



3rd Regional PANTERA Workshop

Green Islands as a driver for the Energy Transition -
Going Renewable and Smart

@NJV Athens Plaza Hotel

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Table of Contents

1. Introduction and Welcome Address	1
2. Research and Innovation priorities for facilitating the Energy Transition and the realization of the future Smart Island Energy Systems.....	2
3. The PANTERA Process	3
4. EU Policies and Strategy on the way to Autonomous and Sustainable Energy Systems in Geographical Islands	4
5. Local governance to enable the clean energy transition of Greek islands: Best Practices, Barriers and the way forward.....	5
6. The role of interconnections in achieving the energy transition: The case of Greek islands and the way forward.....	7
7. Increasing social acceptance through collaboration: The emergence of Energy Communities - Lessons Learned and replication routes for island communities	10
8. Digitalization as an enabler for the energy transition	12
9. Conclusions	15

1. Introduction and Welcome Address

The regional workshop organized by the PANTERA project in Athens, 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.

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 will be included in the dedicated deliverable D4.1.



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



Mr. Tasos Tsitsanis (Suite5) welcoming the attendees 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.

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



Professor Nikos Hatziargyriou (NTUA/ETIP SNET) presenting the ETIP SNET's

Professor Nikos Hatziargyriou 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)

3. 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 carbon economy, heading to a sustainable future as it affects all sectors: regions, industries, consumers, in compliance with Vision 2050.

After the completion of Dr. Efthymiou's presentation, 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 and R&I investments, laying that way the floor to Mario Dionisio, representative of the European Commission.



Dr. Venizelos Efthymiou (FOSS) analyzing the PANTERA process

4. EU Policies and Strategy on the way to Autonomous and Sustainable Energy Systems in Geographical Islands

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

- Horizon 2020 and beyond
- The energy transition
- PANTERA vision



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

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.

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



Mr. Kostas Komninos during his presentation

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.

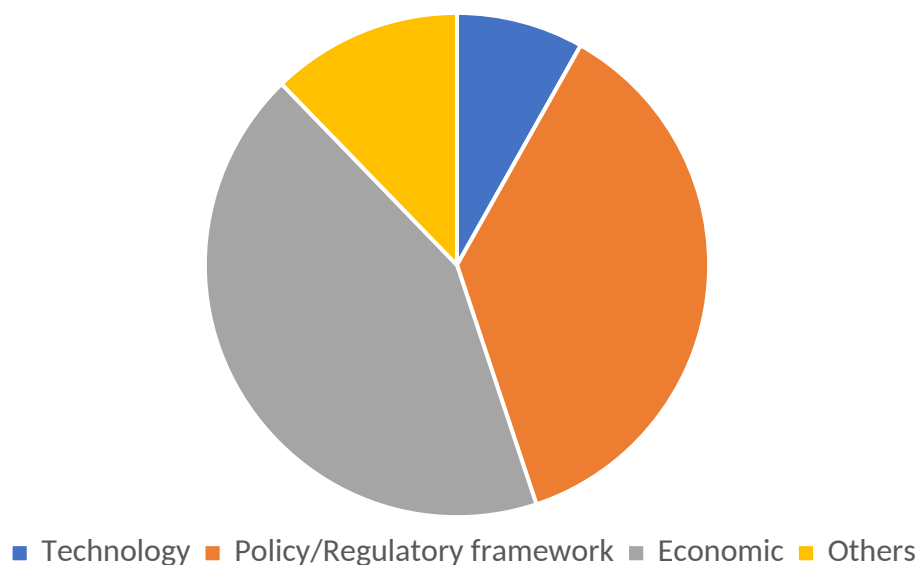
Professor Rad Stanev from TU-Sofia pinpointed, inter alia, that although Bulgaria does not have any geographical islands, the same challenges are encountered with the ones that Mr. Komninos presented regarding the islands power systems.

Professor 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.



Mr. Kostas Komninos answering questions raised by the attendees

Mr. Mohamed Shalaby from DERlab at that point, asked the attendees to engage in the process of the workshop, by giving them the opportunity through a 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 to challenge towards the 100% RES penetration in geographical islands.



The results of the voting (49 votes)

As a next step, 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 21 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

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

The 3rd keynote presentation was held 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

- Reliability of interconnection
- Surrounding environment for the interconnection
- Cable Industry

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

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



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

Upon concluding his presentation, Mr. Messinis answered some questions that were raised by the workshop attendees, before giving the floor to Professor 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.

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

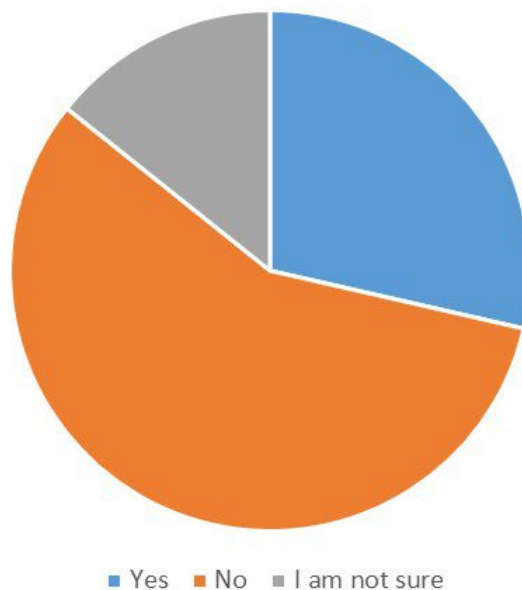
- high energy intensiveness of the gross national product
- strong dependence on energy supplies from a single supplier (Russian Federation)
- structural economic reforms insufficiently coordinated with national interests

- 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 once more on the Glisser interactive voting system, on whether the interconnections of the islands to the mainland hindering green investments in the islands; the results of the 21 received votes can be displayed as follows:



The results of the voting (21 votes)

7. 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.



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

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 (eg 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

capitalizing from the transfer of knowledge and best practices that would support the energy transition to smart grids.

On behalf of the Bulgarian experts taking part in the workshop, Professor 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.

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 21 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

8. Digitalization as an enabler for the energy transition

The 5th keynote presentation was held by Professor 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:



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

- 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./

He also mentioned what are the essential gaps and challenges in Resources, Governance, Regulations, Networking, etc.

On the matter of Resources, Professor 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 favorable conditions for local energy communities 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 Professor Georgiev's presentation, Professor 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 trully 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. Hence, the results of 42 votes received are displayed in the following chart.



The results of the voting (42 votes)

9. Conclusions

At the end of the workshop, a roundtable discussion took place amongst the attendees, on how the PANTERA platform can act as a link to Regions, Working Teams and R&I community, in accordance to the EU needs. This discussion brought into focus the vision of the PANTERA multifunctional platform, the importance of generating best-practice-based guidance for the resolution of specific problems and needs raised by the members of the PANTERA Collaborative Platform, the living document repository and how the knowledge generated from project reports, deliverables, etc., will be available and accessible to all users at any given time and period.