



PANTERA
***Pan European Technology Energy Research
Approach***

Work Package 5
**Workshop and dedicated stakeholders meeting
organisation**

D5.2
**Report on the outcomes of regional workshops
(intermediary)**

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Table of contents

Abbreviations	5
Executive Summary	7
1 Introduction	12
1.1 Scope of the Document	12
1.2 Structure of the Document	12
2 PANTERA Regional workshop format.....	13
2.1 Introduction.....	13
2.2 COVID-19 and its impact on PANTERA regional workshops	14
3 PANTERA regional workshops: Outcomes	14
3.1 Sofia (BG) workshop.....	14
3.1.1 Introduction	14
3.1.2 Agenda.....	15
3.1.3 Proceedings of the Workshop	16
3.1.4 Selected interviews with participating stakeholders	24
3.1.5 The workshop's main outcomes	24
3.2 Dublin (IE) workshop.....	25
3.2.1 Introduction	25
3.2.2 Agenda.....	26
3.2.3 Proceedings of the workshop.....	27
3.2.4 Stakeholders poll for platform functionalities.....	30
3.2.5 The workshop's main outcomes	31
3.3 Athens (GR) workshop.....	31
3.3.1 Introduction	31
3.3.2 Agenda.....	32
3.3.3 Proceedings of the workshop.....	33
3.3.4 The workshop's main outcomes	45
3.4 Paphos (CY) workshop	45
3.4.1 Introduction	45
3.4.2 Agenda	46
3.4.3 Proceedings of the workshop.....	48
3.4.4 The workshop's main outcomes	59
3.5 Varna (Bulgaria) nano-workshop	59
3.5.1 Introduction	59
3.5.2 Agenda.....	60
3.5.3 The workshop's main Outcomes	60
4 Conclusions and Future Outlook	61

4.1	Conclusions	61
4.2	Future Outlook	62
	References	64
	Annex	65
	List of Figures.....	65
	List of Tables.....	66

Abbreviations

<i>BG</i>	Bulgaria
<i>COVID-19</i>	Coronavirus disease 2019
<i>CRE</i>	Romanian Energy Center
<i>CSA</i>	Coordination and Support Action
<i>CY</i>	Cyprus
<i>DC</i>	Direct Current
<i>DERlab</i>	European Distributed Energy Resources Laboratories (DERlab) e. V.
<i>DG ENER</i>	Directorate-General for Energy
<i>DSO</i>	Distribution System Operator
<i>EC</i>	European Commission
<i>EERA JP</i>	European Energy Research Alliance Joint Programmes
<i>EIRIE platform</i>	European Interconnection for Research Innovation & Entrepreneurship Platform
<i>EPRI</i>	<i>Electric Power Research Institute</i>
<i>ESB</i>	Electricity Supply Board
<i>ESO</i>	Electricity System Operator
<i>ETIP SNET</i>	European Technology & Innovation Platforms Smart Networks for Energy Transition
<i>EU</i>	European Union
<i>EUSEW</i>	EU Sustainable Energy Week
<i>FOSS</i>	Research Centre for Sustainable Energy of University of Cyprus
<i>GR/EL</i>	Greece
<i>HVDC</i>	High-Voltage, Direct Current
<i>ICCS/NTUA</i>	Institute of Communication and Computer Systems/National Technical University of Athens
<i>IE</i>	Ireland
<i>IERC</i>	the International Energy Research Centre (IERC)
<i>JRC</i>	Joint Research Centre
<i>LV</i>	Low Voltage
<i>MEDPOWER</i>	Mediterranean Conference on Power Generation, Transmission, Distribution and Energy Conversion
<i>MW</i>	Megawatts
<i>NECP</i>	National energy and climate plans
<i>NOR</i>	Norway

<i>PANTERA</i>	Pan European Technology Energy Research Approach
<i>R&I</i>	Research & Innovation
<i>S3 platform</i>	Smart Specialisation Platform
<i>SET-Plan</i>	European Strategic Energy Technology Plan
<i>SNSP</i>	System non-synchronous penetration
<i>TSO</i>	Transmission System Operator
<i>TU Sofia/TUS</i>	Technical University of Sofia
<i>UCD</i>	University College of Dublin
<i>WP</i>	Work Package

Executive Summary

The PANTERA consortium dedicated a specific work package (WP5: Workshop and dedicated stakeholders meeting organisation) within its project to organise Pan-European and regional workshops. This deliverable (D5.2: Report on the outcomes of regional workshops (intermediary)) summarises the work done within T5.2: Regional workshops and the main outcomes from the regional workshops that took place during 2019 and 2020.

The PANTERA project organised three physical regional workshops and one nano-workshop. The COVID-19 pandemic affected the PANTERA workshops starting from March 2020. The workshops could not be organised due to introduction of travel restrictions in the European member states, which can be considered as Force Majeure circumstances. Nevertheless, the consortium managed to organise a successful virtual workshop focusing on PANTERA regional desk 3 (Cyprus and Malta) during the MEDPOWER 2020 conference.

The first PANTERA regional workshop took place in Sofia, Bulgaria on the 2nd of July 2019. The title for the workshop is “Pan European Research and Innovation activities for Smart Grids, Energy Storage and Local Energy Systems”. This workshop focused on identifying and establishing the communication links with local research and innovation stakeholders active in the fields of smart grids, storage and local energy systems. Furthermore, the key challenges in accelerating R&I activities in the region were identified.



Figure 1: SWOT analysis with the stakeholders

The main outcomes of the first workshop were:

- The first workshop raised high interest in the PANTERA initiative among the Bulgarian and the Balkan region Stakeholders, initiating strong interest for participation of the Bulgarian Stakeholders in the next regional and Pan-European events.
- PANTERA initiative has the full support of EC on delivering the promised vision with close collaboration with existing EU tools.

- PANTERA initiative can have a constructive and fruitful cooperation with other pan-European associations such as EERA AISBL / JP4SG / Storage, ETIP SNET, ERA-NET Smart Energy Systems etc. to support the energy transition, leverage the smart grids investments and maximize their impact.
- Stakeholders of the Balkan region interacted actively with the PANTERA initiative and further involvement can be established for achieving a “win-win” situation
- Stakeholders have a principal role into the PANTERA process and thus ways of getting them involved were discussed with many options opened to them: through the PANTERA (regional) desks, ad hoc working groups and participation in targeted workshops.
- The conducted SWOT analysis highlighted the strongest shaping factors (mainly Strengths and Weaknesses and identified opportunities and threats that are of critical importance to know and adapt accordingly) on how PANTERA needs to act and move forward with the support of the stakeholders for the Balkan region.
- Main challenges and prevailing barriers were identified that form a great constructive feedback for the next workshops to be organised by PANTERA.
- The analysis performed showed that the most valuable results of the workshop were generated in the team work in small groups and from the interviews performed during the workshop. This fact was taken into account and used for refining the format for the organization of the next workshops and later on for the formulation of the “nano-workshop” concept.

The second PANTERA regional workshop took place in Dublin, Ireland on the 2nd of December 2019. This workshop focused on the Ireland’s Smart grid, Energy Storage and Local Energy Systems Landscape: Research & Innovation Roadmap. Several participants and keynote experts from national and international academic and industry bodies participated in the workshop and shared ideas on how to achieve the energy transition climate action targets. The aim of this workshop was to facilitate the exchange of best practices and information among R&I experts, policy makers, and foster links with EU level initiatives and highlight how the PANTERA project could address the energy transition challenges at regional and EU level through the prism of smart grid R&I.

The main outcomes of the second workshop were:

- There is significant activity and interest in Smart Grid R&I across industry and academia in Ireland.
- There is a demand for access to relevant smart grid data to allow building of prototype models.
- The deregulation of the market, and GDPR rules make cooperation and data sharing among actors in the electricity space difficult.
- The proposed PANTERA platform offers an opportunity for data and knowledge sharing.
- The PANTERA regional desks offer an opportunity for networking for the Irish Smart Grid R&I community, participants expressed interest in follow up activities.
- The desired tool set that could be of use and truly supportive to the R&I community were identified and these will be available within the planned interactive platform.

The third regional workshop took place in Athens, Greece on the 13th of February 2020. The title for the workshop is “Green Islands as a driver for the Energy Transition - Going Renewable and Smart”. It focused on the challenges and barriers, along with the best practices and future steps towards greening geographical islands and transforming them to 100% renewable energy systems with the support of technologies that enable their smart autonomous operation.

The main outcomes of the third workshop were:

- The PANTERA process should be used to help towards the fulfilment of the energy transition vision through the stakeholders' support/engagement and move along with R&I activities for energy transition.
- Bridge existing gaps in member states through PANTERA activities.
- Continuity of PANTERA even after the completion of the project, through the use of the JRC identified low-spending countries.
- Availability of use cases & scenarios and further strengthening of R&I activities through the platform and all the knowledge data that will be brought together.
- PANTERA to continue fostering regional work along the principles developed by RIS3 in line with the S3 platform activities.
- It is a focal point to identify the strengths of each region and support this action for the targeted low carbon economy, heading to a sustainable future as it affects all sectors: regions, industries, consumers, in compliance with the EU Vision of 2050.
- Working Teams within PANTERA process to generate valuable information and provide it through developed tools to all users.
- Elaborate on actions of the Commission through PANTERA capable of boosting the process:

Finally the final round table discussion re-iterated the following:

- The PANTERA platform should act as a link to Regions, Working Teams and R&I community, in accordance to the EU needs.
- Realise the vision of the PANTERA multifunctional platform, for generating best-practice-based guidance for the R&I community.
- The resolution of specific problems and needs raised by the members of the PANTERA Collaborative Platform.
- The development of the living document repository with emphasis on how the knowledge generated from project reports, deliverables, etc., will be available and accessible to all users at any given time and period.

The fourth regional workshop took place virtually on the 10th and 11th of November 2020 during the MEDPOWER 2020 conference. The title for the workshop is "Energy transition through optimal use of the rich Renewable Energy Resources of the Mediterranean basin". The workshop tackled different aspects the energy transition needs to be addressed in order to contribute efficiently to the Energy targets of EU. The status of the smart grids regional evolution was also presented, while use cases covering technologies -such as Energy storage, Demand Response, Renewables and Electric mobility- were highlighted.

The main outcomes of the fourth workshop were:

- The INTERPLAN project was correctly linked to the PANTERA workshop since partners of the consortium of PANTERA are partners to the INTERPLAN project as well and presenting the strengths of the project that were excellently presented by Mr. Ata Khavari and Dr. Christina Papadimitriou to the operators and other policy and utility stakeholders that were attending the workshop is of utmost importance. The real benefit of this is related to the issue of revealing the strengths of R&I work in areas that are so real to the day-to-day operation of the system offering tangible solutions that will make a difference to the quality of work of the system. Hence, the R&I work in solving day to day needs of the industry and the economy receive a boost through such actions and hence stir real interest in policy makers to take more positive action.

- Discussing the country NECPs with the direct stakeholders with the active contribution of EU initiatives gives a dimension of direct contribution to maturing further the needs of the country and taking up sensitive issues for further elaboration. This discussion brings into the open the strengths of R&I in addressing
- The needs of countries in the most optimal way. Hearing the views of the participants through the Glisser tool helped the discussion and made it much more real and direct with positive benefits in all directions.
- The regional work of the PANTERA project that is further supported through the planned visualization and facilitation of the EIRIE platform raised noticeable interest among the stakeholders and policy makers. The discussion that was conducted using the results of the corresponding poll as evidence, gave the very positive message that the PANTERA project is moving in the correct direction and there is evident hope that the interest of the stakeholders will be transformed into real contribution for improved results.
- As indicated above, extensive use was made of the interactive tool Glisser giving the opportunity to the participants to actively participate in the proceedings and to the conference a quick view of the prevailing thoughts of the participants making the round table discussions more responsive and rewarding.

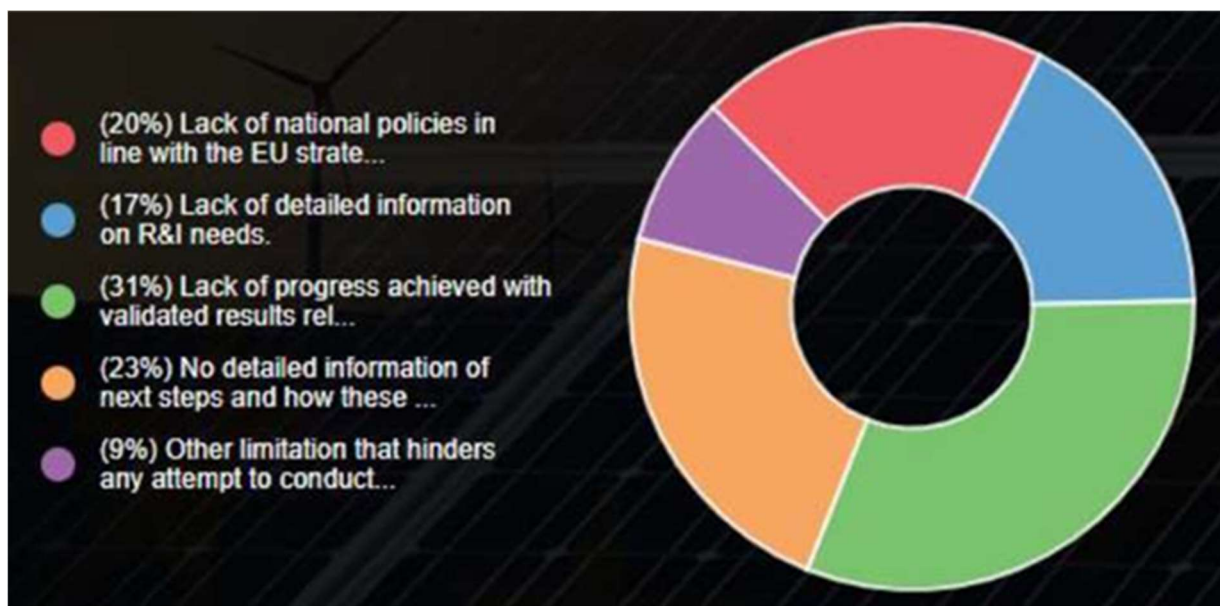


Figure 2: The results of voting question "What are the limitations that you face in the available valid information to support your R&I endeavours in support of the Energy Transition?"

In addition to the four regional workshops, a nano-workshop was organised in Varna, Bulgaria on the 13th of September 2019 during BULEF 2019 International conference. The event attracted the local R&I stakeholders to join the PANTERA initiative. The PANTERA project and its process were presented, followed by a roundtable with a discussion to the R&I status in Bulgaria in the field of smart grids, energy storage, flexibility and local energy systems. Furthermore, the participants provided valuable feedback on the bottlenecks hindering the R&I activities and gave their expectations from PANTERA. The nano-workshop concept has proven to be quite efficient, useful and promising adjunct to the regional workshops planned.

With the concluded workshops and nano-workshop the PANTERA consortium completed successfully milestone 5 and this was reported to the Project Officer with all the details. In this milestone it was stressed that:

- The PANTERA consortium is planning to organise 16 workshops. Eight workshops are planned to be organised at the regional level, while the other eight workshops are planned to be organised at the Pan-European level. In the first year of the project, only two workshops have been organised, while in the second and third year of the project five workshops are planned to be organised per year.
- The first workshop took place in Bulgaria, while the second workshop took place in Ireland.
- The consortium has also conducted a nano-workshop in Bulgaria in combination with the BULEF conference.
- In 2020, three workshops were planned at the regional level, while two workshops are planned at the Pan-European level.
- The main outcomes of the PANTERA workshops were:
 - getting early feedback from stakeholders on PANTERA Platform and its functionalities.
 - understanding the low spending countries needs and challenges in the energy field.
 - mapping the PANTERA functionalities with the needs and challenges that are facing low spending countries.

1 Introduction

One of the main objectives of the PANTERA project is the organisation of several interactive regional and Pan-European workshops and webinars. A primary target of the events is the PANTERA for the steering committee and working groups' members to reach out to a wider range of local, regional and international stakeholders and initiatives in order to be identified and have the opportunity to discuss the smart grid related priorities of the respective regions regarded. The workshops further contribute to the development of the PANTERA project's directions of contribution to these priorities and the identification process of the respective needs by giving the possibility to directly access information of what is common, what is unique related to the inherent specifics of the different countries that otherwise might not be recognized. A special focus is put on the countries that are less active in the research and innovation in the smart grid, storage and local energy systems.

1.1 Scope of the Document

The main objective of this document is to describe the work carried out within the task 5.2 "Regional Workshops" (WP5 - Workshop and dedicated stakeholders meeting organisation) and to present the main outcomes of the regional and nano-workshops that took place during the first two years of the project (2019 and 2020).

1.2 Structure of the Document

This document consists of four sections and it is structured as follows:

- Section 1 "Introduction" – this section introduces D5.2 "Report on the outcomes of regional workshops".
- Section 2 "PANTERA Regional Workshop Format" – this section gives a high-level overview of the regional workshop format.
- Section 3 "PANTERA regional workshops outcomes" – this section presents the main outcomes of the regional and nano-workshops.
- Section 4 "Conclusion and Future Outlook" – this section presents the conclusion and an outlook on the future planned regional and nano-workshops and webinars.

2 PANTERA Regional workshop format

2.1 Introduction

The PANTERA consortium is organising regional workshops to approach the local stakeholders and boost the research and innovation in the low activity countries. To achieve this, it is planned to organise eight regional workshops within the course of the project. During the course of the project, it transpired that the objectives of the PANTERA project are best served when wider audience of stakeholders is involved. For this reason, the consortium has come across with the challenge of extending the format of the planned workshops and introduce targeted interventions in planned conferences and / or events in cooperation with the organisers. Calling this approach as nano workshops of shorter duration but tailored to meet the content of the conferences / events and the expected synthesis of the stakeholders attending them but always intermingled with the high level objectives of the PANTERA project. For this reason, the consortium has taken the conscious decision of adapting such nano workshop format, embedded in conferences and events and planned for promoting the objectives of the PANTERA project to a wider stakeholder audience.

To achieve the above in a coordinated way, the PANTERA consortium divided the low spending countries into six regional desks, in which each partner is responsible for a specific region. Table 1 shows the PANTERA regional desks, the related countries and the responsible PANTERA partner for each desk.

Table 1: Regional desks and the responsible partners

Regional Desk No.	Countries	Responsible partner
Regional desk 1	Latvia – Lithuania - Estonia	IPE
Regional desk 2	Bulgaria – Romania – Greece	TU Sofia
Regional desk 3	Cyprus – Malta	FOSS
Regional desk 4	Poland – Slovakia - Czech Republic	DERlab
Regional desk 5	Italy – Hungary – Croatia	RSE
Regional desk 6	Ireland – Portugal	UCD & NUID

The workshop agenda was planned for each workshop based on the regional challenges, needs and gaps, so that the workshop tackles those topics and try to present best practices from the region or other regions that faces the same challenges (e.g., the workshop organised in Greece focused on Green Islands and its challenges).

Within the period 2019 and 2020, the PANTERA consortium managed to organise three physical workshops and one virtual workshop. Details of these PANTERA workshops are presented in Table 2.

Table 2: The PANTERA regional workshops that took place during 2019 and 2020

Title	Location	Date
PANTERA Sofia Workshop: “Pan European Research and Innovation activities for Smart Grids, Energy Storage and Local Energy Systems”	Sofia (BG)	2 July 2019

PANTERA Dublin Workshop: “Ireland’s Smart grid, Energy Storage and Local Energy Systems Landscape: Research & Innovation Roadmap”	Dublin (IE)	2 December 2019
PANTERA Athens Workshop: “Green Islands as a driver for the Energy Transition – Going Renewable and Smart”	Athens (GR)	13 February 2020
PANTERA Regional Workshop: “Energy transition through optimal use of the rich Renewable Energy Resources of the Mediterranean basin”	Online, MEDPOWER 2020	10-11 November 2020

2.2 COVID-19 and its impact on PANTERA regional workshops

The PANTERA consortium planned to organise a fifth workshop in Riga, Latvia in March 2020. Unfortunately, due to force majeure circumstances caused by COVID-19 pandemic, the consortium had to shift this workshop to Autumn of 2021. The exact date for the workshop and agenda will be announced on the project website and social media once these are finalised with the organisers and travelling possibilities go back to normal.

Similarly, the November 2020 workshop was planned to be a physical event to be hosted in Cyprus under the premises of the MEDPOWER conference. However, due to the pandemic complications, the conference and workshop were organised virtually and the outcome is presented in section 3.4 of this report.

The COVID-19 repercussions have affected dramatically of how we plan and execute our daily obligations towards the PANTERA project. One of the most affected areas of our daily work, is undoubtedly the physical face to face events that are targeting the related stakeholders and policy makers. For this reason, the consortium has studied very carefully the available options and has taken a conscious decision of adapting the objectives of these events to virtual options that can achieve as much as originally intended. This has influenced the adapted format without changing content and objectives. Apart from the face to face benefits that are overwhelming positive through physical events, virtual alternatives proved as effective and in some areas achieving more for the benefit of the project and its objectives. One such area is the actual participation of selective stakeholders since the online events are much more easy to attend than physical events, requiring much less effort and time that proved a decisive factor for attracting valuable participations in the virtual events that materialised during the reporting period.

3 PANTERA regional workshops: Outcomes

3.1 Sofia (BG) workshop

3.1.1 Introduction

The PANTERA project held the first PANTERA workshop titled “Pan European Research and Innovation activities for Smart Grids, Energy Storage and Local Energy Systems” in Sofia, Bulgaria on the 2nd of July 2019. The main objectives of the workshop were:

- Identify and establish communication links with local research and innovation stakeholders active in the fields of smart grids, storage and local energy systems including policymakers, standardisation bodies and experts in both research and academia in the region.
- Identify the key challenges in accelerating R&I activities in the region.
- Engage and bring under the same activity umbrella facilitated by PANTERA all active entities/stakeholders in the field of smart grids/storage and local energy systems to leverage synergies and maximize benefits.

- Exchange experience and knowledge between members of R&I community in collaboration with already on-going activities aiming to wider participation, strengthen objectives and extent replicability, scalability and impact of achieved results.

3.1.2 Agenda

8:30	Registration
9:00	Welcome words <i>Rad Stanev (TU Sofia), Venizelos Efthymiou (FOSS)</i>
9:05	Setting the scene: Why PANTERA? Main objectives and building the PANTERA process <i>Venizelos Efthymiou (FOSS)</i>
9:20	Energy policies and vision on energy transition of Bulgaria <i>Veneta Tsvetkova (Ministry of Energy of Bulgaria), Evgenia Haritonova (Energy and water regulatory commission BG)</i>
9:45	EC R&I policy and trends; Pan-European challenges on R&I in Energy; Clean Energy Package and PCI; H2020 – HEU – SF <i>Mario Dionisio (Project Officer EC). Sebastian Gras (Project Officer EC)</i>
10:30	Status of smart grid evolution in the region that generate open R&I needs – (Bulgaria/Romania/ Greece) <i>Rad Stanev (TU Sofia)</i>
10:50	Gaps/challenges and shortcomings related to energy transition in the Balkan Region <i>Dimitar Zarchev (ESO EAD)</i>
11:10	Greek approach on investing in smart grids and good practices if any as means to achieve it <i>Tasos Tsitsanis (Suite5)</i>
11:30	Coffee break
12:00	Romanian approach on investing in smart grids and good practices if any as means to achieve it <i>Mihai Mladin (CRE)</i>
12:20	Pan-EU R&I community: stakeholders' involvement and enhanced collaboration opportunities <i>Luciano Martini (RSE)</i>
12:35	The PANTERA initiative for enriching R&I in support of the energy transition: Promises and expectations <i>Christina Papadimitriou (FOSS), Andrei Morch (SINTEF)</i>
13:00	“ERA-Net Smart Energy Systems: building a European wide Knowledge Community for RDI on the member state level” <i>Ludwig Karg (ERA-Net Smart Energy Systems)</i>
13:15	Lunch break

14:15	Roundtable 1: SWOT analysis with an open discussion aimed at identifying areas of actions and next steps <i>Ludwig Karg (ERA-Net Smart Energy Systems)</i>
15:30	Coffee break
16:00	Roundtable 2: The PANTERA initiative in focus: Regional stakeholders discussing their expectations from PANTERA on how PANTERA can facilitate the active collaboration of participating MS <i>Ludwig Karg (ERA-Net Smart Energy Systems), Venizelos Efthymiou (FOSS)</i>
17:30	Conclusions
18:00	End of the workshops

3.1.3 Proceedings of the Workshop

The first regional PANTERA Workshop in Sofia, Bulgaria joined 49 project partners and Stakeholders from 9 countries to share their needs, experience and vision on how to strengthen the research and innovation activities within the Balkan region. The high-level management of the Bulgarian DSOs, electric vehicle cluster, TSO, Electricity trading companies, Ministry of Energy, as well as key stakeholders from the energy industry and academia from Bulgaria, Romania, Greece and Cyprus indicated their commitment to the PANTERA process.



Figure 3: The morning session of the Sofia workshop

The Vice-Rector and Head of Research and Development Sector **Professor Dr. Eng. Ivan Kralov** and **Dr. Rad Stanev** from TU Sofia (TUS) opened the morning session by welcoming the attendees of the 1st workshop of PANTERA, emphasizing the role that R&I has in the development of society and the economy of knowledge. To this effect, TUS is honoured to welcome the event and be a full active partner in the project PANTERA, which is targeting to enhance R&I possibilities in Europe, especially in countries that engage less in the energy transition process.



Figure 4: Dr. Rad Stanev welcoming the participants to Sofia

Dr. Venizelos Efthymiou, from FOSS the coordinator of the project, followed with setting the scene for the PANTERA project to deliver. Started by highlighting the objectives of the project and how the PANTERA process could help towards the fulfilment of the energy transition vision through the stakeholders' support/engagement. Among others he stressed the following:

- To ensure sustainable, secure and affordable energy supplies in the European Union, a fully integrated grid and energy market are required.
- The importance of integrating emerging technologies and defining common energy market rules.
- Cooperation and collaboration between different stakeholders in the R&I are a key point.
- This is why the EU-funded PANTERA project will identify and implement initiatives aimed at raising the participation of EU countries in the needed R&I for developing technologies, systems and markets in support of the common energy market and the energy transition.
- The project's main goal is to bridge the gaps in research and innovation in the energy field that exist between the EU Member States.
- Its mission is to become the single point of reference for smart grids in Europe.



Figure 5: Dr. Venizelos Efthymiou (PANTERA coordinator) presenting the project and its objectives

In the next, **Ms. Veneta Tsvetkova**, a representative of the Ministry of Energy of Bulgaria analysed the Energy policies and vision on energy transition of Bulgaria. Within her speech, the context of the challenges and the next steps for fulfilling the Bulgarian commitment towards the EU were highlighted. In short, she stressed that:



Figure 6: Ms. Veneta Tsvetkova presented the Bulgarian Energy policies and vision

- In Bulgaria, the development of renewable energy rapidly grows. Installed capacities for the production of renewable energy, mainly solar and wind, have significantly increased in recent years.
- Electricity production from photovoltaic and wind power plants is volatile and highly dependent on meteorological conditions creating the need for grid modernization.
- Hence, investments are needed for further development of electricity grids and implementation of new technologies: smart metering and smart grids through appropriate legislation amendments covering personal data protection as well.

Mr. Mario Dionisio, the Project Officer, DG ENER (EC), introduced the EC R&I policy, trends and challenges concerning EU Energy Policy and briefly covered the following:

- Horizon 2020 and beyond
- The energy transitions
- PANTERA

He highlighted how the EC can support trends and tackle challenges underlining the fact that we are in a unique opportunity to modernise our economy and to boost competitiveness, create growth and jobs.

He briefly introduced the plans for Horizon Europe. The Commission proposals:

- a € 100 billion research and innovation funding programme for seven years (2021-2027):
 - to strengthen the EU's scientific and technological bases
 - to boost Europe's innovation capacity, competitiveness and jobs
 - to deliver on citizens' priorities and sustain our socio-economic model and values
- Additional € 4.1 billion are proposed to be allocated for defence research, in a separate proposal for a European Defence Fund.

He finished by reiterating the importance of gathering in Sofia to discuss the R&I agenda in Europe and how the Commission through PANTERA can boost the process:

- To better frame the status of EU grids
- To disseminate EU R&I&D activities on grid modernisation for the energy system transition
- Raise awareness on possible application/replication throughout the EU
- Pan European Technology Energy Research Approach
- Exchange of experiences, knowledge, use cases, etc.



Figure 7: Mr. Mario Dionisio (DG ENER EC) introducing the EC R&I policy, trends and challenges

- PANTERA aims to deliver a pan-European multi-dimensional platform for a modern grid, contributing to the energy policy objectives.

As a second voice from the EC, **Mr. Sebastian Gras**, Policy Officer (EC) representing the European Connection Facility, addressed the meeting laying the importance of creating bridges in all spheres of our development and support of the energy transition. He identified the synergies that exist in the activities of the two sectors and emphasised the importance of capitalising on them to achieve the high-level objectives of the EU.

R&I is not the prime objective of the Europe Connection Facility, but it is the bridge to deliver promising technologies to the European Networks connecting and facilitating.



Figure 8: Mr. Sebastian Gras (Policy Officer - EC) presenting the European Connecting facility

Within the next 2 hours, **Mr. Tasos Tsitsanis** (Suite5, EL), **Mr. Dimitar Zarchev** (ESO, BG), **Mr. Mihai Mladin** (CRE, RO), **Dr. Rad Stanev** (TU-Sofia, BG) representing European Academics, Policy and Energy Sector experts from the Balkan region -and mainly Bulgaria, Romania and Greece- participated in the workshop's agenda by presenting the R&I challenges on Energy in their countries, the gaps to be addressed and good practices as a way to move the energy transition forward.

In the next session, **Dr. Luciano Martini** (Chairman for EERA JP for SG) gave the presentation "Pan-EU R&I community: Stakeholders involvement and enhanced collaboration opportunities". He focused on two EU level initiatives that are very important for PANTERA activities and objectives: EERA JP SG and ETIP SNET. EERA JP SG is an association of research centres and academia that gathers together 40 participants from 17 EU countries that are dealing with smart grids Research & Innovation (R&I) while the ETIP SNET is an important initiative fostered by the European Commission that aims to guide Research, Development & Innovation (RD&I) to support Europe's energy transition. Moreover, the speaker introduced the ISGAN and Mission Innovation Challenge 1 on Smart Grids. Dr. Martini focused, also, on stakeholders' involvement and enhanced collaboration opportunities through the aforementioned associations and PANTERA initiative.



Figure 9: Dr. Luciano Martini (Chairman of EERA JP for SG) presenting Pan-EU R&I community



Dr. Christina Papadimitriou (FOSS, CY) and Mr. Andrei Morch (SINTEF, NOR) presented the promises and expectations from PANTERA initiative for enriching R&I in support of the energy transition.

Figure 10: Dr. Christina Papadimitriou (FOSS) and Mr. Andrei Morch (SINTEF) presenting the PANTERA promises and expectations



Figure 11: Group photo for PANTERA Sofia's workshop

In the afternoon session, **Mr. Ludwig Karg** (ERA-Net Smart Energy Systems expert) introduced the ERA-Net Smart Energy Systems and their approach on building a European wide Knowledge Community for R&D&I on their member's state level. Through their approach, potential synergies with the PANTERA initiative were also highlighted.



Figure 12: SWOT analysis with the stakeholders

As stakeholders' involvement is of high importance for the PANTERA process an interactive SWOT analysis was organised with the support of **Mr. Ludwig Karg**, to identify areas of actions and next steps concerning the Balkan region.

The workshop ended by discussing and analysing in a roundtable discussion with all attendees the main findings of the SWOT analysis performed. The strongest factors shaping the SWOT analysis are listed in the Table 3. A complete list of the identified Strengths, Weaknesses, Opportunities and Threats can be found in Table 4, Table 5, Table 6 and Table 7, respectively listed in descending order depending on the votes received from the participants.

Table 3: SWOT analysis

STRENGTHS	WEAKNESSES	OPPORTUNITIES	THREATS
Knowledge in EU extensive and accessible	Project results are not utilized	High potential for renewable energy resources	Data handling
R&I family is strong in numbers and quality and well connected to EU networks	Weak industry involvement	Education	Bureaucracy
Regulation promotes RES & energy efficiency	Slow regulation adaptation compared to technology evolution and system needs	Low cost of ICT hardware infrastructure	Funds
A lot was done in infrastructure and technology evolution	Weak in the communication of achieved knowledge, results and solutions	EU funds	Action is needed from outside EU too
	Low involvement of stakeholders	Job opportunity	
	Slow technology penetration	Energy active citizen	
		Open energy market	
		Collaboration of stakeholders	
		Investment	

Table 4: List of strengths in the SWOT analysis

STRENGTHS	
Knowledge in EU extensive and accessible	<ul style="list-style-type: none"> • A lot of knowledge and experience around the EU • Good networking synergies • Easy access to knowledge & resources • Networking activities
R&I family is strong in numbers and	<ul style="list-style-type: none"> • High-level researchers linked to R&I at EU level

quality and well connected to EU networks	<ul style="list-style-type: none"> • Project under implementation could give the best practice examples • A lot of R&D EU projects are already done • Potential of knowledge transfer between R&I and industry • The strong interest of the ERA-NET family to link with low spending counties
Regulation promotes RES & energy efficiency	<ul style="list-style-type: none"> • Incentives for PV rooftops & energy-efficient buildings • New regulations focusing on social acceptance and consumer engagement • Regulation for energy communities
A lot was done in infrastructure and technology evolution	<ul style="list-style-type: none"> • There is a good EU grid infrastructure • Good working relations between different stakeholders • Integration of RES through a regulatory framework • Main issues in the energy field are addressed

Table 5: List of weaknesses in the SWOT analysis

WEAKNESSES	
Project results are not utilized	<ul style="list-style-type: none"> • R&D results are not well communicated • Lack of access to project results & knowledge • Lack of demonstration of projects • Lack of information about the possible coupling of instruments/supplementary funding
Weak industry involvement	<ul style="list-style-type: none"> • Cannot convince the industry to invest • High investment cost of new technologies restricts the deployment of innovative technologies • Missing business case • Missing leadership • Long decision process • No clear market specification • EU industry is not competitive (e.g., PV and storage)
Slow regulation adaptation compared to technology evolution and system needs	<ul style="list-style-type: none"> • The regulation is so slow to peak up with the technology evolution • No regulation about synergistic approaches and sector coupling • Lack of understanding the urgency of energy shift at the policy level • TSO & DSO don't want to change
Weak in communication of achieved knowledge, results and solutions	<ul style="list-style-type: none"> • Lack of communication between projects/partners • Lack of communication between project applications • Data exchange is difficult among stakeholders which leads to reinventing the wheel • Lack of networking & synergies • Scientific results are not connected with each other

Low involvement of stakeholders	<ul style="list-style-type: none"> • Lack of understanding of regulation & policy by the end users • Customers are not ready or educated enough for smart grids • Limited involvement of some stakeholders
Slow technology penetration	<ul style="list-style-type: none"> • Technology penetration is slower than they should be (e.g., Smart meters) • The area that is rich in renewable have weak access to the grid

Table 6: List of opportunities in the SWOT analysis

OPPORTUNITIES	
High potential for renewable energy resources	<ul style="list-style-type: none"> • Local renewable energy resources can meet the EU energy needs • Potential of hydro infrastructure
Education	<ul style="list-style-type: none"> • Educate students in schools on energy sustainability
Low cost of ICT hardware infrastructure	<ul style="list-style-type: none"> • Low cost of ICT hardware infrastructure
EU funds	<ul style="list-style-type: none"> • Funding available on the European level • Providing information on funding opportunities
Job opportunity	<ul style="list-style-type: none"> • More jobs opportunity • More energy experts
Energy active citizen	<ul style="list-style-type: none"> • More energy active citizens
Open energy market	<ul style="list-style-type: none"> • Opening of the energy market
Collaboration of stakeholders	<ul style="list-style-type: none"> • Collaboration of stakeholders from other projects associated
Investment	<ul style="list-style-type: none"> • Possibility of creating potential companies to invest in new projects

Table 7: List of threats within SWOT analysis

THREATS	
Data handling	<ul style="list-style-type: none"> • Security and personal data handling • Social acceptance
Bureaucracy	<ul style="list-style-type: none"> • Bureaucratic legislation from each country • In some countries regulatory bodies have inertia on fulfilling EU recommendations

Funds	<ul style="list-style-type: none"> • Insufficient national funds • EC sponsors projects with more than one country involved
Action is needed from outside EU too	<ul style="list-style-type: none"> • If the rest of the World don't take action, the EU cannot save the World Alone

3.1.4 Selected interviews with participating stakeholders

Throughout the workshop, parallel interviews were conducted as a means of stakeholders' consultation. The main feedback from the interviewed stakeholders is that the PANTERA's approach appears to be reasonable and timely. More specific summary of the interviews is included in the dedicated deliverables D4.1 [2] & D4.2 [3].

3.1.5 The workshop's main outcomes

The workshop completed all activities as planned with the active participation of all the stakeholders that have physically attended the event. Details of the proceedings are given in the paragraphs above and on the website of the PANTERA project as indicated below. However, it is important for the next steps of the project to identify the main lessons learned to base on the plans ahead. Shortly these are:

- The first workshop raised high interest in the PANTERA initiative among the Bulgarian and the Balkan region Stakeholders, initiating strong interest for participation of the Bulgarian Stakeholders in the next regional and Pan-European events.
- PANTERA initiative has the full support of EC on delivering the promised vision with close collaboration with existing EU tools.
- PANTERA initiative can have a constructive and fruitful cooperation with other pan-European associations such as EERA AISBL / JP4SG / Storage, ETIP SNET, ERA-NET Smart Energy Systems etc. to support the energy transition, leverage the smart grids investments and maximize their impact.
- Stakeholders of the Balkan region interacted actively with the PANTERA initiative and further involvement can be established for achieving a "win-win" situation
- Stakeholders have a principal role into the PANTERA process and thus ways of getting them involved were discussed with many options opened to them: through the PANTERA (regional) desks, ad hoc working groups and participation in targeted workshops.
- The conducted SWOT analysis highlighted the strongest shaping factors (mainly Strengths and Weaknesses and identified opportunities and threats that are of critical importance to know and adapt accordingly) on how PANTERA needs to act and move forward with the support of the stakeholders for the Balkan region.
- Main challenges and prevailing barriers were identified that form a great constructive feedback for the next workshops to be organised by PANTERA.
- The analysis performed showed that the most valuable results of the workshop were generated in the team work in small groups and from the interviews performed during the workshop. This fact was taken into account and used for refining the format for the organization of the next workshops and later on for the formulation of the "nano-workshop" concept.

For further information you can find the workshop slides and the produced report on the PANTERA website¹.

¹<https://pantera-platform.eu/pantera-workshop-an-innovative-approach-towards-unified-pan-european-research-innovation-efforts-in-the-energy-sector-balkan-series-sofia-bg-2-july-2019/>

3.2 Dublin (IE) workshop

3.2.1 Introduction

The PANTERA project held its second regional workshop at the University College Dublin (UCD), Dublin, Ireland on 2nd of December 2019. This workshop focused on the Ireland's Smart grid, Energy Storage and Local Energy Systems Landscape: Research & Innovation Roadmap. More than 50 participants and keynote experts from national and international academic and industry bodies participated in the workshop and shared ideas on how to achieve the energy transition climate action targets.

The PANTERA workshop, jointly organised by UCD Energy Institute and the International Energy Research Centre (IERC), aimed to facilitate the exchange of best practices and information among R&I experts, policy makers, and foster links with EU level initiatives. The workshop aimed to highlight how the PANTERA project could address the energy transition challenges at regional and EU level through the prism of smart grid R&I. Sessions explored the opportunities and challenges for research and innovation in Smart Grids, Energy Storage and Local Energy Systems in Ireland. The final agenda of the workshop is presented in section 3.2.2. Speakers from the DSO, TSO, New Entrant and academia presented their perspectives. Topics for discussion included:

- The European and Irish Smart Grid Landscapes;
- Supporting Research & Innovation through Knowledge Dissemination;
- EU and national R&I funding opportunities;
- PANTERA Working Groups - Local and Pan-European R&I challenges and gaps;
- PANTERA Desks – Local and Pan-European Networking for promoting regional needs and capitalising in local strengths and opportunities.

The UCD and IERC teams worked to identify and secure the time of relevant keynote speakers. Tailored speaker briefing notes were prepared to align the speakers' talks with the overall PANTERA project objectives, but also ensuring the content and format would be of benefit and interest to a broad range of Irish stakeholders. Targeted keynote speakers were invited to participate in one-to-one interviews in parallel with the workshop. The outcome for the interviews is documented in PANTERA deliverables D4.1 [2] and D4.2 [3].



Figure 13: Some of the Dublin Workshop Participants

Moreover, the PANTERA project and its platform were presented and discussed, giving the workshop participants an opportunity to give early feedback via the Glisser tool.



Figure 14: Dublin Workshop Presenters left to right Prof Andrew Keane (UCD), Dr Paula Carroll (UCD), Dr Terence O'Donnell (UCD), project officer Mr. Mario Dionisio, consortium leader Dr Venizelos Efthymiou, and Dr Eamonn Lannoye (EPRI)

3.2.2 Agenda

9:00	Registration and Coffee, Quinn School of Business, Belfield, Dublin 4
9:30	Welcome Address <i>Paula Carroll (UCD)</i>
9:35	EPRI's Smart Grid International Research & Innovation <i>Eamonn Lannoye, Senior Project Manager Electric Power Research Institute (EPRI)</i>
10:00	PANTERA <i>Venizelos Efthymiou (FOSS)</i>
10:15	European Union <i>Mario Dionisio, Directorate General for Energy Unit C2 - New energy technologies, innovation and clean coal (EC)</i>
10:30	Smart Grid Research & Innovations in Ireland: New Entrant Perspective <i>Paddy Finn, Managing Director of Electricity Exchange</i>
11:15	Coffee break
11:45	Smart Grid Research & Innovations in Ireland: DSO Perspective <i>Pádraig Lyons, Development Manager ESB Networks Future Networks (ESB)</i>
12:30	Smart Grid Research & Innovations in Ireland: TSO Perspective <i>Jon O'Sullivan, Innovation Manager (EirGrid)</i>
13:15	Lunch & Networking
14:00	Smart Grid Research & Innovations: Research Organisation Perspective <i>Assos Prof Terence O'Donnell (UCD)</i>
14:30	Discussions on how PANTERA Platform & WGs address gaps identified in morning sessions <i>Venizelos Efthymiou (FOSS)</i>

	<p><i>Anna Mutule (IPE)</i></p> <p><i>Andrei Morch (SINTEF)</i></p>
15:30	<p>Vote/summarise next steps</p> <p><i>Mohamed Shalaby (DERlab)</i></p>

3.2.3 Proceedings of the workshop

Prof. Andrew Keane from the UCD Energy Institute welcomed participants and opened the workshop. He included a brief summary of the talks and the roundtable discussions that followed.

Dr. Eamonn Lannoye (Senior Project Manager, EPRI)

EPRI's Smart Grid International Research & Innovation

Session Facilitator: Dr Paula Carroll, UCD

Dr. Lannoye highlighted progress in Ireland since the 2009 3rd energy package legislation for an internal gas and electricity market in the EU, and interconnect goals. He noted Ireland has reached the limits of social acceptance of onshore wind energy, and the social challenges of decarbonisation. He emphasised the need for speedier integration of technology in the market and noted challenges in regulations and data infrastructure, commenting that lags in data sharing will impact the timeliness of decarbonisation.



Figure 15: Dr. Eamonn Lannoye (EPRI) at the Dublin Workshop

Dr. Venizelos Efthymiou (FOSS & PANTERA)

Dr. Efthymiou discussed the globalisation of the energy transition and shareable targets that can be made usable for achieving results within research, innovation and competitiveness. He highlighted the role PANTERA can play to achieve this.



Mr. Mario Dionisio (Directorate General for Energy Unit C2 - New energy technologies, innovation and clean coal Focus: European Union)

Mr. Mario Dionisio discussed HVDC projects, DC communications, and the need for the energy sector to be like a 5G network with smart interconnections offshore. He has extended this view to the EU policies for the energy transition and how developments in this sector will offer optimal connectivity to sustainable resources to achieve the targeted carbon free economy.



Dr. Paddy Finn (Managing Director, Electricity Exchange)

Smart Grid Research & Innovations in Ireland: New Entrant Perspective Session

Facilitator: Dr. Matt Kennedy, IERC.

Dr. Finn discussed the technology his company have developed to make autonomous consumers into controllable, predictable resources. He noted this can increase grid capacity without additional infrastructure and allows load shedding/fast demand response. He compared 27 MW of fast frequency response to that of a 9 MW battery, with advantages over battery price. He noted the need for new regulation to allow new *non wire* business models, and highlighted opportunities for new services in the electrification of transport and heating. He emphasised the importance of extracting value from existing assets in the system through smart efficient usage. He noted that historically focus was on the TSO, but with the emergence of the smart grid, more emphasis will be placed on the DSO to facilitate innovation.

Dr. Pádraig Lyons (Development Manager ESB Networks Future Networks)

Smart Grid Research & Innovations in Ireland DSO Perspective. Session

Facilitator: Dr. Christina Papadimitriou (FOSS)

Dr. Lyons discussed the challenges for the network to achieve the Climate Action Plan 840,000 electric vehicles and 600,000 Heat Pumps. It will require greater capacity on the low voltage network by 2030. Currently eight roadmaps detail ESB-Networks energy transition plans, details to be published shortly. Current innovation projects are exploring how to enhance the LV network. He noted the issue of sharing data and the potential for learning from the PANTERA platform to help fast track research through to implementation and business as usual.

Dr Terence O'Donnell (UCD)

Smart Grid Research & Innovations: Research Organisations Perspective.

Session Facilitator Dr Beth Massey

Dr O'Donnell summarised some of the current smart grid research in Ireland including projects on the stability of the grid under faults, enabling autonomous operation at the edge of the grid and solving the observation issue.

Dr. Jon O'Sullivan (Innovation Manager Eirgrid)

Smart Grid Research in Ireland: TSO perspective.

Session Facilitator: Dr. Luciano Martini (RSE)

Dr. O'Sullivan discussed some of the energy security issues facing Ireland, with 85-95% dependency

on imports. He highlighted the issue of fuel poverty and the challenges to achieve fairness to the individual during the energy transition. On the technical side he noted the Irish renewable electricity 70% target in the Climate Action Plan: enabling 75% System non-synchronous penetration (SNSP) limit will be a world first. SNSP is a measure of the non-synchronous generation on the system at an instant in time. It is the ratio of the real-time MW contribution from non-synchronous generation and net HVDC imports to demand plus net HVDC exports. He noted the financial challenges and the balance between operating and capital costs. He noted that changing mind-sets may be the biggest challenge to achieve the energy transition climate action goals without building new network/infrastructure to enable future smart solutions.



Figure 16: Dr. Jon O'Sullivan (EirGrid) at the Dublin Workshop

Roundtable Discussion

Session Facilitators: Dr. Fabiano Pallonetto (UCD) and Mr. Mohamed Shalaby (DERlab)

Participants to the workshop were engaged in round table discussions to identify the biggest challenges raised during the preceding presentations and how the PANTERA platform could bridge the identified gaps. The most significant issues raised were:

- The need for provided data in standard formats to test and build research models/prototypes, and business cases;
- The need for integration with established platforms for the deployment of data analytics tools and systems;
- The development of an integrated knowledge area to capture latest regulations and standards into living documents;
- The enrichment of available datasets with structured metadata and hyperlinks to associated R&I activities;
- The necessity to easily retrieve national, regional and local R&I activities and cross functional archives.

Further discussions on the requirements, features and collaborations with different platforms has been stressed during the round table and the necessity to strengthen the involvement of European industry to raise awareness among different stakeholders has been highlighted.



Figure 17: Dr. Fabiano Pallonetto leading the roundtable discussion



Figure 18: Participants during the round-table discussion

3.2.4 Stakeholders poll for platform functionalities

Taking under consideration the roundtable discussions and the main outcomes, regional stakeholders were asked to provide their insides regarding the functionalities of the platform and their significance within the R&I Community through an anonymous poll. The results of the real time poll were discussed thoroughly, giving a good feedback to the PANTERA representatives regarding the type of hosted functionalities and the way of setting up the platform.

The prioritization and the functionalities that were highlighted are provided in the list below:

- Data bases
- Strong Search Engine
- Smart Grid Data Collection
- Living Document Repository
- Data Analytics
- Linking functionality
- Matchmaking
- Training area
- Event Calendar
- Newsletter functionality
- Jobs Area

3.2.5 The workshop's main outcomes

The workshop completed all activities as planned with the active participation of all the stakeholders that have physically attended the event. Details of the proceedings are given in the paragraphs above and on the website of the PANTERA project as indicated below. However, it is important for the next steps of the project to identify the main lessons learned to base on the plans ahead. Shortly these are:

- There is significant activity and interest in Smart Grid R&I across industry and academia in Ireland.
- There is a demand for access to relevant smart grid data to allow building of prototype models.
- The deregulation of the market, and GDPR rules make cooperation and data sharing among actors in the electricity space difficult.
- The proposed PANTERA platform offers an opportunity for data and knowledge sharing.
- The PANTERA regional desks offer an opportunity for networking for the Irish Smart Grid R&I community, participants expressed interest in follow up activities.
- The desired tool set that could be of use and truly supportive to the R&I community were identified and these will be available within the planned interactive platform.

For further information you can find the workshop slides and the relevant report that are publicly available on the PANTERA website².

3.3 Athens (GR) workshop

3.3.1 Introduction

The third PANTERA regional workshop was organised in Athens, Greece. It focused on the challenges and barriers, along with the best practices and future steps towards greening geographical islands and transforming them to 100% renewable energy systems with the support of technologies that enable their smart autonomous operation.

The workshop was structured around 5 keynote presentations from major stakeholders of the Greek Energy Market. Each keynote presentation has been combined with a facilitated Q&A/discussion, allowing the anticipation of questions and generating active contributions to the workshop.

The workshop was closed with an interactive session around the PANTERA platform addressing progress, achievements, mode of working and delivering, expectations and current issues that are of interest to the participants of the workshop aiming advancements needed, rectification of problems and next steps.

Throughout the workshop, parallel interviews were conducted as a means of stakeholders' consultation. The main feedback from the interviewed stakeholders is that the PANTERA's approach and vision can be helpful and effective. More specific summary of the interviews is included in the dedicated deliverables D4.1 [2] and D4.2 [3].

² <https://pantera-platform.eu/pantera-workshop-pan-european-research-and-innovation-activities-for-smart-grids-energy-storage-and-local-energy-systems-dublin/>



Figure 19: The 3rd PANTERA workshop, hosted by Suite5, was held in N.J.V. Athens Plaza Hotel, Syntagma Square

3.3.2 Agenda

9:00	Registration and Coffee, N.J.V. Athens Plaza Hotel, Syntagma Square
9:30	Welcome Address <i>Tasos Tsitsanis (Suite5)</i>
9:40	Research and Innovation Priorities for facilitating the Energy Transition and the realization of the future Smart Island Energy Systems <i>Nikos Hatziargyriou (NTUA/ETIP-SNET)</i>
10:00	PANTERA Process <i>Venizelos Efthymiou (FOSS)</i>
10:35	EU Policies and Strategy on the way to Autonomous and Sustainable Energy Systems in Geographical Islands <i>Mario Dionisio (EC/DG ENER)</i>
11:00	Local governance to enable the clean energy transition of Greek islands: Best Practices, Barriers and the way forward (Case Study 1) <i>Kostas Komninos (DAFNI Network)</i>
11:50	Coffee break
12:15	The role of interconnections in achieving the energy transition: The case of Greek islands and the way forward (Case Study 2)

	<i>Georgios Messinis (Ariadne Interconnection)</i>
13:10	Lunch & Networking
14:00	Increasing social acceptance through collaboration: The emergence of Energy Communities - Lessons Learned and replication routes for island communities (Case Study 3) <i>Dimitris Kitsikopoulos (Electra Energy Community)</i>
15:00	Digitalisation as an enabler for the energy transition (Case Study 4) <i>Metody Georgiev (TU-Sofia)</i>
16:00	Coffee break
16:20	PANTERA - Platform as a link to Regions, WTs and R&I community in EU Needs – Strengths and weaknesses & Feedback on PANTERA platform (Roundtable) <i>Venizelos Efthymiou (FOSS) & Mohamed Shalaby (DERlab)</i>
17:20	Open discussion: summarize the day, discuss open points, plan next steps <i>Mohamed Shalaby (DERlab)</i>

3.3.3 Proceedings of the workshop

Mr. Tasos Tsitsanis from Suite5 opened the morning session by welcoming the attendees of the 3rd PANTERA workshop, highlighting the importance of joint collaborations in R&I activities in smart grids. He also emphasised on the importance of the expected contributions by the key experts that participated in the workshop, in order to look upon their perspective on the PANTERA process potential strengths and weaknesses and ways of further enhancement.



Figure 20: Mr. Tasos Tsitsanis (Suite5) welcoming the attendees of the workshop

Research and Innovation priorities for facilitating the Energy Transition and the realization of the future Smart Island Energy Systems

Prof. Nikos Hatziaargyriou of ETIP-SNET took the floor for the 1st keynote presentation on the “Research and Innovation priorities for facilitating the Energy Transition and the realization of the future Smart Island Energy Systems” and briefly covered the following:

- R&I priorities for facilitating the energy transition and the realisation of the future smart island energy systems.
- Input on the H2020 activities from ETIP SNET on smart energy transition with the organisation of the Working Group 5.
- Vision 2050 on Low carbon secure reliable & Pan-European integrated system for a fully CO2-neutral & circular economy by the next year.
- The energy island framework (still pending issues regarding energy production of RES).



Figure 21: Prof. Nikos Hatziaargyriou (NTUA/ETIP SNET) presenting the ETIP SNET's

The PANTERA Process

PANTERA project coordinator, Dr. Venizelos Efthymiou of FOSS Research Center, followed with setting the scene for what the PANTERA project aims to deliver. He started by highlighting the objectives of the project, how the PANTERA process could help towards the fulfilment of the energy transition vision through the stakeholders' support/engagement and how to move along with R&I activities for energy transition through PANTERA. Among others he stressed out the following:

- Bridge existing gaps in member states through PANTERA activities.
- Continuity of PANTERA even after the completion of the project, through the use of the JRC identified low-spending countries.
- Availability of use cases & scenarios and further strengthening of R&I activities through the platform and all the knowledge data that will be brought together.
- PANTERA is fostering regional work along the principles developed by RIS3 in line with the S3 platform activities.
- Working Teams within PANTERA process to generate valuable information and provide it through developed tools to all users.

He mentioned that it is a focal point to identify the strengths of each region and how to support this action for the targeted low carbon economy, heading to a sustainable future as it affects all sectors: regions, industries, consumers, in compliance with the EU Vision of 2050.



Figure 22: Dr. Venizelos Efthymiou (FOSS) analyzing the PANTERA process

After the completion of Dr. Efthymiou's presentation, Mr. Mohamed Shalaby from DERlab discussed remarks and feedback received, regarding the PANTERA process and what should be improved in order to support EU in smart grid R&I investments.

EU Policies and Strategy on the way to Autonomous and Sustainable Energy Systems in Geographical Islands presented by Mr Mario Dionisio

Mr. Mario Dionisio of DG ENER (EC) and Project Officer of the PANTERA project, introduced the EC R&I policy, trends and challenges in relation to EU Energy Policy and briefly covered Horizon 2020 funding, the energy transitions and PANTERA's vision.

He highlighted how the EC can support trends and tackle challenges underlining the fact that a unique opportunity is presented to us, in order to modernise our economy, boost competitiveness, while creating growth and job openings.

He introduced the plans for Horizon Europe and finished by reiterating the importance of gathering in Athens to discuss the R&I agenda in Europe and how the Commission through PANTERA can boost the process:

- To better frame the status of EU grids
- To disseminate EU R&I&D activities on grid modernisation for the energy system transition
- To raise awareness on possible application/replication throughout the EU
- To exchange experiences, knowledge, use cases, etc.
- To move towards greening geographical islands, with the support of technologies that can enable their smart autonomous operation.



Figure 23: Mr. Mario Dionisio elaborating on EU Policies and Strategy towards sustainable energy systems

Local governance to enable the clean energy transition of Greek islands: Best Practices, Barriers and the way forward

The 2nd keynote presentation was held by Mr. Kostas Komninos from DAFNI Network on “Local governance to enable the clean energy transition of Greek islands”, regarding best practices, barriers and the way forward. He indicated the evolution of “The Path towards the Clean Energy for EU Islands Initiative”, from ISLEPACT (2011), to SMILEGOV (2013), Smart Islands Initiative (2016) and eventually to Clean Energy for EU Islands (CE4EUI Declaration in 2017). He then proceeded his presentation with the example of Kythnos as a Smart Island and the vision for sustainable local development of the island. Among others, he pointed out the aims of the Municipality towards:

- the holistic infrastructure planning integrating smart and innovative solutions in the sectors of energy, water, waste, transport and mobility
- the exploitation of the island’s natural and cultural resources, which will boost the development as a smart and sustainable destination

After the end of the presentation, Mr. Komninos met with a barrage of questions from the attendees, allowing this interactive approach of the workshop to stipulate responses, discussion and hands-on experience.

Dr. Rad Stanev from TU-Sofia pinpointed, inter alia, that although Bulgaria does not have any geographical islands, the same challenges are encountered with the ones that Mr. Komninos presented regarding the islands power systems.

Dr. Stanev, further elaborated in the direction of dealing with those challenges, stating that the energy transition requires a new holistic perception and new holistic architecture in which the Macrogrid is composed by partially or fully autonomous Micro, Mini, and Nanogrids, which are in fact operating more or less as island power systems. So, finding a proper way to share this knowledge is critical for the entire European Society. He indicated that a lot of mature technologies are currently available, ready to support the energy transition but the most critical aspect in this process is finding a proper way for knowledge sharing, for collaborative research and for education.



Figure 24: Mr. Kostas Komninos during his presentation

Mr. Mohamed Shalaby from DERlab engaged the attendees in the process of the workshop, by giving them the opportunity through the Glisser online voting system to decide on which are the biggest barriers/challenges against having green geographical islands based on 100% RES & smart grid technology. The majority of the voters insisted that economic aspects, lack of financing along with the regulatory framework and policies, are the key factors that can lead geographical islands towards the 100% RES penetration.

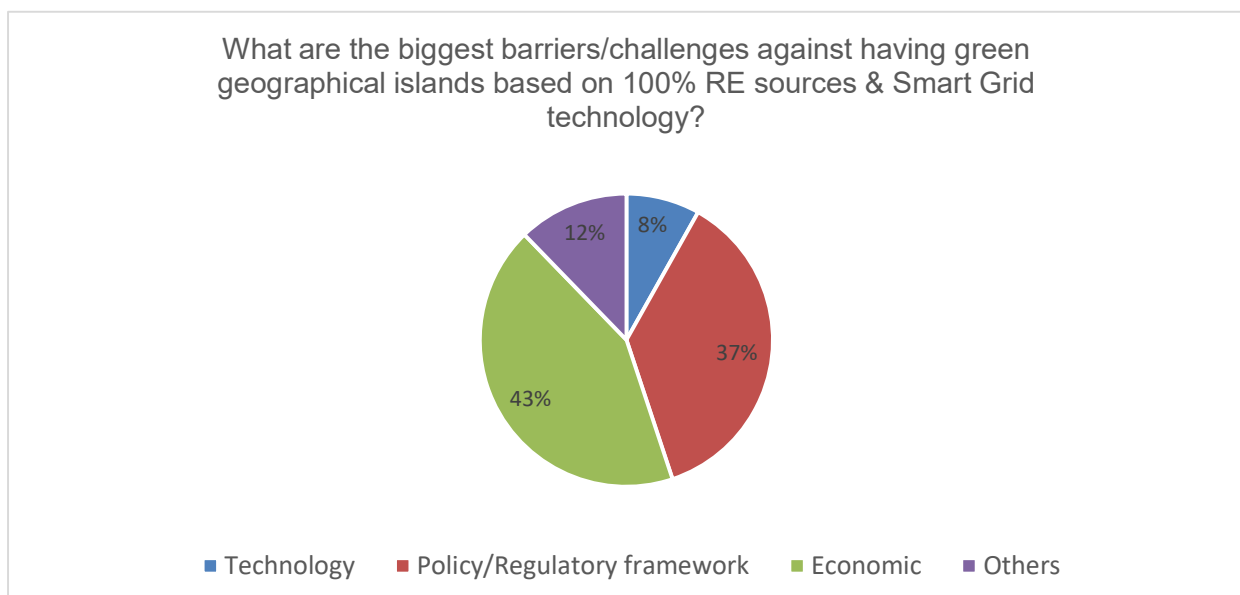


Figure 25: The results of the voting

Next, the attendees of the workshop were asked, through Glisser, to elaborate on the ways to overcome those barriers/challenges against having green geographical islands based on 100% RES

& smart grid technology. The answers received indicated that the means to overcome the aforementioned barriers/challenges can potentially be the following:

- Further investments and better communication to the local regions
- Better funding in education and collaboration
- Incentivise local communities, present the benefits and encourage local investments
- Strong industry and research collaboration
- Central coordination respecting the regions' special characteristics
- Synergies/Collaborations between different organisations within European countries and policies that are more flexible towards the supporting economy of smart grids
- Introduction of new regulatory schemes that will facilitate this kind of activities - New government incentives for relevant activities promotion
- Better organisation through the EC
- Engagement of local communities and further communication about business models with focus on islands
- By accepting more flexible policies for building island energy communities.
- Work along with the governments and decision makers to take serious actions in implementing the up-to-date technologies simultaneously
- Organised process, requiring changes in the national and Pan-European regulatory framework, so it create better conditions for implementation of RES and SmartGrids
- 1. Investments on new pilot projects with state-of-the-art technologies included. 2. Cooperation between the national energy makers
- High-RES penetration on islands usually finds social barriers (mainly in touristic islands). Education and Incentives to the local society to accept new technology
- Enabling regulation for storage, smarter grids
- Mobilise the local stakeholders
- Make info well available to citizens on regulations/possibilities/benefits/negative sides on investing in and utilization of renewables
- Energy communities/virtual net metering

The role of interconnections in achieving the energy transition: The case of Greek islands and the way forward

The 3rd keynote presentation was presented by Mr. Georgios Messinis from Ariadne Interconnection, on "The role of interconnections in achieving the energy transition: The case of Greek islands and the way forward". He explained which are the main drivers and criteria over the integration of the national electricity market, in terms of interconnecting the islands with the continental transmission system. He indicatively mentioned the main challenges for interconnecting the islands to the transmission system are:

- | | |
|----------------------------------|---|
| • Interconnection lengths | • Surrounding environment for the interconnection |
| • Reliability of interconnection | |
| • Cable Industry | |

He offered a plethora of solutions to deflect these challenges, such as:

- | | |
|--|---|
| • Cable technologies for HVDC interconnections | • voltage levels |
| • Cable core material | • Cable laying vessels |
| • Cable armoring | • Advanced Control Center: |
| • HVAC/HVDC: Moving towards HVDC for long interconnections | • Protection schemes for hybrid AC/DC systems |
| • Voltage level: Moving towards higher | • Multi-terminal HVDC |
| | • Enhanced communications |

Mr. Messinis underlined the importance of conforming the aforementioned solutions, always with respect to the surrounding environment of each island.

Upon concluding his presentation, Mr. Messinis answered some questions that were raised by the workshop attendees, before giving the floor to Prof. Dimo Stoilov (Bulgarian Academy of Sciences), in order to present his case regarding the lack of resources in the research domain in Bulgaria and how it can be beneficial for every region to share findings in the energy sector.



Figure 26: Mr. Georgios Messinis (Ariadne Interconnection) describing the role of interconnections in achieving the energy transition

Prof. Stoilov explicitly mentioned that the Bulgarian energy sector faces a number of challenges, such as:

- high energy intensiveness of the gross national product
- strong dependence on energy supplies from a single supplier (Russian Federation)
- structural economic reforms insufficiently coordinated with national interests
- lack of adequate consideration of the complex interactions' energy – economy – technologies – environment – society – security – climate – globalization
- considerable share of grey economy
- sufficient availability of local, but strongly polluting energy lignite sources
- limited water sources
- sufficient solar and wind primary energy, a considerable share of which is absorbed at long-term set "preferential" prices
- low solvency of consumers and wide-spread energy poverty
- high share of electricity in the end energy consumption
- high share of electricity generation with obligation for purchase contracts
- insufficient regulation range of the electricity generation, etc.

At the same time, he indicated that, for a number of years now, the world has embarked on a "grand transition" in the field of energy use, defined as the transition to a world with less population and work force increase, dramatically new technologies, greater environmental protection obligations and shift of the economic and geopolitical force to other countries/states.

Ultimately, he expressed his hope to cooperate with PANTERA platform and project, in the area of objective estimation of the alternative solutions/variants for the “grand energy transition” of Bulgaria and of course, the Balkan region as a whole.

The attendees of the workshop were asked to vote through the Glisser interactive voting system, on whether the interconnections of the islands to the mainland is hindering green investments in the islands; the casted votes gave the following outcome:

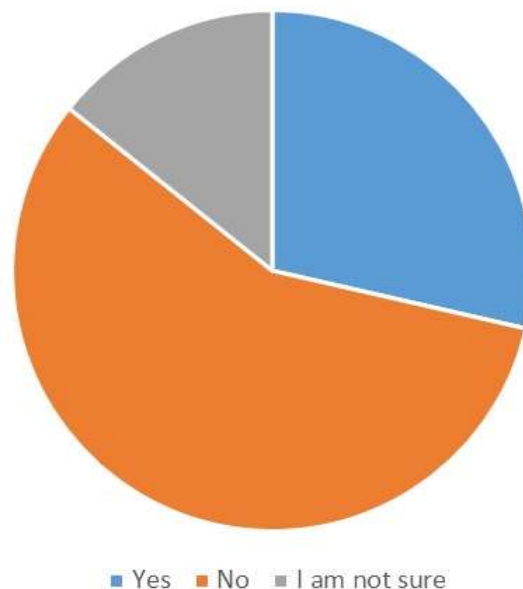


Figure 27: The results of the voting

Increasing social acceptance through collaboration: The emergence of Energy Communities - Lessons Learned and replication routes for island communities

The 4th keynote presentation was held by Mr. Dimitris Kitsikopoulos from ELECTRA Energy Community, on “Increasing social acceptance through collaboration: The emergence of Energy Communities - Lessons Learned and replication routes for island communities”, underlining the importance of the development of energy communities or collectives.

He mentioned that the main challenges that need to be addressed in order to build an energy community are:

- Policies/regulations gaps
- Lack of awareness
- Education and Training
- Governance (of Energy Communities)
- Lack of expertise
- Lack of suitable financing tools
- Social resistance

Mr. Kitsikopoulos indicated a series of actions, in order to tackle these challenges, which can be summarized as follows:

- Policy making actions, synergies with other organizations in Greece and Europe (e.g. RESCOOP)
- Events, Guidebook “Building Energy Communities - energy in the hands of citizens”, media,

- articles, etc
- Workshops
- Research, synergies with IT companies
- Networking, consultancy
- Mobilize conventional banks and cooperative banks, develop a community energy financing tool

He admitted that through PANTERA platform, ELECTRA Energy Community can overcome the lack of expertise, gain visibility, network with other experts on the energy sector while also benefit from the transfer of knowledge and best practices that would support the energy transition to smart grids.



Figure 28: Mr. Dimitris Kitsikopoulos (ELECTRA) offering his thoughts on the emergence of Energy Communities

On behalf of the Bulgarian experts taking part in the workshop, Prof. Milena Ivanova from TU-Varna, offered some comments regarding the Case Study that Mr. Kitsikopoulos presented. She mentioned in brief that:

- In Bulgaria, we do not have formed Energy Communities. We although have some local RES installations for meeting the energy needs of some enterprises. The excess energy is sold to the National Electric Company. We also have many PV, Wind or Biogas installations working separately from each other.
- The difference between the price of the energy generated by the traditional energy source and the energy from RES (<) is covered by the National Electric Company.
- The energy regulatory authorities are increasing pressure for reduced costs and transparency in the electricity pricing. This requires a very big amounts of data exchange and infrastructure.
- The development of the electric grid requires full integration with ICT-> Smart meter-> EVN>90%, Energo Pro – 60%.
- The initiative for changing smart meters is entirely taken by the Local Energy/Electricity Suppliers (Distribution Systems Operators, DSO).
- No national policies for encouraging the individual customers to create/install smart device for

better energy management.

She also suggested that in order to increase the social acceptance, a good approach is to initiate pilot project with small groups of consumers, giving them financial support or some other benefits to install the necessary devices, for instance boilers with network connectivity, smart meters, monitoring devices or others. More attention and investments should be given and made in dissemination of the results of such projects to the public as publications in some media, explaining the technical aspects of the proposed solution.

Means to engage society and end customers in the energy transition and increase social acceptance

Before the beginning of the next session, Mr. Mohamed Shalaby asked the attendees of the workshop to elaborate on the means to engage society and end customers in the energy transition and increase social acceptance. The answers received, can be summarized as follows:

- Encourage society and local entities to become part of the investment. provide monetary incentives.
- Active dissemination campaign which includes detailed technical and social explanation of the benefits
- Education, benefits
- Monetary incentives e.g., tax breaks
- Showcasing success stories, highlighting market conditions rendering new business models viable, promote societal benefits (e.g., vulnerable)
- Create a clear business case for the customers
- Extensive marketing
- Participation in the revenues
- Close collaboration of experts with end customers, living labs, continuous engagement
- Local energy community seminars energy marketing campaigns - new incentives for more prosumers rather than consumers
- By proper scientifically proven governance

Digitalization as an enabler for the energy transition

The 5th keynote presentation was held by Prof. Metody Georgiev from Technical University of Sofia, on "Digitalization as an enabler for the energy transition". He initially stressed out the main barriers and challenges of digitalization, which can be summarized as follows:

- Increased Vulnerability
- Grid flexibility meet grid complexity
- New services need new business models and trading strategies
- Legal aspects: New technologies lead to new regulation needs
- Interoperability with other networks/Thermal, gas, hydrogen, etc.
- Resources, Governance, Regulations, Networking, etc.



Professor Metody Georgiev (TU-Sofia) pinpointing the importance of Digitalization towards energy transition

On the matter of Resources, Prof. Georgiev emphasized on the following:

- Highly skilled personnel move abroad so it is too difficult to find and engage really skilled personnel in relevant R&D activities

- Highly skilled personnel move to work for industry and do not participate in R&I activities
- Demographic crisis
- Low societal and financial respect to the energy sector in Bulgaria
- Low percent of yearly graduated students in electrical power engineering
- Low motivation for R&I activities in energy sector of the young people
- Lack of related educational programs at middle schools
- Limited budget available at national level
- Reduced visibility to engage in EU funded projects
- Orientation of funding towards more traditional activities (infrastructure enhancement) rather than digitalization

Regarding Governance, he identified the main challenges in:

- Financing (mainly due to lack of information)
- Lack of innovation projects management skills
- Lack of collaboration between market actors for the definition of new business models and the provision of novel energy services
- Knowledge exchange face the know-how protection
- Collaborative knowledge sharing
- Education
- Exchange of data and information
- No coordination between market actors that possess their own agendas and operate in silos
- No data sharing attitude between them and strong conflicts that affect their collaboration potential for an orchestrated approach in smart grid management

Subsequently, he added the main gaps in networking that were identified in:

- Reduced visibility of R&I results towards external actors
- Need to promote collaborations with business and industry to increase attractiveness towards external stakeholders and achieve the involvement in EU funded projects through local consortia
- Need for national coordination towards the organization of the participation of local R&I actors in EU organized events to facilitate networking

Concerning the gaps in Regulations, he highlighted the need for:

- Adjustment of the national legal framework for new technologies (e.g., Storage and e-mobility)
- Incentives for the penetration of such new technologies
- Clear framework for independent RES and demand side aggregators participation in the market
- More favourable conditions for local energy community's establishment and remuneration of demand
- Robust framework regulating data sharing mechanisms and remuneration
- Clear regulation for data privacy and data sharing

He continued his presentation offering his thoughts on how PANTERA can support organizations/energy communities to drive the energy sector towards decarbonization, bridge the gaps that currently exist in R&I energy field in Europe by incentivizing investments in smart grids. As a concluding statement, he presented his expectations from the PANTERA project, which are the following:

- Establish contacts (through collaboration) with renowned organizations that can enable further involvement in R&I activities and cover adequately the identified gaps
- Knowledge transfer and experience sharing
- Identification of best practices that have been successfully deployed in similar contexts and

collaboration establishment for the attraction of the required financing

At the end of Prof. Georgiev's presentation, Prof. Nikolay Nikolaev from TU-Varna and on behalf of the Bulgarian Experts that participated in the workshop, took the opportunity to point out the:

1. Main Challenges in Bulgaria:
 - a. the DSOs are very inert and typically do whatever is required as a minimum by the Energy Regulator
 - b. DSOs lack R&D and what's worse the idea of having such department is not so welcome
 - c. Not many experts are present in the energy sector.
2. Main competitive advantages of Bulgaria:
 - a. Main competitive advantage of Bulgaria is the availability of many talented ICT experts
 - b. However, there is a lack of proper mindset to facilitate this resource
3. Ways to attract investors:
 - a. Build a small but strong interdisciplinary workforce. Mainly researchers and friends (enthusiasts) from the energies companies who will not officially represent their employers (because they will help with what is practical).
 - b. Then do broad research on best practices, past and ongoing pilot implementations of digitalized power systems.
 - c. Based on that research build a strong technological and cost benefit case.
 - d. If the case is truly viable, then the investors will join.
4. Criteria for monitoring and assessment of the success of the studied case:
 - a. user satisfaction measurement would provide very useful clue about whether or not the tested technology and approach is applicable in large scale.
 - b. measuring the financial and environmental benefits are also crucial for the future success.

At the end of the session, the attendees of the workshop were given a range of the predominant challenges/barriers/needs, that digitalization faces in relation to the energy system in Europe. Through the interactive voting system of Glisser, the main challenges/barriers/needs were identified. The results are displayed in the following chart:



Figure 29: The results of voting

3.3.4 The workshop's main outcomes

The workshop completed all activities as planned with the active participation of all the stakeholders that have physically attended the event. Details of the proceedings are given in the paragraphs above and on the website of the PANTERA project as indicated below. However, it is important for the next steps of the project to identify the main lessons learned to base on the plans ahead. Shortly these are:

- The PANTERA process should be used to help towards the fulfilment of the energy transition vision through the stakeholders' support/engagement and move along with R&I activities for energy transition.
- Bridge existing gaps in member states through PANTERA activities.
- Continuity of PANTERA even after the completion of the project, through the use of the JRC identified low-spending countries.
- Availability of use cases & scenarios and further strengthening of R&I activities through the platform and all the knowledge data that will be brought together.
- PANTERA to continue fostering regional work along the principles developed by RIS3 in line with the S3 platform activities.
- It is a focal point to identify the strengths of each region and support this action for the targeted low carbon economy, heading to a sustainable future as it affects all sectors: regions, industries, consumers, in compliance with the EU Vision of 2050.
- Working Teams within PANTERA process to generate valuable information and provide it through developed tools to all users.
- Elaborate on actions of the Commission through PANTERA capable of boosting the process:

Finally the final round table discussion re-iterated the following:

- The PANTERA platform should act as a link to Regions, Working Teams and R&I community, in accordance to the EU needs.
- Realise the vision of the PANTERA multifunctional platform, for generating best-practice-based guidance for the R&I community.
- The resolution of specific problems and needs raised by the members of the PANTERA Collaborative Platform.
- The development of the living document repository with emphasis on how the knowledge generated from project reports, deliverables, etc., will be available and accessible to all users at any given time and period.

For further information you can find the workshop slides and the relevant report that are publicly available on the PANTERA website³.

3.4 Paphos (CY) workshop

3.4.1 Introduction

The fourth regional workshop took place virtually, due to COVID-19 pandemic, on the 10th and 11th November 2020. It was organised by FOSS (University of Cyprus), who is coordinating the PANTERA project. This workshop aimed at raising the interest of the local stakeholders and policymakers. In order to increase the visibility of the workshop and the PANTERA project, it was

³ <https://pantera-platform.eu/pantera-workshop-green-islands-as-a-driver-for-the-energy-transition-going-renewable-and-smart-athens-gr-13-february-2020/>

planned to organise this workshop as a plenary session and a parallel session of the international MEDPOWER conference. More than 90 scientific papers were approved to be presented over the 3-day MEDPOWER conference. For more information about MEDPOWER conference, visit its website: <http://medpower2020.org/>

The choice of joining the MEDPOWER 2020 conference for the workshop of PANTERA was a wise decision. The conference ended on the 11th of November and exceeded expectations (considering the COVID-19 pandemic Health and safety Restrictions) with 136 participants coming from different scientific and research backgrounds-registering for the conference. The approved 90 high level technical papers were presented in 17 technical sessions in addition to 4 project sessions that run in parallel, 2 plenary sessions, and 4 keynotes speeches.

The workshop covered different aspects that the Energy Transition needs to address in order to contribute to the Energy Targets of EU efficiently. The status of the smart grids regional evolution has been presented while use cases have been highlighted covering technologies such as Energy storage, Demand Response, Renewables and Electric mobility that are critical to the energy transition including the Energy Communities and the Operators' perspective. The workshop mainly hosted activities and content of the Horizon 2020 CSA project PANTERA complemented with the work/results of the NAVIGANT/SWECO contract and the Horizon 2020 project INTERPLAN.

Under this prism, the consortium Navigant/SWECO that has completed a study for the benefit of the European Commission on offshore grid concepts for the Mediterranean Sea, adding to the planned offshore renewable energy agenda for the European Union has presented their results within Day 1. The study covered:

- Analysis of potential for offshore power generation at sea (offshore wind, wave, tidal) and on Energy communities of islands (PV and wind onshore)
- Development of energy production scenarios
- Comparative evaluation of offshore grid options
- Inventory of region-specific implementation challenges and barriers
- Key recommendations.

The INTERPLAN Horizon 2020 project focuses on providing solutions and tools to the operators for managing the grid with high-RES penetration by making effective utilization of emerging supportive technologies/systems such as Demand Response, storage and EVs. These raise interest by the non-interconnected islands of the Mediterranean who are already facing such challenges and they are welcoming such supportive solutions.

Each of the presentations in all sections has specifically referred to the pertaining challenges in resources, gaps in networking, regulation and/or finance for supporting R&I work in support of the energy transition. This is in line with the PANTERA identified R&I needs and barriers and its coordinated work to support the EU R&I community especially countries with low activity in the smart grid field to meet their expectations. These raised issues were analysed and discussed in a fully interactive way.

To facilitate this, each presentation was followed by a targeted Q&A/discussion with the active participation of the participants to the workshop. Below, there are presented details of the outcome of this interactive discussion.

3.4.2 Agenda

Day 1 of PANTERA – 10 November 2020	
14:00	Welcome and Setting the scene: Why PANTERA? Main objectives and building the PANTERA process

	<i>Venizelos Efthymiou (FOSS)</i>
14:20	Energy Policy and R&D&I needs: EC R&I policy and trends; Pan-European challenges on R&I in Energy; Clean Energy Package and PCI; H2020 – HEU – SF <i>Mario Dionisio Project Officer (European Commission)</i>
14:40	NAVIGANT - RES driving the energy transition: The potential of the Mediterranean Region. <i>Konstantin Staschus, Lou Ramaekers and Iza Kielichowska (Navigant), Frank Krönert, Simon Lindroth and Frank Krönert (SWECO)</i>
15:40	Coffee Break
15:50	Opening Remarks for the Roundtable 1 and objectives <i>Dr. Christina Papadimitriou (FOSS)</i>
16:00	Roundtable 1: Analysis with open discussion aimed at identifying areas of concern of the R&I community in the field of energy systems, supporting the strategy for energy transition apart from financing mechanisms in fulfilling their research endeavours, gaps that exist, supporting actions required and next steps. <i>Moderated by: Luciano Martini (RSE-EERA JP for SG)</i> <i>Invited contributors: Nestor Fylaktos (CYI) and Christina Papadimitriou (FOSS)</i>
16:50	Summary of findings and conclusions.

Day 2 of PANTERA – 11 November 2020	
10:30	INTERPLAN project and the integrated network operation planning tool: A support for the operators to efficiently manage a network with high share of RES and other emerging technologies <i>Ata Khavari (DERlab)</i>
10:45	A showcase of INTERPLAN tool: Maintain frequency stability in low inertia systems through innovative inertia management and fast frequency restoration control functions <i>Dr. Christina Papadimitriou (FOSS)</i>
10:55	Roundtable 2: An interactive discussion on the Research questions that lie on the road to the energy transition triggered by the priorities set within NECPs (main objective to co-shape the most urgent research questions to be addressed in the next 5 years) <i>Moderated by: Rad Stanev (TUS)</i> <i>Invited contributors: Ivan Matejak (SUPEERA), George Partasides (Ministry), Antonis Ioulianos (IΔEK) and Tasos Gregoriou (DSO)</i>
12:00	Opening Remarks for the Roundtable 3 and objectives <i>Tasos Tsitsanis (Suite5)</i>
12:05	Roundtable 3: The PANTERA initiative in focus: Regional stakeholders discussing their expectations from PANTERA on how PANTERA can facilitate the active

	collaboration with Research and Innovation stakeholders? <i>Moderated by: Anna Mutule (IPE)</i> <i>Invited contributors: Fanos Karantonis (OEB), Nicolas Jarraud (CYI) and Tasos Tsitsanis (Suite5)</i>
13:05	Summary of findings and conclusions <i>Venizelos Efthymiou (FOSS)</i>

3.4.3 Proceedings of the workshop

Welcome and setting the scene

Dr. Venizelos Efthymiou (chairman, FOSS/UCY) opened the workshop and set the scene as to where the project PANTERA currently is and introduced the PANTERA process called RICAP (R&I status and Continuous gAP analysis) through which it is aimed to build appropriate tools that will facilitate the evaluation of projects for feeding in valuable information for identifying R&I needs through the process.

He indicated the importance of building the process in feeding in the multifunctional interactive EIRIE (European Interconnection for Research Innovation and Entrepreneurship) platform that is under development to serve the needs of the R&I community in Europe with emphasis on the low activity countries.

Through this introductory presentation, details were given of the architecture that has been put in place in building EIRIE and how this is intended to be linked with important sources of information that are already active in Europe: JRC, ETIP SNET, BRIDGE, Mission Innovation, DERlab, ERA NET SES (EXPERA).

It was evident from this opening session that the PANTERA project is substantially contributing to the needs of the R&I community in Europe aiming to deliver a point of reference that will strongly support the research endeavours in the field of smart grids, storage and local energy systems.

Energy policy Technology and innovation

Mr. Mario Dionisio (DG ENER), the Project Officer of the project PANTERA in his intervention gave the inside of the current policies of the Commission that helped immensely the discussions that followed.

In his presentation he gave details of the six Commission priorities for 2019 to 2024 that form the basis of the current adapted policies. Following that, he presented the strategy of EU for achieving Paris Agreement objectives and the targeted low carbon economy of 2050. As he indicated, this includes the 7 building blocks for taking Europe there:

- Energy efficiency (central role: housing stock renovation and fuel switching, required: financial instruments, consumer engagement and skilled workforce)
- Deployment of renewables (required: decentralized, smart and flexible power system, carbon free carriers such as hydrogen and e-fuels)
- Clean, safe and connected mobility (digitalization, data sharing and interoperable standards leading to more efficiency, smart cities, cheaper and efficient batteries)
- Competitive resource-efficient industry and circular economy (electrification, energy efficiency, hydrogen, biomass and renewable synthetic gas to reduce energy emissions in the production of industrial goods)
- Network infrastructure and inter-connections (smart electricity and data/information grids, hydrogen pipelines, smart charging stations)
- Bio-economy and natural carbon sinks

- Carbon capture and storage

As a follow up, the Project Officer stressed the importance of Research and Innovation that is a key dimension of the Energy Union:

- To achieve the low-carbon transition, a fundamental transformation of Europe's society is needed.
- Only development and adoption of new technologies can allow the EU to achieve its goals.
- SET Plan and the Communication on Accelerating Clean Energy Innovation identified the strategic research and innovation priorities and actions needed at EU level.
- The NECPs (National Energy and Climate Plans) are intended to set out which of these objectives are being pursued nationally.

Roundtable 1

Following the introductory presentations, the workshop continued with interactive round tables covering selected themes with the participation of important stakeholders representing the industry, EU and Cyprus stakeholders including policymakers of the ministry and the local funding agency.

The main objective of roundtable 1 was to address the following:

- Research endeavours to support the strategy for energy transition
- Existing limitations in the form of results achieved, generated data supporting R&I, degree of maturity in the evolution of technologies, research needs in meeting strategic objectives, testing facilities for undertaken research work, etc
- What actions are needed to tackle the above limitations
- What PANTERA process and platform can do to serve the above

Coordinated by Dr. Luciano Martini (RSE-EERA JP for SG) who has introduced the session as above and continued to introduce the invited participants: Dr. Nestor Fylaktos (CYI) and Dr. Christina Papadimitriou (FOSS).

Dr. Christina Papadimitriou taking the floor covered the main areas of concern of the R&I community related energy transition focussing on issues related to the PANTERA Regional Desk 3 covering Cyprus and Malta. She addressed issues related to:

1. Climate action, decarbonizing the economy
2. Energy Efficiency
3. Energy security and interconnection
4. Integrated electricity market
5. R&D performance

In her presentations she has given important information about Cyprus and Malta and the analysis done to identify areas of concern to dwell on. Based on the findings, the Regional Desk 3 has put together the required actions to support the process. These will follow in the months ahead along the common R&I priorities of both countries, enriching the R&I work done already in both countries.

One pioneering action that the PANTERA project has included in the agenda of the workshop, is using the Glisser tool to capture the views of all participants to the workshop through carefully selected questions. This has given to the workshop real interaction with the valuable reward of views and opinions of stakeholders on burning issues. Having the results tabulated and pictured gives direct feeling of the opinion of the participants that have helped the round table guests to comment and discuss. The achieved results are overwhelming. Altogether 8 detailed questions were asked for the contribution of the participants covering all the hot issues around R&I actions of low activity countries and more specifically the host country Cyprus.

Question 1 to the audience: How do you identify the R&I needs in support of the energy transition strategy of your country?

- Through the detailed strategy plans of the Government of my country published in the appropriate ministry.
- Through the detailed strategy plans of the EU (that by default do not reflect country specifics)
- Through a detailed literature survey conducted by me or my affiliates
- By intuition or by just following the content of the national or European R&I calls in the field.
- None of the above

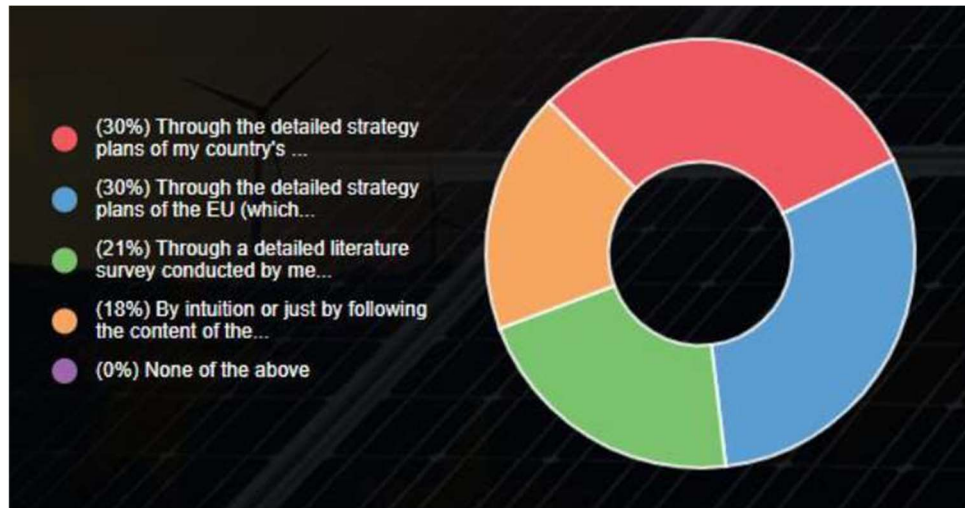


Figure 30: The results of voting question "how do you identify the R&I needs in support of the energy transition strategy of your country?"

Question 2 to the participants: To what degree your country R&I needs are related to the SET Plan process?

- Highly related since my country is active in the SET plan process and national policy is well reflected in the SET Plan process
- There is no evidence that the two are related and any relation can be taken as incidental.
- Simply I do not know.

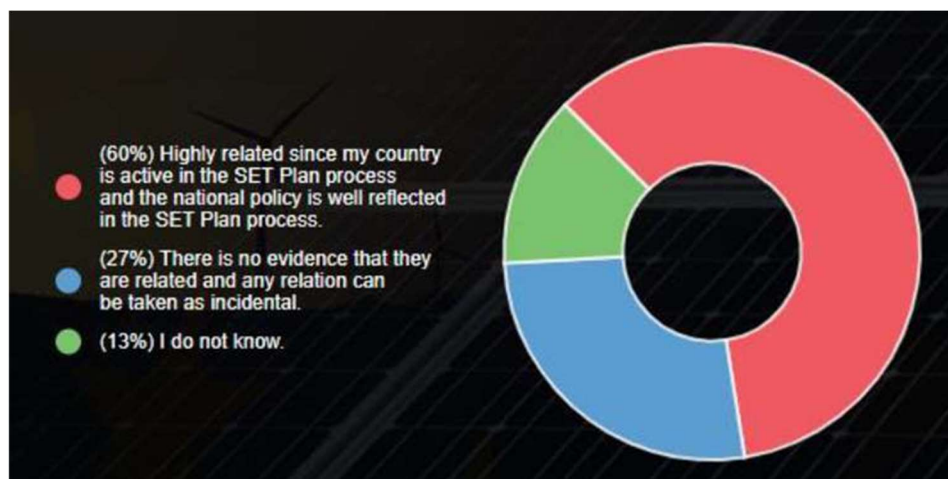


Figure 31: The results of voting question "to what degree your country R&I needs are related to the SET Plan process?"

Question 3 to the participants: "What are the limitations that you face in the available valid information to support your R&I endeavours in support of the Energy Transition?"

- Lack of national policies in line with EU strategy to achieve 2030 targets

- Lack of detailed information on R&I needs
- Lack of progress achieved with validated results related to technology maturity and use,
- No detailed qualification of next steps and how these are related to EU / country strategy
- Other that hinder any attempt to conduct worthwhile R&I activity in the field.

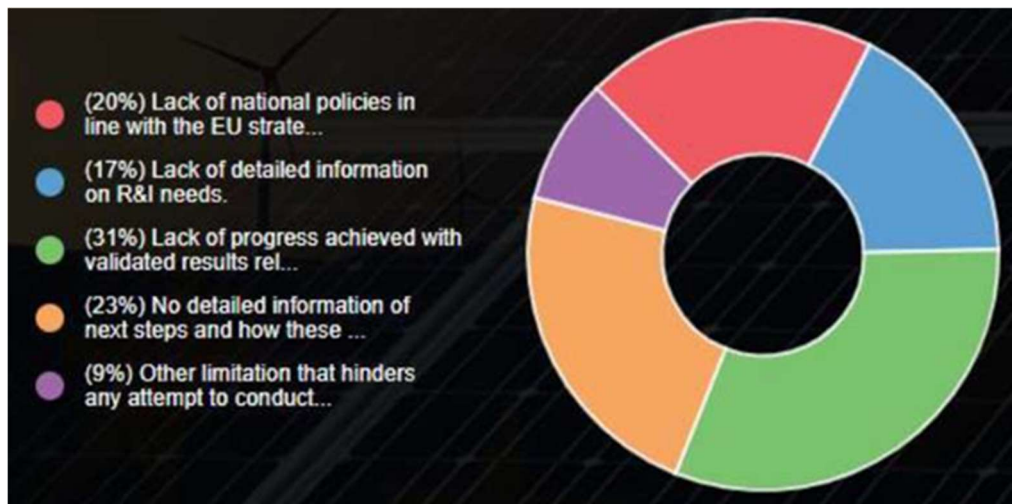


Figure 32: The results of voting question "What are the limitations that you face in the available valid information to support your R&I endeavours in support of the Energy Transition?"

Question 4 to the participants: "How do you think this process can be supported?"

- I consider the current situation as healthy, fully documented and I do not face any problems
- The existence of a reference repository that directs the user to the details of the EU and country strategies accessible to all
- A reference repository that collects and makes available to use all results achieved till today through R&I work in the field
- Tools and functionalities that can easily evaluate progress achieved in technology evolution easily accessible.
- A methodology that can evaluate R&I needs through a thorough use of progress achieved leading to required next steps

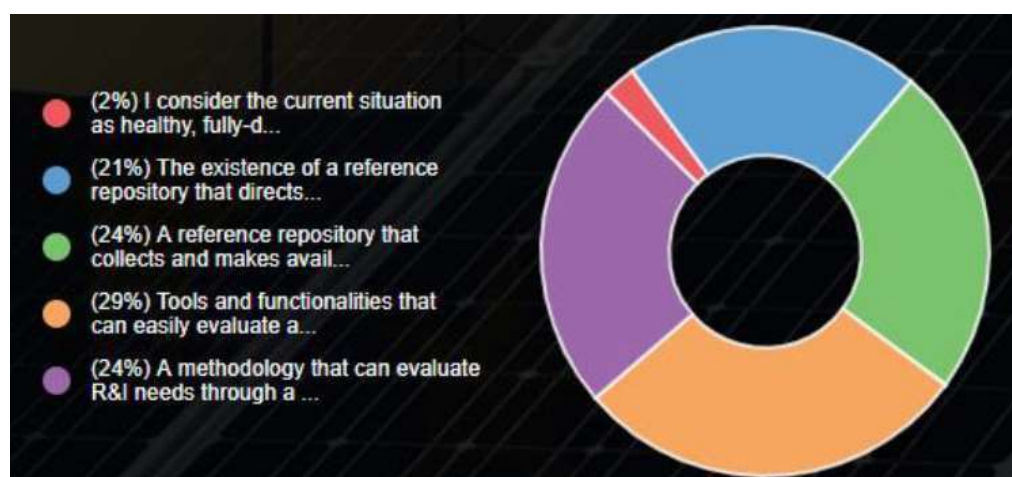


Figure 33: The results of voting question "how do you think this process can be supported?"

The guest to the round table discussions Dr. Nestor Fylaktos representing the Cyprus Institute was asked of the role of the institute in supporting the R&I endeavours of Cyprus for the Energy Transition. Moreover, he was asked to inform the workshop to what degree these research needs

are coordinated at national level and how the process can be improved and be assisted by a platform like EIRIE?

Dr. Nestor Fylaktos has indicated in his response that the Cyprus Institute is quite active in R&I in support of the energy transition but very specific in the field of utilization of solar energy through CSP technologies and related technologies. Going further, Dr. Nestor Fylaktos indicated the rich activities of the institute in research complementing the role that it plays in mobilizing work within Cyprus but also representing this to European institutions. Taking into consideration the prevailing R&I status in Cyprus and the support offered through the activities of the Cypriot Authorities he strongly indicated appreciation of the work done within the PANTERA project in developing EIRIE and the promised functionalities to serve the R&I community of Cyprus and Europe at large.

He positioned himself that he considered the responses of the participants to the questions as realistic and revealing the true situation in Cyprus. He considers that more is needed to be done in Cyprus aligning with the SET plan strategy through more coordinated work in the field. He underlined the fact that R&I community of Cyprus is not supported enough and more coordination work in the field will improve the situation for the benefit of the whole economy.

He was particularly pleased with the work conducted within the Cyprus Institute and the working environment that is cultivated in support of R&I work. He noted that on November 9, 2020 The Cyprus Institute (CYI) received the “HR Excellence in Research” award. This award was established by the European Commission to acknowledge academic and research organizations for their commitment to continuously improve their human resource policies in line with the European Charter for Researchers and the Code of Conduct for the Recruitment of Researchers.

Summary of findings and conclusions of day 1

Mr. Andrei Morch (SINTEF) taking the floor at the end of roundtable 1 expressed his admiration for the achieved results of the first day proceedings. Following a short reference to the opening presentations from Dr. Venizelos Efthymiou and Mr Mario Dionisio he emphasised the importance of having the project of NAVIGANT/GUIDEHOUSE addressing the important project on “RES driving the energy transition: The potential of the Mediterranean Region” that they have conducted for the benefit of the Commission. He gave emphasis through his comments to the findings of the first-round table discussion on identifying areas of concern of the R&I community in the field of energy systems:

- No consistent/unified methodology or approach on identifying the research needs and gaps.
- Progress achieved in R&I is not visible.
- Lack of information on R&I needs and how these are related to the strategic objectives of Cyprus.

He then underlined the important contribution that is planned through the EIRIE platform in providing:

- A reference repository that directs the user to the details of the EU and country strategies,
- Provision of results achieved till today with support for effective utilization,
- Tools and functionalities that can help in evaluating progress achieved.
- A methodology that can evaluate R&I needs leading to required next steps.

Roundtable 2 “An interactive discussion on the Research questions that lie on the road to the energy transition triggered by the priorities set within NECPs”

The main objective of this roundtable was to co-shape the most urgent Research questions to be addressed in the next 5 years. An open interaction with the participants through electronic voting was coordinated by Dr. Rad Stanev from Technical University of Sofia (TUS) who is a partner in the PANTERA project and coordinator of the PANTERA Regional Desk 2 that includes the countries Bulgaria, Romania and Greece. The invited participants to the roundtable 2 were: Mr. Ivan Matejak (SUPEERA), Mr. George Partasides (Ministry), Dr. Antonis Ioulianos (ΙΑΕΚ) and Mr. Tasos Gregoriou (DSO).

Dr. Rad Stanev opened the roundtable with welcoming words for the guests to the panel and the participants and initiated the process of questions to set the scene for discussion.

Question 5 to the audience: “What do you think are the most important strategy goals of Cyprus from those listed in the national NECP?”

- Utilization of wind parks in operation
- Utilization of photovoltaic parks in operation
- Energy Efficiency
- Roof insulation in the building stock
- Deployment of photovoltaic panels
- Deployment of heat pumps for heating
- Utilization of biomass boilers
- Promotion and utilization of high efficiency air conditioning units
- Energy Security
- Optimization and control of the distribution system
- Load and generation forecasting
- Supervisory Control and Data Acquisition of PV systems
- Internal Energy Market
- Load profile management through demand response
- Increased distribution system observability
- Direct participation of customers in all market stages, through aggregation

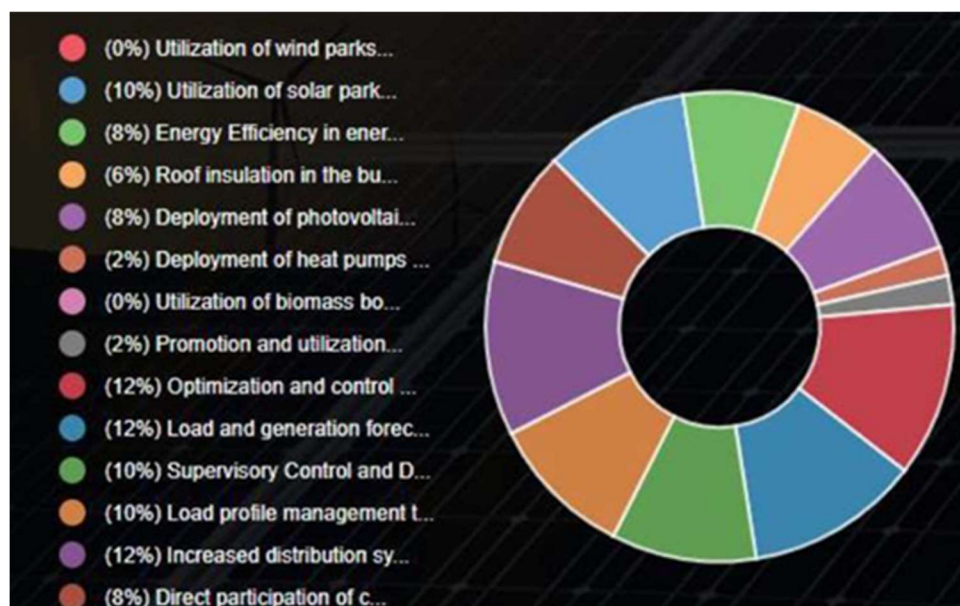


Figure 34: Results for voting to question "what do you think are the most important strategy goals of Cyprus from those listed in the national NECP?"

Mr. Ivan Matejak (SUPEERA) talked on the need to enrich the R&I work in support of the SET Plan process underlined this need and explained how the project SUPEERA can deliver this closely working with the PANTERA consortium. Extending on this need, he underlined the need of each Member State aligning its NECPs with the SET Plan strategy and working closely together to deliver to support national and EU economy. Hence, working on the SET-Plan process countries should align to act as follows:

- To deliver on key objective of the Energy Union, by understanding that the SET-Plan helps to promote cooperation among EU countries, companies and research institutions
- SET-Plan as a strategy for all energy research and innovation in Europe supported the changing of the EU energy system; but more ambitious goals (climate neutral society by 2050)

and new set of policies call for its “revision”

- The redefinition of the SET-Plan priorities in the wider context of the green recovery and the Clean Energy Transition should also seize the opportunity for better integrating the multidisciplinary aspects of the transition

To this effect he identified that

- National and regional R&D funding programs are the main public funding resource for SET-Plan activities
- The final NECPs fail to pay sufficient attention to R&I needs for delivering on climate and energy objectives
- There is an overall decrease in national budgets devoted to R&I in clean energy technologies and a severe lack of national objectives and funding targets that show concrete and relevant pathways to 2030 and 2050
- Most Member States don't specify how national funds and/or activities are allocated under the Implementation Plans in which they are involved and how the SET-Plan and their NECPs are linked

Mr. George Partasides representing the Ministry of Energy of Cyprus was asked to comment on the results of the question to the participants and to justify the selected priorities and where do we stand in Cyprus with the adoption of the required policies? Moreover, how far is Cyprus from achieving the new enabling policies that will allow the set-out strategies within the NECP to materialise and what are the main barriers?

Mr. George Partasides indicated that he represents the Ministry of Energy of Cyprus and from this role he was active in developing the NECP for Cyprus and he finds the responses to the questions as very realistic giving evidence that all identified themes indicated in question 5 as much needed for Cyprus. The emphasis given on optimal operation of the distribution system and forecasting are well justified since they play an important role in the evolution towards the zero-emission economy.

RES is going to grow fast and for this reason we need the system with improved utilization of storage to play an important role in facilitating this transition. They do understand the fundamental need to be in line with the EU strategy expressed through the SET Plan but local national needs are a priority for them and they do give emphasis in their development and utilization.

They are also well aware of the implications of this technology evolution and they are working with experts to develop the systems that will help to implement the right policies for attracting the deployment and utilization of these emerging technologies in support of the shift towards low carbon solutions and meet the strategic objectives of Cyprus.

Panelist Dr. Antonis Ioulianos was brought at this point in the discussion to shed some light on the activities of the funding agency of Cyprus the Research & Innovation Foundation. To this effect he was asked on the main difficulties regarding the national funding of R&I in Cyprus as a process, from initiation through the process to final outreach? Comment also on the outcome of Question 1.

Taking the floor, Dr Antonis Ioulianos gave a few details on the Research and Innovation Foundation (RIF) that he works for, informing the participants that it is the national authority in charge of supporting and promoting research, technological development and innovation in Cyprus.

The RIF was established in 1996, following an initiative by the Government of the Republic of Cyprus, with the initial name of Research Promotion Foundation (RPF). The RIF is a private legal entity structured as a non-profit organization, and is registered as an Institution, under the Societies and Institutions Laws. The significant role of scientific research in modern socio-economic development, as well as the vital need to enhance research activities and infrastructures in Cyprus, were determining factors for the founding of the RIF.

Since its establishment, the Foundation has developed widespread activities at the National,

European and International levels, with a strong focus on the development of national research programs, as well as the representation of Cyprus in European and International programs and organizations. Its current structure was the result of the decision by the Council of Ministers in October 2018, for the overall restructuring of the sector and took over the role of the executive arm of this System.

Dr Antonis Ioulianos gave substantial evidence of the current activities of RIF and the effort exercised in giving to the R&I community of Cyprus the support required for contributing to the wider needs of the Cyprus and European economy in the field of energy. He confessed that gaps in this effort do exist and coordination with policy plans for meeting the 2030 targets of Cyprus can improve. He finds the response of the participants to the relevant question quite fair reflecting the priorities that do exist in achieving the objectives set out. They do realise their responsibilities in filling these identified gaps and they have the will to respond in close cooperation with the other arms of the Cyprus government.

Question 6 to the audience: “What do you think are the most required regulatory/legislation steps that Cyprus should undertake, in order to fulfil and accomplish the NECP priorities?”

- Achieve the fulfilment of the climate neutrality objective, maintaining the consistency with all relevant EU and national policies
- Deploy policies promoting the penetration of RES in electricity generation, in heating, cooling and in transport
- Deploy strategies for the renovation of the building stock (both residential and governmental)
- Increase diversification of energy sources and import routes
- Promote flexibility, storage and response systems, ensuring Cyprus’s power adequacy
- Strengthen electricity and gas interconnectivity with neighbouring countries and upgrade the existing ones

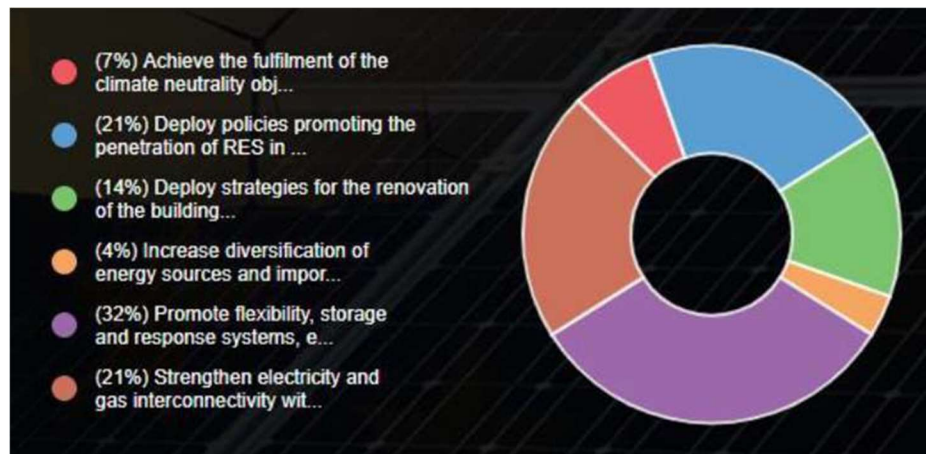


Figure 35: Results for voting to question "What do you think are the most required regulatory/legislation steps that Cyprus should undertake, in order to fulfil and accomplish the NECP priorities?"

The DSO director of Cyprus Mr. Tasos Gregoriou taking the floor and respond to the questions: How we accelerate innovation and implementation of the required technologies by the industry? Do you think we have a satisfactory pace in Cyprus? What are the main barriers?

He commented that DSOs are the key players in the new era of energy transition. The era of decarbonisation of the energy as by 2050 we have to be carbon neutral, the era of decentralisation of the energy as by 2050 all electricity power has to be produced by distributed RES Units, and digitalisation of the energy as the system itself and services provided by DSO's have to go digital. The era of:

- Distributed RES integration

- Dynamic tariffs
- Flexibility
- Active customers
- Big Data
- Disruption and emerging technologies (ET)

Roundtable 3 “The PANTERA initiative in focus: Regional stakeholders discussing their expectations from PANTERA on how PANTERA can facilitate the active collaboration with Research and Innovation stakeholders”

This roundtable was moderated by Dr. Anna Mutule (IPE) and she invited the following participants to contribute to this roundtable: Mr. Fanos Karantonis (OEB), Dr. Nicolas Jarraud (CYI) and Mr. Tasos Tsitsanis (Suite5).

Dr. Anna Mutule took the floor and introduced her role in the PANTERA project and indicated that the main objective of this roundtable is to engage stakeholders to the Regional Desk 3 and agree on further cooperation with PANTERA process.

Question 7 to audience: “What do you think are the main barriers for a regional stakeholder to find funding for their research?”

- Lack of networking
- Lack of information
- Lack of administration capacity
- Lack of a strong regional and EU network
- Other

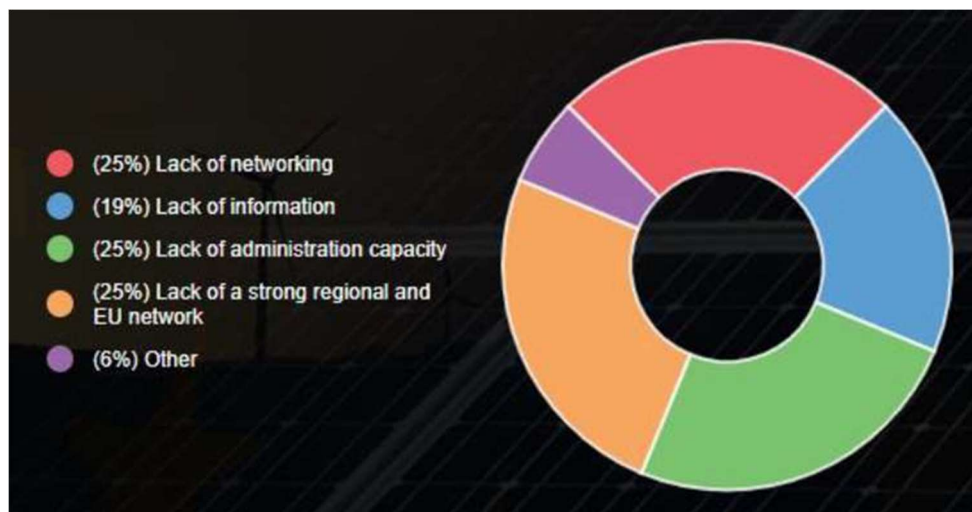


Figure 36: Results for voting to question "what do you think are the main barriers for a regional stakeholder to find funding for their research?"

Mr. Tasos Tsitsanis was called in by the coordinator of the session to comment on the outcome of question 7 as an active stakeholder in Regional Desk 3 and what steps did he go through to overcome the barriers that he has faced?

Mr. Tasos Tsitsanis taking the floor gave some inside for the company he works for which is Suite5. The company is an Information Technology Solutions and Services SME with the mission to deliver innovative data-driven intelligence solutions through state-of-the art technologies. Combining strong technology know-how and hands-on approach in managing and implementing projects commissioned by the public and the private sector, Suite5 provides research-inspired solutions and

practical support for its clients. The research and innovation activities of Suite5 span over a wide spectrum of innovative areas, including Big Data Analytics, Machine Learning, Trusted Data Sharing, Semantics & Data Interoperability, Data Management, while exploring new application domains for high-end IT data-driven solutions.

This expertise knowledge has helped the company to address early difficulties and has successfully gone through a development process that was highly self-controlled with little support from Cyprus or Greece where they are active. For this reason, they do find a lot of value in what PANTERA is doing through the regional desks complemented with the supporting functionalities of the EIRIE platform. Seeing the details of the planned solutions through the EIRIE platform they see important benefits that can be gained and be of real support and value to the R&I community.

In general, they do agree with the opinion of the participants to the workshop expressed through the conducted poll. All identified points through the poll are of fundamental importance to companies like Suite5.

Question 8 to Audience: “What do you think is the most important support that the PANTERA regional activities can give to the stakeholders?”

- Increase the visibility of regional interests and priorities in SG R&I to a wider audience, European associations and the EC.
- Build regional interest in co-funding opportunities in R&I through access to the ERA-NET SES process
- Possibility of being engaged in PANTERA working activities with highly prestigious EU initiatives
- Safeguard access to SET Plan and EC classified information through building up enhanced working relations with ETIP SNET and its WGs
- Strengthen working relations with EC, leading to enhanced possibility to shape the respective EU policies on R&I
- Access to documents and exchange of information between Regional Desks stakeholders and associations via the PANTERA (IT) platform



Figure 37: Results for voting to question "What do you think is the most important support that the PANTERA regional activities can give to the stakeholders?"

Mr. Fanos Karantonis following closely the presentations and discussion was asked to take into consideration the replies to question 8, and inform the participants on how he foresees the role of OEB in strengthening the national stakeholders' network? Moreover, what joint activities he considers appropriate that can be shared with Regional Desk 3 of PANTERA?

Mr. Fanos Karantonis took the floor and informed the participants about the Cyprus Employers & Industrialists Federation (OEB) and the importance that is given to:

- Provide information and update of OEB members on the developments in the field of energy and environment at national, European, and international level.
- Technical and administrative support to members and joined Professional Associations.
- Collection, processing and publication of statistical data in the field.
- Organizing training seminars, events, lectures, thematic days related to energy and the environment.
- Provision of technical advisory support to the sector related issues.
- Develop national and other European co-funded projects on the fields of energy and the environment.
- Promotion of the cooperation of academia and the industry in the field of energy and environment and the development of research and innovation. Cooperation with liaison offices of public and private academic institutions.
- Promotion of the development of new standards and their implementation.

He stressed that as can be appreciated all these activities are central to OEB and OEB would greatly appreciate the initiatives of PANTERA to strengthen this process with other regions through Desk 3. Looking at the responses of the participants in question 8, he indicated that he is aligned with the outcome and he gives a lot of value to the work that is targeted through the work of the project PANTERA and the planned functionalities on the EIRIE platform. As OEB they will be happy to cooperate with PANTERA in this direction and they are ready to build closer links and contribute where required.

Dr. Nicolas Jarraud working for the Cyprus Institute was lastly asked to take into consideration the replies to question 8 and indicate how he foresees the role of CYI in strengthening the national stakeholders' network? Moreover, what joint activities he feels is worth sharing with the Regional Desk 3 of PANTERA?

After a short introduction in his role in Cyprus Institute he has stressed the importance of R&I in the economy of knowledge and especially for Cyprus in strengthening the areas where it matters most. To do this he underlined the important need of building regional cooperation along the lines that PANTERA consortium is working on with central focus on the regional strengths to bring them in focus and collectively work for their progress. Through this work that he considers is central also to the Cyprus Institute, the interests of Cyprus can be promoted and reach European status for capitalizing the much-wanted benefits. As an example, he has indicated the very good work that is currently being done in the area of Concentrated Solar Power (CSP) through the coordinated work of the Cyprus Institute with the support of the Ministry of Energy and other affiliations in Cyprus. Through this good work, access to the corresponding European institutions has been quite fruitful and rewarding.

Dr. Anna Mutule in wrapping up the session asked the panellists as to how happy they are with their regional and EU network?

The panellists Mr. Tasos Tsitsanis, Mr. Fanos Karantonis and Dr. Nicolas Jarraud all converged to characterizing the current situation as weak as compared to the real needs of Cyprus. We do not have strong national representation at national level and at European level. We are doing the minimum in representing Cyprus in the various fora that play a role in strengthening the R&I capacity of Cyprus in the fields that matter most. All have indicated that they enjoy good success in their personal endeavours but these are highly dependent on their own actions and contacts and not on

coordinated work from the Cypriot Authorities. To be fair to all, the authorities in Cyprus are trying and currently showed signs of improvement in both regional and European dimension. However, the work undertaken by the PANTERA project is moving into the correct direction and through EIRIE, opportunities will be enriched and all panellists confirmed that they very much look forward for closer cooperation for mutual benefit.

3.4.4 The workshop's main outcomes

The workshop completed all activities as planned with the active participation of all the stakeholders that have virtually attended the event. Details of the proceedings are given in the paragraphs above and on the website of the PANTERA project as indicated below. However, it is important for the next steps of the project to identify the main lessons learned to base on the plans ahead. Shortly these are:

- The INTERPLAN project was correctly linked to the PANTERA workshop since partners of the consortium of PANTERA are partners to the INTERPLAN project as well and presenting the strengths of the project that were excellently presented by Mr. Ata Khavari and Dr. Christina Papadimitriou to the operators and other policy and utility stakeholders that were attending the workshop is of utmost importance. The real benefit of this is related to the issue of revealing the strengths of R&I work in areas that are so real to the day-to-day operation of the system offering tangible solutions that will make a difference to the quality of work of the system. Hence, the R&I work in solving day to day needs of the industry and the economy receive a boost through such actions and hence stir real interest in policy makers to take more positive action.
- Discussing the country NECPs with the direct stakeholders with the active contribution of EU initiatives gives a dimension of direct contribution to maturing further the needs of the country and taking up sensitive issues for further elaboration. This discussion brings into the open the strengths of R&I in addressing
- The needs of countries in the most optimal way. Hearing the views of the participants through the Glisser tool helped the discussion and made it much more real and direct with positive benefits in all directions.
- The regional work of the PANTERA project that is further supported through the planned visualization and facilitation of the EIRIE platform raised noticeable interest among the stakeholders and policy makers. The discussion that was conducted using the results of the corresponding poll as evidence, gave the very positive message that the PANTERA project is moving in the correct direction and there is evident hope that the interest of the stakeholders will be transformed into real contribution for improved results.

For further information you can find the workshop slides and the relevant report that are publicly available on the PANTERA website⁴.

3.5 Varna (Bulgaria) nano-workshop

3.5.1 Introduction

The PANTERA consortium organised a nano-workshop of 2 hours duration under the auspices of the BULEF scientific conference. This nano-workshop aimed the stakeholders active in the field of research and innovation to join the PANTERA project and its activity. This was organised on the 13th of September 2019 in Varna, Bulgaria.

⁴ <https://pantera-platform.eu/pantera-regional-virtual-workshop-medpower-2020-outcomes/>

3.5.2 Agenda

11:15	Welcome words <i>Rad Stanev (TU Sofia)</i>
11:20	Introducing PANTERA: background, objectives and activities <i>Rad Stanev (TU Sofia)</i>
11:45	Roundtable discussion: Smart Grids Research and Innovation Status in Bulgaria: gap analysis, opportunities and needs <i>Yulian Rangelov (TU-Varna), Mediha Hamza (TU-Varna), Rad Stanev (TU Sofia), Nikolay Nikolaev (TU-Varna) with all the participants</i>

3.5.3 The workshop's main Outcomes

The event was organized on a voluntary basis at zero cost with the support of the Electrotechnical Faculty of TU-Sofia, the PANTERA team, and proactive PANTERA stakeholders from TU-Varna who participated previously in the first PANTERA regional workshop held on the 2nd of July 2019 in Sofia, Bulgaria.

Along with presenting a conference paper dedicated to the PANTERA process, a PANTERA sub-session and roundtable discussion was organised. Dr. Rad Stanev (TU-Sofia) opened the event with welcome words and introduction to the PATERA project describing its background, objective, concept and mode of operation. The first PANTERA workshop held in Sofia and the main results and lessons learned from that event were presented. Then, following a description of the main benefits and expectations from joining the PANTERA process, a roundtable discussion facilitated by representatives of TU-Sofia and TU-Varna was made. The discussion was dedicated to the R&I status in Bulgaria in the field of smart grids, energy storage, flexibility and local energy systems. The participants provided valuable feedback on the bottlenecks hindering the R&I activities and gave their expectations from PANTERA. Some ideas and opportunities for collaboration were also exchanged.

The main outcomes from the first PANTERA nano workshop are:

- The nano-workshop concept is very promising and highly productive: it is easy to be organised, time and cost efficient, and excellent for team work in small groups;
- The event continued the dialogue with the energy sector stakeholders on how the PANTERA project could help in strengthening R&I activities in EU, in support of building a stable and resilient Pan-European energy system, aligned with the effort for achieving the energy transition and the low carbon economy.
- More than 15 participants in the energy sector were informed about the PANTERA activities;
- 5 new participants indicated their interest to become PANTERA stakeholders and participate actively in the process;
- Some of the PANTERA stakeholders who participated in the first workshop in Sofia supported the process of organizing the nano-workshop and actively collaborating during the event. This had a very positive influence on the involvement of "new" stakeholders.

4 Conclusions and Future Outlook

4.1 Conclusions

The PANTERA consortium managed to organise three physical workshops, one nano-workshop and one virtual workshop. The regional workshops focused on identifying the main challenges and gaps that the regions face and try to present solutions and best practices to tackle those gaps. Furthermore, through them the consortium worked for identifying and establishing communication links with local R&I stakeholders active in the fields of smart grids, storage and local energy systems to boost the research and innovation in the smart grid energy field with a specific focus on the countries which are less active in R&I.

The first PANTERA regional workshop took place in Sofia, Bulgaria on the 2nd of July 2019. This workshop focused on exchanging experience and knowledge between members of R&I community. Furthermore, it brought the stakeholders active in the Smart grids, storage and local energy systems from Balkan region under the same umbrella facilitated by PANTERA to leverage synergies and maximize benefits.

The PANTERA objectives and process were presented to the participants, followed by several presentation presenting the R&I policy at EU level and national level too in the Balkan region. Moreover, best practices in the region were highlighted. The regional workshop ended with an interactive SWOT analysis with the participants to identify the strengths, weaknesses, opportunities and threats that the Balkan region faces.

The second PANTERA regional workshop took place in Dublin, Ireland on the 2nd of December 2019. This workshop focused on Ireland's smart grid, energy storage and local energy systems landscape: research & innovation roadmap. This workshop focused on the Irish case studies in which Smart grid, Energy Storage and Energy System projects were presented from new entrants, DSO, TSO and research organisations.

Moreover, the PANTERA project and its platform were presented and discussed with the participants, giving them the opportunity to give early feedback on the architecture of the EIRIE platform and the planned functionalities, which helped the PANTERA consortium to prioritise the required functionalities for the platform based on the needs of the smart grid R&I community.

The third PANTERA regional workshop took place in Athens, Greece on the 13th of February 2020. This workshop focused on the challenges and barriers, along with the best practices and future steps towards greening geographical islands and transforming them to 100% renewable energy systems with the support of technologies that enable their smart autonomous operation.

The Athens workshop was closed with an interactive session around the PANTERA platform addressing progress, achievements, mode of working and delivering, expectations and current issues that are of interest to the participants of the workshop.

Due to COVID-19 pandemic limitation, the PANTERA consortium had to held the fourth workshop virtually. It took place on the 10th and 11th of November 2020 during MEDPOWER 2020 conference. This workshop tackled different aspects related to the energy transition needs to be addressed in order to contribute efficiently to the Energy targets of EU. The status of smart grids regional evolution was presented. In addition to that the use cases covering technologies, such as energy storage, demand response, renewables and electric mobility were highlighted.

Three roundtables took place during the two days of the workshop, allowing stakeholders and participants to actively share their opinion via an electronic voting tool (Glisser). This interactive approach was highly efficient as it made it possible to have intensive talks with the participants contributing on crucial subjects such as identifying areas of concern of the R&I community in the energy systems field in Europe.

In addition to the four workshops that were organised, a nano-workshop was organised in Varna, Bulgaria on the 13th of September 2019 during BULEF 2019 International conference. During this workshop the PANTERA project and its process were presented, followed by a roundtable. The discussion was dedicated to the R&I status in Bulgaria in the field of smart grids, energy storage, flexibility and local energy systems. Furthermore, the participants provided valuable feedback on the bottlenecks hindering the R&I activities and gave their expectations from PANTERA.

The PANTERA consortium planned to organise further regional workshops, but due to the COVID-19 pandemic limitation, some of those workshops had to be postponed to 2021.

Based on the lessons learned from the conducted workshops, both physical and virtual and in addition to the above, we consider the following enrichments for future workshops:

- For questions posed to attendants through Gliser tool, an answer for 'Other reasons' and an entry field to manually type the answer will be included. This planned additional option will help the PANTERA consortium to identify possible gaps, problems or needs that were not previously identified.
- The SWOT analysis activity held in the first regional workshop showed to be very positive for feedback collection on the targeted country. Thus, we plan to design such an exercise to be suitable for the Virtual Workshops to maximize the feedback that we as consortium can generate from the good and rich mixture of stakeholders participating on the online virtual workshops.
- For future workshops we will try to filter responses by countries participating at the workshops through the provided online tool, taking of course into consideration all the precautions related to data protection of the attendants. We will try to do that aiming to bring to the forefront the specificities of each country separately provided that benefits transpire through this exercise.

4.2 Future Outlook

The PANTERA consortium is planning to organise at least five regional workshops and webinars in 2021, in addition to the Pan-European workshops. The PANTERA consortium will try its best to organise those events physically whenever it is possible, never the less all the events will be accessible virtually too.

The first event that is scheduled for 2021, will take place virtually and it would focus on the big data and data management within the Smart grid domain. This event will be organised by UCD in February 2021.

The second and third events are scheduled to take place during ELMA 2021 conference, June 2021 and BULEF IEEE Conference, September 2021.

The fourth event is scheduled to take place in Riga, Latvia during the second semester of 2021. This workshop would focus on the Energy transition in the Baltic states and the funding opportunities for Smart Energy Research and Innovation.

The fifth event is scheduled to take place in Croatia during the second semester of 2021. This event would focus on identifying the key challenges that the PANTERA regional desk 5 (Italy, Hungary and Croatia) are facing and promote best practices in their planned activities.

- For questions posed to attendants through Gliser tool, it could be added an answer for 'Other reasons' and an entry field to manually type the answer. That option may help PANTERA consortium to identify some gaps, problems or needs that were not previously identified.
- SWOT analysis activity held in the first regional workshop showed to be very positive for feedback collection on the targeted country. It could be thought any idea to perform it also

for Virtual Workshops.

- For those workshops in which there will be attendants from different countries under the same regional desks, if possible (data protection under consideration and technically feasible), it should be introduced any way to collect Gliser feedback filtered by country.

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Annex

List of Figures

Figure 1: SWOT analysis with the stakeholders	7
Figure 2: The results of voting question "What are the limitations that you face in the available valid information to support your R&I endeavours in support of the Energy Transition?	10
Figure 3: The morning session of the Sofia workshop	16
Figure 4: Dr. Rad Stanev welcoming the participants to Sofia workshop	17
Figure 5: Dr. Venizelos Efthymiou (PANTERA coordinator) presenting the project and its objectives	17
Figure 6: Ms. Veneta Tsvetkova presented the Bulgarian Energy policies and vision	18
Figure 7: Mr. Mario Dionisio (DG ENER EC) introducing the EC R&I policy, trends and challenges	18
Figure 8: Mr. Sebastian Gras (Policy Officer - EC) presenting the European Connecting facility... ..	19
Figure 9: Dr. Luciano Martini (Chairman of EERA JP for SG)presenting Pan-EU R&I community	19
Figure 10: Dr. Christina Papadimitriou (FOSS) and Mr. Andrei Morch (SINTEF) presenting the PANTERA promises and expectations.....	20
Figure 11: Group photo for PANTERA Sofia's workshop.....	20
Figure 12: SWOT analysis with the stakeholders	20
Figure 13: Some of the Dublin Workshop Participants	25
Figure 14: Dublin Workshop Presenters left to right Prof Andrew Keane (UCD), Dr Paula Carroll (UCD), Dr Terence O'Donnell (UCD), project officer Mr. Mario Dionisio, consortium leader Dr Venizelos Efthymiou, and Dr Eamonn Lannoye (EPRI).....	26
Figure 15: Dr. Eamonn Lannoye (EPRI) at the Dublin Workshop	27
Figure 16: Dr. Jon O'Sullivan (EirGrid) at the Dublin Workshop	29
Figure 17: Dr. Fabiano Pallonetto leading the roundtable discussion	29
Figure 18: Participants during the round-table discussion	30
Figure 19: The 3rd PANTERA workshop, hosted by Suite5, was held in N.J.V. Athens Plaza Hotel, Syntagma Square	32
Figure 20: Mr. Tasos Tsitsanis (Suite5) welcoming the attendees of the workshop.....	33
Figure 21: Prof. Nikos Hatziaargyriou (NTUA/ETIP SNET) presenting the ETIP SNET's	34
Figure 22: Dr. Venizelos Efthymiou (FOSS) analyzing the PANTERA process	35
Figure 23: Mr. Mario Dionisio elaborating on EU Policies and Strategy towards sustainable energy systems	36
Figure 24: Mr. Kostas Komninos during his presentation	37
Figure 25: The results of the voting	37
Figure 26: Mr. Georgios Messinis (Ariadne Interconnection) describing the role of interconnections	

in achieving the energy transition.....	39
Figure 27: The results of the voting.....	40
Figure 28: Mr. Dimitris Kitsikopoulos (ELECTRA) offering his thoughts on the emergence of Energy Communities.....	41
Figure 29: The results of voting.....	44
Figure 30: The results of voting question "how do you identify the R&I needs in support of the energy transition strategy of your country?".....	50
Figure 31: The results of voting question "to what degree your country R&I needs are related to the SET Plan process?".....	50
Figure 32: The results of voting question "What are the limitations that you face in the available valid information to support your R&I endeavours in support of the Energy Transition?".....	51
Figure 33: The results of voting question "how do you think this process can be supported?".....	51
Figure 34: Results for voting to question "what do you think are the most important strategy goals of Cyprus from those listed in the national NECP?".....	53
Figure 35: Results for voting to question "What do you think are the most required regulatory/legislation steps that Cyprus should undertake, in order to fulfil and accomplish the NECP priorities?".....	55
Figure 36: Results for voting to question "what do you think are the main barriers for a regional stakeholder to find funding for their research?".....	56
Figure 37: Results for voting to question "What do you think is the most important support that the PANTERA regional activities can give to the stakeholders?".....	57

List of Tables

Table 1: Regional desks and the responsible partners.....	13
Table 2: The PANTERA regional workshops that took place during 2019 and 2020	13
Table 3: SWOT analysis	21
Table 4: List of strengths in the SWOT analysis.....	21
Table 5: List of weaknesses in the SWOT analysis	22
Table 6: List of opportunities in the SWOT analysis	23
Table 7: List of threats within SWOT analysis	23