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

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

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

SUPEERA/PANTERA workshop, Sofia, Bulgaria
25th May 2022

Ivan Matejak, EERA

The new European/World Context

Revamping SET Plan

REPower EU

EU Green Deal

Energy crisis emergency

New Energy Paradigm

EU Strategic Autonomy

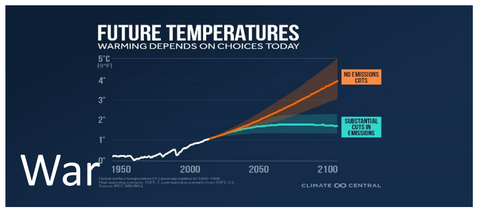
New Geopolitical Order

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

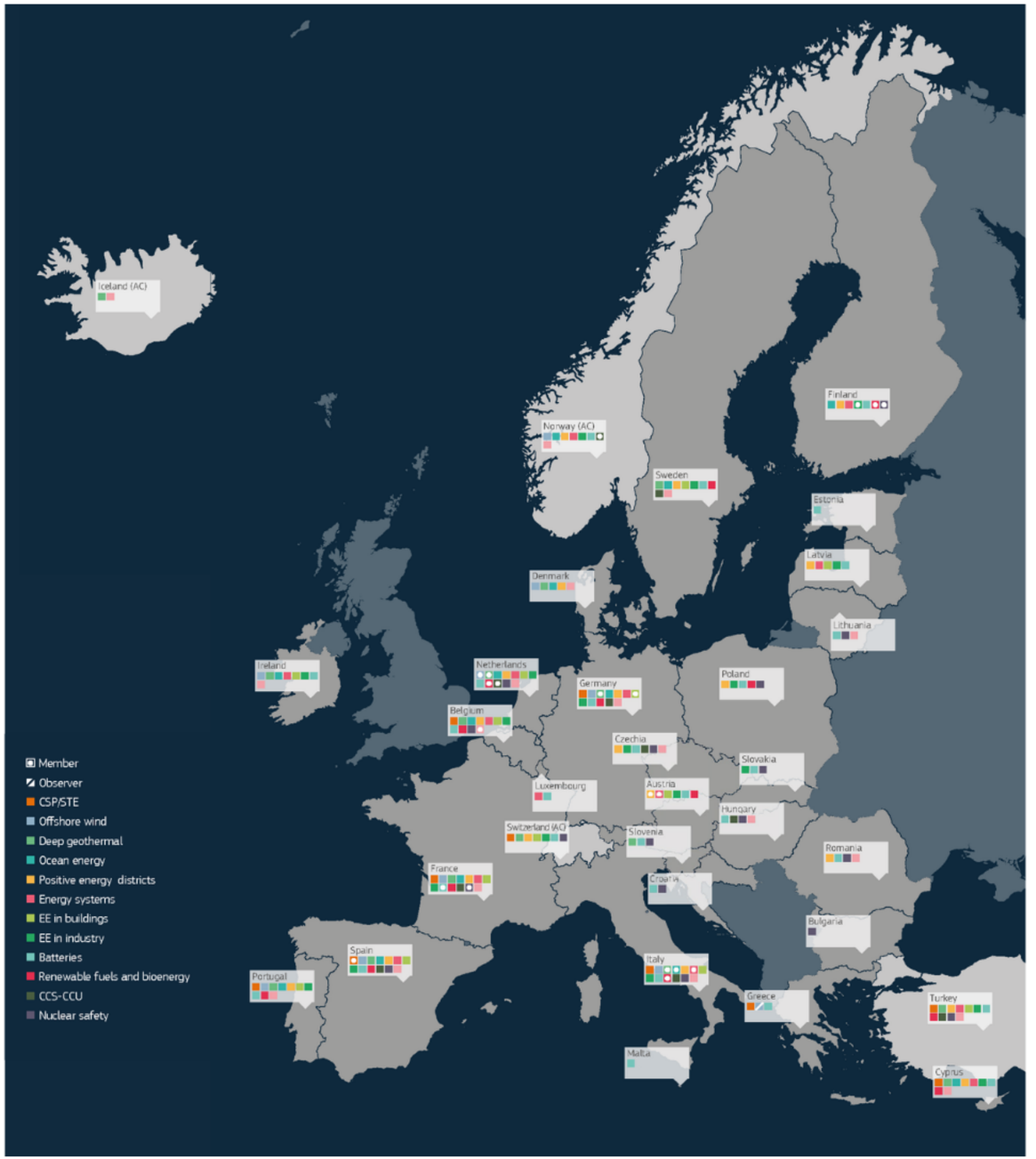
- Defining the shared methodology
- Monitoring evolution of spending
- Identifying trends

Mobilising public and private investment

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

The European Strategic Energy Technology Plan

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



The gap in relation to the SET Plan

EU13 participation to SET Plan Implementation Working Groups (IWGs)

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

Source: SETIS's website, Implementing the actions.

Main background information on Bulgaria's energy sector

Renewable energy

→Bulgaria is among the 11 EU member states that have already hit their 2020 renewable energy target (share of renewable energy in gross final energy consumption in 2018 was 20.5%)

→Bulgaria aims to contribute to the EU's 2030 target for renewable energy by reaching 27.09% share

Energy efficiency

→BG has the most energy-intensive economy in the EU

→BG aims to contribute to the EU 2030 energy efficiency target by reducing primary energy consumption by 27.9% and final energy consumption by 31.7% compared to the 2007 reference

Energy poverty

→In 2020, 27.5% of the Bulgarian people reported they were unable to keep their homes adequately warm and 22.2% of the population was unable to pay their utility bills

Bulgaria in the SET Plan and CET

SET Plan

→BG participates in only Implementation Working Group: Nuclear Safety

→BG'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 …."

CET in the Recovery Plan

→€ 6,27 billion in grants; 59 % for reforms and investments supports climate objectives

- Accelerated decarbonisation of the energy sector € 1,7 billion
- Energy efficiency of private and public buildings € 924 million
- Sustainable transport € 666 million

Opportunities and recommendations

Opportunities arising from bridging the performance gap

Bridging the gap between EU13 and EU15 countries would allow to:

- Ensure that the **CET** and underlying policies and strategies will unfold in an **even way throughout the whole EU**, narrowing disparities across MSs;
- Achieve an untapped opportunity for **growth and development** of EU13 national economies and the EU as a whole;
- Greater likelihood of meeting **2030 and 2050 targets**.

Opportunities arising participating in the SET Plan

Deeper involvement in the SET Plan would lead EU13 to:

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

Recommendations

Some preliminary recommendations may include:

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

Benefits of being EERA member

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

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

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

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Engagement of Bulgaria in H2020

SUPEERA/PANTERA workshop, Sofia, Bulgaria
25th May 2022

Ivan Matejak, EERA

Agenda 1/2

Time (EEST)	Topic	Speaker
09:00	**Registration and coffee**	
09:30	Welcome address	prof. Dr. Eng. Valentin Kolev, Dean of the Electrical Engineering Faculty of TU-Sofia
09:40	Mobilization of EU-13 national public research resources in the Clean Energy Transition: challenges and opportunities SUPEERA findings: engagement of Bulgaria in H2020 or R&I	Ivan Matejak, SUPEERA coordinator, EERA
10:00	• Sofia University's research activities and collaboration with the business in support of the energy transition • EU funding for energy efficiency projects - the experience of SEA SOFENA • Research team in the area of "Electric Power Systems" at the Technical university of Varna • PANTERA process	**Mariya Trifonova**, Assistant Professor, Department of Industrial Economics and Management **Lily Stammler**, Senior Energy Security expert, SOFENA **Dimitar Georgiev**, Assistant Professor, Department Electric Power engineering, Technical University of Varna **Rad Stanev**, TU-Sofia / **Dr Venizelos Efthymiou**, PANTERA coordinator, FOSS Research Centre of University of Cyprus
11:00	**Panel discussion and Q&A**	**Moderator: Ivan Matejak**

Agenda 2/2

11:30	**Coffee break**	
12:00	R&I opportunities for collaboration and funding (Horizon Europe: Clean Energy Transition Partnership, Widening Calls) Norway/EEA Grants	**Spyridon Pantelis**, Project Manager, EERA **Berta Matas Güell**, Senior Researcher, SINTEF
12:25	The EIRIE Platform	**Tasos Tsitsanis**, Suite5 / **Dr Kyriaki Psara**, FOSS / **Rad Stanev**, TU-Sofia
13:10	Open discussion and Q&A	
13:40	**Lunch break**	

EUROPEAN ENERGY RESEARCH ALLIANCE

EERA
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

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

EERA 19
European Energy Research Alliance

We support the Clean Energy Transition by catalysing European energy research and providing world-leading scientific expertise on three thematic categories.

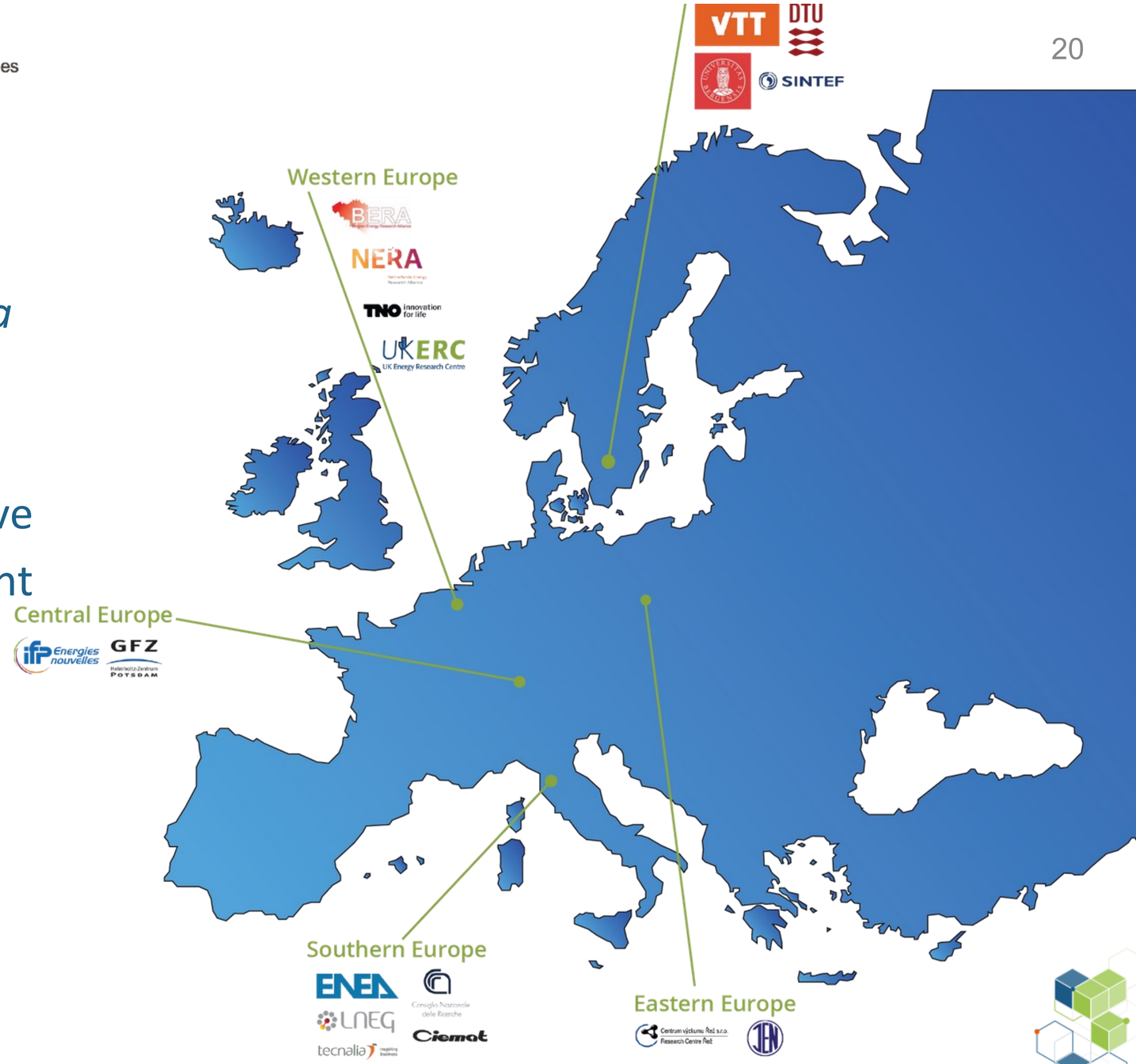
LOW- CARBON TECHNOLOGIES

MATERIALS

SYSTEMIC TOPICS

Catalysing European energy research for a climate-neutral society by 2050

17 of our members make up the Executive Committee (ExCO), EERA's management body.



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

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.

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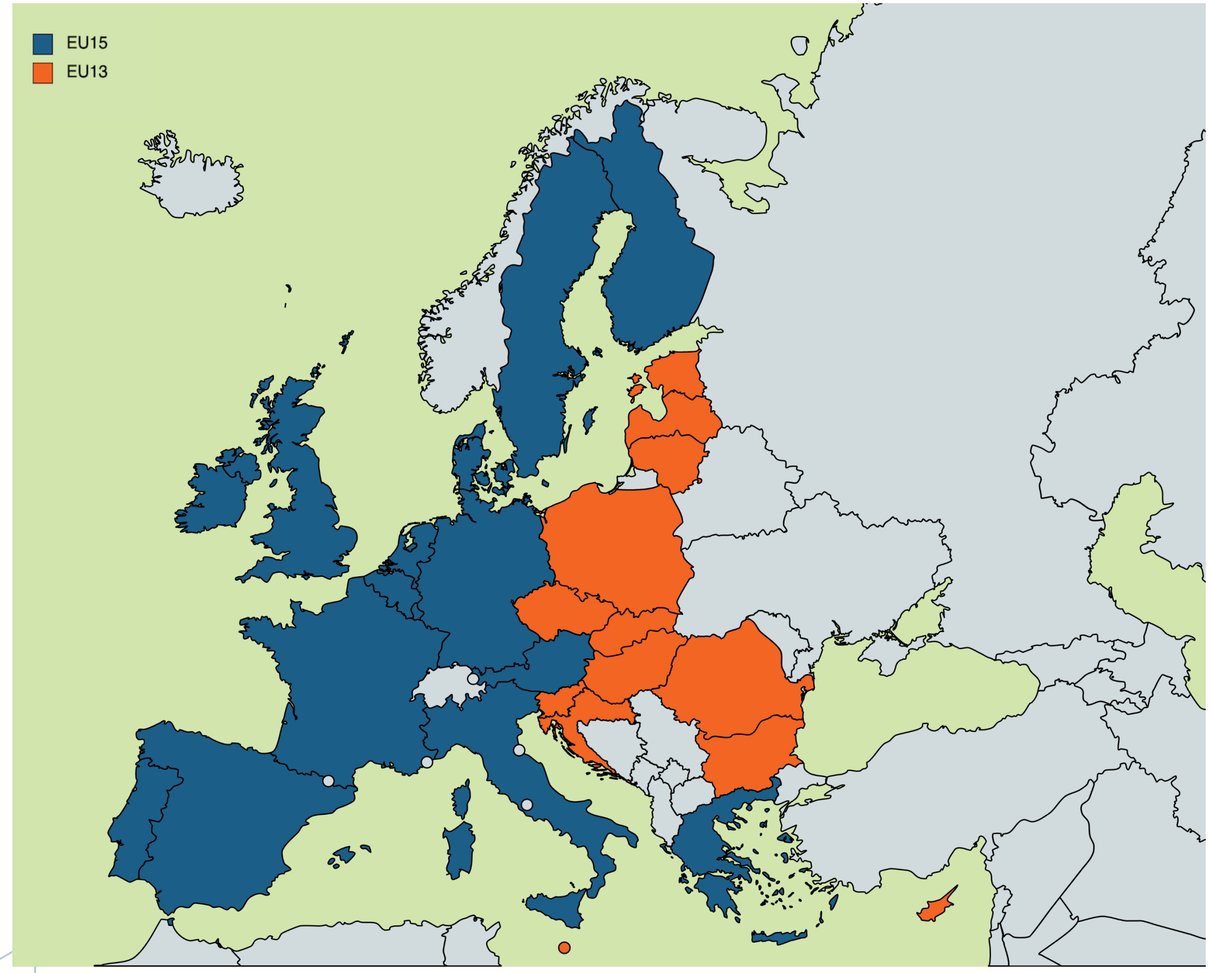
Introductory note

The research and innovation gap between EU13 and EU15 Member States

The R&I gap between EU13 and EU15 Member States

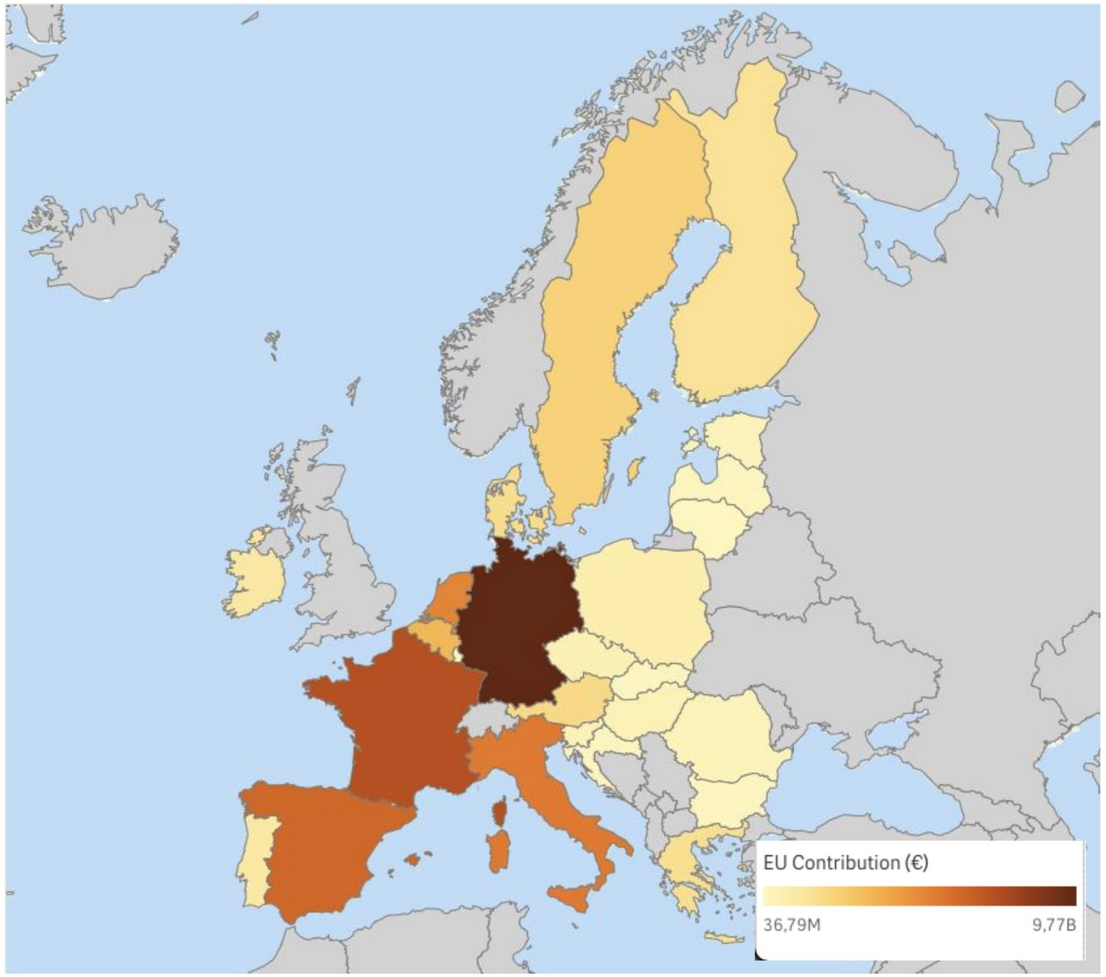


The **research and innovation (R&I) gap** in the EU is a pressing **challenge**, especially in consideration of the **2030** and **2050 climate goals**.

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



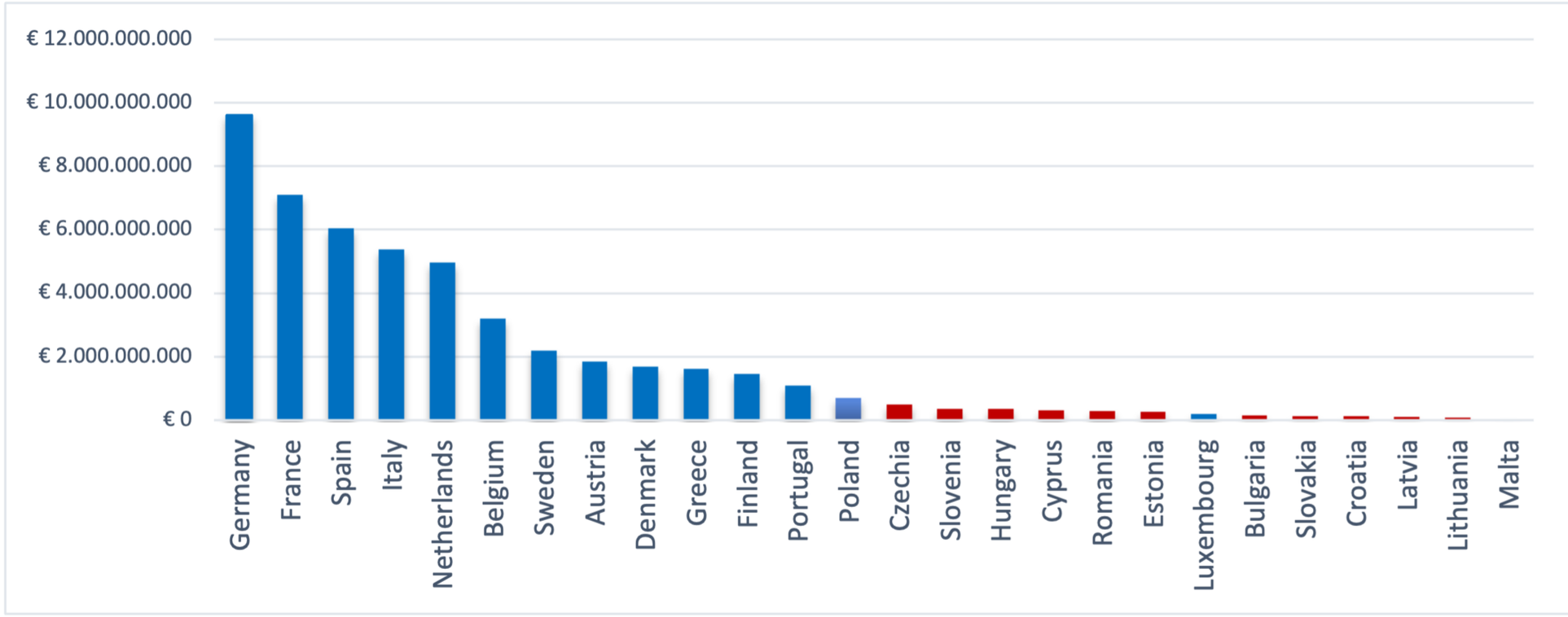
The limited commitment to the SET Plan reflects in **low H2020 performance**.

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**).

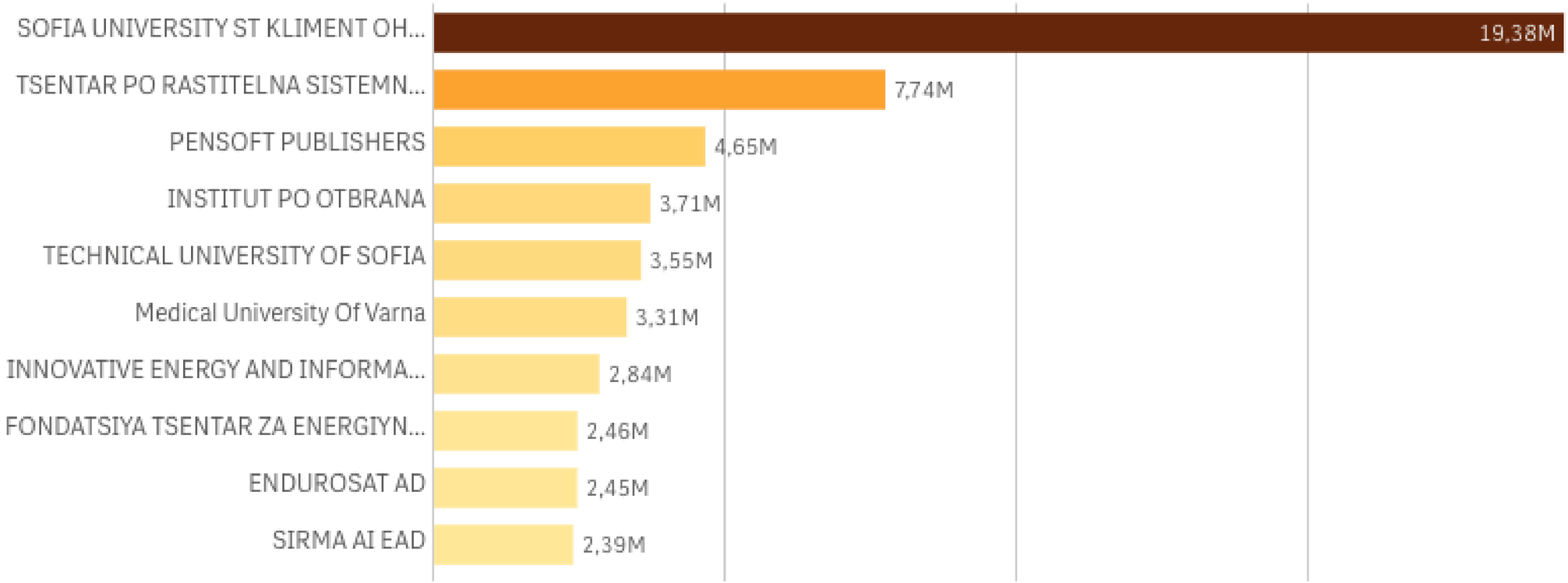
vs.

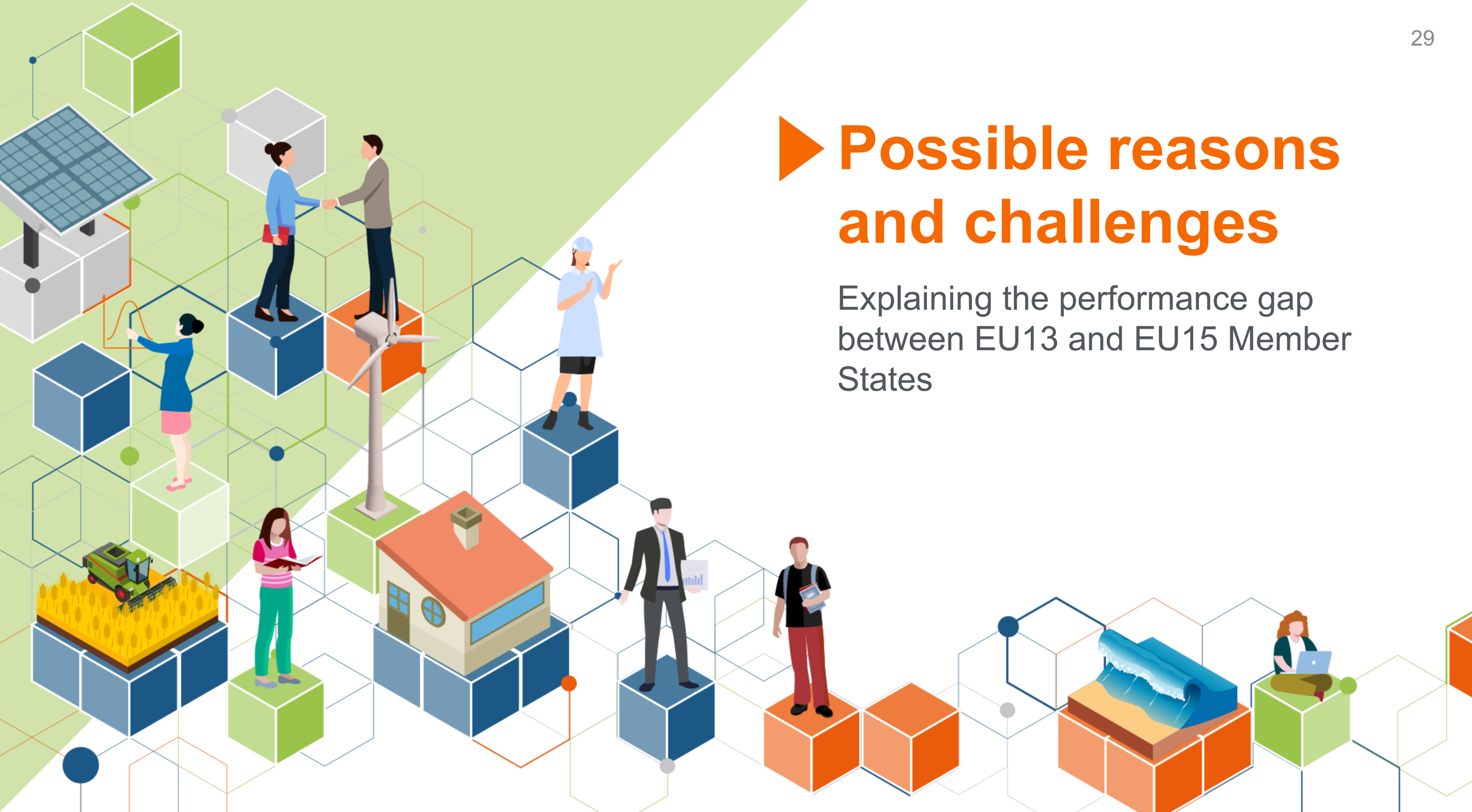
→Among the EU15 countries, **Luxembourg** is the country receiving the lowest share from Horizon 2020 (EUR **189 million**), while **Germany** receives the highest contribution of EUR **9 600 million**

Bulgaria'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)
Bulgaria	**636**	**955**	**0,63%**	**€ 154**	**0,26%**
EU total	32.064	151.718	100,00%	€ 59 580	100,00%
EU13 total	6.229	14.640	9,65%	€ 3 470	5,82%
EU15 total	30.881	137.078	90,35%	€ 56 120	94,18%

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





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.**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SOFIA UNIVERSITY "ST. KLIMENT OHRIDSKI" BULGARIA

RESEARCH ACTIVITIES AND COLLABORATION WITH THE BUSINESS IN SUPPORT OF THE ENERGY TRANSITION

Chief Assist. Prof. Dr. Mariya Trifonova

Sofia University “St. Kliment Ohridski”

- The oldest higher education institution in Bulgaria
- Based in the capital of Bulgaria one of the most highly reputable centers of science on the Balkans
- 16 faculties
- 119 educational programs in the field of humanities and natural sciences
- Around 3000 employees

Faculty of History

Faculty of Philosophy

Faculty of Slavic Studies

Classical and modern philology

The Faculty of Economics & Business Administration

- 1st place in the field of Economics (Bulgarian University Ranking System)
- 70 total employees (80% of them is academic staff)
- BEP working paper series
- 3 Bachelor programs & 32 Master Programs offered in Bulgarian as well as 3 foreign languages
- Member in a number of recognized networks and associations such as:
  - UNGC (UN Global Compact) and the Bulgarian network
  - PRME - Principles of Responsible Management Education
  - EuroFM- European Facility Management Association
  - Bulgarian Facility Management Association
  - Industrial Cluster Srednogorie
  - Industrial Cluster Electromobility
  - The Association for Innovation, Business Excellence, Services and Technology (AISBEST)

FEBA Collaboration Agreements

- Ministry of Energy
- Ministry of Labor and Social Policy
- Energy and Water Regulatory Commission
- STARA ZAGORA Regional Economic Development Agency
- Diplomatic Institute by Bulgarian Ministry of Foreign Affairs
- Sofia Municipal Agency for Privatization and Investment

- EU Investment Bank
- Global Compact Network Bulgaria Association
- UNICEF
- World Energy Council
- IAEE

- Dimitar A. Tsenov Academy of Economic
- Technical University of Sofia, in particula Department of Electrical Power Engineering
- Florence School of Regulation

Department of Industrial Management and Economics
Education for the energy/ sustainability transition

Major areas of research & education

- Energy Economics, incl. RES
- Facility Management
- ESG
- Management of Public Resources
- Social Innovation

- 10 Doctoral students, working on topics in the energy domain + 6 doctoral students, defended PhD thesis on energy topics
- 4 Master programs touching upon different aspects of energy economics, RES and energy efficiency, European Green Deal
  - Energy Markets and Services
  - Facility Management
  - Sustainable and Good Governance
  - Management of Public Resources
- The ESG Academy
- Open Educational Activities: capacity building for media, open guest-lectures, participation of our academic staff in educational events (Ratio)

Department of Industrial Management and Economics

Climate and Energy Education beyond Uni Sofia borders

In December 2021 the Faculty of Economics and Business Administration (FEBA) of Sofia University organized in partnership with guest lecturers from the energy sector a series of capacity building workshops on energy markets and prices. The format of the certification training was designed to bes suit the interests of journalists, media representatives and opinion makers. The topics of the training touched upon the factors and preconditions for the record braking prices of energy globally in recent months and impacts in the national and regional context. This initiative continues FEBA efforts to provide academic knowledge beyond doors of its audiences and to facilitate knowledge exchange and various views sharing on trending economic and social issues.

Department of Industrial Management and Economics
Research activities for the energy/ sustainability transition

Horizon Projects

- COP21:RIPPLES
- SHAREs
- INNOAir
- Transform4Europe - T4E

Small Research Grants

- Social Acceptance of Renewable Energy Technologies
- The role of the Natural gas in the energy transition

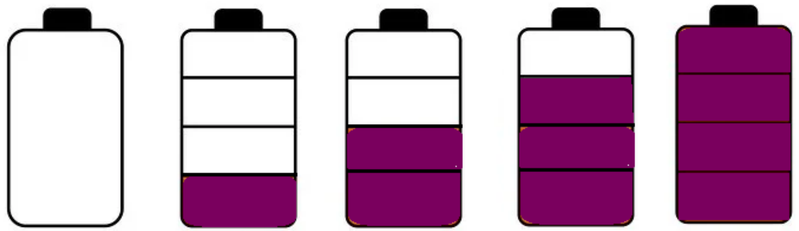
Academica meets the Policy Makers

- Collaboration with the Center for the Study of Democracy: Offshore Wind Energy, Decarbonisation pathways modelling
- Participation in the JT Platform Working Groups on Horizontal Stakeholder Engagement and Cement

Academica meets the Industry

- Competence Center on Carbon Capture, Storage and Utilisation

INVITATION



SOFIA UNIVERSITY
ST. KLIMENT OHRIDSKI

FACULTY OF ECONOMICS AND
BUSINESS ADMINISTRATION

AUSTRIAN ENERGY AGENCY

exawatt

APSTE
Association for Production, Storage and Trading of Electricity

ELECTRICAL STORAGE IN BOOST OF RENEWABLES

Educational workshop/ Webinar

30 May 2022, 15-17 EET, room 400 @ FEBA

Hosted by University of Sofia "St. Kliment Ohridski", Faculty of Economics and Public Administration (FEBA)

1. Opening	Assoc. Prof. Dr. Atanas Georgiev, Dean of FEBA, Sofia University
2. Renewable Energy and Storage Deployment Prospects in Bulgaria	Chief Ass. Prof. Dr. Mariya Trifonova, Department of Industrial Economics
3. Energy Conservation through Energy Storage- the Austrian Experience	Lukas Zwieb, Austrian Energy Agency
4. Grid-Scale (Lithium) Battery Storage – A Technoeconomic Perspective	Simon Price, CEO of UK-based market intelligence company Exawatt
5. Q&A	

Lukas Zwieb is project manager at the Austrian Energy Agency. in the field of energy supply systems and the market design. His research interests were focused on optimization of electricity storage management algorithms for the German-Austrian electricity market.

Simon Price is CEO of Exawatt, a provider of strategic consulting, technology analysis and cost forecasting for solar PV, EV, power electronics and lithium-ion battery industries. He holds Electrical and Electronic Engineering Degree from the University of Newcastle upon Tyne and MSc in Science Communication from Imperial College

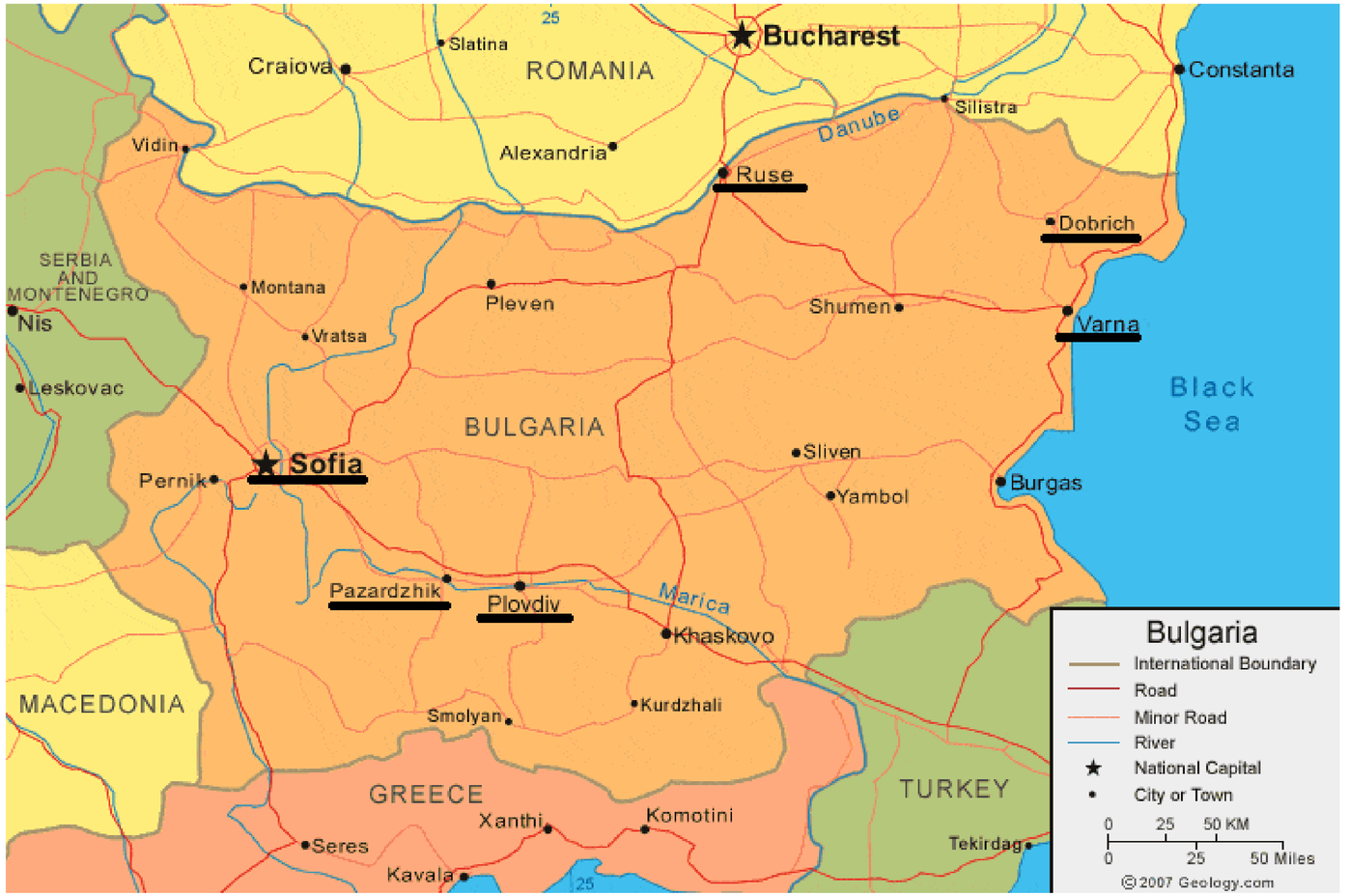
We encourage you to come to FEBA and get to know our guest lecturer, however, online attandance is possible after ***registration****:* ***https://forms.office.com/r/5FfGMkAeV1***

EU Funding for Energy Efficiency Projects the Experience of SEA SOFENA

Lilly Stammler,
Sofia Energy Agency - SOFENA

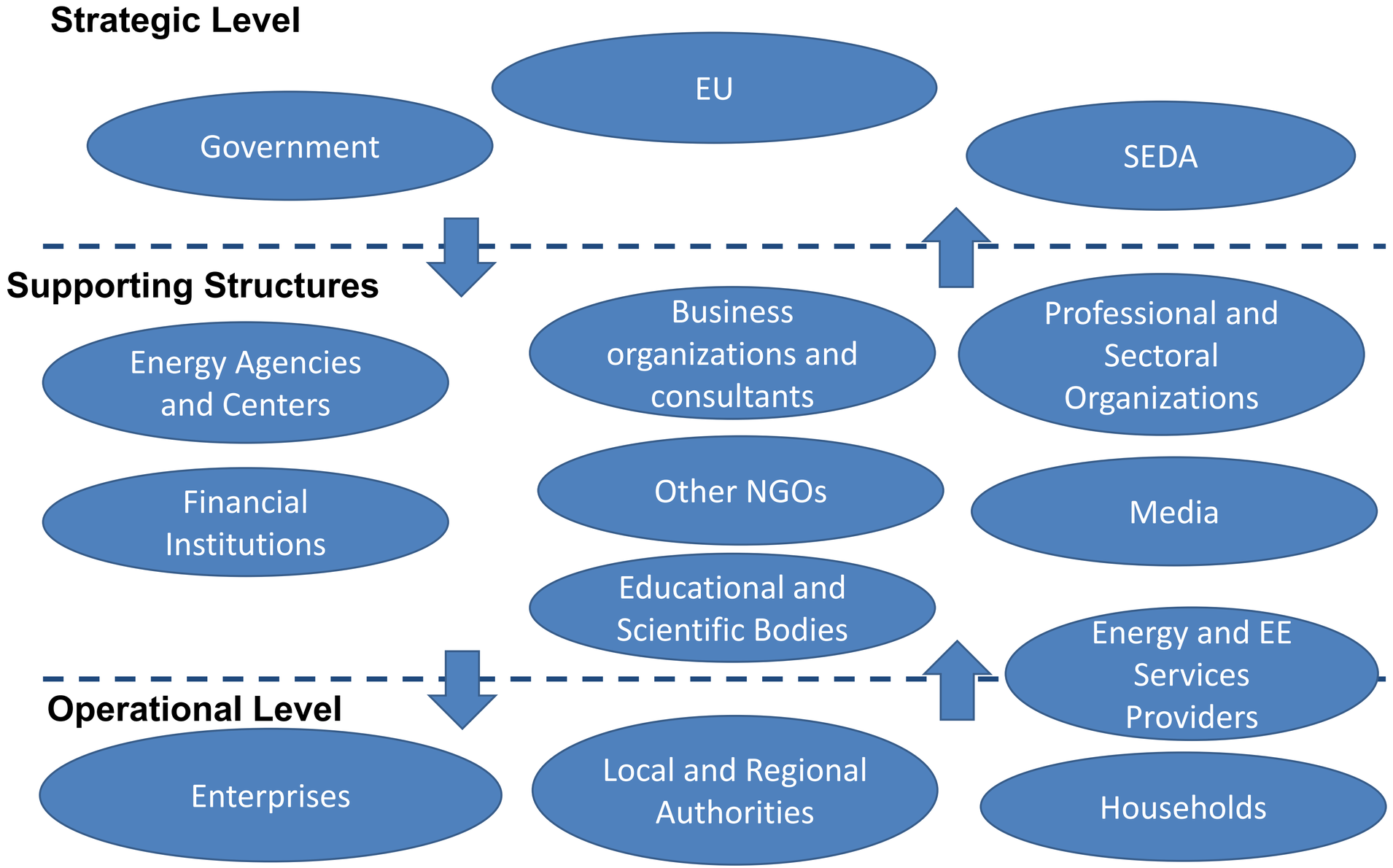
EU Clean Energy Transition
Workshop
25.05.2022

Energy Agencies and Centers in Bulgaria



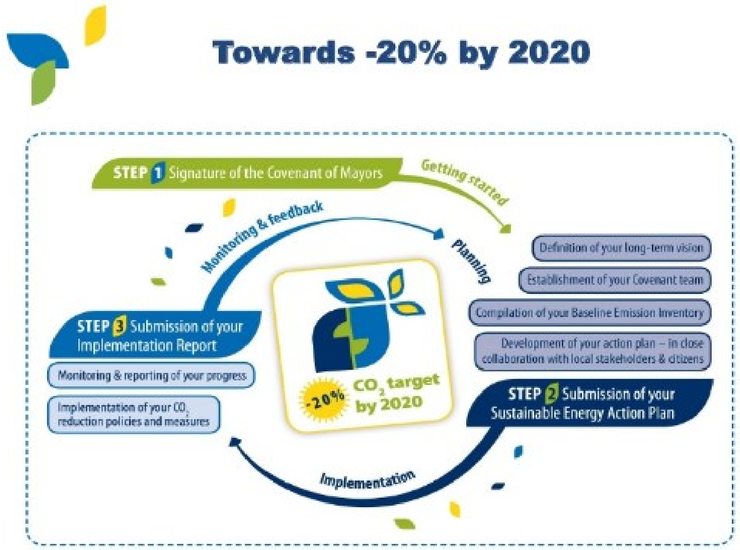
<u>Umbrella organization:</u> Association of Bulgarian Energy Agencies – ABEA
<u>Others:</u> Municipal Energy Efficiency Network, local and regional NGOs

Green Energy Stakeholders and Interaction Between Them



Public Sector

➢ Covenant of Mayors

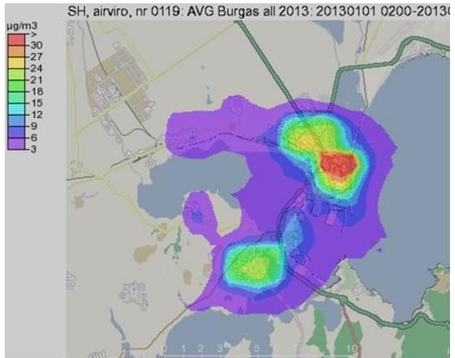


- **SEAP/SECAP development**
- **CO2 inventories**
- **Supporting structures (RODOSHOP, others)**
- **Smart City (Smarter Together, SmartEnCity, others)**
- **Demonstration projects, others**

➢ Air Quality

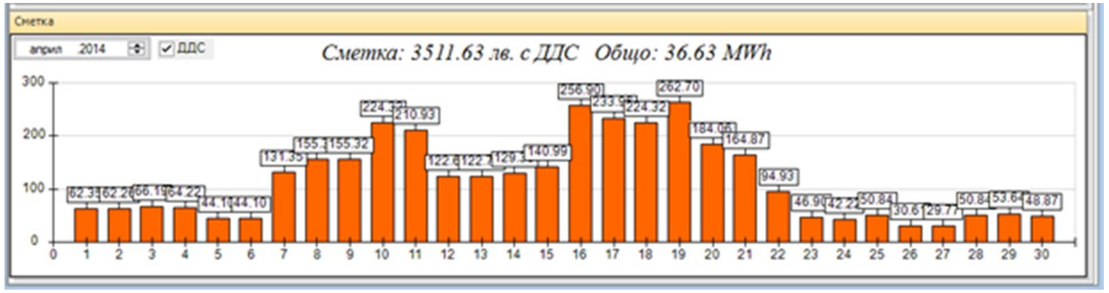
➢ Biomass and Waste analysis

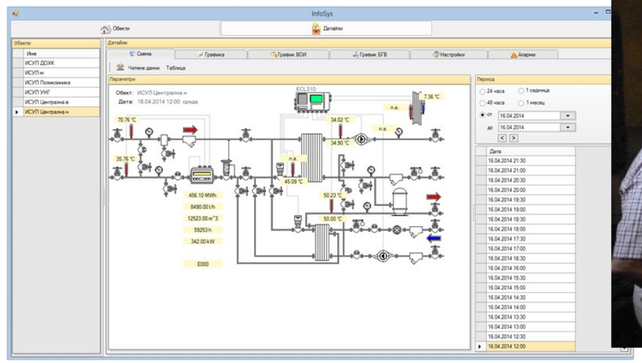
Analytical Laboratory for Testing of Solid Biofuels, Compost and Bio-waste accredited to ISO 17025



Example of Projects in the Public Sector

Demonstration Project: **S**ustainable **T**echnologies **A**nd **C**ombined **C**ommunity **A**pproaches **T**ake **O**ff





400000 EUR investments giving >60000 EUR annual savings:
-Monitoring and control
-Solar thermal and PV systems
-LED lightening
-Thermostatic valves

University hospital Tsaritsa Yoanna ISUL and 191 Kindergarten in Sofia

staccato

CONCERTO

Example of Projects in the Public Sector

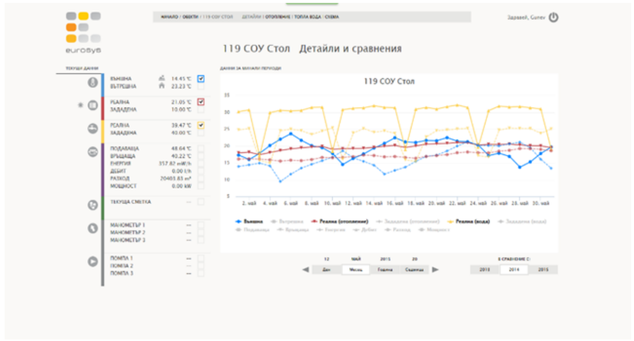
Municipal Energy Management

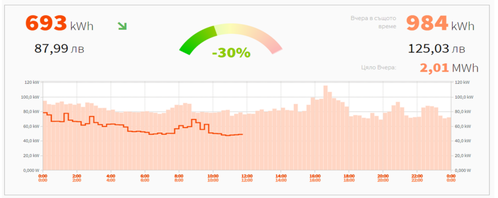
Municipal Energy Management

Kindergartens in Sofia and Elin Pelin–134,34 - 265,85 kWh/m²a
Clinics center – 120 kWh/m²a
Schools – 61,68 kWh/m²a

Specific energy consumption in 6 schools and kindergartens in Elin Pelin 91-260 kWh/m²a

ISO 50001, Financial Models, Trainings





Federal Ministry
for the Environment, Nature Conservation
and Nuclear Safety

European
Climate Initiative
EUKI

Implementation of ISO 50001 in industrial enterprises

- Energy Management Systems (EMS), consultations for energy monitoring systems
- Trainings for internal auditors and personnel responsible for EMS
- Sectors – recycling, plastic products, metal processing, textile, cosmetics, oth.
- Saving potential – 5-10% from the system
- Type of measures – technology modernization, vehicles, lighting, monitoring and measurement

СОФЕНА ЕООД издава настоящия

СЕРТИФИКАТ

На

Инж. Христо Харитонов

за успешно преминато обучение за ВЪТРЕШЕН ОДИТОР на системи за управление на енергията съгласно стандартите БДС EN ISO 50001:2011 и БДС EN ISO 19011:2018

Обучението е проведено на 20 ноември 2018 с лектор д-р инж. Здравко Георгиев по следните основни теми:

Стандарти, принципи и дефиниции. Връзки с други стандарти;

Акредитация, сертификация и видове одит;

ISO 50001 Системи за управление на енергията – изисквания и указания за съдържанието и внедряването;

Процесът на одит. Кодекс на поведение на одитора, характеристики и техники на одит;

Идентифициране на несъответствия, коригиращи действия и докладване.

Управител: ....

Д-р инж. Здравко Георгиев

Дата: 22.11.2018 г.

ORGANIZATION FOR TECHNICAL CONFORMITY

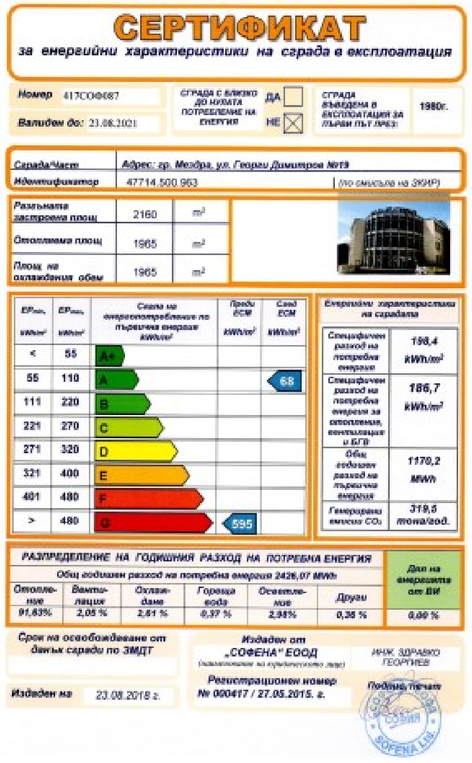
СЕРТИФИКАТ

БАЛКАНКАР ЗАРЯ АД

БДС EN ISO 50001:2011

Системи за управление на енергията. Изисквания.

Energy Audits of Buildings, Industrial Enterprises and Street Lightening



СЕРТИФИКАТ

за енергийни характеристики на сграда в експлоатация

Номер 417СОФ087

Валиден до: 23.08.2021

СГРАДА С БЛИЗКО ДО НУЛАТА ПОТРЕБЛЕНИЕ НА ЕНЕРГИЯ: ДА ☐ НЕ ☒

СГРАДА ВЪВЕДЕНА В ЕКСПЛОАТАЦИЯ ЗА ПЪРВИ ПЪТ ПРЕЗ: 1980г.

Сграда/Част — Адрес: гр. Мездра, ул. Георги Димитров №19

Идентификатор: 47714.500.963 (по смисъла на ЗКИР)

Разгъната застроена площ	2160	m²
Отоплявана площ	1965	m²
Площ на охлаждания обем	1965	m²

EP min, kWh/m²	EP max, kWh/m²	Сграда на енергопотребление по първична енергия kWh/m²	Преди ЕСМ kWh/m²	След ЕСМ kWh/m²
<	55	A+		
55	110	A		68
111	220	B		
221	270	C		
271	320	D		
321	400	E		
401	480	F		
>	480	G	595	

Енергийни характеристики на сградата

Специфичен разход на потребна енергия	198,4 kWh/m²
Специфичен разход на потребна енергия за отопление, вентилация и БГВ	186,7 kWh/m²
Общ годишен разход на първична енергия	1170,2 MWh
Генерирани емисии CO₂	319,5 тона/год.

РАЗПРЕДЕЛЕНИЕ НА ГОДИШНИЯ РАЗХОД НА ПОТРЕБНА ЕНЕРГИЯ

Общ годишен разход на потребна енергия 2426,07 MWh

Отопление	Вентилация	Охлаждане	Гореща вода	Осветление	Други	Дял на енергията от ВИ
91,63%	2,05 %	2,61 %	-0,37 %	2,98%	0,35 %	0,00 %

Срок на освобождаване от данък сгради по ЗМДТ

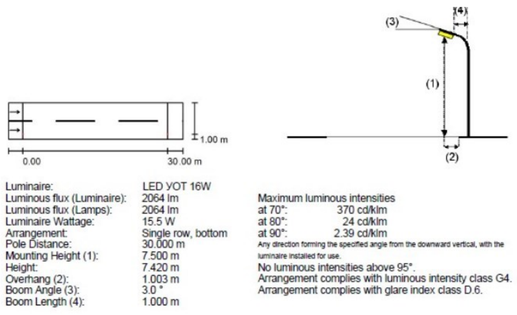
Издаден от „СОФЕНА" ЕООД

ИНЖ. ЗДРАВКО ГЕОРГИЕВ

Регистрационен номер № 000417 / 27.05.2015. г.

Подпис, печат

Издаден на 23.08.2018 г.

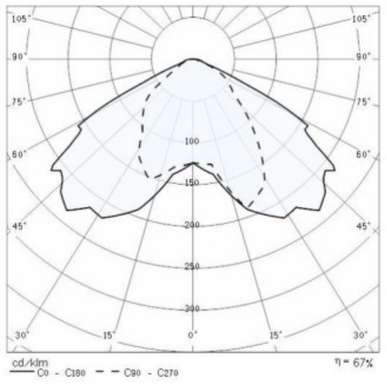


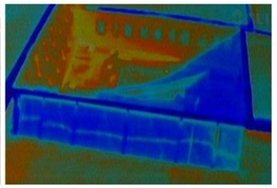
Luminaire:	LED YOT 16W
Luminous flux (Luminaire):	2064 lm
Luminous flux (Lamps):	2064 lm
Luminaire Wattage:	15.5 W
Arrangement:	Single row, bottom
Pole Distance:	30.000 m
Mounting Height (1):	7.500 m
Height:	7.420 m
Overhang (2):	1.003 m
Boom Angle (3):	3.0 °
Boom Length (4):	1.000 m

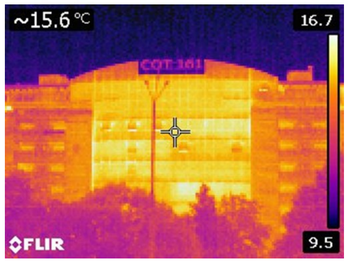
Maximum luminous intensities
at 70°: 370 cd/klm
at 80°: 24 cd/klm
at 90°: 2.39 cd/klm

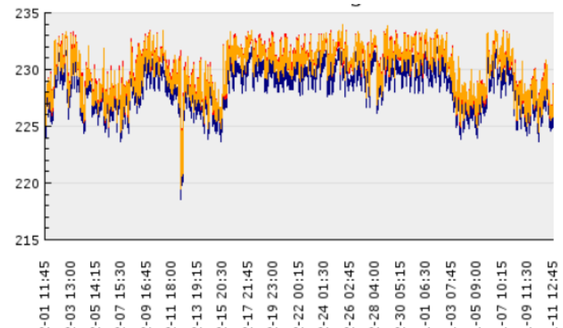
Any direction forming the specified angle from the downward vertical, with the luminaire installed for use.

No luminous intensities above 95°.
Arrangement complies with luminous intensity class G4.
Arrangement complies with glare index class D.6.



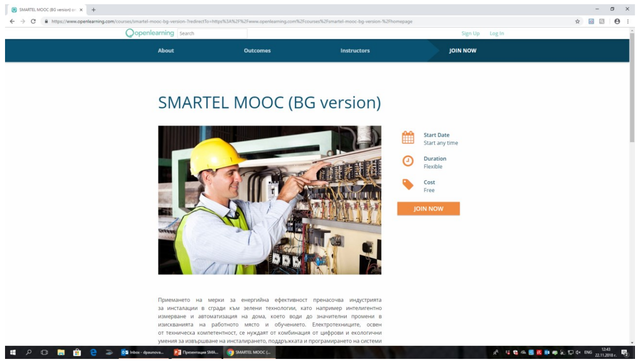






Example for Trainings

- SMARTEL - Smart Metering and Home Automation Technologies Re-Training for Electricians
- GSS-VET - Geothermal and Solar Skills - Continuing Education and Training



Green Energy Financial Opportunities in Bulgaria

- **Energy-related financial instruments:**

➢ with shared management between the EU and the Member States, e.g. the Structural Funds and the Cohesion Fund (ESI funds)

➢ managed centrally and directly by the European Commission, e.g. for research:

➢ Horizon 2020

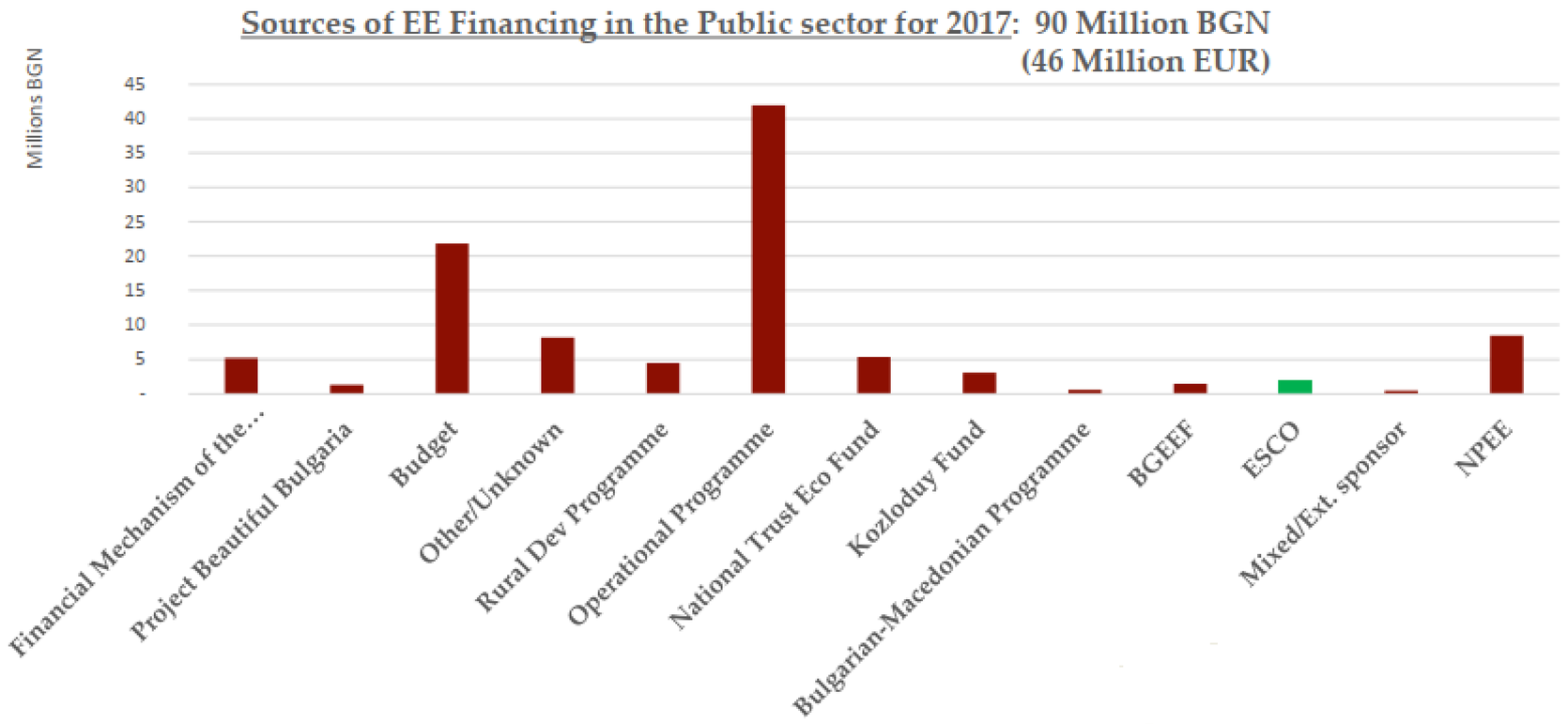
➢ LIFE

Green Energy Financial Opportunities in Bulgaria

- Joint European Support for Sustainable Investment in City Areas (JESSICA)
- Smart Finance for Smart Buildings
- European Energy Efficiency Fund
- EBRD financing - GEFFs and SEFFs

Others

Current State of Financing



Source: Alliance for Energy Efficiency
http://www.alliance-ee.bg/

Operational programme: Innovations and Competitiveness

Procedure Name	Contracted Amounts			AAP	
	Total	% of Implementation	EU Funding	Total	% of Implementation
Increasing the energy efficiency in large enterprises	122 571 361.56	125.34	104 185 657.32	26 656 433.47	27.2
Подкрепа за пилотни и демонстрационни инициативи за ефективно използване на ресурсите	70 846 580.47	98.89	60 219 593.37	1 429 799.32	2.0
Energy efficiency for SMEs	329 243 242.12	187.04	279 856 755.83	238 080 266.52	135.2
Financial instruments under OP "Innovation and Competitiveness"	78 233 200.00	5.67	66 498 220.00	19 558 300.00	1.4
Sustainable energy development of Bulgarian enterprises through provision of support to SEDA.	4 107 815.34	52.51	3 491 643.04	821 563.00	10.5

SOURCE: INFORMATION SYSTEM FOR MANAGEMENT AND MONITORING OF EU FUNDS IN BULGARIA 2020
http://2020.eufunds.bg/en/5/0/PriorityLines

Financial Instruments in Bulgaria

1. OP "REGIONS IN GROWTH" (2014-2020)
The implementation of energy efficiency projects and such for renovation of existing buildings falls in Investment Priority ‘Supporting energy efficiency, smart energy management and renewable energy use in public infrastructure, including in public buildings and in the housing sector’ – over 170 (total number of 265) municipalities in Bulgaria received funding for renovation of the public infrastructure.

2. The EEA Grants are jointly financed by Iceland, Liechtenstein and Norway.
2009-2014 – 117 projects for renovation of public buildings were implemented
For the period 2014- 2021 over 40 million EUR are dedicated for energy efficiency and environmental projects

3. Energy Efficiency and Renewable Sources Fund (FEEVI) The Fund provides loans or loan guarantees, and acts as a free consultation centre.

4. National Program for the Energy Efficiency of Multi-Family Residential Buildings - since 2015 1 billion EUR were granted by the state budget for EE renovation.

Projects of over 2022 multi-family residential buildings have been approved and until now 1728 buildings have been entirely renovated /over 100 000 flats/.

Best Practices in Bulgaria

1. Clinic Center N 12 “Ljulin”, Sofia Municipality

The centre was built in 1973 and it is one of 24 district centres on the territory of Sofia - a model of energy efficient public building with a new roof insulation; changed windows with PVC profiles; insulation of the envelope, etc. It is connected to the district heating that ensures thermal comfort for about 150

Best Practices in Bulgaria

1. Clinic Center N 12 “Ljulin”, Sofia Municipality

As the energy consumption of the building, especially for heating, stayed very high, SOFENA experts conducted an analysis of the situation and recommended measures for solving the situation.

The implementation of MEM project in the building included the following measures:

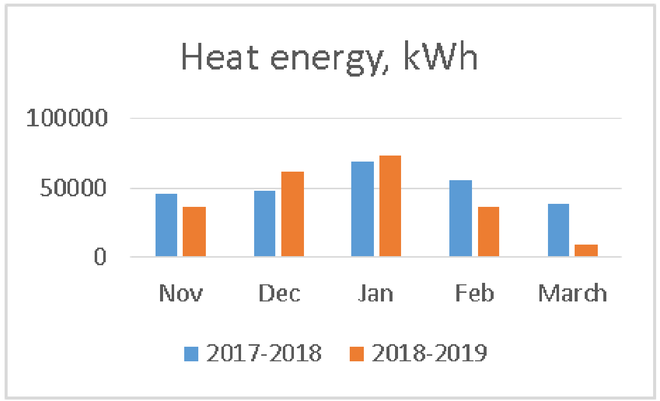
- Installation of energy management system for remote control and optimization of the district heating substation in the building – thus heating supply was reduced with 20-30% during the transition months without affecting comfort of work and the annual reduction was 15,8%.
- The technician of the building and other staff was trained to improve skills on technical issues, understanding utility bills, behavior and organizational measures for energy savings and other practical aspects of rational use of energy in buildings.
- System for on-line electricity monitoring was installed in order to detect unexpected energy consumption and lower the peaks of energy consumption of the building.

Best Practices in Bulgaria

1. Clinic Center N 12 “Ljulin”, Sofia Municipality

The saving achievements reached by the implemented measures within the MEM project are as follow:

- 15.8% heating savings for the heating season 2018-2019
- 3% electricity savings for the period June-August 2019.



Best Practices in Bulgaria

2. Kindergarten №191 “Prikazka bez krai”

The building is situated in Sofia – the capital of Republic of Bulgaria. It was constructed in 1974 and it is one of the 74 kindergartens on the territory of the municipality. The building was renovated under STACCATO project in the period 2011-2012.

A solar system on the roof was installed for domestic hot water for the daily needs and for the pool. The windows are PVC with double glazing. The roof and the external walls are insulated. More than 60% savings of heat energy was achieved in the main building from STACCATO project result. In 2011 – 2012 a new building was constructed with floor area 250 m^2 and flat roof next to the old renovated one.

2. Kindergarten № 191 “Prikazka bez krai”, Sofia Municipality

However, within MEM project SOFENA`s experts detected 2 basic problems. After several on-site visits, collected data and talks with the management of the kindergarten it was concluded that:

- The first problem appeared in 2012 when the new building was attached to the heating system of the old renovated one. So system balancing problems appeared almost immediately in the heating season 2012-2013. The old building was overheated in order to ensure the required comfort temperature in the building. And even in this way it was difficult to achieve the comfort temperature in the new one.

- The second issue was the higher consumption of electricity in the old building that happened after its renovation. There was an increasing trend in the last years due to adding of the new equipment in the building.

Best Practices in Bulgaria

2. Kindergarten № 191 “Prikazka bez krai”, Sofia Municipality

Within the project a concept for solving the issues were elaborated and given to the municipality for approval. It consisted of 2 possible investments in technical equipment that will be financed by the municipality 2020 budget.

- The first one is a solar PV system, that could be installed on the roof of the new building to cover partly the energy consumption of the kindergarten; including 10 PV panels, 2,6 kWp, and on-line monitoring system, invertor 2000 Wp with cables and all supporting elements.
- The second one is an energy monitoring and management system that can be installed for measuring energy yield from the solar PV and electricity use in the kindergarten. The total sum of the investment will be 11 500 Euro.

The expected results are: Online energy monitoring and control of heat energy and electricity consumption.

Expected energy savings: min. 10%. Integration of solar heat and solar PV systems with the existing energy sources: electricity form the grid and heating oil for the existing boilers. Demonstration of PV installation and energy management and monitoring system.

POWERPOOR

Empowering Energy Poor Citizens through Energy Cooperative Initiatives

Working on the field with
energy poor citizens and policy makers
to lower energy poverty levels across Europe

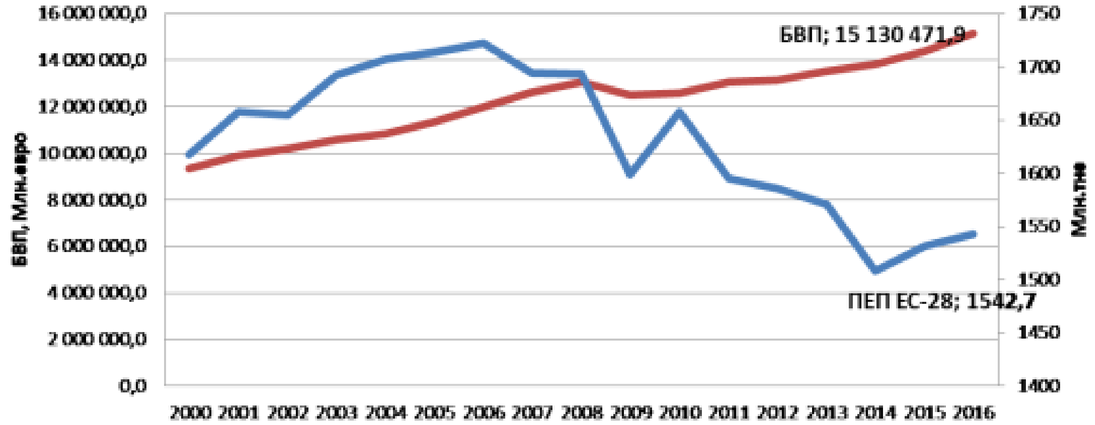
- The POWERPOOR project has received funding from the European Union's Horizon 2020 Research and Innovation Programme under grant agreement No 890437.

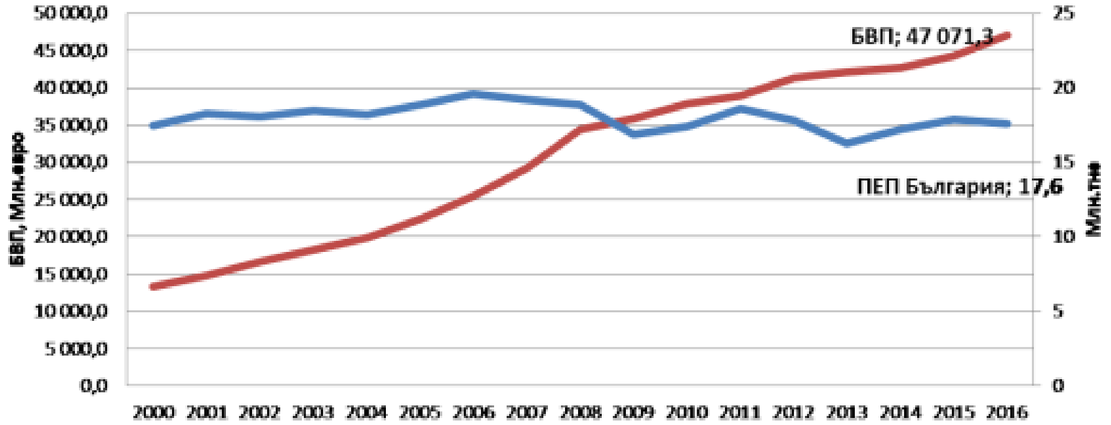
Perspectives for development

- Industrial sector – subsidies, loans, technology modernization, RES for own needs
- Households – renovation, RES penetration
- Transport sector – the big challenge
- ESCO market development – the role and energy efficiency obligations of energy suppliers
- Large scale RES installations (wind, PV) is not likely to be developed in the next few years
- Energy Cooperatives

Challenges

Project: Increasing Citizens' Participation in the Processes of Formulation, Implementation and Monitoring of Policies and Legislation in the Field of Energy Efficiency (Partners: BIA, SOFENA, SEDA)





OPERATIONAL PROGRAMME
GOOD GOVERNANCE

Source: Bulgarian Industrial Association, Eurostat

THANK YOU FOR YOUR ATTENTION

Lilly Stammler
lstammler@sofena.com

Tel: +359 2 943 44 01

Research team in the area of “Electric Power Systems" in Technical University of Varna

Eng. Dimitar Georgiev

Content

1. About the Team
2. Product development experience
3. Projects

About the team

The research team in the area of “Electric Power Systems” has extensive experience in power systems modelling and scripting, analysis of its stability, reliability and optimal operation.

During the past fifteen years, our team participated in the evaluation of many renewable energy-based power parks for interconnection with the transmission system.

We actively work on modelling converter-based generation and studying its impact on the stability of electric power systems as well as using them as a means for power oscillation damping.

The team is also specialized in developing software tools for small-signal stability analysis, power system stabilizer tuning, subsynchronous resonance analysis, grid code compliance studies, analysis of stochastic processes and many others.

Product development experience

- Grid code compliance – software tool for Siemens PTI (2021)
- Subsynchronous resonance analysis – software tool for Siemens PTI (2020)
- Power system stabilizer tuning – software tool for Siemens PTI (2019)
- Power system stabilizer tuning – software tool for General Electric Global Research (2016-2017)
- NASAVR – small-signal stability analysis and excitation system tuning, a software tool for NEK EAD (2005)

Projects

- GARPUR - Generally Accepted Reliability Principle with Uncertainty modelling and through probabilistic Risk assessment. 7th Framework Programme of the EU, role as a team leader of ESO EAD (2013-2017)
- Grid code compliance study of a CHP unit. Industry project with Siemens-Energy (2021-2022)
- Power system stabilizer tuning of three steam and two gas-powered generation units. Industry project with Siemens PTI (2021)
- Power system stabilizer tuning of a pump-hydro generation unit. Industry project with Siemens PTI (2021).
- Development of a grid code compliance verification software tool. Industry project with Siemens PTI (2021).
- Development of a subsynchronous resonance analysis software tool. Industry project with Siemens PTI (2020).
- Methodological issues of soil thermal properties survey during HV cable line pre-design phase. НП1/2020 by TU-Varna.
- Development of a power system stabilizer tuning software tool. Industry project with Siemens PTI (2019).
- Modeling and protection of high voltage AC transmission power lines. Contract НП1/2018 by TU-Varna.
- Study of the electric power system stability and frequency control at a predominant share of renewable energy generation. Research Project with National Science Fund (2017-2020)
- Rehabilitation of the frequency control performance of the Turkish Power System for synchronous operation with UCTE. Industry project with UCTE (2009)
- Intelligent systems for energy and cost management. Research Project with National Science Fund (2011-2012)
- PSS tool and studies. Industry project with General Electric Global Research, München, Germany (2016)

GARPUR - Generally Accepted Reliability Principle with Uncertainty modelling and through probabilistic Risk assessment. **7th Framework Programme of the EU**

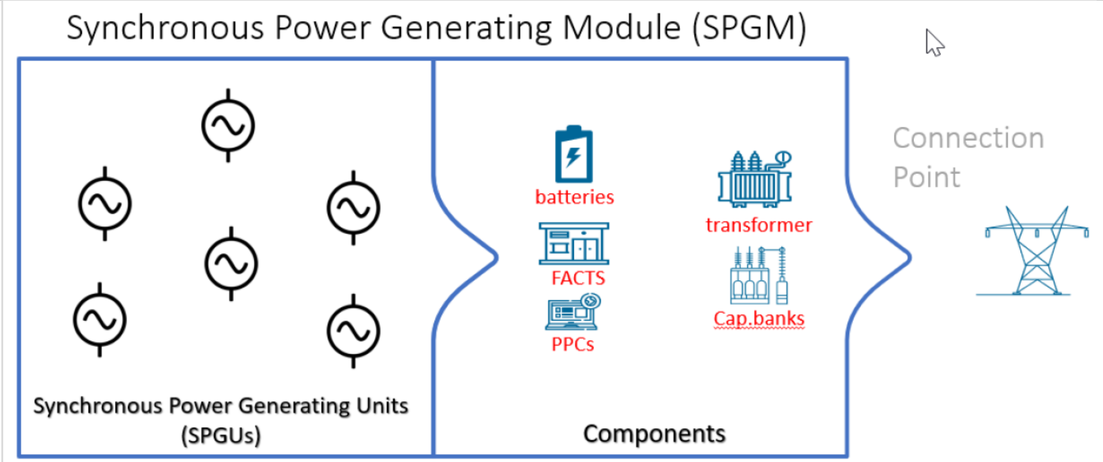
Historically in Europe, network reliability management has been relying on the so-called "N-1" criterion: in case of fault of one relevant element, the elements remaining in operation must be capable of accommodating the new operational situation without violating the network's operational security limits.

Today, the increasing uncertainty of generation due to intermittent energy sources, combined with the opportunities provided e.g. by demand-side management and energy storage, call for imagining new reliability criteria with a better balance between reliability and costs.

The GARPUR project designed, developed, assessed and evaluated such new reliability criteria to be progressively implemented over the next decades at a pan-European level, while maximising social welfare.

Industry projects with Siemens PTI and Siemens-Energy (2019-2022)

Grid code compliance study of a generation units. Development of a grid code compliance verification software tool



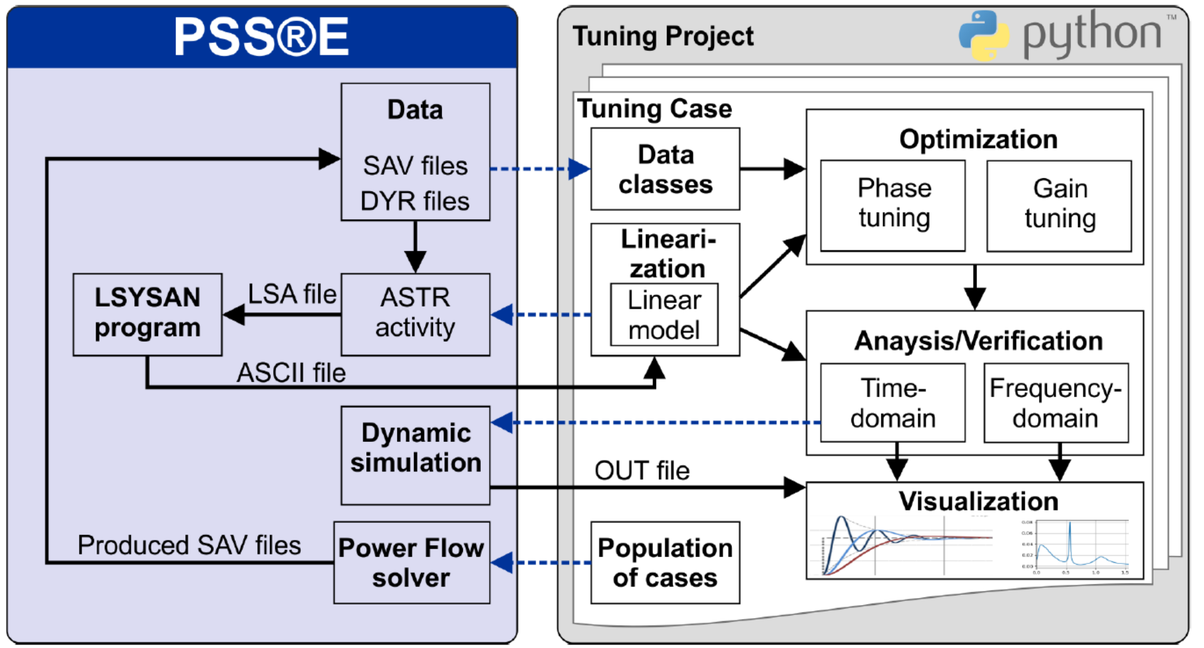
As per the EU Connection Network Codes (CNCs), newly connected or significantly modernised system users must be compliant with the relevant CNC technical requirements, and compliance must be verified at the time of the request for an operational notification and monitored throughout the life cycle.

Carry out compliance tests and relevant simulation studies to be carried out in accordance with a compliance monitoring program, after any failure, modification or replacement of any equipment or component that may have an impact on compliance with applicable requirements as described by RSOs and in line with CNCs, throughout the life cycle of the facility.

Industry projects with Siemens PTI and Siemens-Energy (2019-2022)

Development of a subsynchronous resonance analysis software tool

Development of a power system stabilizer tuning software tool and PSS tuning of steam and gas-powered and pump-hydro generation units

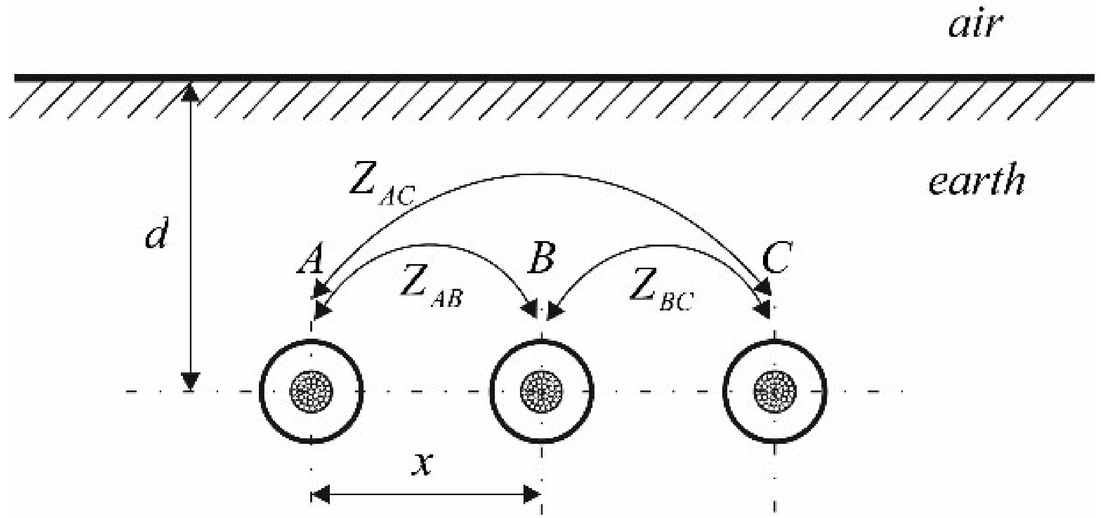


This projects presents the implementation of a frequency scanning program based on the PSS/E power system software package. The tool is developed on Python and makes use of the PSS/E API

Research Project with TU-Varna

Modeling and protection of HVAC transmission power lines

This project aims at a relevant problem that is not yet well established in the literature. It is related to the modelling of high-voltage cable lines and the processes in terms of steady-state operation and transients in the electric power system.

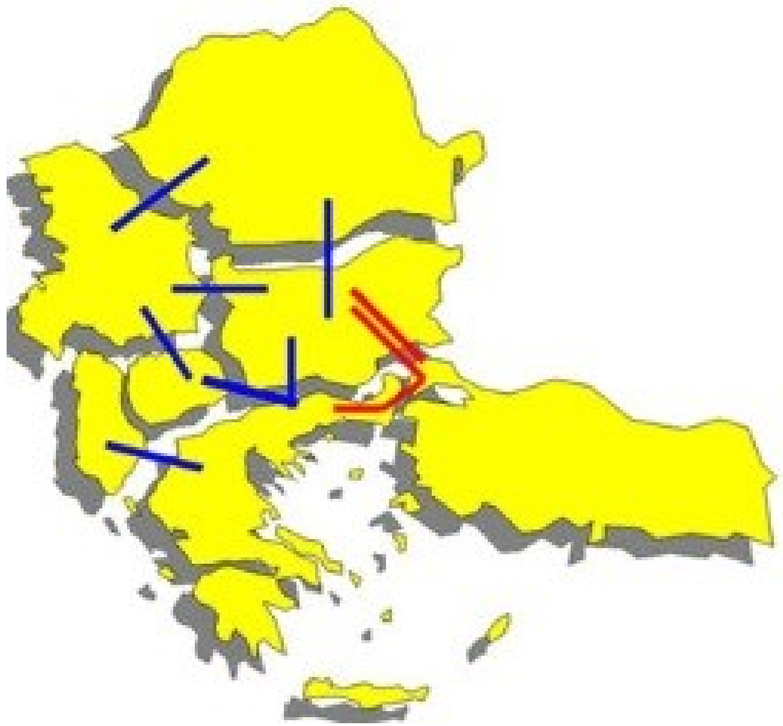


The goals of the project that were achieved are as follows. Increasing the scientific potential of PhD students, undergraduate students and lecturers in the defined relevant scientific problems. Dissemination of the results in a world-renowned data bases, such as SCOPUS and Web of Science, in order to increase the rating of Technical university of Varna. The laboratories of department “Electric power engineering” were upgraded.

Industry project with UCTE

Rehabilitation of the frequency control performance of the Turkish Power System for synchronous operation with UCTE

The Project is to fully integrate the Turkish Electricity Market to the EU Internal Electricity Market.
Turkish Power System is prepared for future parallel operation with UCTE regarding power and frequency control, steady state and transient stability.



Task of the team from TU-VARNA:

Design/Optimization of AVR/PSS in a set of turkish power plants

Research Project with National Science Fund

Study of the electric power system stability and frequency control at a predominant share of renewable energy generation

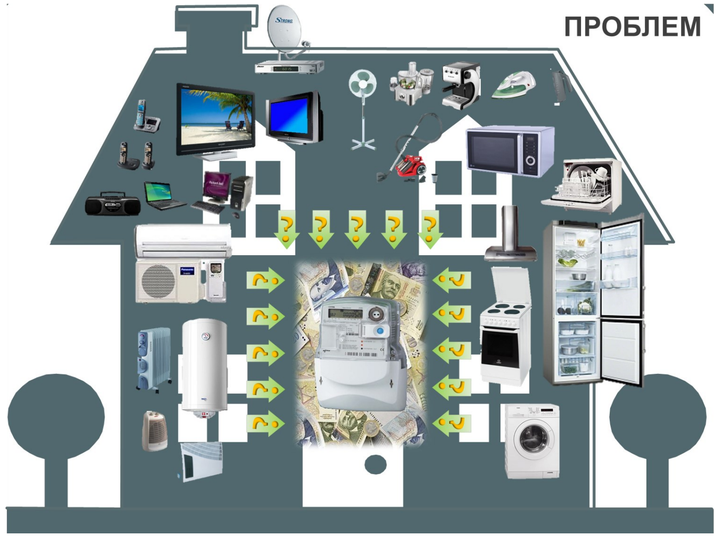
The scientific-technical objectives of the project can be summarized in two directions:

- Development of new mathematical models of generators based on renewable energy sources, which could be implemented in specialized algorithms for research on: (i) the stability of the electric power system at small and large disturbances; (ii) the mechanism of maintaining the synchronous operation of the conventional generators and regulating the voltage frequency.

- Creation/establishment of an experimental complex imitating small scale electric power system for “live” simulation of transient processes at small and large disturbances under different shares of participation of conventional power plants and those using renewable energy sources.

Research Project with National Science Fund

Intelligent systems for energy and cost management



Research initiative and goal of the project is research, proposal, experiment and verification of an intelligent system for energy management and cost management. Multiplatform system, built of two levels:

• Intelligent electronic electricity meter - an innovative solution that allows the user to monitor how electricity is distributed in the home without the need to use additional devices in addition to the device included in the central panel.

• Software for data collection and processing - a new approach, through which the electricity behavior of the consumer can be determined on the basis of the identified consumers. Thus, the system will be able to offer the best strategy for improving energy efficiency based on a pre-prepared database.

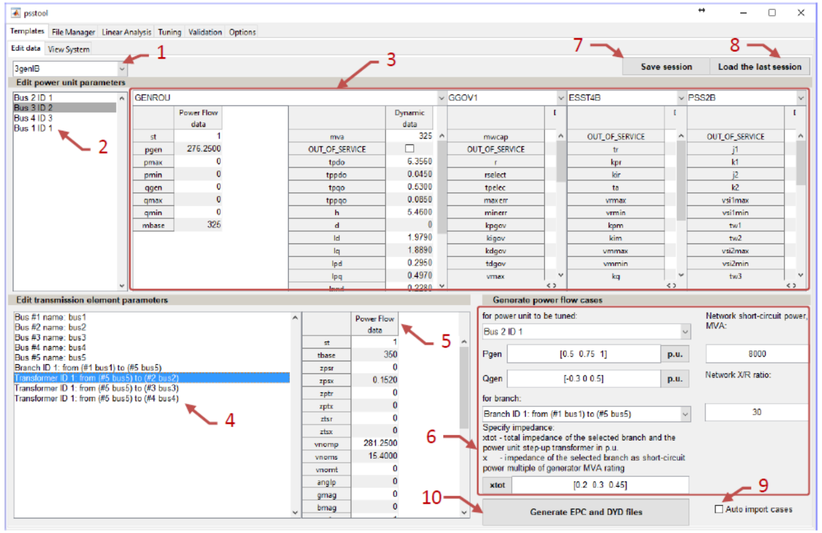
Industry project with General Electric Global Research, Germany

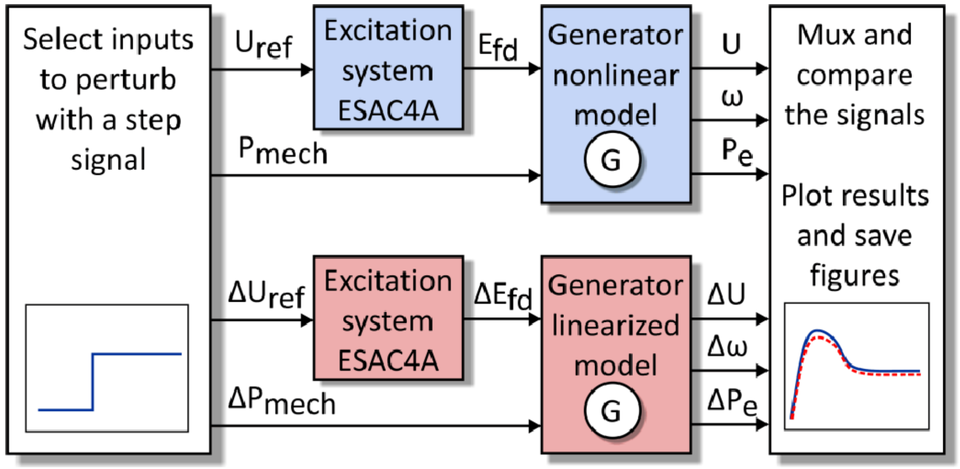
PSS tool and studies

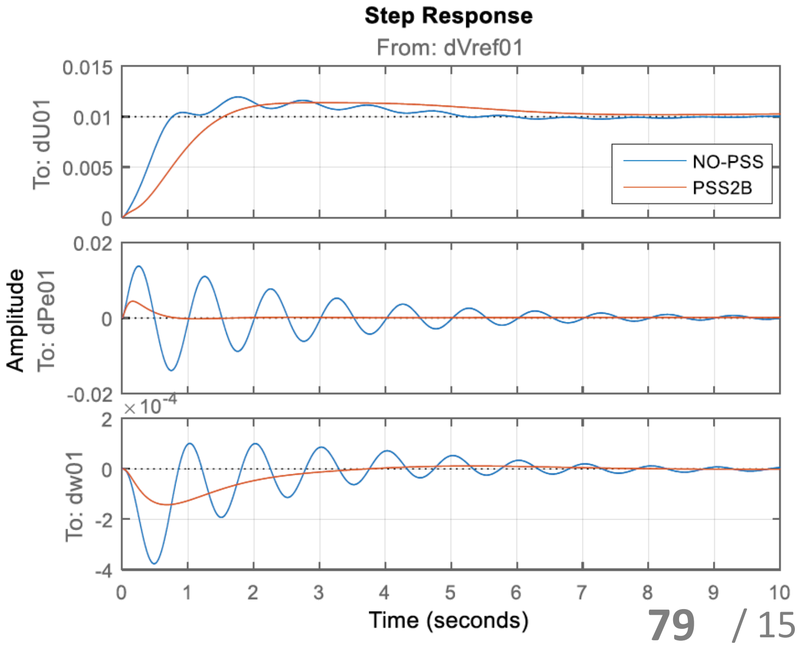
The developed PSS tool is based on the mathematical models from GE's software PSLF. These models are linearized about the steady-state point whose small-signal stability will be analyzed. It should be noted that the models in PSLF describe the electromechanical transients of the electric power system. Therefore, the models can be used to analyze the rotor oscillations of the synchronous generators, i.e. their synchronous operation with the rest of the power system.

To analyze the stability, the small-signal method is used. This method requires the set of state-space equations to be in an independent form.

A structural approach is adopted for the construction of the electric power system (EPS) model. First, the model of each particular element is created. After that, all of them are combined to form the EPS model.

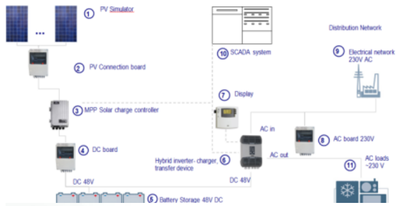






We seek collaboration opportunities for future EU calls

Thank you for your attention!



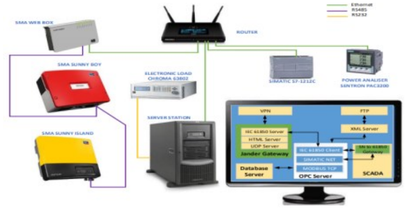
Technical University of Sofia

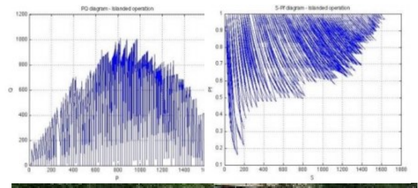
Research and Development Sector

TU-Sofia

Power System Stability Laboratory

Rad Stanev





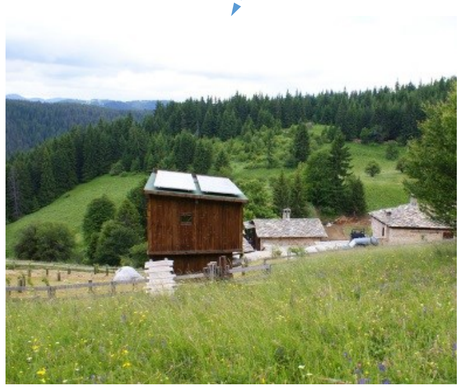
CONTENTS

POWER SYSTEM STABILITY LABORATORY STRUCTURE (2/3)

PSS Laboratory

Pure laboratory environment

Real life laboratory environment



PSS *pure* lab :

- Analytical modeling using STATUS, Neplan and Matlab for static, quasi dynamic and dynamic analysis
- Physical modeling

of micro, mini and nanogrids and components

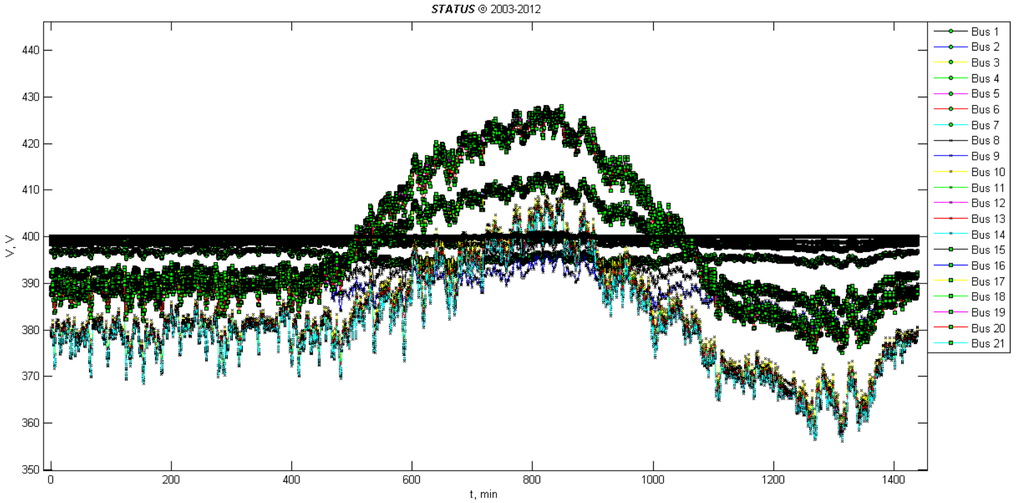
PSS *real life* lab:

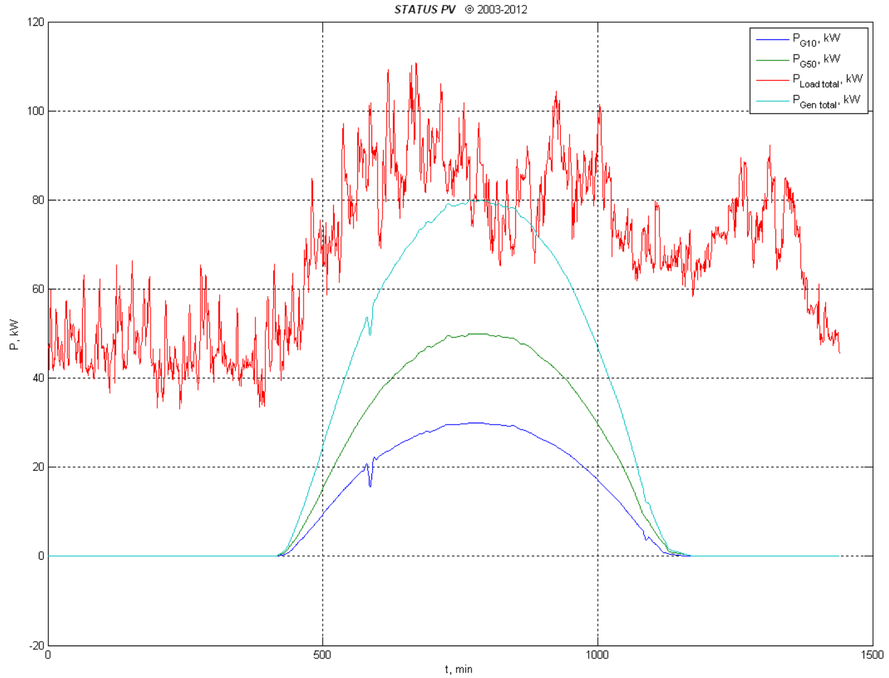
- Microgrids: Solar, Hydro, Diesel
- Domestic Hybrid Nanogrids,
- Small Hydro Power Plant 630kW, Pelton.

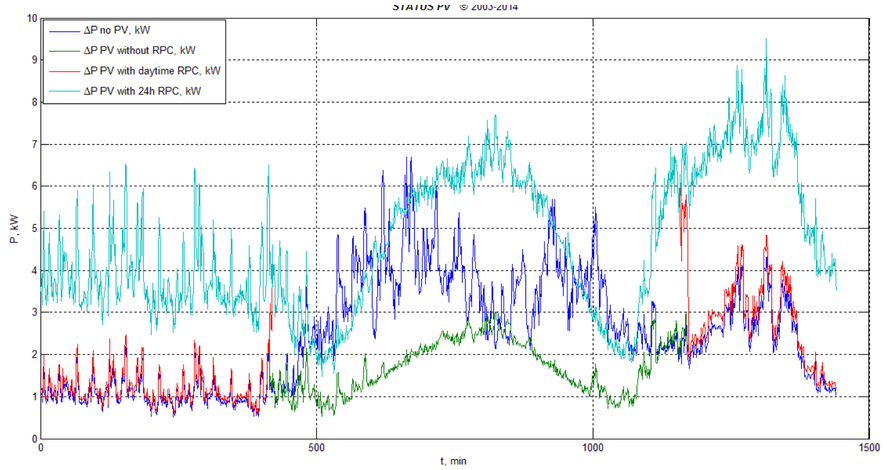
PURE LABORATORY ENVIRONMENT

ANALYTICAL MODELS

Overview







Analytical models:

- to do…
- … .

PURE LABORATORY ENVIRONMENT

PHYSICAL MODELS

Overview

- Micro and nanogrid model,
- Physical model of hydro power plant,

Grid simulator,

- Motor generator sets,
- Multifunctional laboratory transformer,
- Power lines,
- Programmable voltage and frequency controlled grid forming unit,
- Computer based RT interaction simulator,
- SCADA system recording the system parameters.

PURE LABORATORY ENVIRONMENT

Equipment

Micro and nanogrid model

Solar Inverter S= 4600 VA

2 Vector frequency inverter – 5,5 kw 1
Adjustable DC power

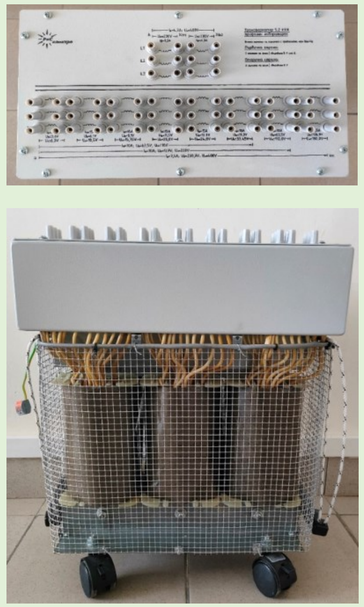
PHYSICAL MODELS

- Micro and nanogrid model with PV simulator, MPP charge controller, fully controllable bidirectional inverter- charger- transfer device, battery storage and smart load controller
- SCADA system recording the system parameters.
- Grid forming inverters (GFI) for micro, mini and nanogrids
- PHiL Power amplifiers (Network simulators)
- 2 Vector frequency inverter – 5,5 kw
- 1 Adjustable DC power source – 0 -600 V
- Solar Inverter S= 4600 VA

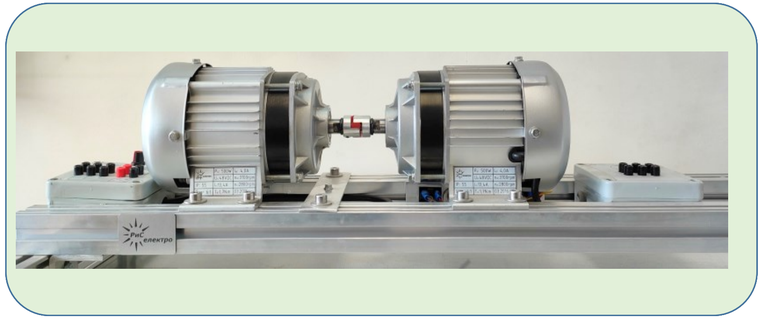
Vac = 220/230/240 V

PURE LABORATORY ENVIRONMENT

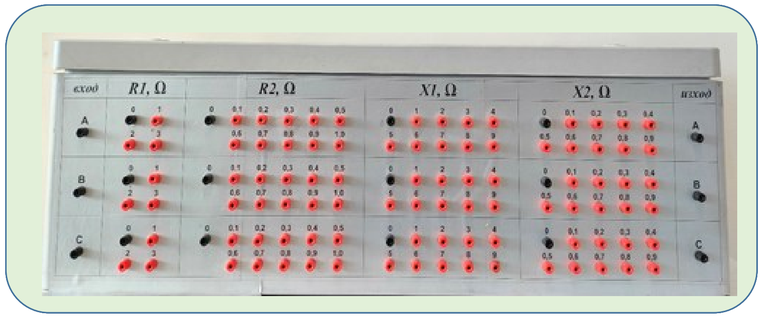
Equipment



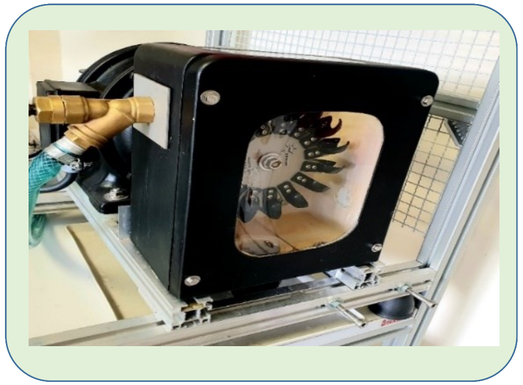
laboratory transformer



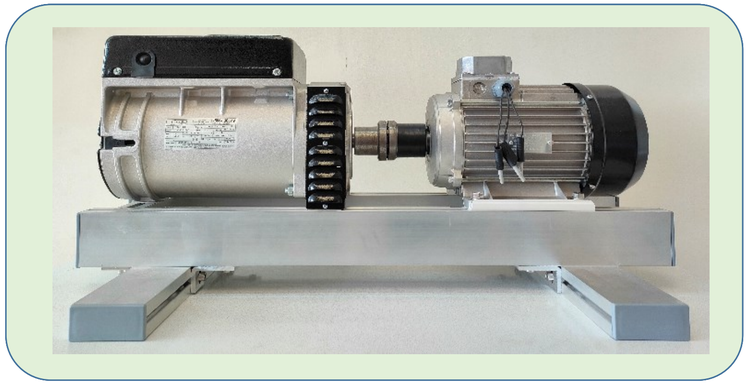
Doubly fed induction generators



Power lines physical model,



hydro power plant



Motor generator sets with synchronous, asynchronous

PHYSICAL MODELS

- Multifunctional laboratory transformer with a variety of primary and secondary windings, which models the standard rated voltage levels in the power system: 6,3kV; 10,5kV, 15,75kV; 20 kV; 35kV; 110kV; 220kV and 400kV scaled down by a factor of 1/1000,
- Motor generator sets with synchronous, asynchronous and doubly fed induction generators,
- Physical model of hydro power plant,
- Power lines physical model,

TEAM

Rad Stanev

Kostadin Viglov

Tsvetomir Asenov

Dimo Siderov

Monika Mladenova

PhD Student and Researcher

Power Networks and Systems, power system and market analysis, power supply/demand modeling.

Kamen Nakov

Tanyo Tanev

PROJECTS

- Ongoing projects
  - PANTERA- PAN European Technology Energy Research Approach
  - TUS-ESO Research infrastructure for research of the impact of grid connected generators on the electrical power system
  - TUS DSO Research on the impact of PV generation on the distribution network

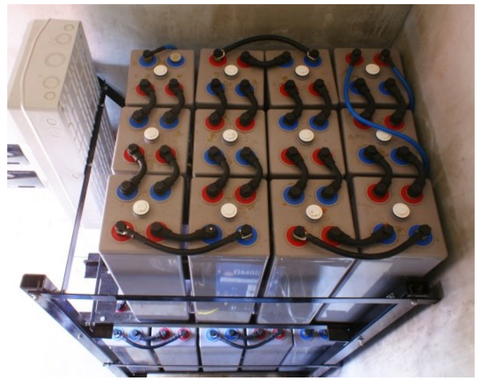
THANK YOU!

RES facility

High voltage lab facility

Living lab facilities

5 controllable facilities in Pirin Mountain, Zabardo, Rhodope mountain and Stara Planina Mountain



PANTERA project:
A Pan-European
Technology Energy
Research Approach

Main objectives that constitute the PANTERA process

General information

Type of Action: Coordination and Support Actions (CSA)

Duration: 48 months

Starting date: 1 January 2019

Total Budget: 3.9 Million Euro

Coordinator:

FOSS
Research Centre for Sustainable Energy

Consortium:

DERlab
European Distributed Energy Resources Laboratories

RSE
Ricerca Sistema Energetico

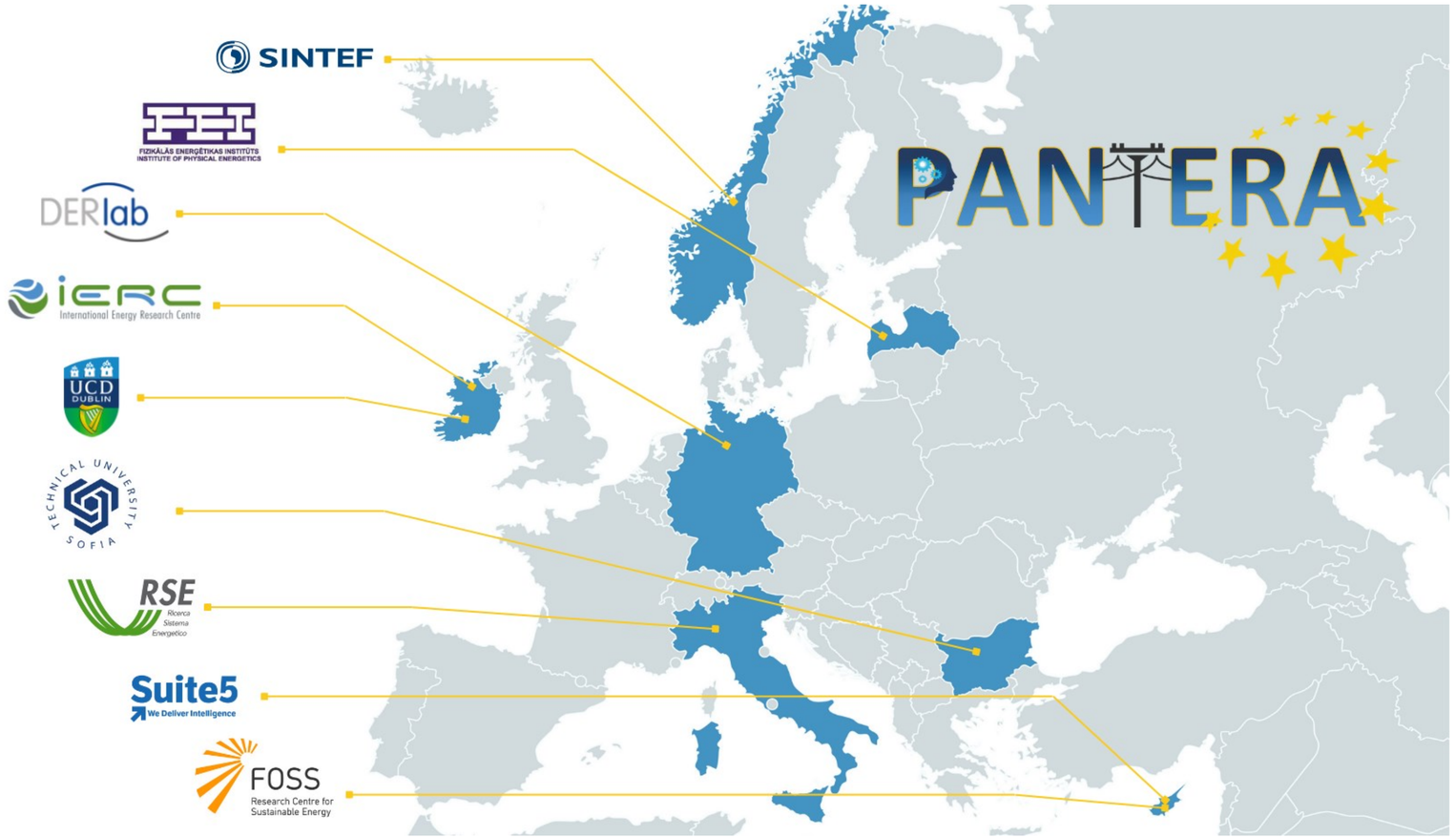
SINTEF

Suite5
We Deliver Intelligence

UCC
University College Cork, Ireland
Coláiste na hOllscoile Corcaigh

UCD DUBLIN

TECHNICAL UNIVERSITY SOFIA



The PANTERA consortium on a map

Vision for a Clean Planet by 2050

- PANTERA CSA steps in to raise awareness, participation, effectiveness, full use of EU resources and as a result :
  - ✓ strengthen the involvement of the European industry and
  - ✓ sharing of benefits achieved.

To ensure sustainable, secure and affordable energy supplies in the European Union, a fully integrated grid and energy market is required.

This is why PANTERA is identifying and implementing initiatives aimed at raising the participation of all EU countries in the needed R&I for developing technologies, systems and markets in support of the common energy market and the energy transition.

Why PANTERA?

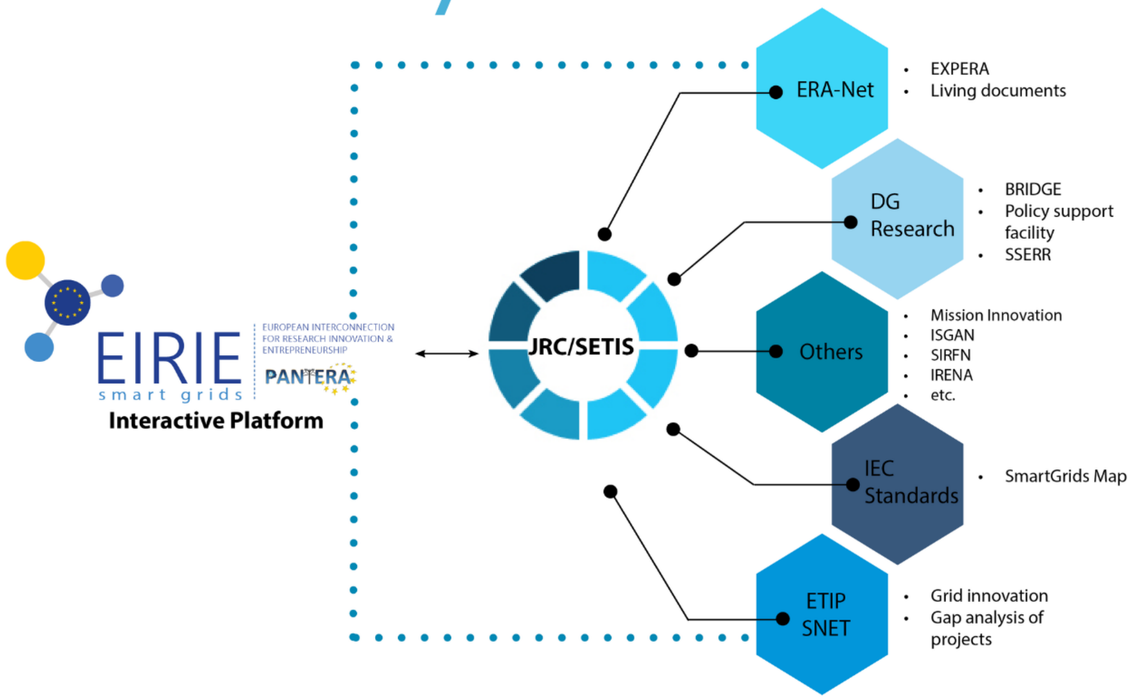
Europe wants coordinated steps forward to achieve the Energy Transition in meeting climate change needs.

The smartening of the grid infrastructure has taken by storm the traditionally slow moving electrical industry in the last decade.

PANTERA steps in to raise awareness, participation, effectiveness, full use of EU resources and as a result :

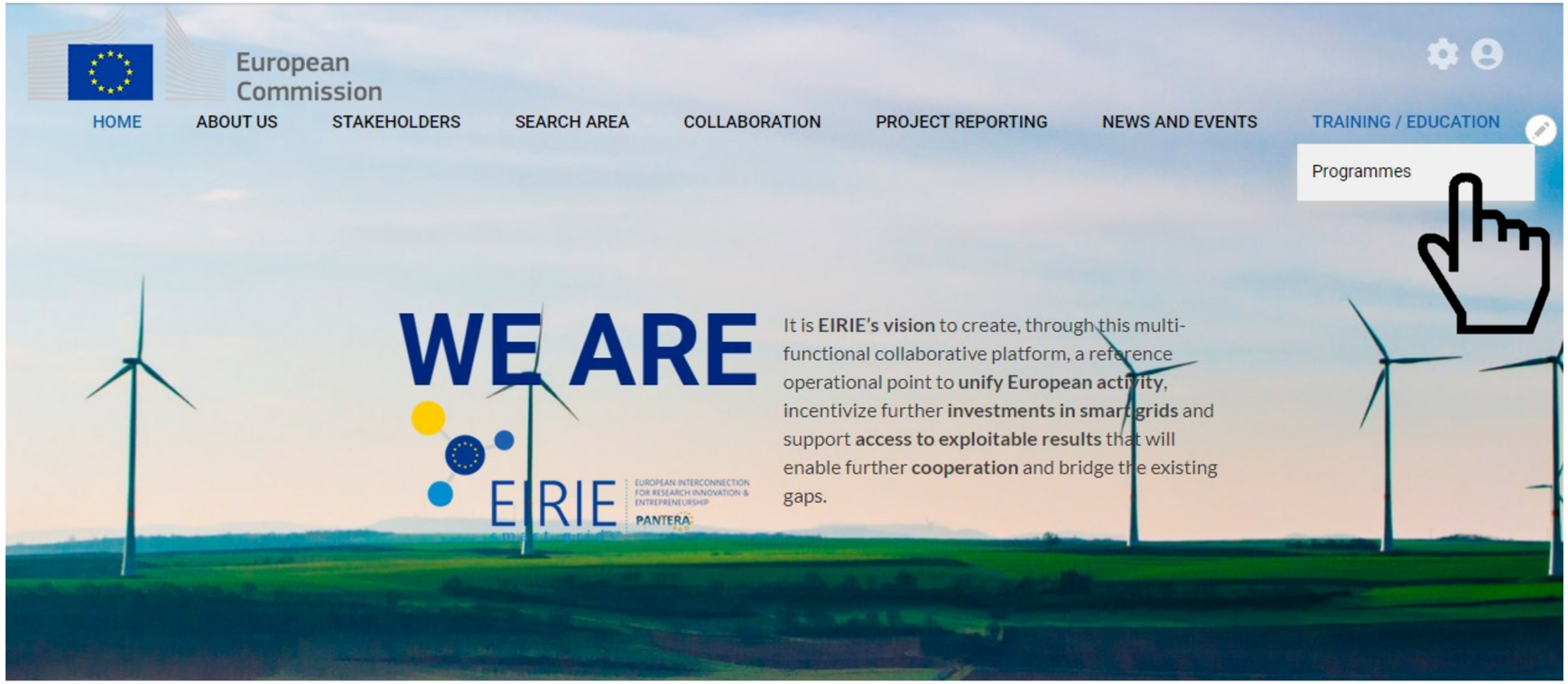
→ **Strengthen the involvement of the European industry and sharing of benefits achieved.**

Collaboration is key



EIRIE is hosted on the Smart Energy System servers of JRC and sustainability is guaranteed by DG Ener through a dedicated Service contract to take over from the PANTERA consortium on completion of the 4 years

SG Outlook/ Map | DiNeMo | resLoadSIM | SG Interactive Tool | DSO Observatory | SG Labs Inventory



Community of stakeholders

Sustainability and collaboration

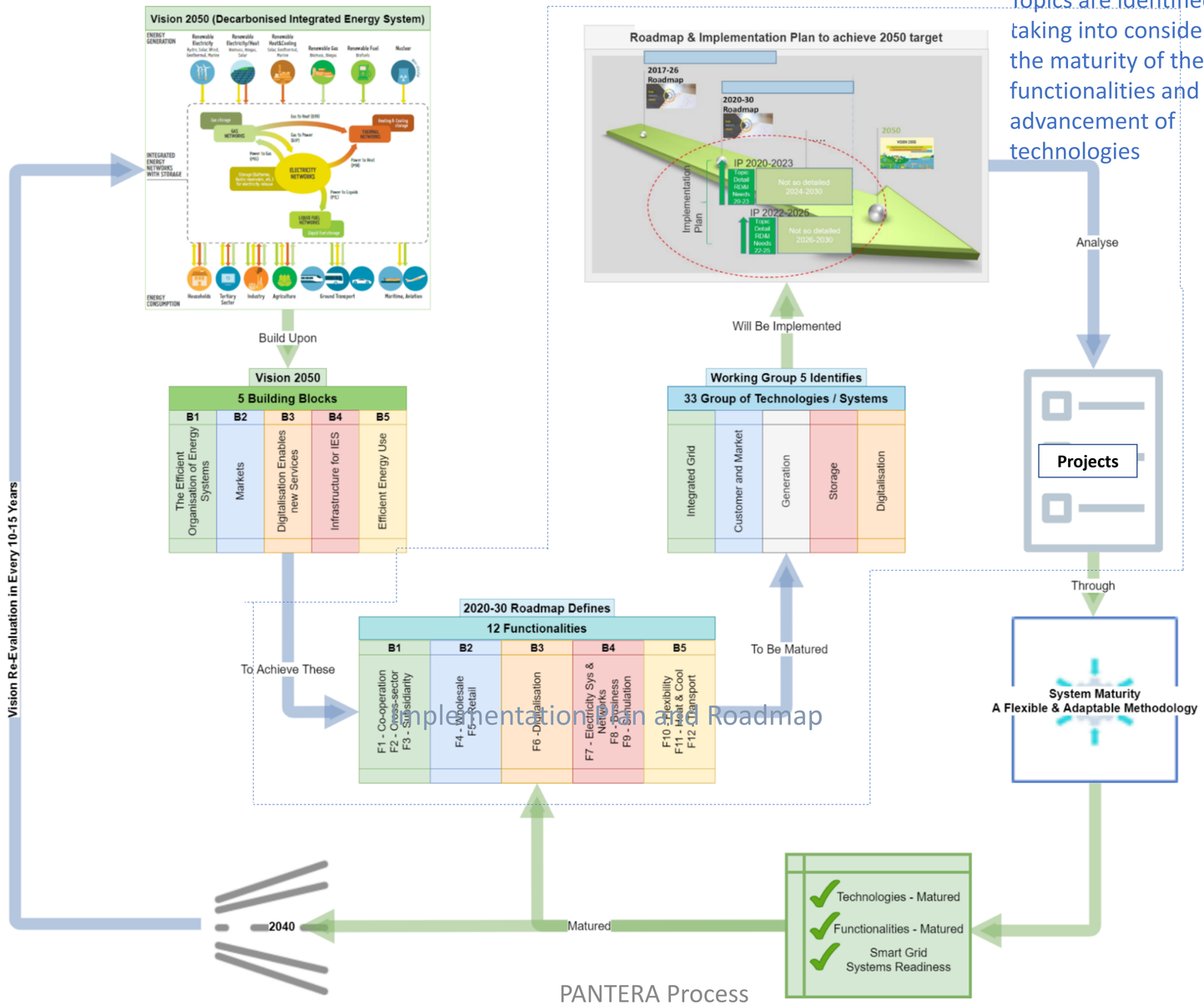
Collaborative multi-dimensional platform

Working Teams in the PANTERA process

In close cooperation with ETIP SNET working teams are currently operating with wider experts that can feed into the PANTERA platform much wanted data, information and knowledge.

Domain System Technology	Working Teams				
	WT1: Research	WT2: Regulation & Standardization	WT3: R&I Needs Mapping	WT4: Innovation support	WT5: Global & European

PANTERA RICAP process for capturing evolution of system



Get in touch

https://pantera-platform.eu/

www.eirie.eu

or

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

Clean Energy Transition and main funding opportunities

Spyridon Pantelis, EERA Project Manager

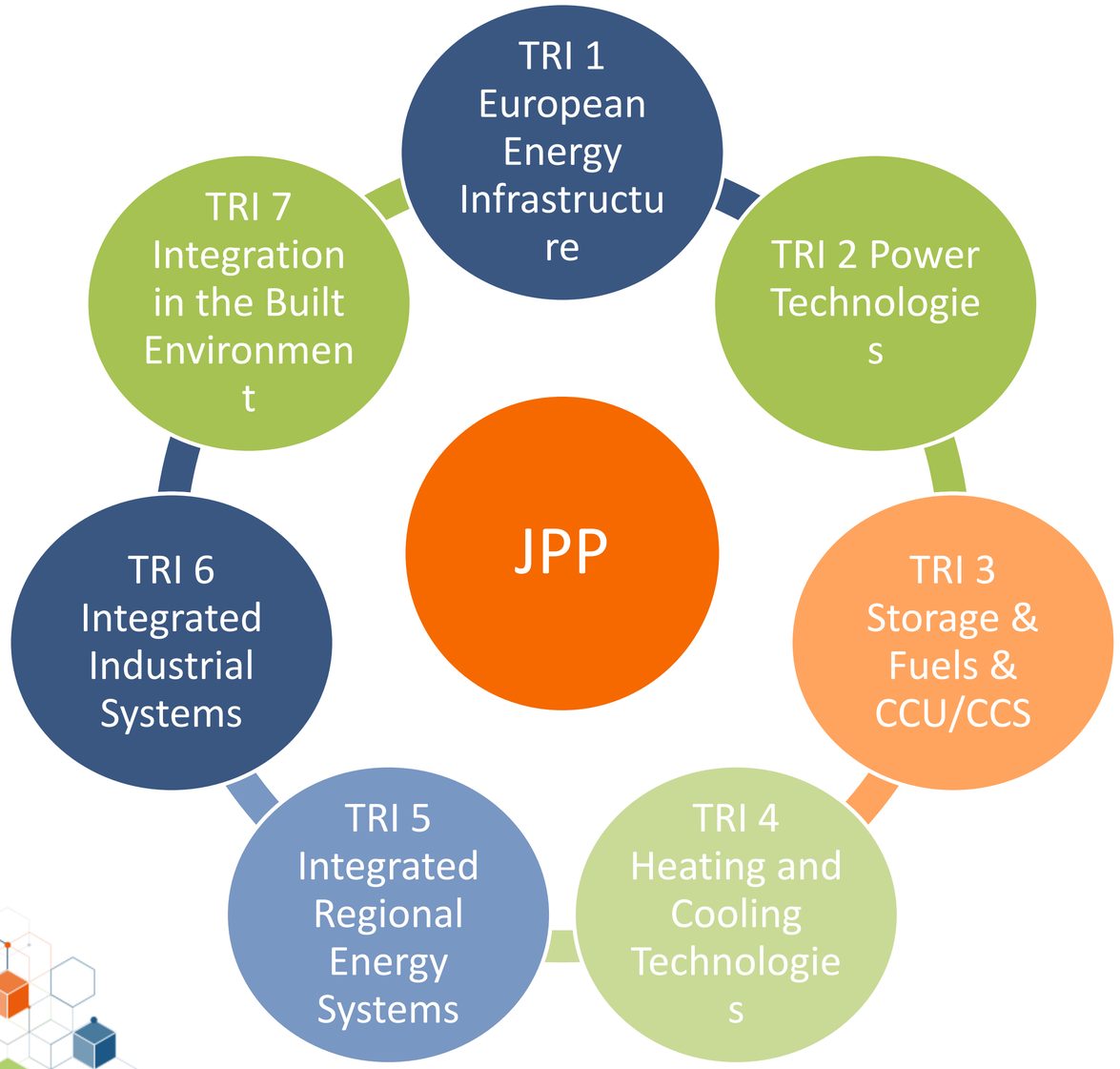
Clean Energy Transition Partnership (CETP)

- The Clean Energy Transition Partnership is a **transnational joint programming initiative** to boost and accelerate the energy transition, building upon regional and national RDI funding programmes.
- The Co-funded Partnership on Clean Energy Transition 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)

32 Countries	70 Funding Partners	13 Coordination Units	Annual Calls for RTDI Projects
•All EU Member States (except LU) + many Associated Countries	•Funding Agencies & Ministries	•Coordinator: BMK/ FFG •Co-coordinator: SWEA	•100 - 130 EUR million/a •2021 - 2027

Transition Initiatives on a Joint Programming Platform



Involving all relevant stakeholder groups:

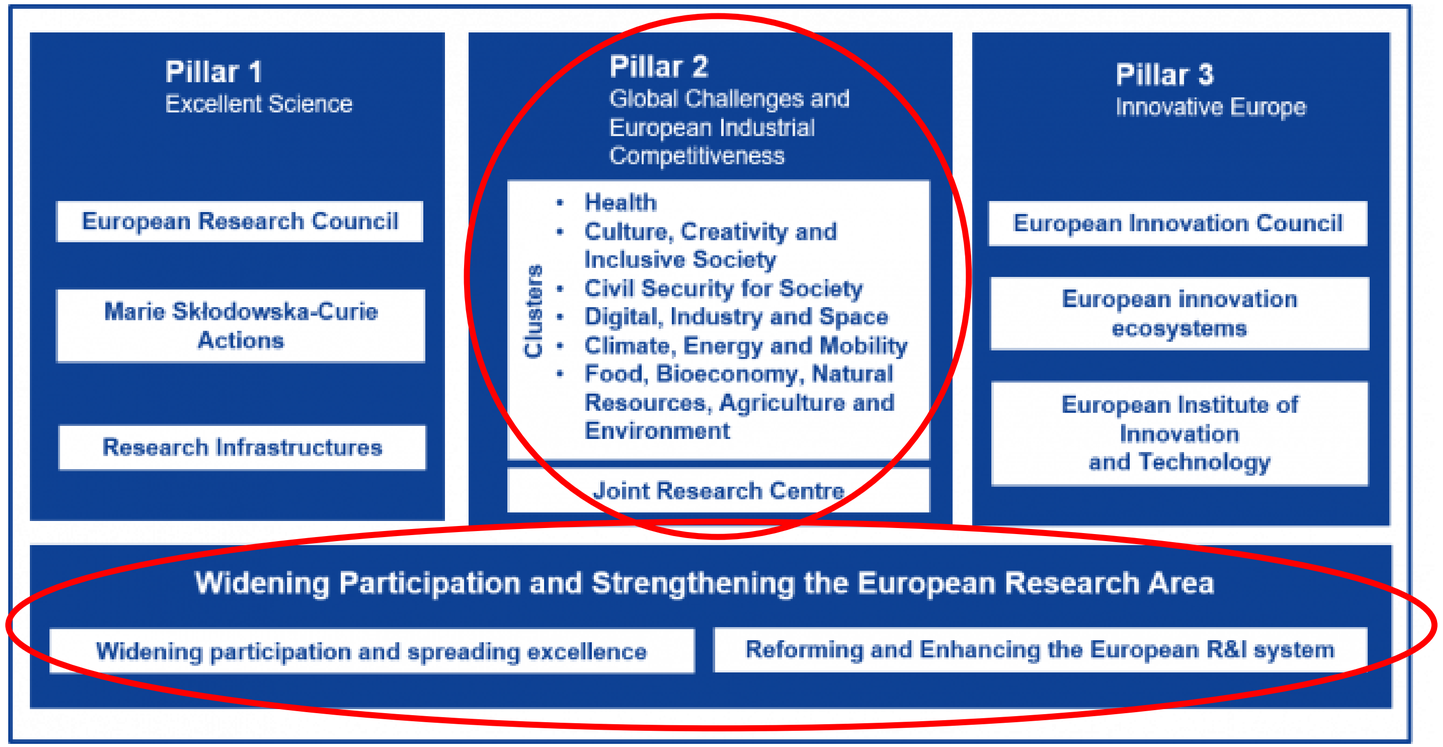
- ERA-NET
- SET Plan Implementation Working Groups
- EERA
- ETIPs
- Representatives of MS/AC

R&I opportunities for collaboration and funding Horizon Europe (Cluster 5 & Widening)

Spyridon Pantelis, EERA Project Manager

Horizon Europe – General Overview

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



Horizon Europe – Detail on Pillars & Clusters

- **Pillar I: Excellent Science** → covers fundamental research funded by the European Research Council and Marie Sklodowska-Curie Actions
- **Pillar II: Tackling global challenges and boosting Europe's industrial competitiveness**. Divided into **6 Clusters:**
  - Cluster 1: Health
  - Cluster 2: Culture, Creativity & Inclusive Society
  - Cluster 3: Civil Security for Society
  - Cluster 4: Digital, Industry & Space
  - **Cluster 5: Climate, Energy & Mobility**
  - Cluster 6: Food, Bioeconomy, Natural Resources, Agriculture & Environment
- **Pillar III: Innovative Europe** → dedicated to improving Europe's innovation ecosystem and to commercialising innovation

Horizon Europe – Detail on Clusters

Horizon Europe - Pillar 2

Cluster 1 - Health

1. Staying healthy
2. Living & working in a health-promoting environment
3. Tackling diseases & reducing disease burden
4. Innovative, sustainable and high-quality health care
5. Unlocking the full potential of new tools, technologies and digital solutions for a healthy society
6. Maintaining an innovative, sustainable & globally competitive health industry

Cluster 2 - Culture, Creativity and Inclusive Society

1. Democracy and Governance
2. European Cultural Heritage and the Cultural and Creative Industries
3. Social and Economic transformations

Cluster 3 - Civil security for Society

1. Better protect the EU and its citizens against Crime and Terrorism
2. Effective management of EU external borders
3. Protected infrastructure
4. Increased Cybersecurity
5. A Disaster-Resilient Society for Europe
6. SSRI (Strengthened Security Research and Innovation)

Cluster 4 - Digital, Industry and Space

1. Climate neutral, circular and digitised production
2. increased autonomy in key strategic value chains for resilient industry
3. world leading data and computing technologies
4. digital and emerging technologies for competitiveness and fit for the green deal
5. open strategic autonomy in developing, deploying and using global space-based infrastructures, services, applications and data
6. a human-centred and ethical development of digital and industrial technologies

Cluster 5 - Climate, Energy and Mobility

1. Climate sciences and responses
2. Cross-sectoral solutions for the climate transition
3. Sustainable, secure and competitive energy supply -2021-2024
4. Efficient, sustainable and inclusive energy use
5. Clean and competitive solutions for all transport mode
6. Safe, Resilient Transport and Smart Mobility services for passengers and goods

Cluster 6 - Food, Bioeconomy, Natural Resources, Agriculture and Environment

1. Biodiversity and Ecosystem Services
2. Fair, healthy and environmentally-friendly food systems from primary production to consumption
3. Circular economy and bioeconomy sectors
4. Clean environment and zero pollution
5. Land, oceans and water for climate action
6. Resilient, inclusive, healthy and green rural, coastal and urban communities
7. Innovative governance, environmental observations and digital solutions in support of the Green Deal

info@efmc.eu / https://efmc.eu

Horizon Europe – Recent developments

- **EU 2022 budget: €12.2 billion.** At the end of 2021, the European Commission has **increased the budget for the 5 HEU Missions**. It will make available **€673 million**, channelling the new funds to 19 research calls
- **UK associate membership to HEU not yet ratified** → Ratification has been delayed due to the UK's non-implementation of the Northern Ireland protocol, a part of the Brexit deal governing customs matters
- **Switzerland associated membership to HEU also an open issue** → Lengthier talks needed on outstanding issues, e.g. better alignment with EU law, a functioning dispute settlement mechanism and Switzerland's future financial contribution to the EU cohesion policy.
- The EU is **continuing the process of third countries association**, with seven countries (Georgia, Israel, Bosnia and Herzegovina, Kosovo, Montenegro, North Macedonia and Serbia) being added to the list in December only. Tunisia associated on 29 March 2022.

Selected upcoming calls
Cluster 5: Climate, Energy and Mobility

Call Reference	Type of Action	Budget available	Deadline
Embedding smart functionalities into battery cells (Batteries Partnership) - HORIZON-CL5-2022-D2-01-06	RIA	15 (EUR million)	06 September 2022
AU-EU Energy System Modelling - HORIZON-CL5-2022-D3-02-02	RIA	5 (EUR million)	27 October 2022
Development of algal and renewable fuels of non-biological origin - HORIZON-CL5-2022-D3-03-07	RIA	15 (EUR million)	10 January 2023
Integrated wind farm control - HORIZON-CL5-2022-D3-03-04	RIA	18 (EUR million)	10 January 2023
Novel Thin Film (TF) technologies targeting high efficiencies - HORIZON-CL5-2022-D3-03-05	RIA	20 (EUR million)	10 January 2023
Best international practice for scaling up sustainable biofuels HORIZON-CL5-2022-D3-03-02	RIA	9 (EUR million)	10 January 2023

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	~~20 April 2022~~ - 10 Nov 2022	**EU contribution per project**	0.20 – 0.50 EUR million
No of projects	80		

More information on Info day for Horizon Europe's WIDERA programme - 27 April 2022 (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)

€ 130 million to enhance research in Widening countries

- **ERA Chairs (HORIZON-WIDERA-2022-TALENTS-01-01)**
  - Focus on institutional changes and increases in research capacity
  - 90 proposals - 32 will be funded
  - € 80 million in total - € 1.5-2.5 million per project

- **Excellence Hubs (HORIZON-WIDERA-2022-ACCESS-04-01)**
  - Foster innovation ecosystems in Widening countries and beyond, creating better linkages between academia, business, government and society
  - 102 proposals - 10-15 to be funded
  - € 50 million in total - € 3-5 million per project

Source: **rea.ec.europa.eu**


SUPEERA


EERA
European Energy Research Alliance


cea


DTU


KIT
Karlsruhe Institute of Technology


SINTEF


VTT

Iceland Liechtenstein Norway grants

Norway grants

The EEA and Norway Grants 2014-2021

Working together for a green, competitive and inclusive Europe

Berta Matas Güell, Senior Researcher, SINTEF

25.05.22

EEA Agreement – Art 115-117

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

Protocol 38c

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

We work through funding periods

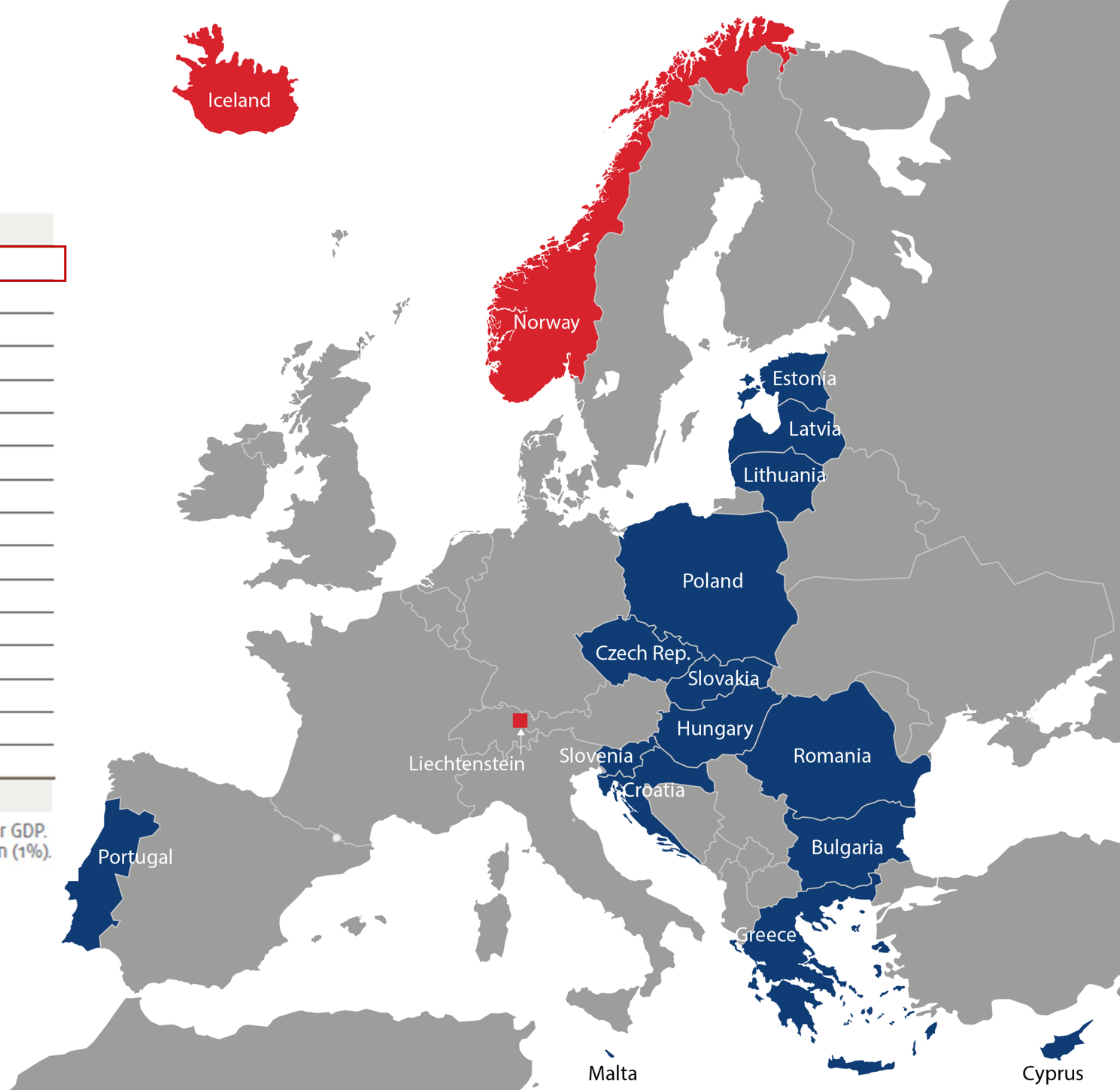
2004-2009 = €1.3 billion
2009-2014 = €1.8 billion
2014-2021 = €2.8 billion

2022-2024 → last funded projects to be implemented

Beneficiary countries (€ million) 2014-2021

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

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



Programme design process

Negotiations on political priorities between donor and beneficiary states

MoU

Concept note

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

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

Programme Agreement

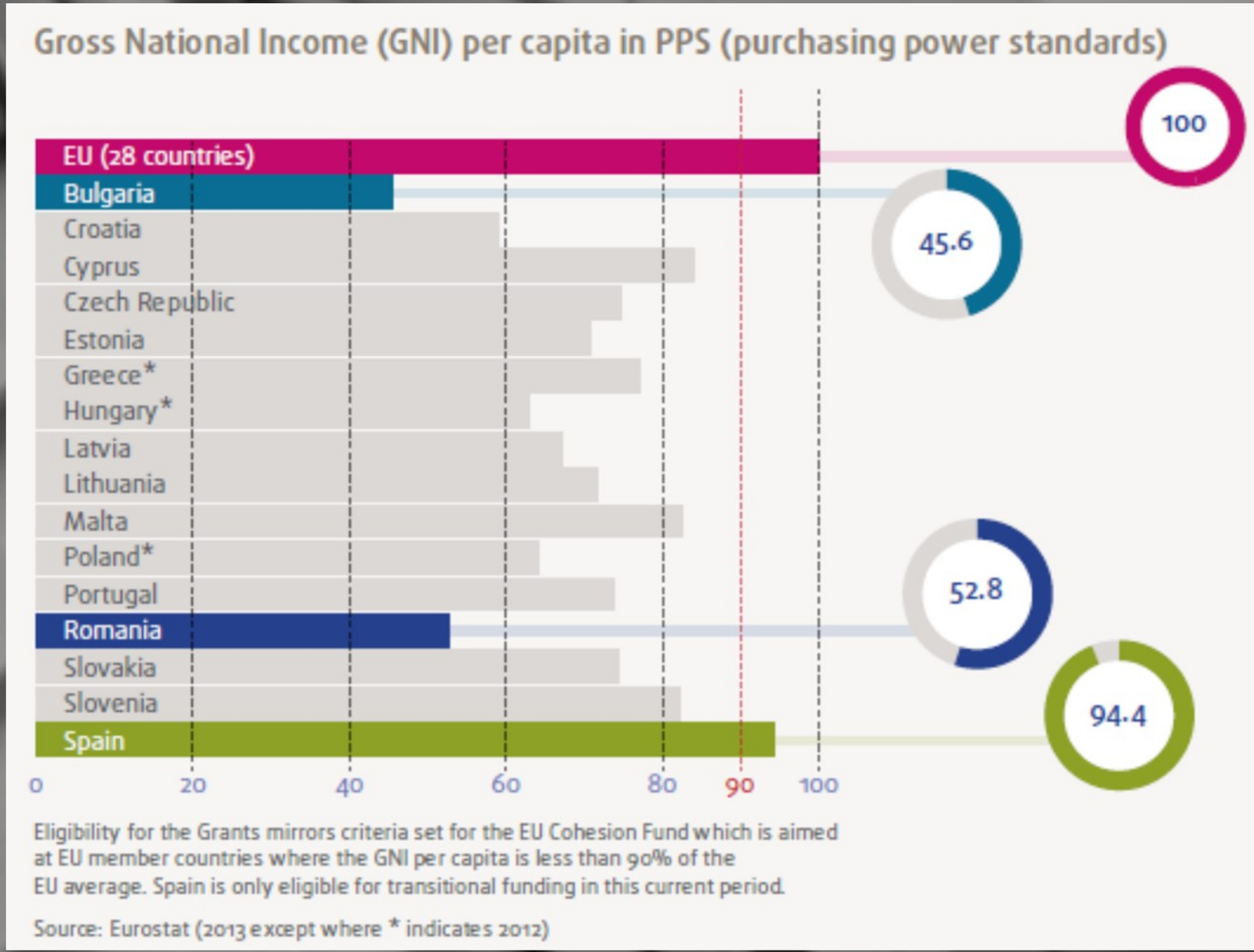
Implementation

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

Eligibility criteria

Mirror EU
Cohesion Funds

GNI less than 90%
of EU average



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

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

Programme Area 11

Ecosystems, air quality, circular economy, water management

Programme Area 12

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

Programme Area 13

Climate change mitigation and adaptation activities, awareness raising

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

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

Energy savings: 897 000 MWh/year

Renewable energy production: 118 000 MWh/year

Restoration of ecosystems: 600 000 m2 of wetland etc.

Promotion of a circular economy: 17 pilot projects etc.

Environmental awareness-raising

New infrastructure for alternative fuels

Overview PA 12: Renewable Energy, Energy Efficiency, Energy Security

Grants allocation, supported areas and objective

Allocation (EEA Grants): **184 503 300 EUR**

Allocation (Norway Grants): **33 778 986 EUR**

Total: **218 282 385 EUR**

Areas of support:

- Energy efficiency in production
- Renewable energy production and/or distribution
- Recovery of energy from waste and hazardous waste
- Energy security
- Renewable energy policies in all relevant sectors
- Energy markets

Objective:

Less carbon intensive energy and increased security of supply

Countries currently receiving funding under PA 12 – updated Dec 2021

Country	Total Sum of Allocation	Total Sum of Disbursed	Total Sum of Incurred	Total Sum of Eligible expenditure
PA12	**218,282,385.00**	**34,711,590.09**	**5,615,242.23**	**247,284,403.92**
Bulgaria	28,000,000.00	6,591,028.96	1,653,821.33	32,941,176.47
Croatia	17,000,000.00	3,504,678.61	25,523.31	20,000,000.00
Greece	10,000,000.00	3,966,714.00	343,952.00	13,333,333.33
Lithuania	845,486.00	535,261.65	301,205.59	994,689.41
Poland	95,360,399.00	6,053,079.87	0.00	112,188,704.71
Romania	62,826,500.00	12,977,077.00	3,290,740.00	62,826,500.00
Slovenia	4,250,000.00	1,083,750.00	0.00	5,000,000.00

Project examples - Bulgaria

95 energy projects currently in implementation

Bulgaria (BG-Energy003):

- ✓ Modernisation of the system of street lighting in 22 zones within the city of Burgas
- ✓ 599 M€

Expected results:

- ✓ Savings of CO2 emissions up to 1328,66 tCO2/y
- ✓ Energy consumption reduction by 1 123 038 kWh/y
- ✓ Financial saving raising up to 197 048,25 lewa per year
- ✓ Increased quality of life and information of the citizens

Source: TheMayor.EU

- ✓ Increase energy efficiency, reduce the costs of municipalities for lighting and improve the living conditions of the population.
- ✓ 9.2 M€ (8.2 M€ as EEA grants) for all 20 cities
- ✓ Program: PA12

Project examples within other PA

Project: Full-scale treatment of biological waste and wastewater in cheese production and for processing of biological by-product as a raw material for production of biogas

Bulgarian Partner: MJ Dairies Ltd
Norwegian partner: University of Stavanger (transfer of knowledge and know-how regarding the application of the new green technology)

Expected outcomes:

1. I**ncreased production capacity**
2. **Environmental impact** in the context of
   - **wastewater treatment; re-use of waste; greening the technologies at the company level** → effective treatment of the wastewater, discharged into the city sewerage network.
   - **reduction of CO2** and other emissions → reduction of the total carbon footprint: gas, electricity and water by 48% or a reduction of 2,118 tonnes of CO2 in 2019, the company will achieve a reduction to 1,100 tonnes of CO2 in 2022
3. **Transformation of by-products into biogas** (replacement of 80% of natural gas used by the company)

PANTERA project: A Pan-European Technology Energy Research Approach

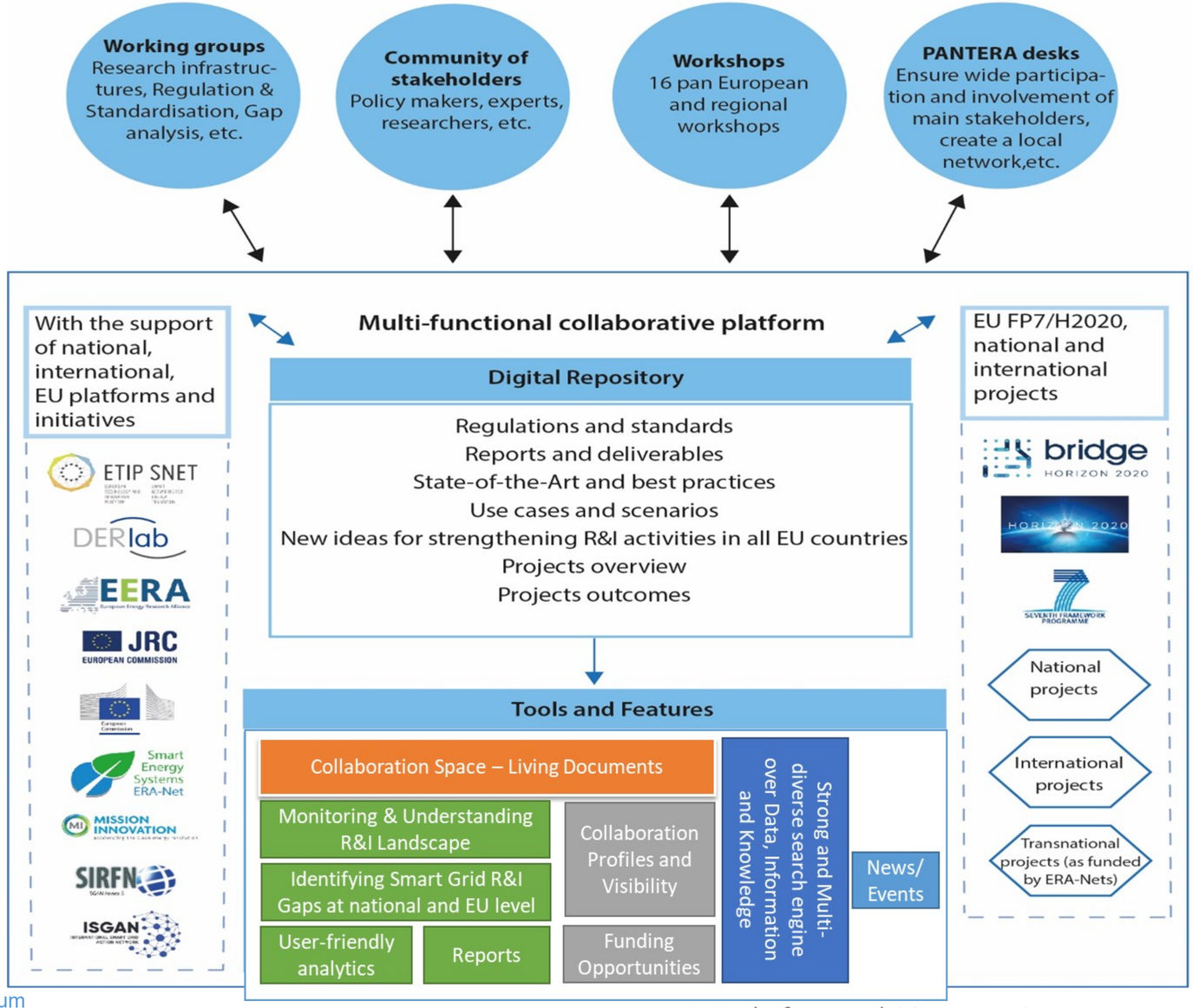
EIRIE platform: R&I is fundamental in achieving the energy transition in time!

Venizelos Efthymiou – FOSS

Tasos Tsitsanis – Suite5

Kyriaki Psara - FOSS

PANTERA Platform Conceptual Representation



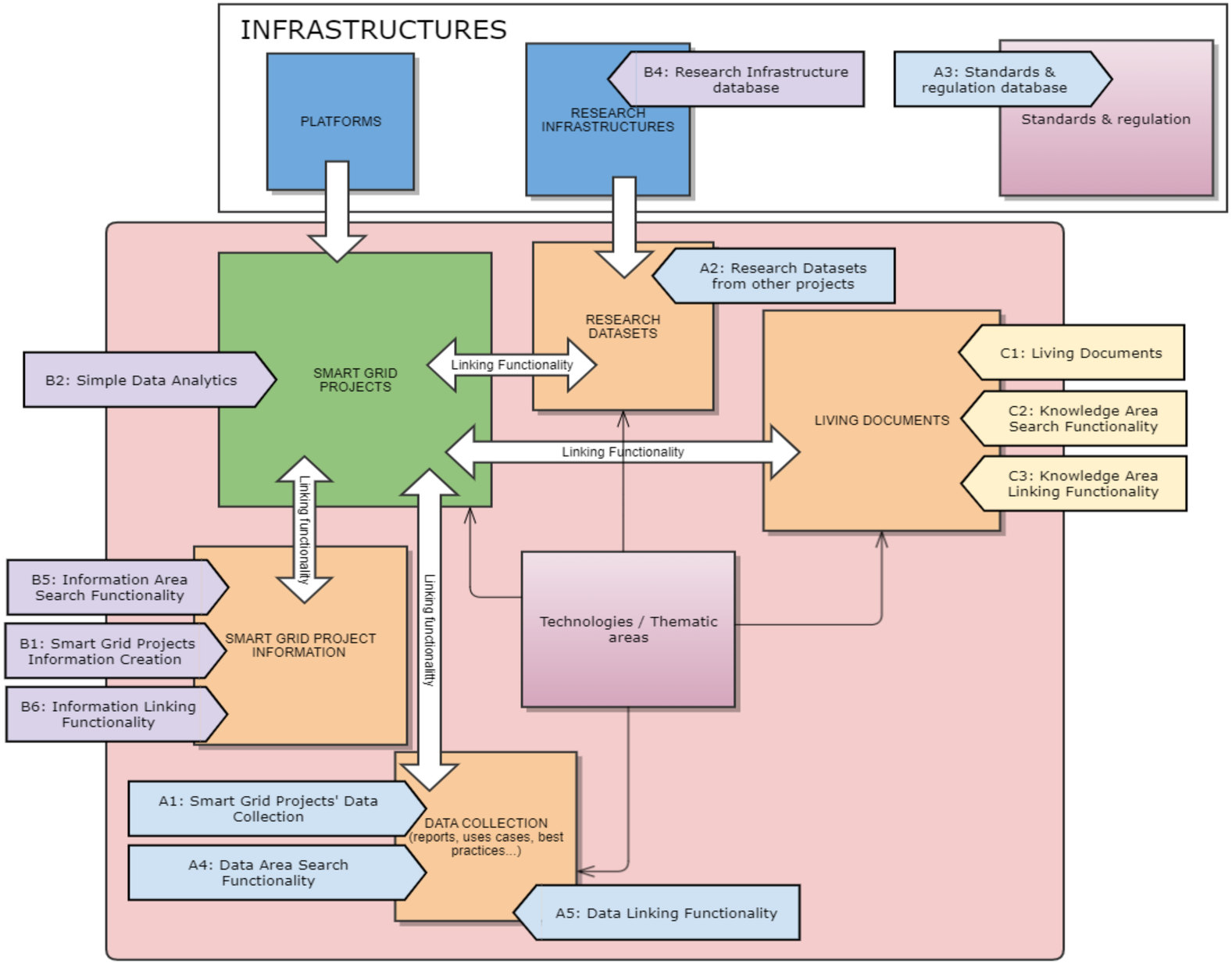
Vision for a multifunctional collaborative platform to serve R&I in EU in support of the energy transition and more specifically energy systems

What is 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.

EU H2020 Programme GA No. 824389



EIRIE Platform Vision

Main structure and functionalities

- **EIRIE Main Structure**
- Platform created in Drupal 9.
- CMS to manage users/Content.
- API to Data injection from external platforms.
- Login through EU-Login.

EIRIE Main Functionalities

- Search tool for Projects, Organizations, Data Collections, Regulations.
- News , Events and Newsletter.
- Data Analytics.
- Use Case repository.

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,

Key functionalities

Data Area, with search and linking functions:

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

Information area, with search and linking functions:

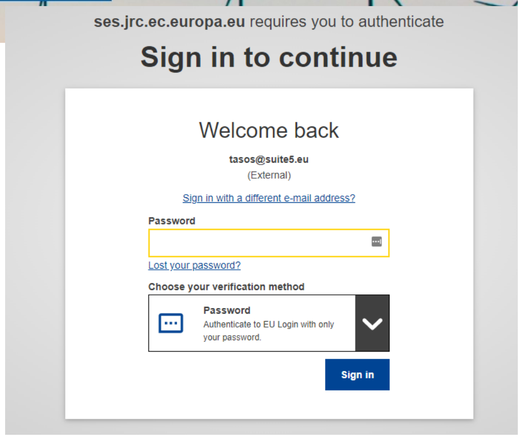
- Project-related information through integration with JRC, CORDIS, Mission Innovation, ETIP SNET, BRIDGE, EXPERA, etc.

Knowledge area, with search and linking functions:

- Living documents

EU H2020 Programme GA No. 824389

Access to the platform



- EIRIE hosted in EC servers (JRC)
- Centralized Authentication through ECAS Services
- Registration to EIRIE – Need for an already validated ECAS account

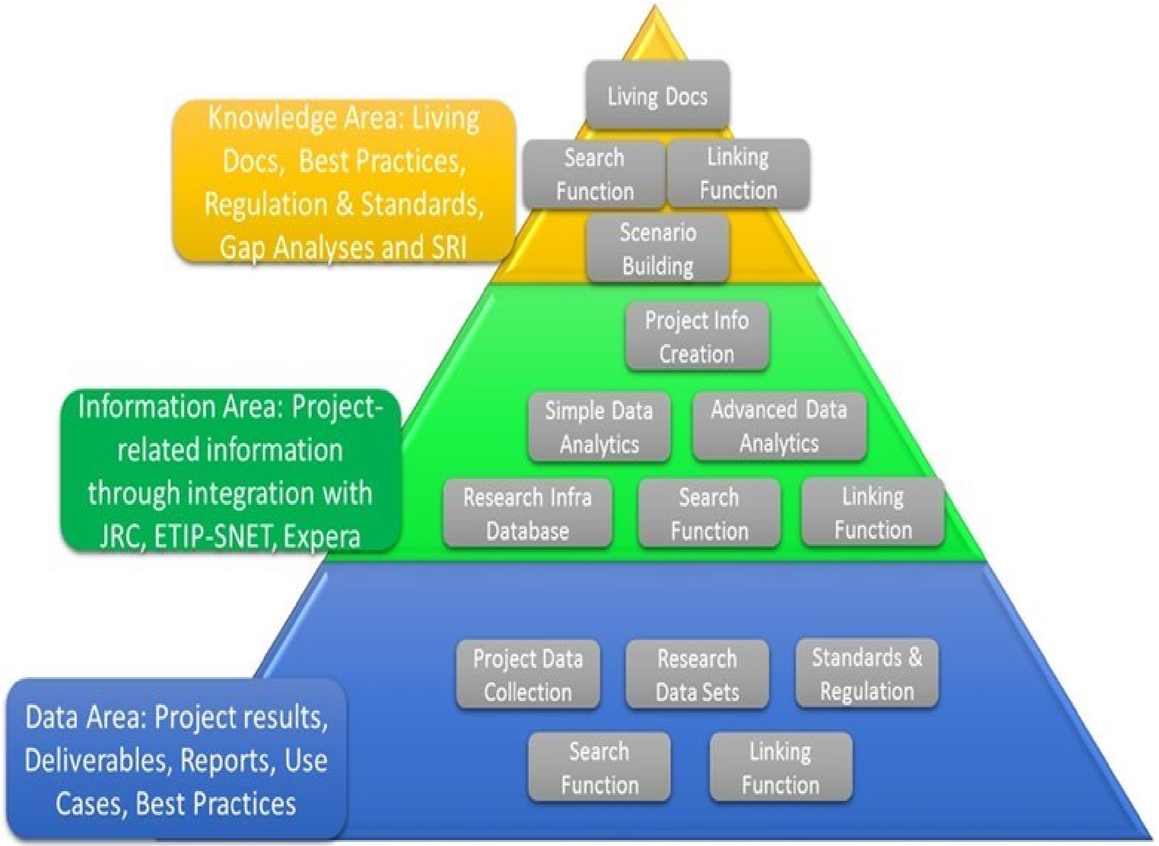
- Non-registered users/ visitors have access only to high-level information about EIRIE and the PANTERA project
- Registration – A pre-requisite to access the wealth of services in EIRIE
- Moderated registration pending verification and acceptance by the EIRIE administrator

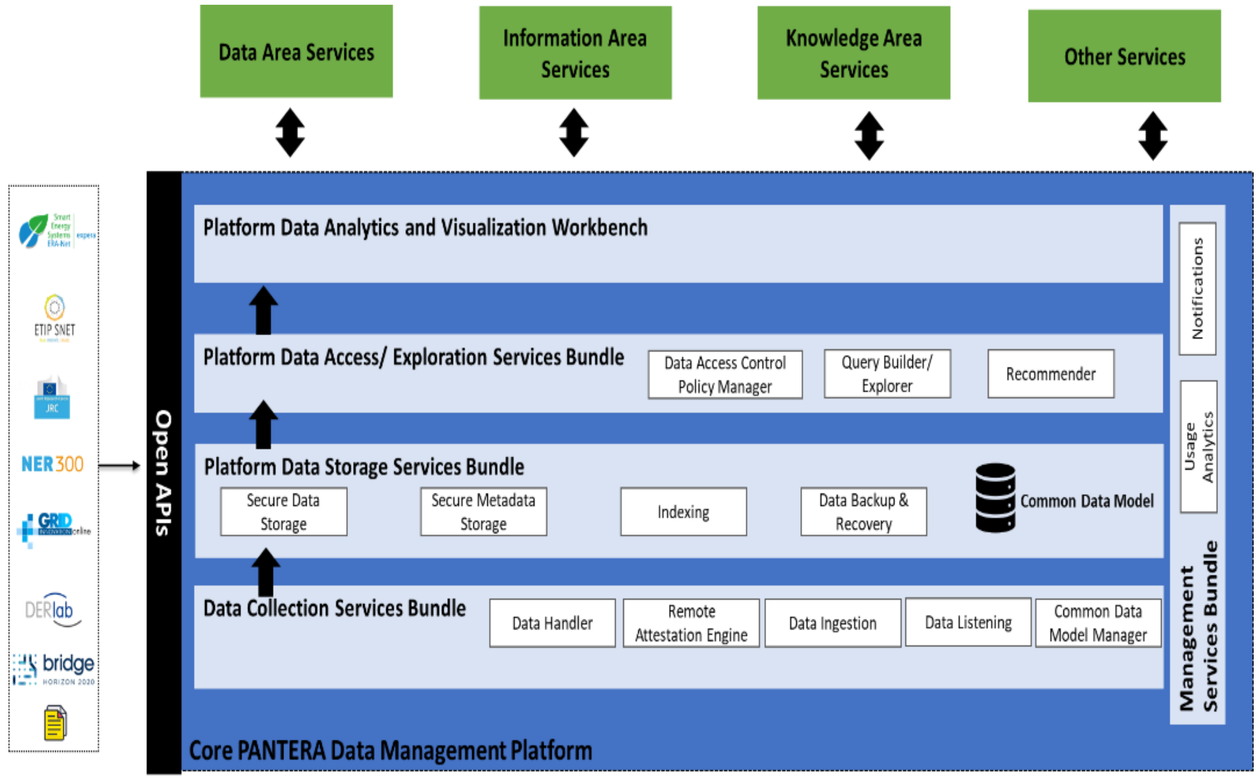
User Roles

Assigned following registration and verification by the EIRIE Administrator:

- **Simple users**
  - access only to the information area and the EIRIE platform functionalities as viewers
- **Collaborators**
  - Access to all services
  - Contribute with new information (projects, education material, regulation, etc)
  - Access in the collaboration area for knowledge creation
- **Regional Actors**
  - Access to all services
  - Contribute with new information (projects, education material, regulation, etc)
  - Access in the collaboration area for knowledge creation
  - Posting profiles in the matchmaking area

EIRIE in a snapshot





EIRIE Value Propositions

* **Researchers**
  * Access to a pan-European data base with analytical and exploitable information on smart grid projects
  * Information about best practices in R&D sector
  * First-hand insights into interesting smart grid projects, results, ideas, initiatives
  * Exchange of know-how with other R&I actors
  * Access to SotA Training Material and Education Programmes
* **R&I Organizations**
  * Cross-promotion opportunities, encouraging synergies with projects and initiatives through information sharing and promotion opportunities through highlighting key achievements as best practices
  * Making feasible for the low spending, in R&I, countries to be engaged in a more active manner in EU R&I activities
* **Policy Makers**
  * Define inefficiencies of R&I activities at national, regional and EU level and prioritization of policy actions towards advancing R&I in low-performing thematics
  * Pooling together different available instruments into one platform, in such a way that it will effectively contribute to the increase of knowledge, coordination of R&I activities and networking

EIRIE

- It is EIRIE's vision to create, through the planned multi-functional collaborative platform, this reference operational point to:
  * Unify European activity
  * Incentivize further investments in smart grids
  * Support access to exploitable results
  * Spark further work and cooperation capable of bridging the existing gaps.

CITnet

- The CITnet service provides a collaborative space for developers at EC, it promotes the Open Source development process and knowledge sharing principles.
- Services
  - Butler
  - Jira
  - Confluence
  - SVN
  - Bamboo
  - Nexus
  - BigPicture
  - Sonarqube
  - FishEye
  - TEMPO
  - Bitbucket
  - Zephyr
  - Callendar
  - Jira Agile

Butler

- CITnet Butler is a tool written by CITnet team for the IT project managers (PM).

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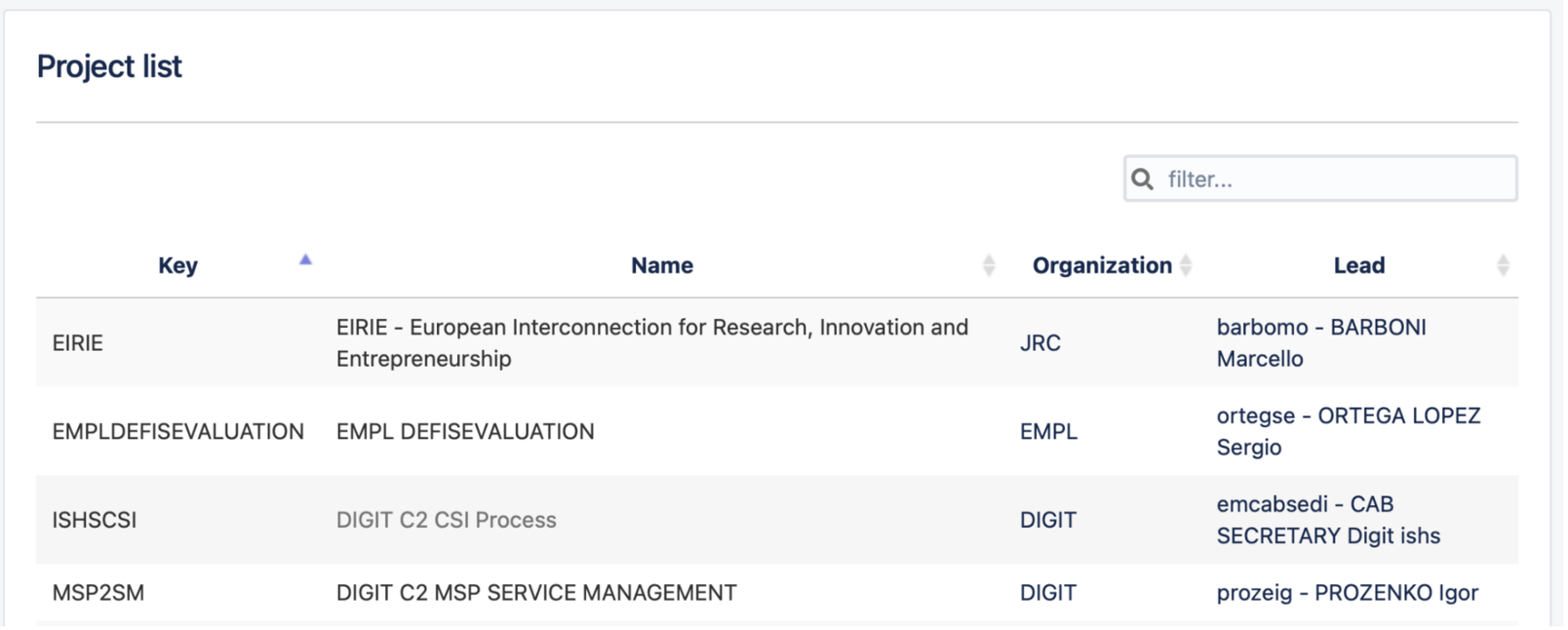
- Butler allows us to:
  * Create the project **EIRIE - European Interconnection for Research, Innovation and Entrepreneurship**



Project list

filter...

Key	Name	Organization	Lead
EIRIE	EIRIE - European Interconnection for Research, Innovation and Entrepreneurship	JRC	barbomo - BARBONI Marcello
EMPLDEFISEVALUATION	EMPL DEFISEVALUATION	EMPL	ortegse - ORTEGA LOPEZ Sergio
ISHSCSI	DIGIT C2 CSI Process	DIGIT	emcabsedi - CAB SECRETARY Digit ishs
MSP2SM	DIGIT C2 MSP SERVICE MANAGEMENT	DIGIT	prozeig - PROZENKO Igor

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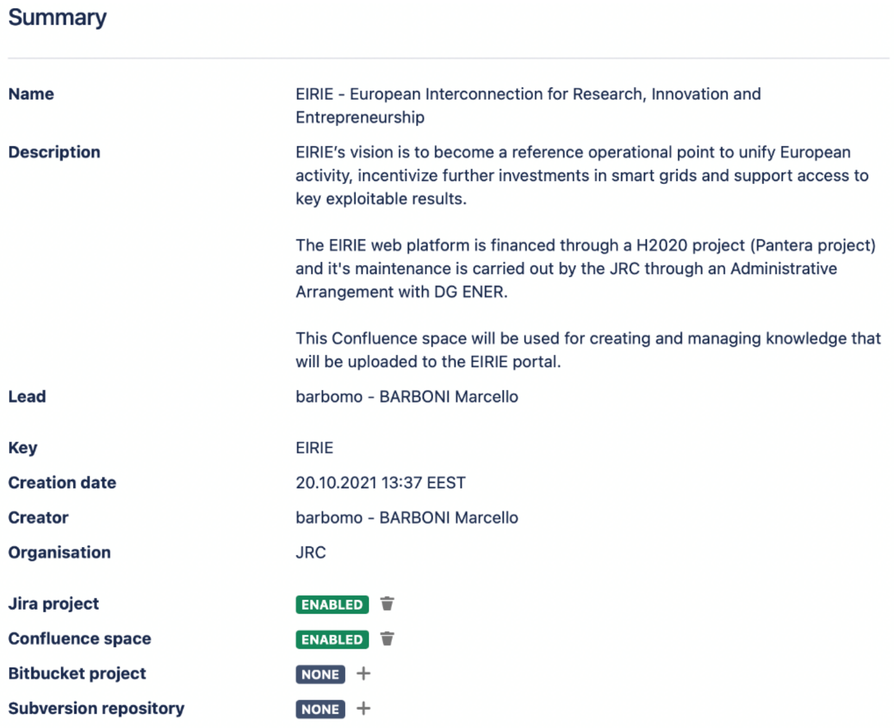
    - Confluence space
    - JIRA project



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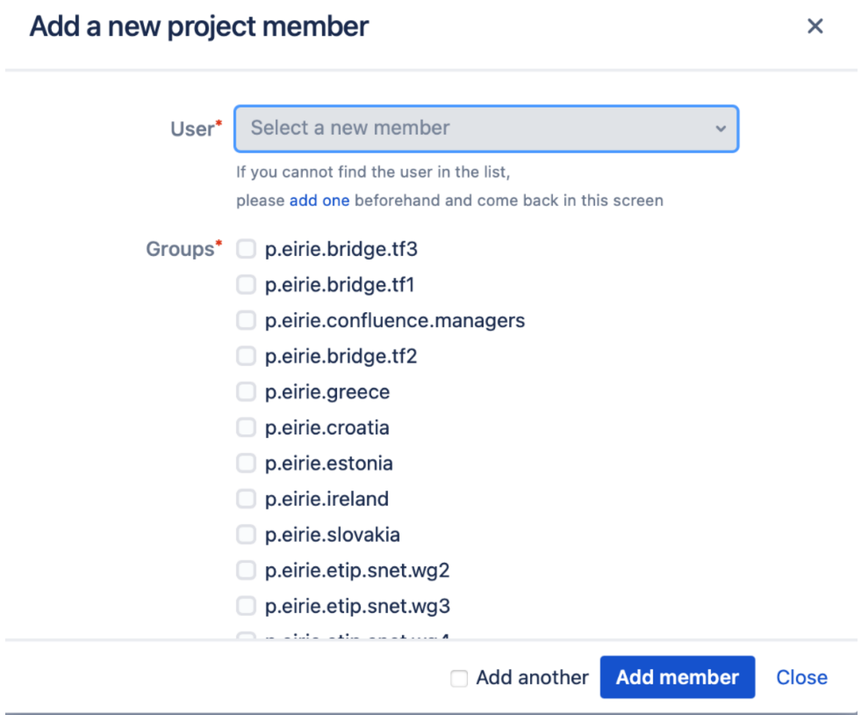
  - Manage project users
    - Add/remove
    - Add to a group
    - Permissions in CITnet



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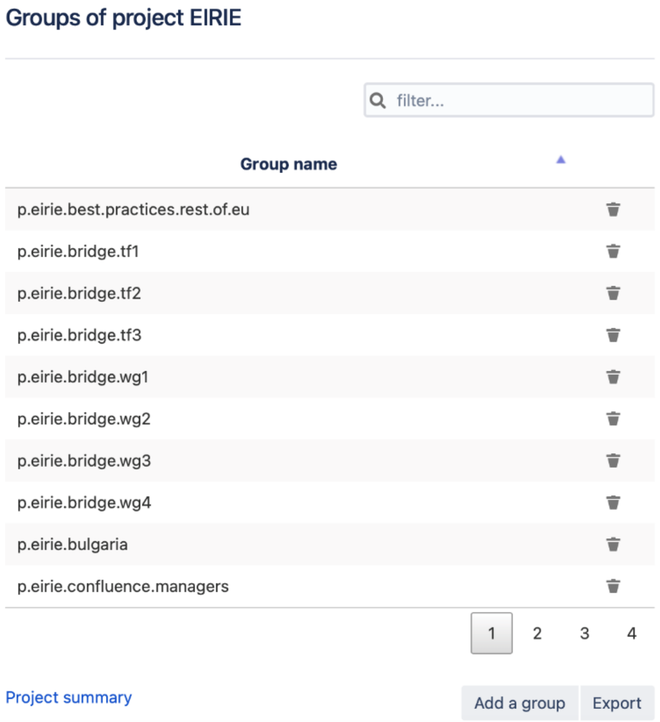
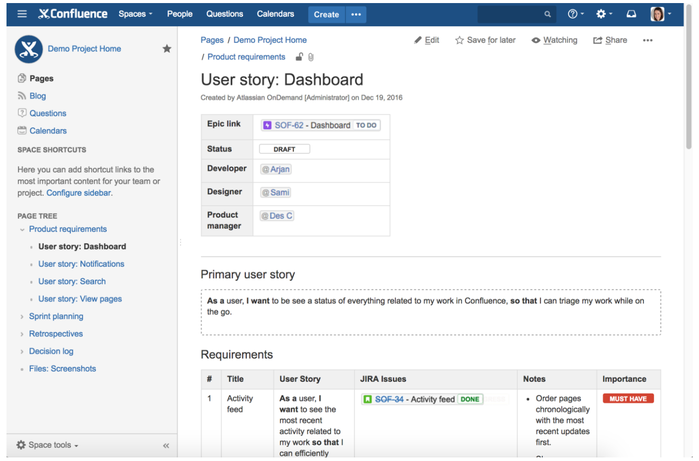
  - Manage project users
    - Add/remove
    - Add to a group
    - Permissions in CITnet
  - Manage project groups
    - User memberships
    - Custom security



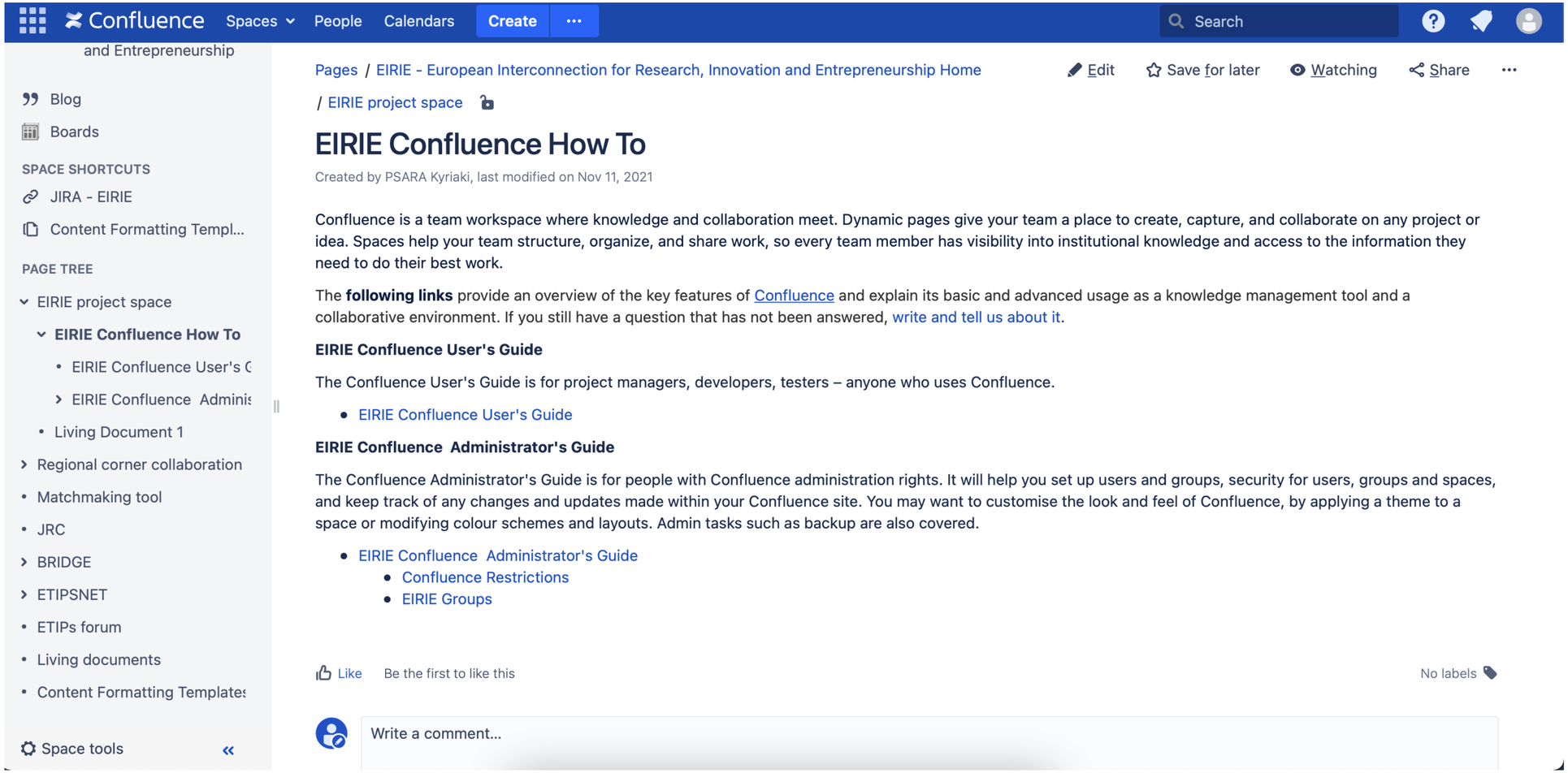
Confluence

- Confluence is a collaboration wiki tool used **to help teams to collaborate and share knowledge efficiently**.
- 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.



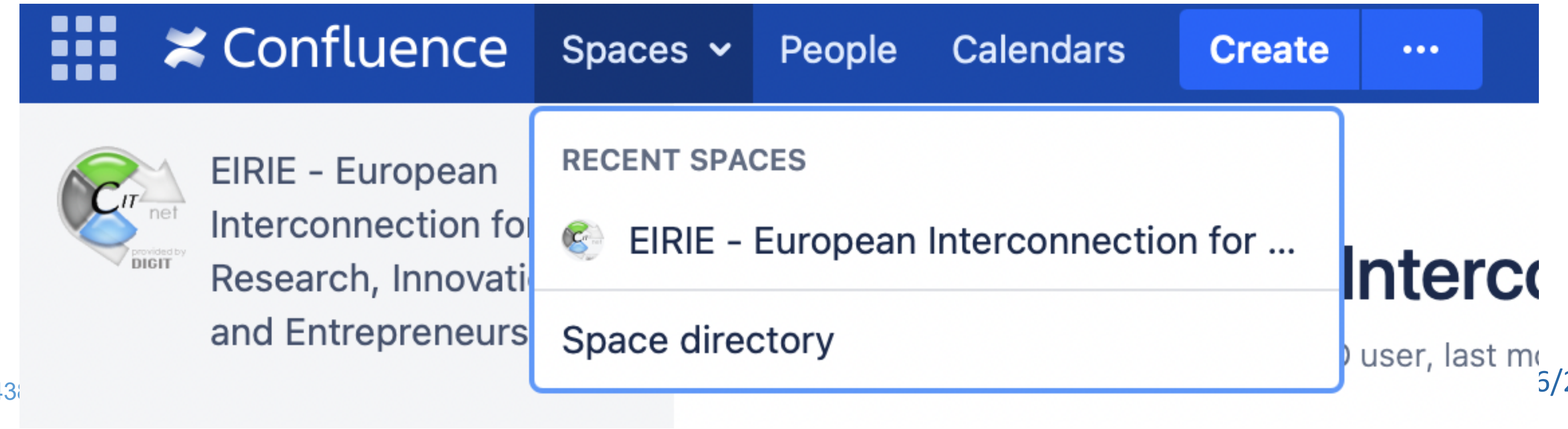
Confluence

Confluence Guides

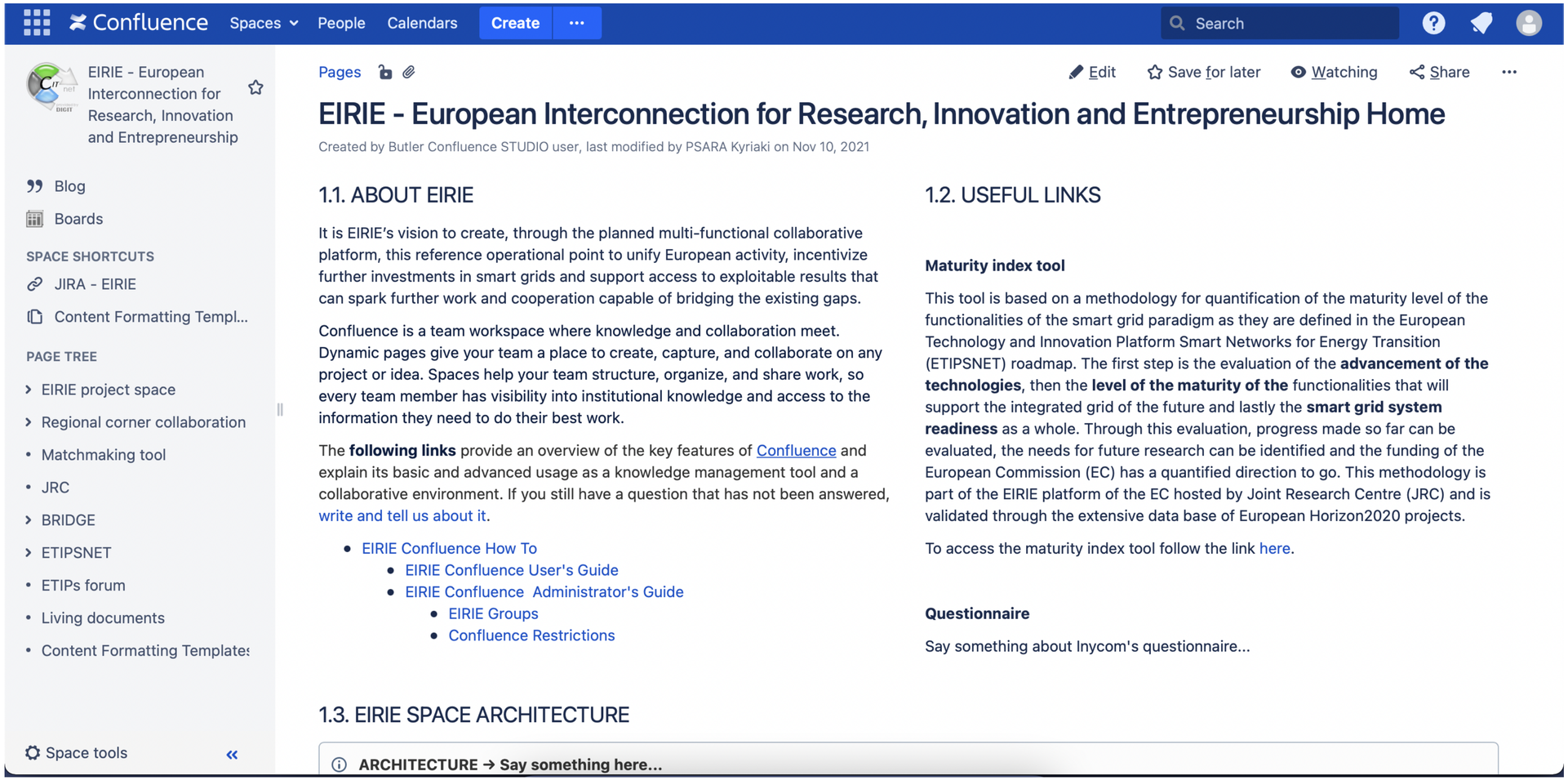


Confluence - Space

- **Spaces** help your team structure, organize, and share work, so every team member has visibility into institutional knowledge and access to the information they need to do their best work.
- All EIRIE content is grouped together in the same space.
- Each space comes with **an overview** (or homepage) and a blog, so it's easy to share updates and announcements with your whole team.



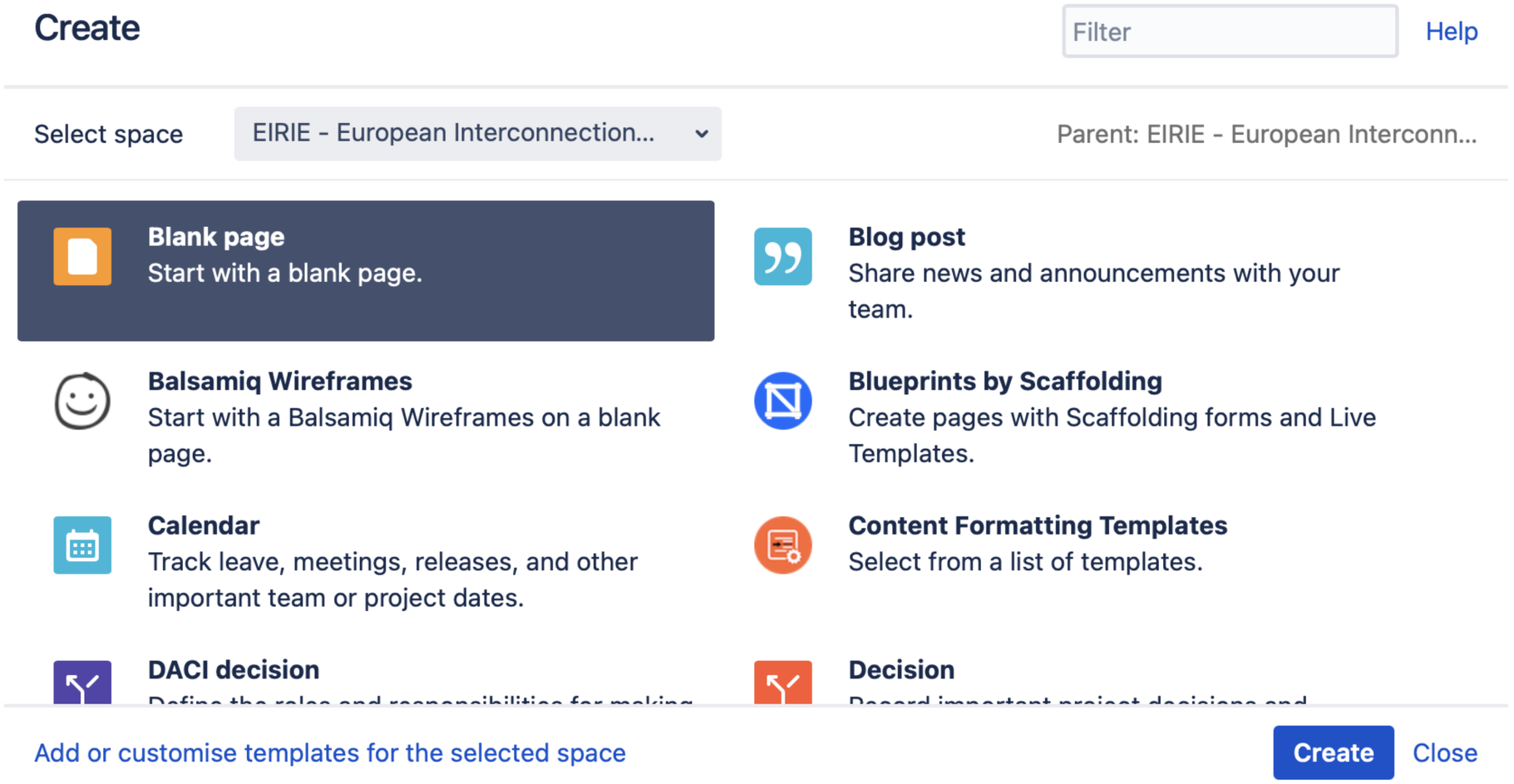
EIRIE Space



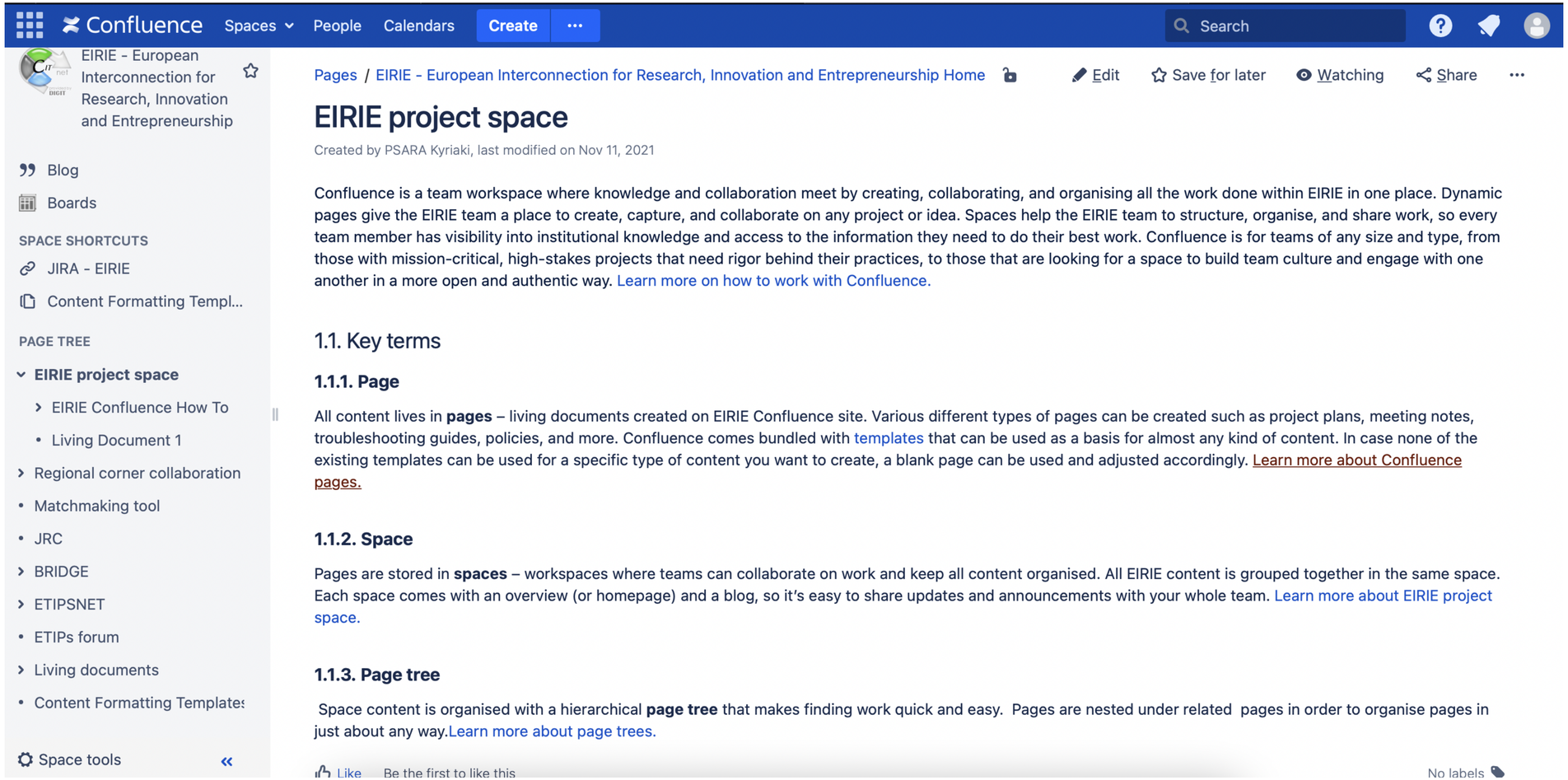
Confluence - Pages

- All content lives in **pages** – living documents created on EIRIE Confluence site.
- Various different **types of pages** can be created such as project plans, meeting notes, troubleshooting guides, policies, and more.
- Confluence comes bundled with **templates** that can be used as a basis for almost any kind of content.
- In case none of the existing templates can be used for a specific type of content you want to create, **a blank page** can be used and adjusted accordingly.

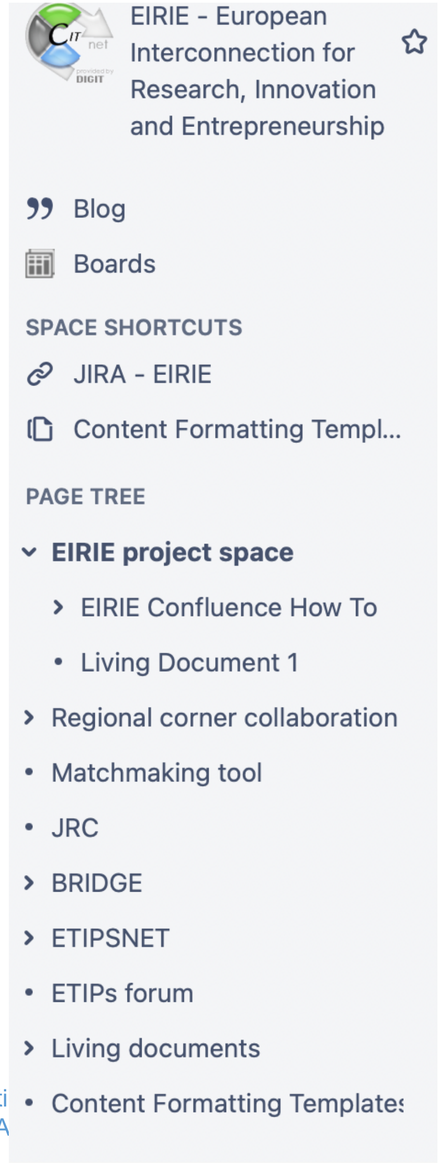
Page Example



Page Example

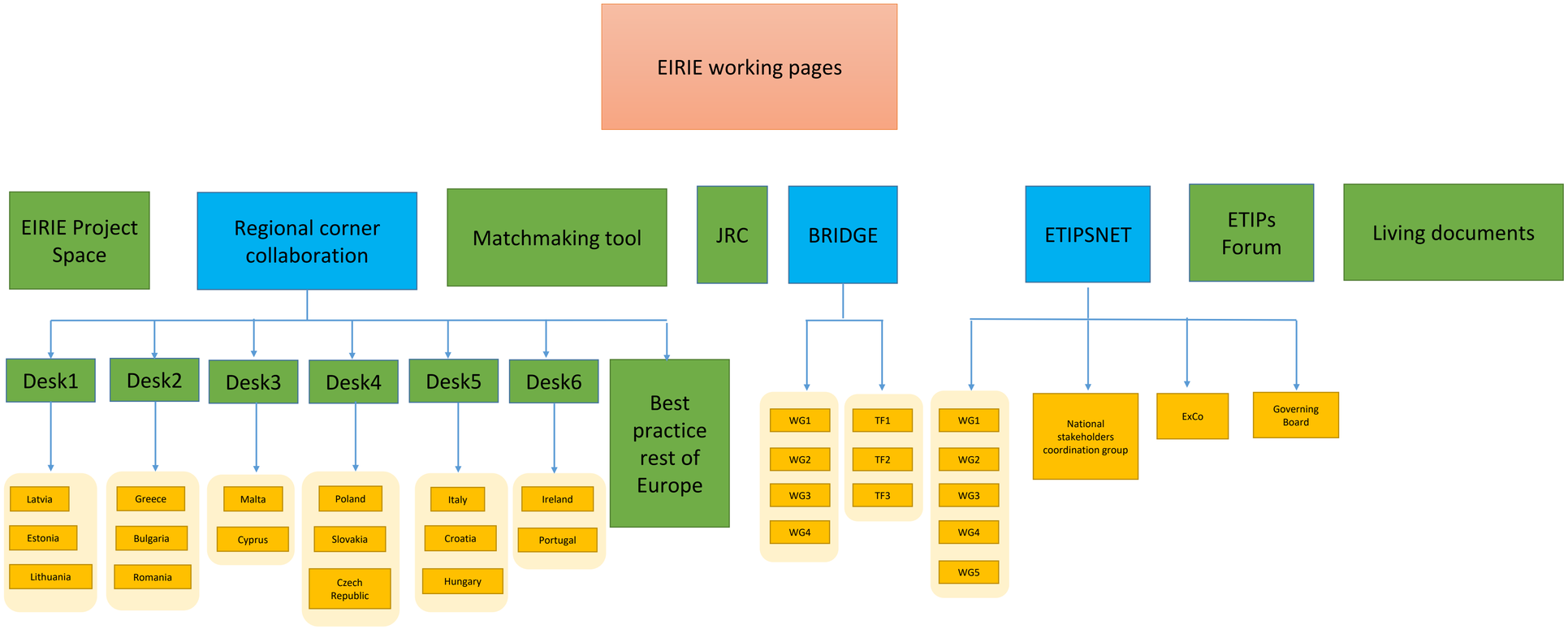


Confluence – Page Trees



- Space content is organised with a hierarchical **page tree** that makes finding work quick and easy.
- Pages are **nested** under related pages in order to organise pages in just about any way.

Confluence - Architecture



LEGEND

46 pages in total

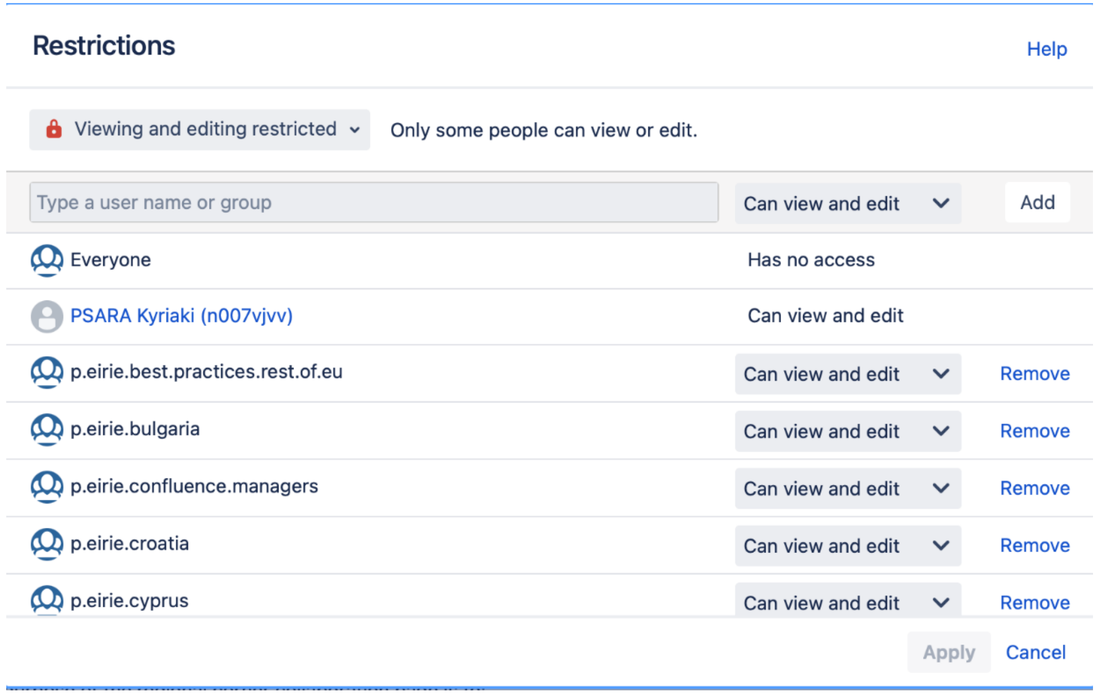
Collaboration page

Child page

Parent page

Confluence - Page Restrictions

- Page restrictions allow confluence users to control who can view and/or edit individual pages in a space.
- Project managers can add restrictions for individuals or for confluence groups.



Get in touch

https://pantera-platform.eu/

www.eirie.eu

or

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