Flexible generation	
	Ge25	Solar including PV & Concentrated So	
	Ge26	Wind	
	Ge27	Hydropower	
	Ge28	Hydrogen & sustainable gases	
	Ge29	Other generation	
		Customers and market	CM12 Distributed flexibility, load, forecasting, management & control and demand response including end devices, communication infrastructure and systems
			CM13 Smart appliances
			CM14 Building control, automation and energy management systems
			CM15 Electric vehicles
			CM16 Energy communities
		Storage	CM17 Lighting
			CM18 Electricity market
			St19 Electric Storage
			St20 Thermal Storage
			St21 Power to X
		Digitalisation, Communication and Data	St22 Pumped storage
			St23 Other Storage
			DCD30 Communication networks including devices and systems for signals and data connectivity and solutions
			DCD31 Digital Twins
			DCD32 Artificial intelligence
			DCD33 Data and cyber security including repositories

## Functionalities

F1	Cooperation Between System Operators
F2	Cross Sector Integration
F3	Integrating the subsidiary principle – the customer at the center at the heart of the integrated Energy System
F4	Pan-European wholesale markets
F5	Integrating local markets (enabling citizen involvement)
F6	Integrating digitalization services (including data privacy, cybersecurity)
F7	Upgraded electricity networks, integrated components and systems
F8	Energy system business (includes models, regulatory)
F9	Simulation tools for electricity and energy systems (Software)
F10	Integrating flexibility in generation, demand, conversion and storage technologies
F11	Efficient heating and cooling for buildings and industrial view of system integration of flexibilities
F12	Efficient carbon-neutral liquid fuels & electricity for in view of system integration of flexibilities

## Functionalities-technologies link

Energy System Building Blocks	Functionalities (Short Name)	Relevant Systems and technologies
The efficient organisation of energy systems	F1 - Cooperation	5 - 11
	F2 - Cross-sector	15, 18, 20 - 25, 28
	F3 – Subsidiarity	12, 14, 18
Markets	F4 - Wholesale	4, 18, 19 ,24, 25, 26
	F5 - Retail	4, 12, 13, 15, 16, 18, 19, 24
Digitalization	F6 - Digitalization	8, 11, 13, 30 - 33
Infrastructure for Integrated Energy Systems	F7 – Electricity Systems & Networks	1, 3, 5 - 12
	F8 - Business	11 - 29
	F9 - Simulation	2, 4, 31, 32
Efficient energy use	F10 - Flexibility	12, 14, 16 - 24, 27 - 29
	F11 - Heating and Cooling	12, 14, 16, 18, 20, 22
	F12 - Transport	16, 18, 19, 28, 29

# EIRIE: Search tool



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EIRIE / Search Area / Repository Search Tool

REPOSITORY  
SEARCH TOOL

EIRIE offers a strong and versatile search engine (classic filtering and list-based results will be featured ). Through this page you can search and find fine-grained and targeted information available in the EIRIE platform and referring to project-related results, like project deliverables, reports, best practices, use cases, regulations, standards and grid codes.

ALLORGANIZATIONSPROJECTSDATA COLLECTIONREGULATIONS & STANDARDS

AllSmart grids projectsMy projectsMy organization's projects

Name/acronym/descriptionDateTo

Project TypeTopic Research sub-areasProject coordination

Project partnersCountryPlatform

© The PANTERA Consortium  
EU H2020 Programme GA No. 824389

PANTERA project – 26<sup>th</sup> October 2022 – Budapest

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# EIRIE: Stakeholders section



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Funding

Access to R&I Funding

Access to regional activity

Matchmaking Area

Opening Date

dd/mm/yyyy

Technology

- Any -

SEARCH


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The EIRIE platform has been developed under the PANTERA project which has received funding from the European Union's Horizon 2020 Research and Innovation programme under GA No : 824389

https://ses.jrc.ec.europa.eu/eirie/en/community-stakeholders

# PANTERA regional desk approach

- ✓ Strengthening national participation rate in smart grid investments by making national stakeholders' **needs and expectations more visible** on the European level.
- ✓ **Raise discussions** with national decision-makers, **sharing experience and challenges** in research and innovation, inviting local stakeholders to **interact more actively**.


DESK 1	DESK 2	DESK 3	 BEST PRACTICE DESK
LATVIA LITHUANIA ESTONIA	GREECE ROMANIA BULGARIA	MALTA CYPRUS	
DESK 4	DESK 5	DESK 6	
CZECH REPUBLIC SLOVAKIA POLAND	ITALY CROATIA HUNGARY	PORTUGAL IRELAND	

# EIRIE: Access to regional activity


- ✓ **Connecting the Research & Innovation EU community**
- ✓ **Creating a strong and expandable network**
- ✓ **Enhancing collaboration and knowledge sharing**

Don't miss an opportunity – read more about PANTERA Desks below and participate in collaborative work.


[Confluence](#)



**PANTERA DESKS**



**COLLABORATION AREA**



**NATIONAL STAKEHOLDERS  
COORDINATION GROUP**

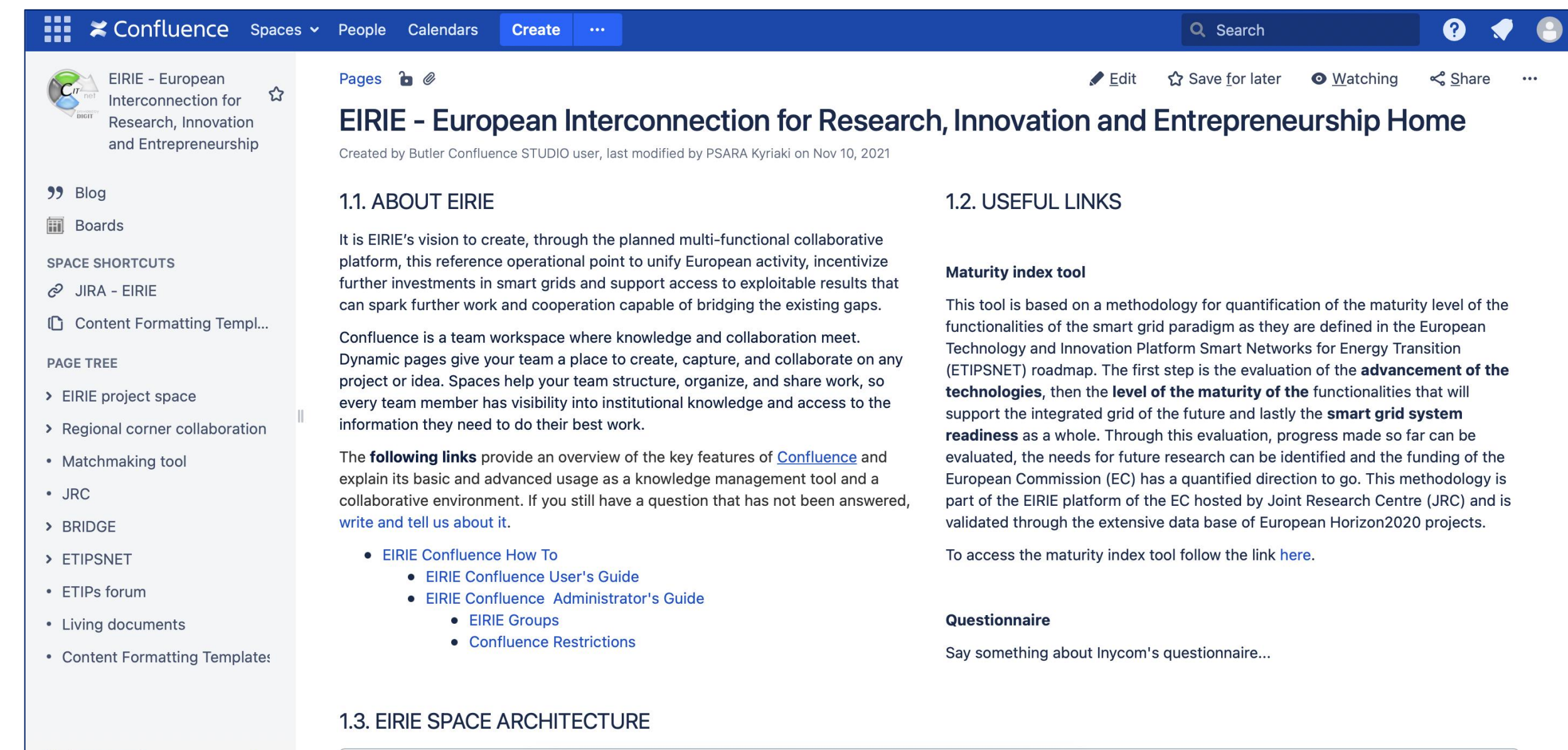
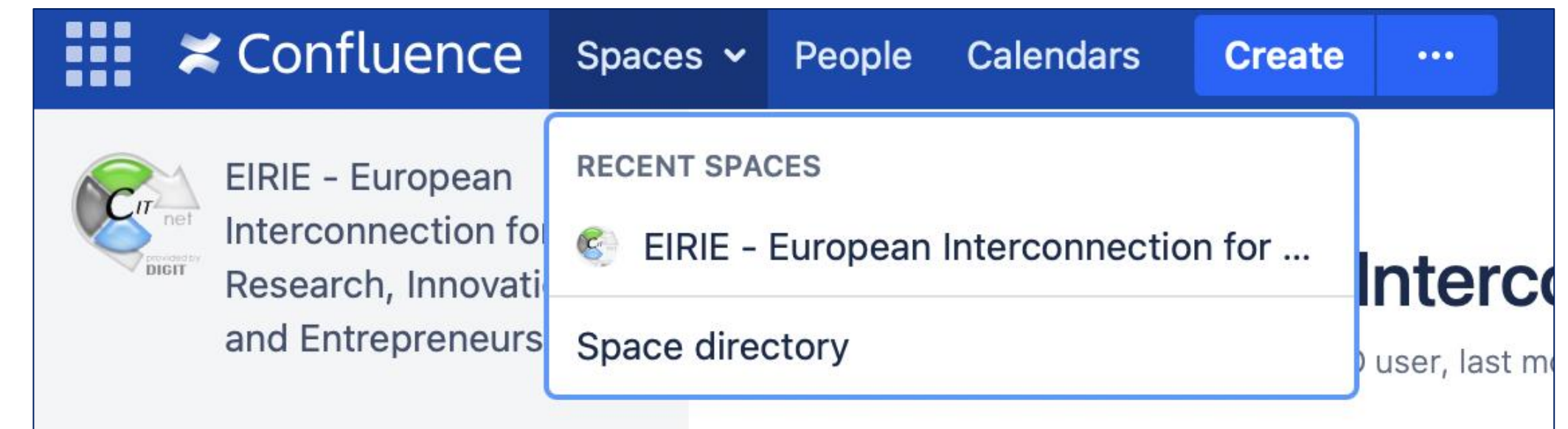
# EIRIE: Collaborating through Confluence



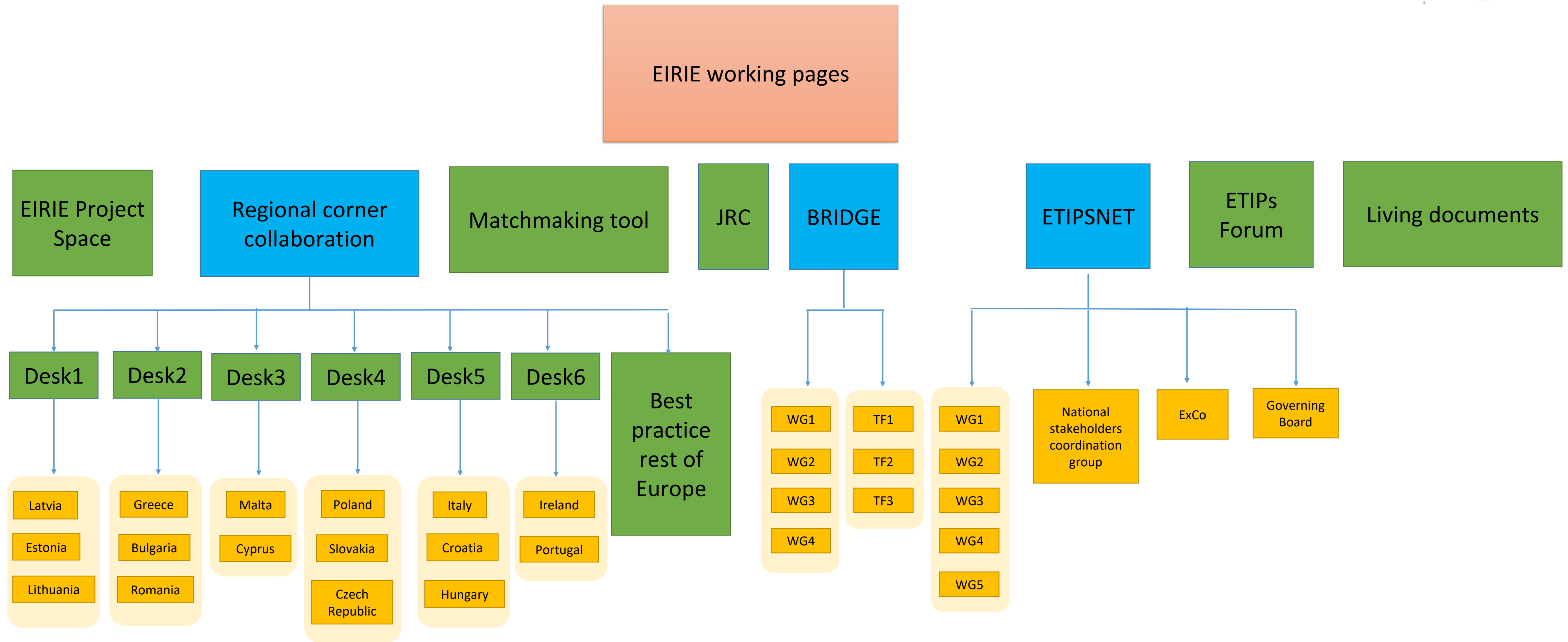
Confluence is a collaboration wiki tool

Confluence is a **team workspace** where knowledge and collaboration meet by creating, collaborating, and organising all the work done within EIRIE in one place.

**Confluence is for teams of any size and type,** from those with mission-critical, high-stakes projects that need rigor behind their practices, to those that are looking for a space to build team culture and engage with one another in a more open and authentic way.



# EIRIE: Collaborative space



# EIRIE: Smart grid projects map



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Smart Grid Projects Map

In the following map you can view the distribution of Smart Grid/ Smart Energy Systems projects awarded across the EU through National, Regional and EU programmes, during the last XX years.

Apart from the visualization of aggregated project data, the map offers you an interactive environment that allows for further drilling in and analyzing the project-related information available in EIRIE with the use of a wide variety of filters (e.g. maturity level, application domain, technology deployed, etc).

Through the map you will also be able to further analyze project-related information 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 above information (e.g. number of projects, funding amount, etc), while allowing for further analysis through the utilization of filters.

Visualization by : ☒ Projects ☐ Funding

Application Domain

Demand side management

Technologies

Building control, automation and energy management systems

Stakeholders

All Stakeholders

Countries

Select Some Options

SEARCH

RESET

Projects

Highcharts.com © Natural Earth



# EIRIE: Training/Education



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Programmes

Title/Description

Location

Organization

Technology

Mode

EQF

Range of Trainees

Thematic

SEARCH

Last update: 06. Jul 2021

DC Microgrids

Technology

Terminal Grids

Networks

System

Energy

Distributed Technology

Network

Denmark

DC distribution and transmission systems are a clear trend in electrical networks.

In collaboration with:



# Get in touch



[www.pantera-platform.eu](http://www.pantera-platform.eu)



[www.eirie.eu](http://www.eirie.eu)



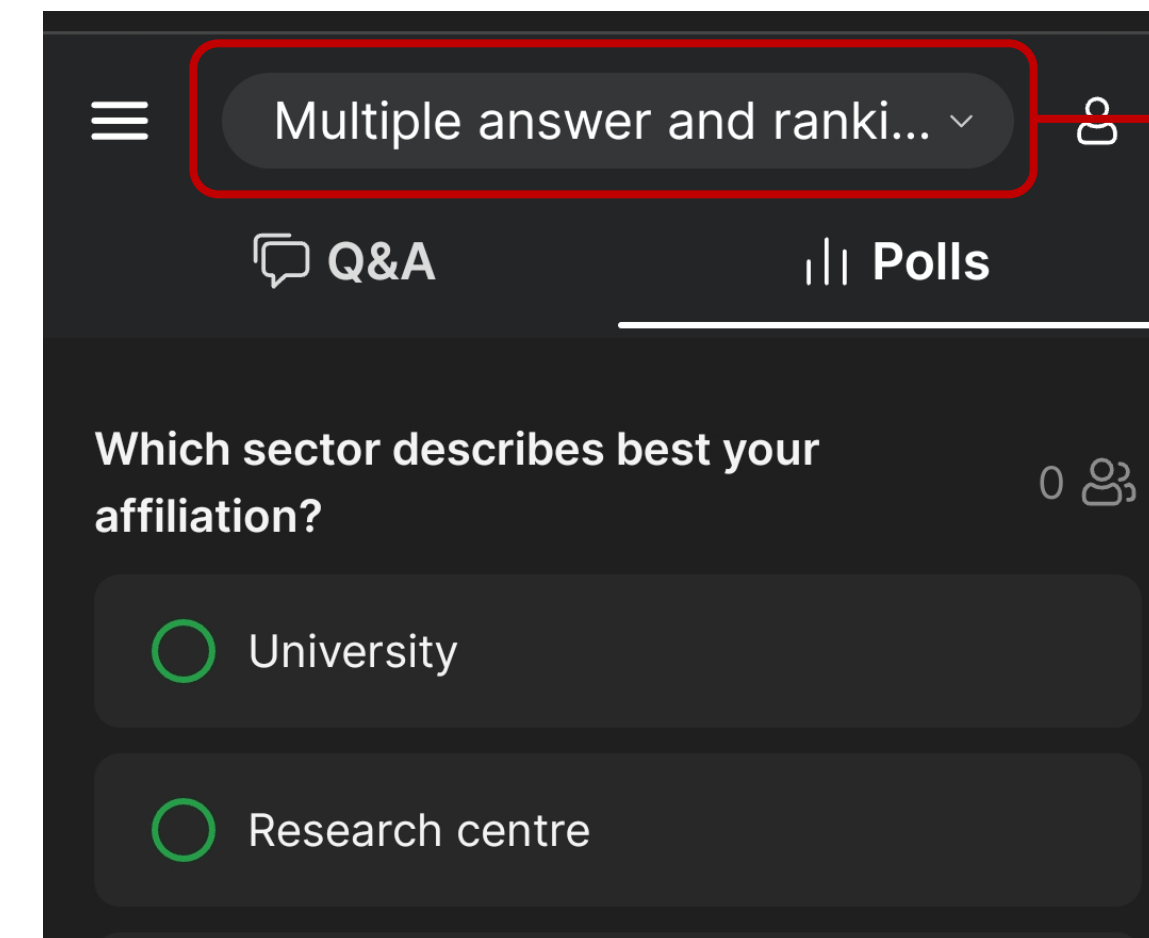
# Interactive session and Q&A: Slido



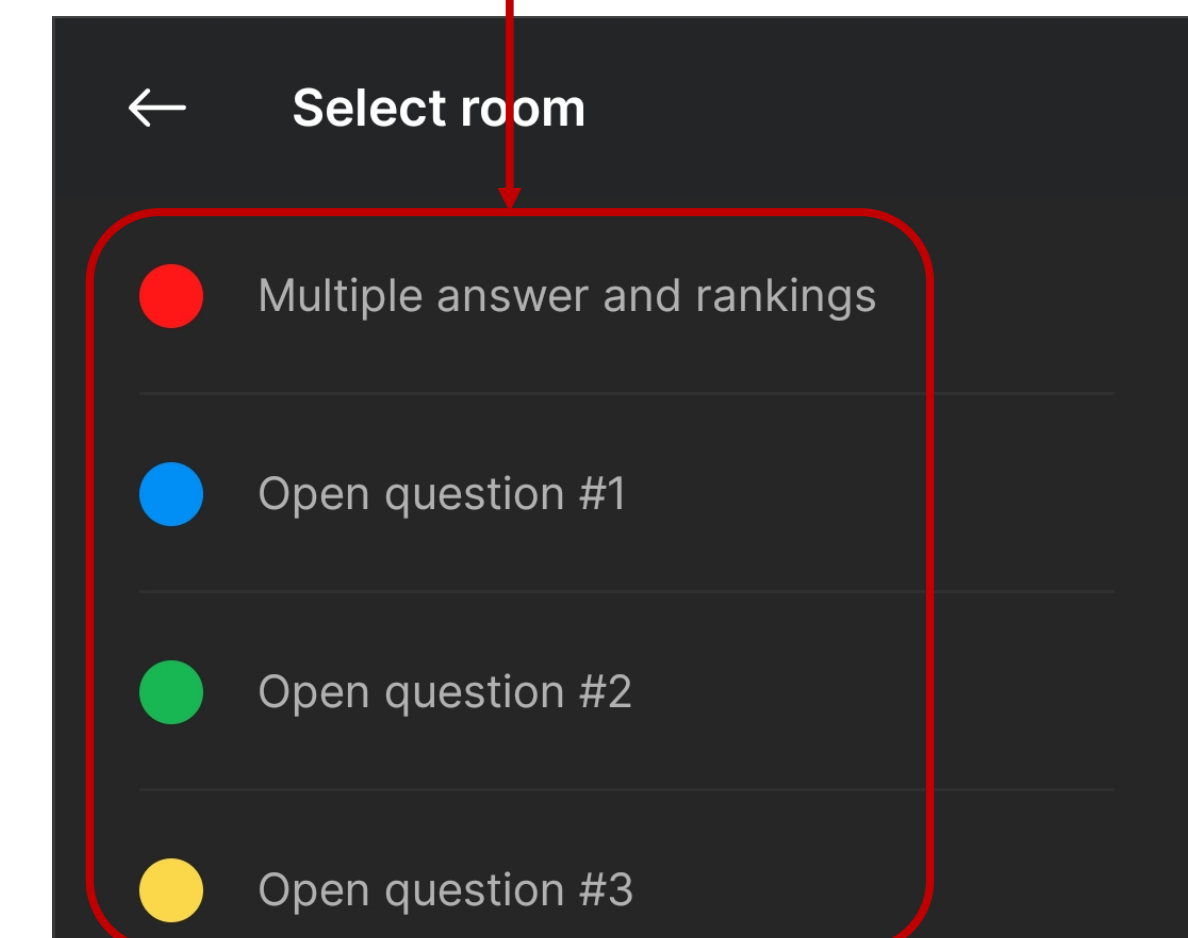
[www.sli.do](https://www.sli.do)

Access code: 1446242

If possible, please use a **second device for voting**  
(smartphone or tablet)

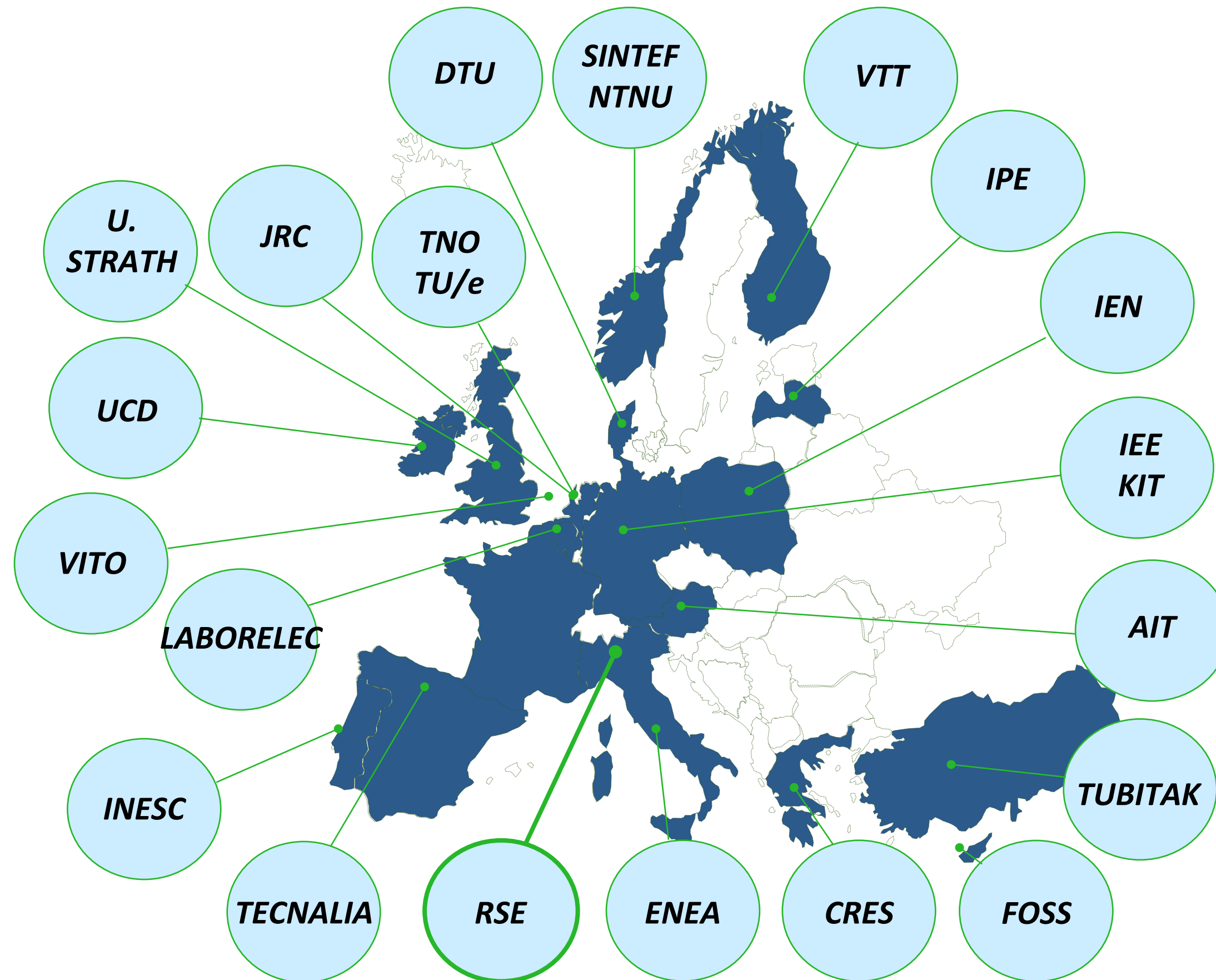


Please reply to  
open questions:  
answers will be  
discussed with the  
audience

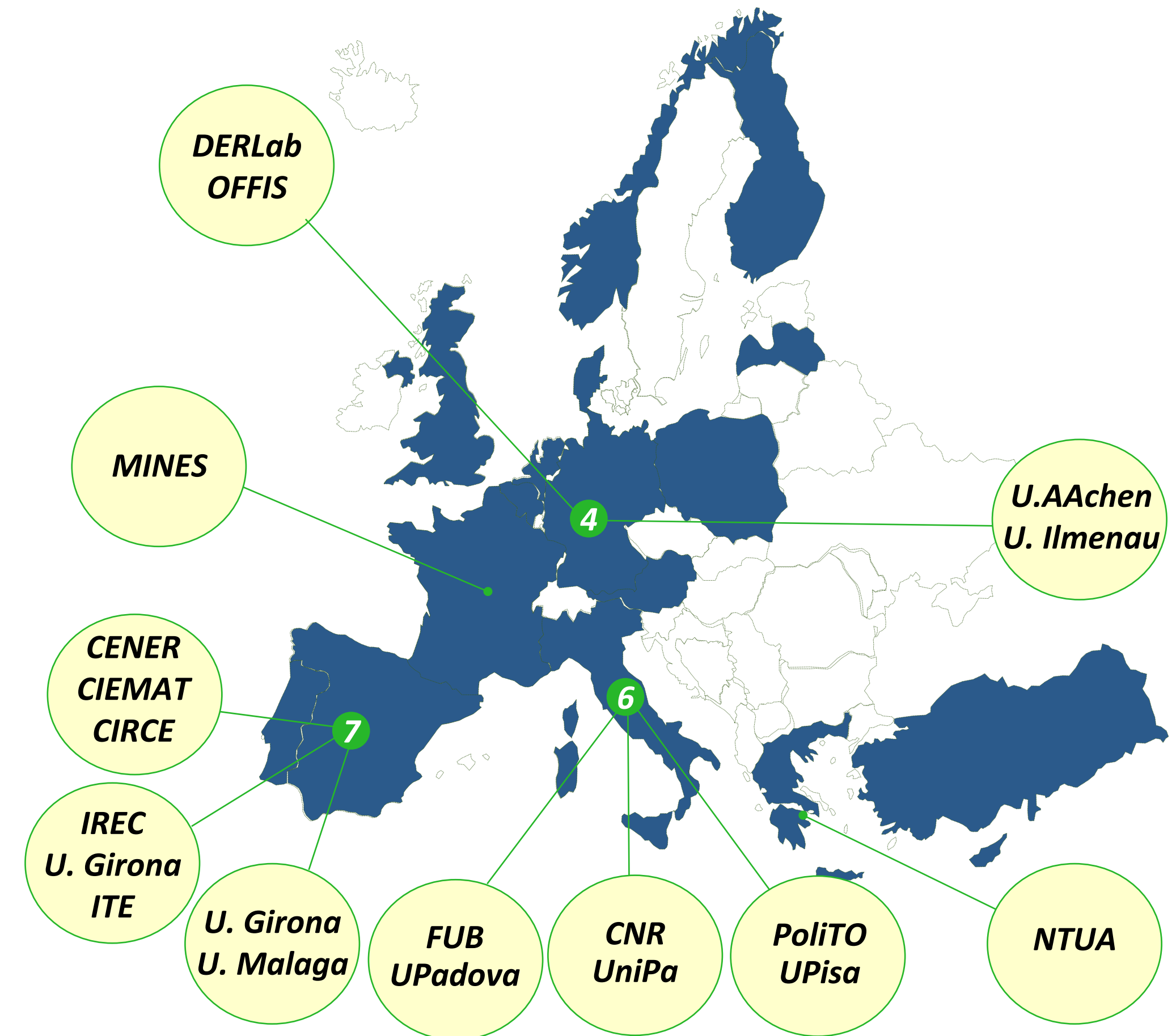


# EERA JP Smart Grids Participants

## Full participants



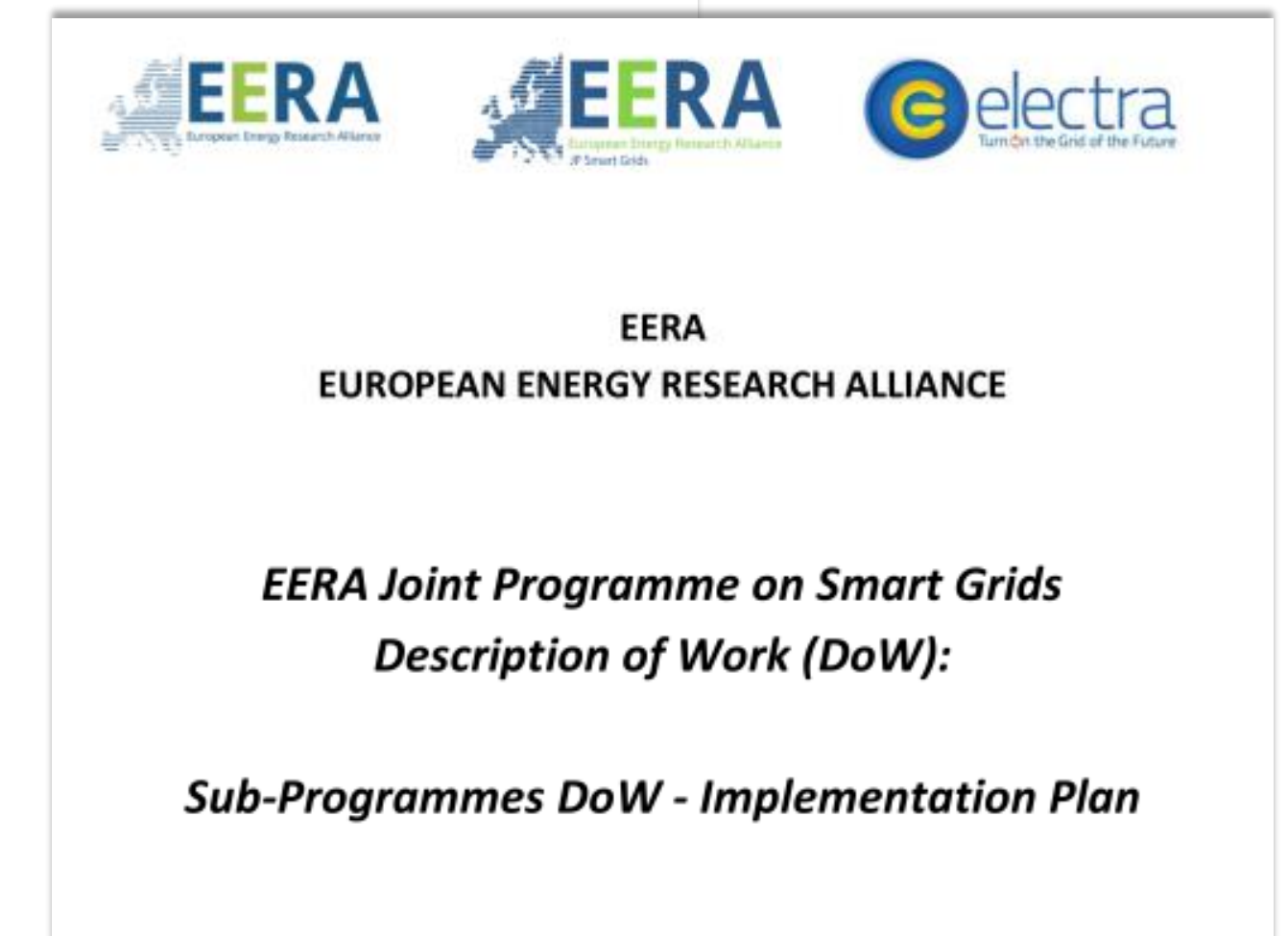
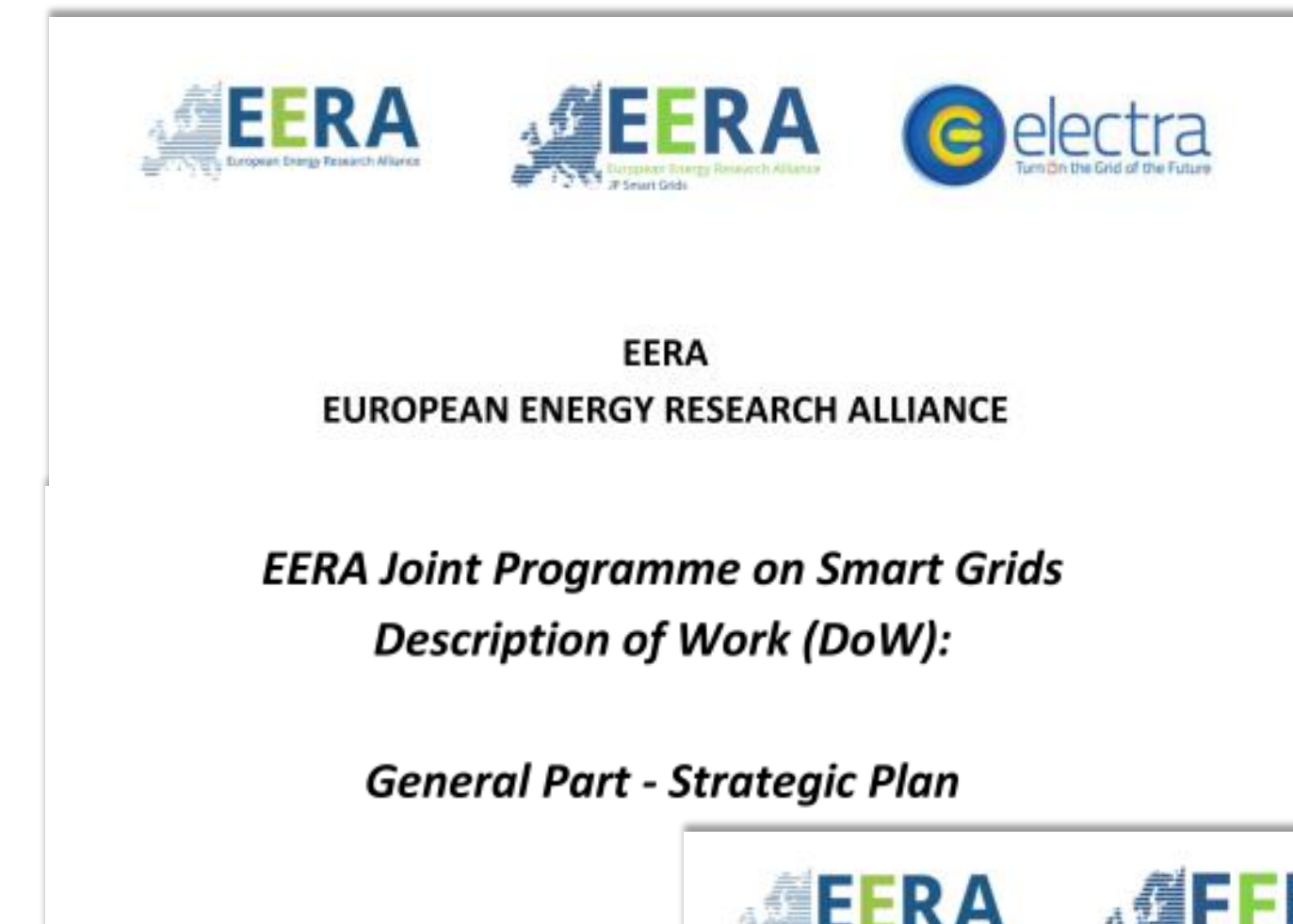
## Associated participants



# 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)



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

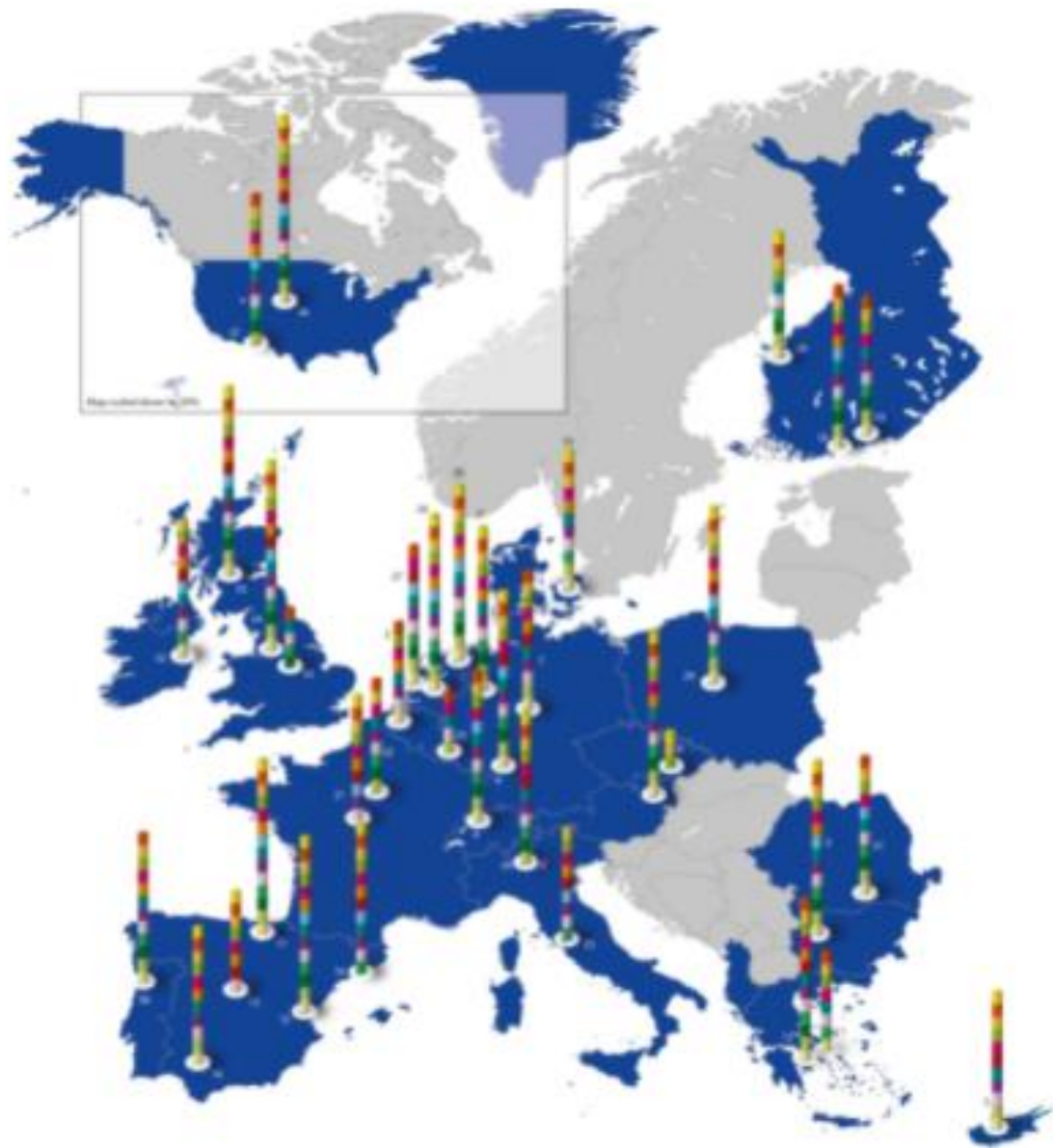
- ❖ Accredited **testing of DER-units and SG-equipment**
- ❖ **Support of SG development** and integration of Renewable Energies
- ❖ Information and **knowledge exchange**
- ❖ Contribution to **standardisation** activities



# 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	HL / 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)															





# Interactive session

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

**EU Clean Energy Transition in Hungary: SUPEERA/PANTERA Joint Workshop**

Budapest, 2022-10-26

Andrei Morch, SINTEF Energy Research (Norway)

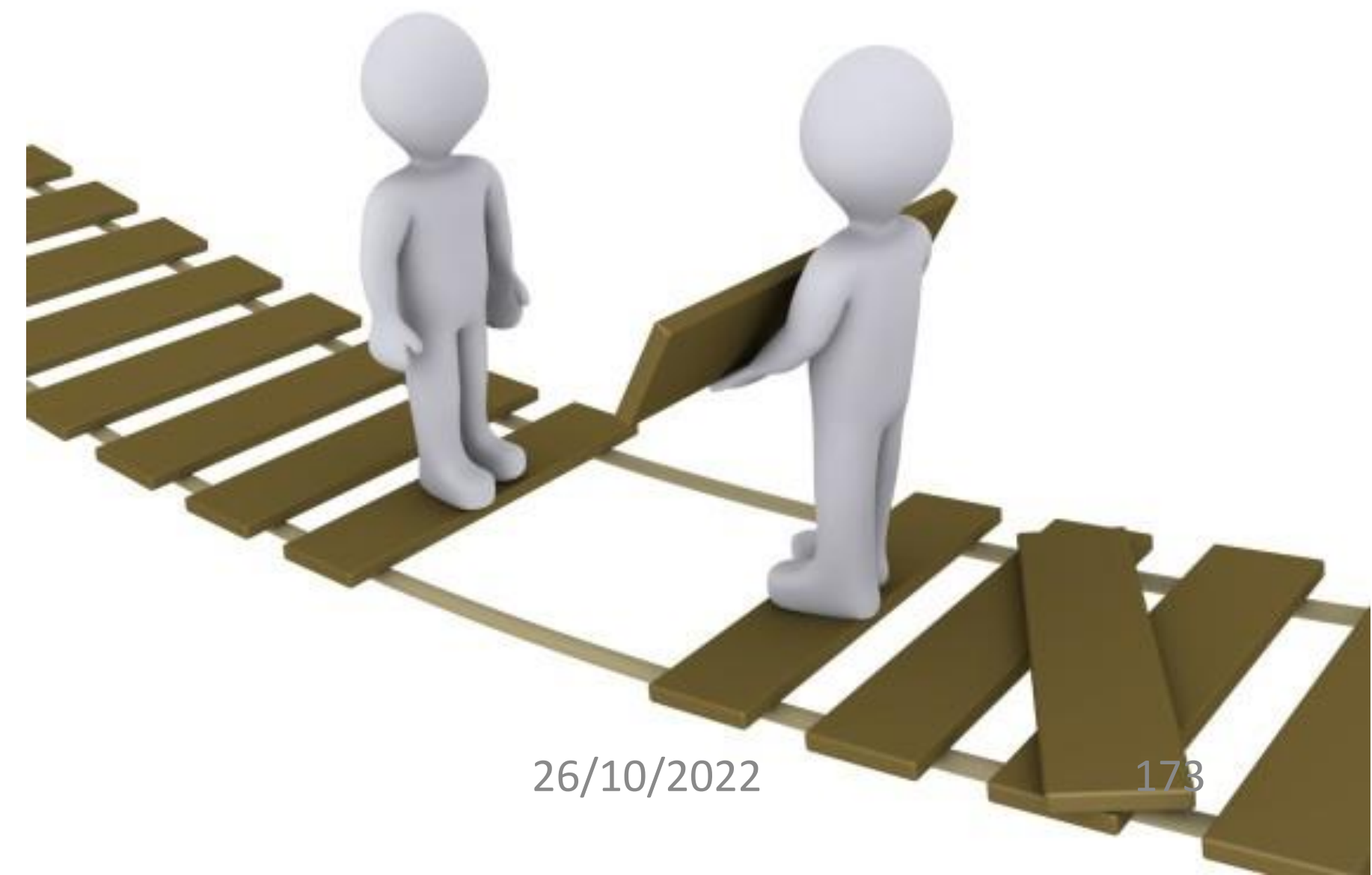
# The purpose and method for activity

## "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



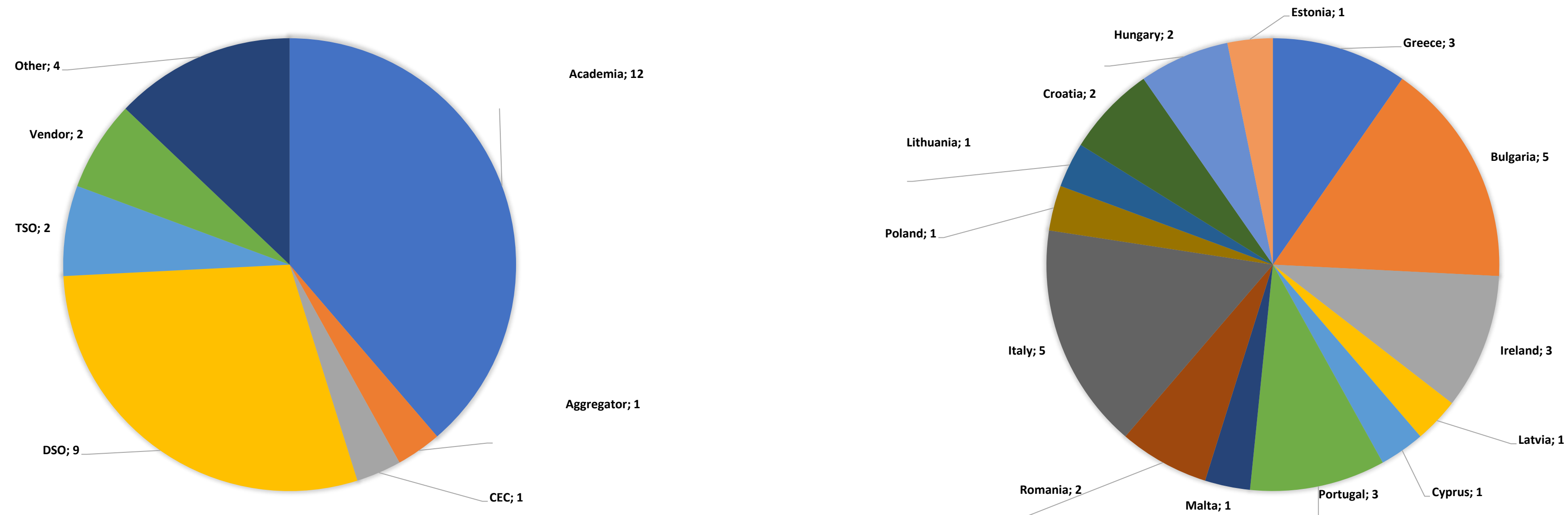
# The main scope of PANTERA project

**PANTERA targeted countries**



- 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)

# Direct interaction with the stakeholders: individual interviews and surveys

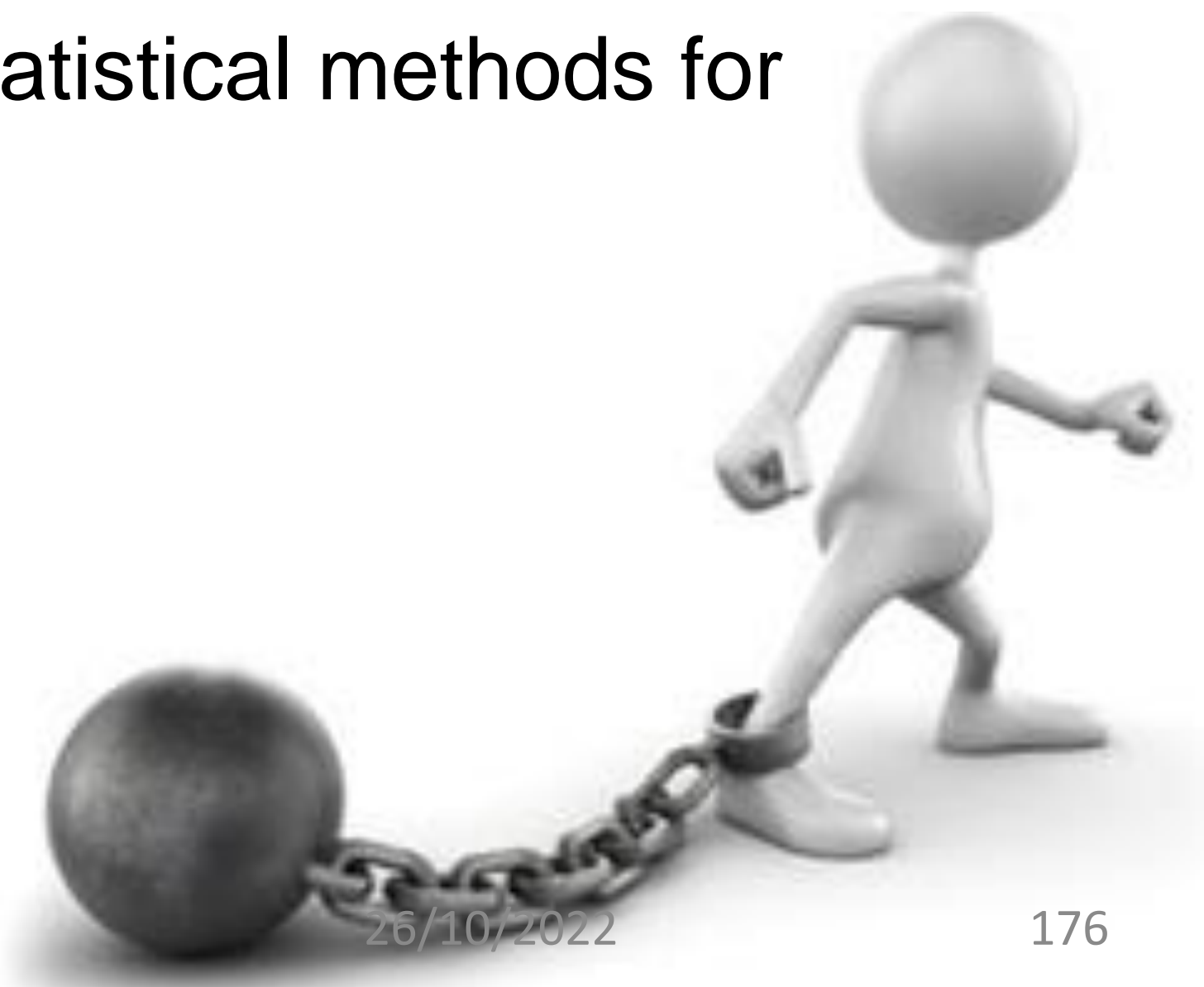


More than 30 semi-structured interviews and surveys have been conducted so far to establish an open dialogue and identify specific stakeholder needs and expectations.

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

# 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
- 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

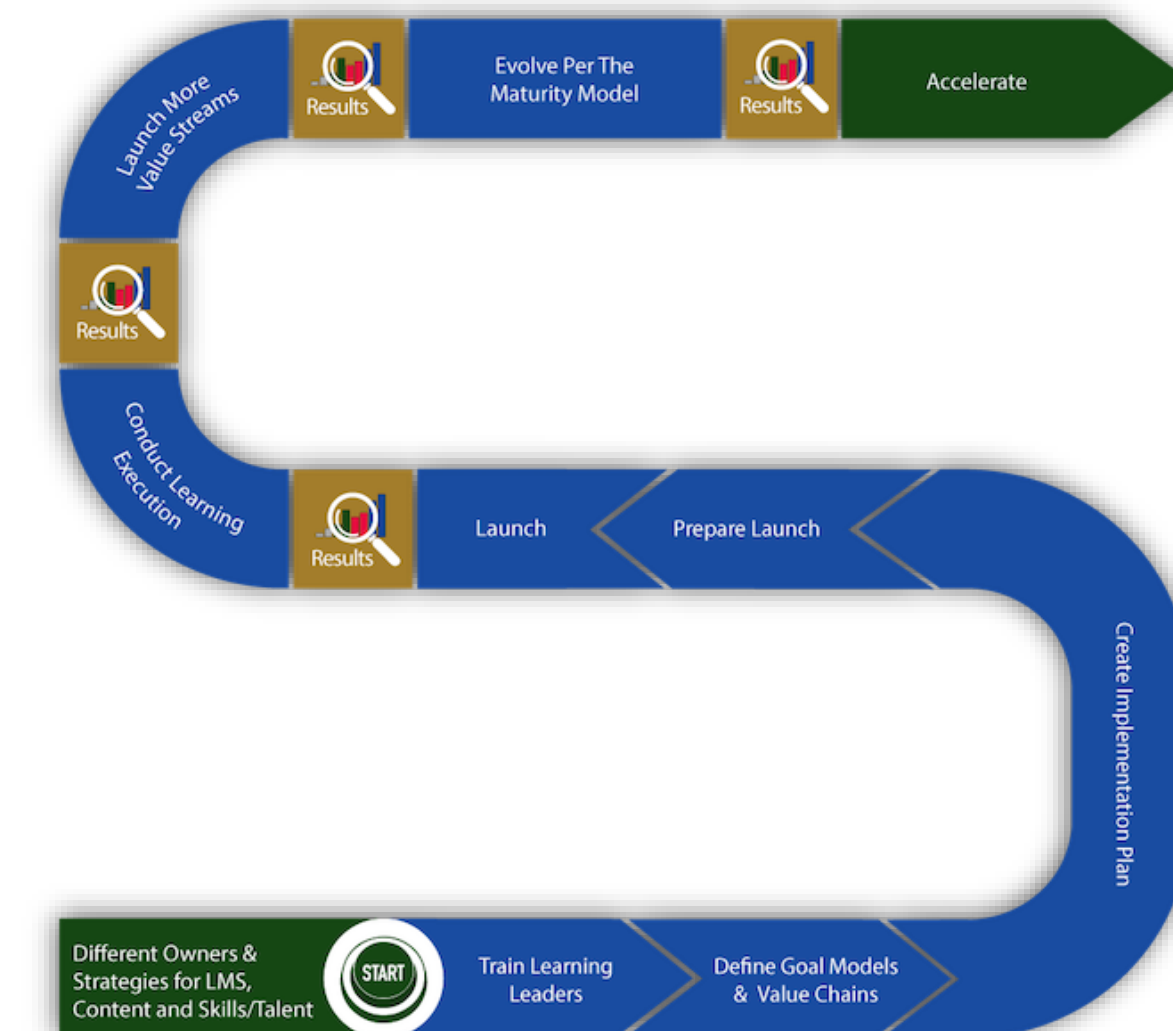
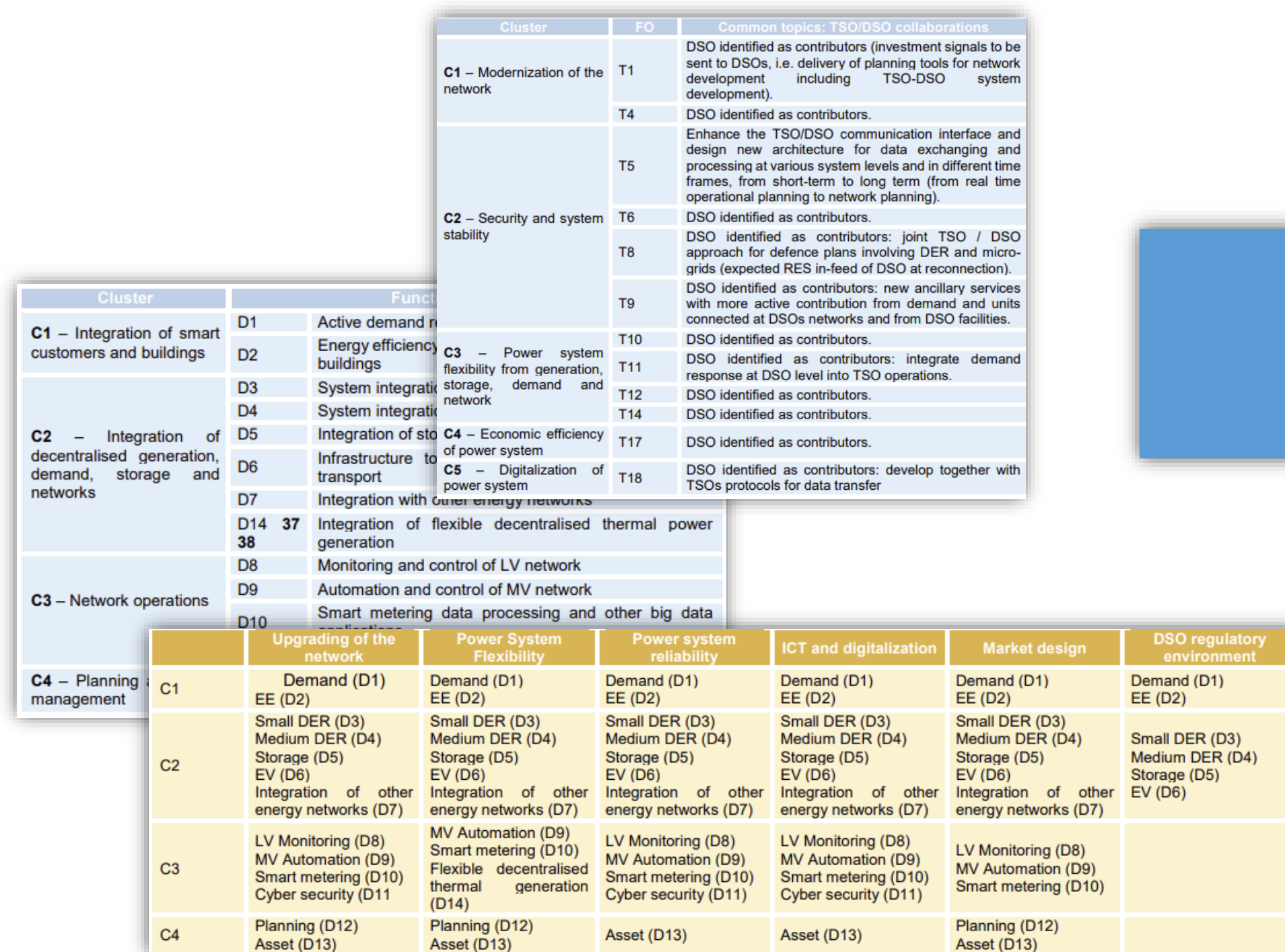


# Challenges requiring implementation of Smart Grid Technologies

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

- The main challenge is high variability in production of electricity based on renewables. Massive deployment of RES (as for example in Poland) has not been followed by development of the grid.
- Growing necessity for consumers' empowerment and engagement.
- Deployment of electric mobility, especially in the major European cities.
- 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.

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



# National priorities for the deployment of SmartGrid Technologies (not final)



Romania	<ul style="list-style-type: none"> <li>Operational improvement for safe and secure supply.</li> <li>Extension of metrological metering within balancing market products.</li> <li>Design of developed Big Data systems.</li> </ul>
	<ul style="list-style-type: none"> <li>Advanced metering infrastructure.</li> <li>Integration of renewable and distributed generation.</li> <li>Charging infrastructure for electric vehicles.</li> </ul>
Latvia	<ul style="list-style-type: none"> <li>Prepare the T&amp;D grids for smart grid solutions through e.g., standards and connection requirements.</li> <li>Data protection.</li> <li>Regulatory framework for how the available infrastructure should be shared between the actors.</li> <li>Clear rules for billing and settlement of active customers that will not have demotivating effect.</li> </ul>
Italy	<ul style="list-style-type: none"> <li>Observability provided by advanced metering functionality and sufficient settlement. The first generation of smart meters has already been deployed.</li> <li>Controllability.</li> <li>Flexibility capability i.e., demand-side response management capability.</li> </ul>
	<ul style="list-style-type: none"> <li>Develop tools for smarter use of resources in the grid, e.g., better utilisation of smart metering.</li> <li>Establish advanced services for the demand side.</li> <li>Creating new business models, regulations, and market actors to fully exploit the data and new functionality.</li> </ul>
	<ul style="list-style-type: none"> <li>Observability</li> <li>Controllability</li> <li>Charging infrastructure for electric vehicles</li> </ul>

Poland	<ul style="list-style-type: none"> <li>Smart metering</li> <li>Observability</li> <li>Better use of flexible resources.</li> </ul>
Lithuania	<ul style="list-style-type: none"> <li>System adequacy</li> <li>System reliability</li> <li>System stability</li> </ul>
Greece	<ul style="list-style-type: none"> <li>Roll-out of Smart Meters for all consumers, including LV residential. (Currently most MV and big LV customers)</li> <li>Improved observability for DSOs</li> <li>Application of controllability of production based on renewables and increase of hosting capacity.</li> </ul>
Hungary	<ul style="list-style-type: none"> <li>Smart metering</li> <li>Optimal integration of technologies. Often a strong focus on certain technologies without considering how these should interact with the rest.</li> </ul>
Portugal	<ul style="list-style-type: none"> <li>Smart metering</li> <li>Solve regulatory and administrative issues that are not prepared for technological development. Most technologies are ready, while the framework around them is not.</li> </ul>
Croatia	<ul style="list-style-type: none"> <li>Improvement of observability, especially in LV networks.</li> <li>Improve data processing</li> <li>Improve the controllability of the network by either installing new smart components or by digitalizing and unlocking the controllability/automation of the existing equipment</li> <li>Create a framework to get customers to go from passive to active participants in the power system.</li> </ul>



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



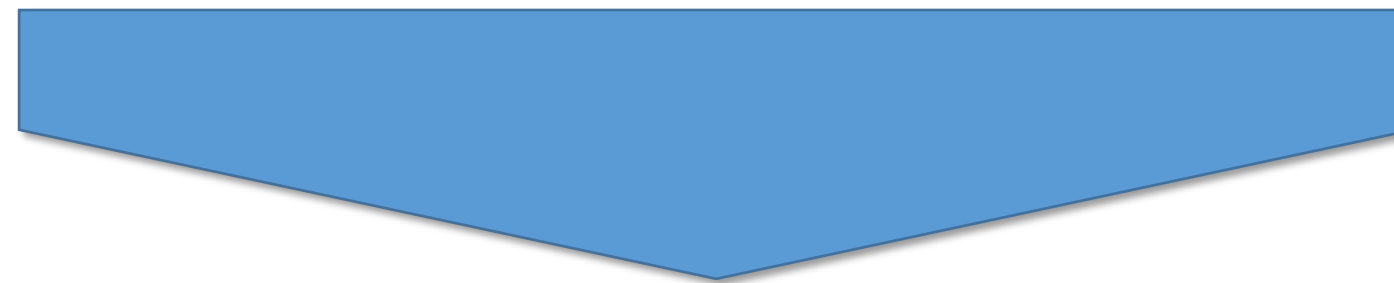
- Advanced Metering Infrastructure (AMI), as a mandatory enabler of the next steps. Proper utilisation of its potential however requires a set of actions, including standardisation, regulatory and administrative conditions, allowing to use and exploit the data
- Enabling observability and controllability 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



# 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.
  - Portugal and Poland mentioned the existing incentives for TSOs and DSOs to invest in R&I, including demonstrators, which are provided by the national regulation regimes.
- 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

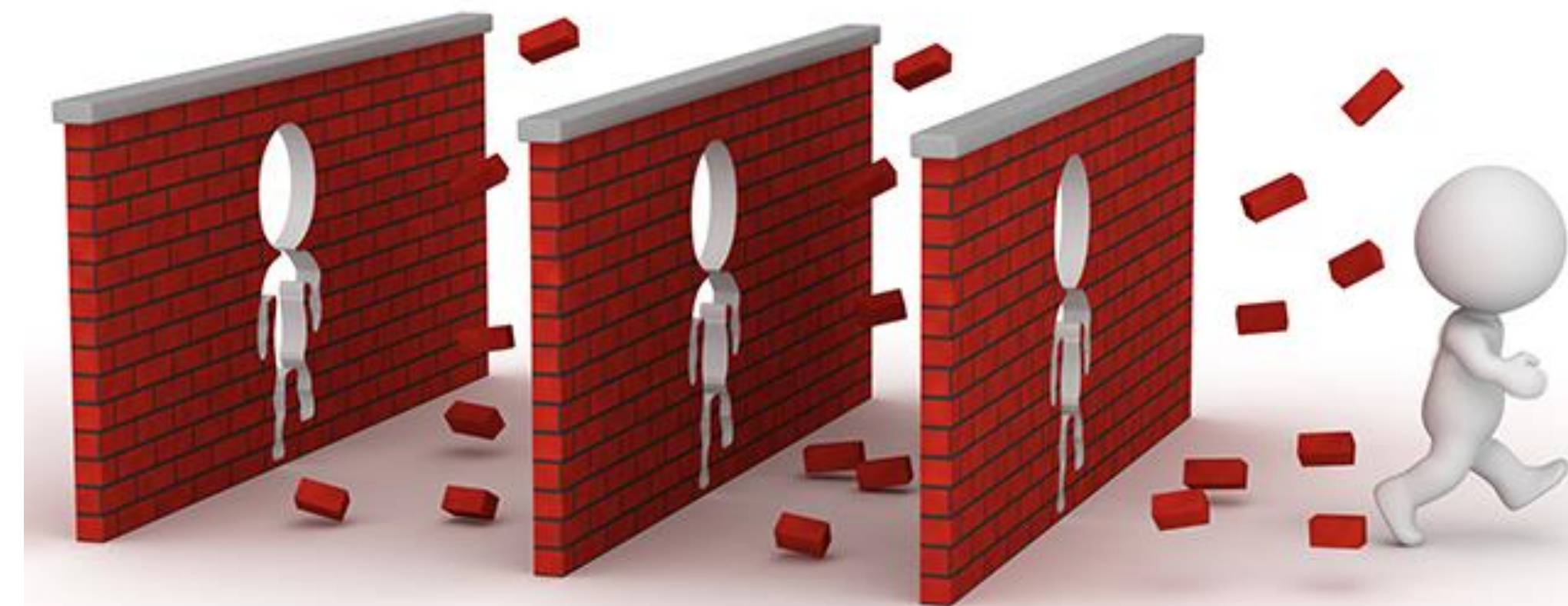


Necessity for having targeted incentivising support schemes, which will focus on specific technical areas, which need more R&I activities and comply with the NECP goals.

# 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
- Market design for flexibility products is still missing, very few (if any) flexibility markets are operational



# None-technical part: other challenges

- National legislations:
  - Slow transposing 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
- The National Contact Points (NCPs) have a rather passive role
- Change of mindset both at industry and customer sides is required so the new technology will be selected instead of conventional



# Overcoming the barriers: Best practices

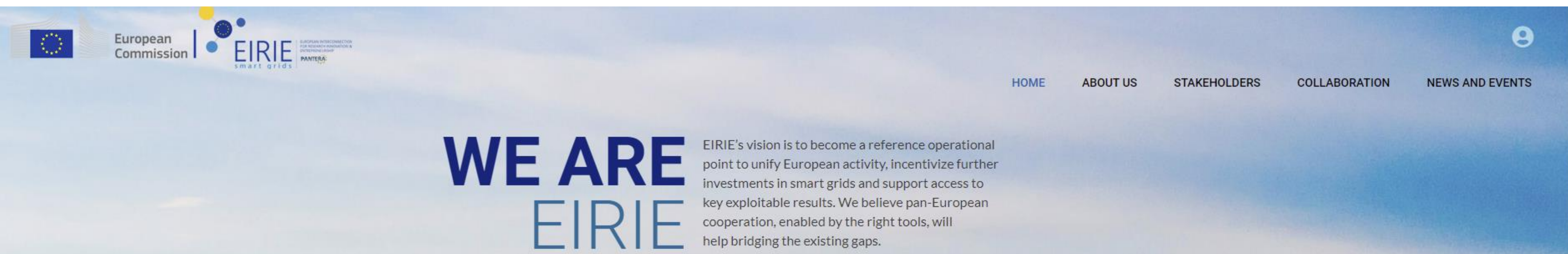
- **Commonly financed R&I activities:**
  - Pooling resources from several industrial organisations for solving specific challenges is a well-established practice.
- **Mixed financing of R&I activities**
  - Combination of grants from the funding agencies with industrial financing allows research with 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



# 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



# Thank you for listening!

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Open discussion and Q&A



Wrap up and feedback



# International research collaboration opportunities: fostering EU Clean Energy transition in Hungary

26 October 2022  
09:00 - 17:00 CEST

Location: Budapest University of Technology and Economics [Room: Pécsi Eszter]