



StoRES

Promotion of higher penetration of Distributed PV through storage for all

Priority Axis 2: Fostering low-carbon strategies and energy efficiency in specific MED territories: cities, islands and remote areas

2.2: To increase the share of renewable local energy sources in energy mix strategies and plans in specific MED territories

Deliverable n°: **4.3.1**

Deliverable Name: **Organization of workshops/meetings in each participating country**

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5. Project Summary

The project addresses the development of an optimal policy for the effective integration of Renewable Energy Sources (RES) and Energy Storage Systems (ESS). The primary challenge is to achieve increased penetration of RES and predominantly Photovoltaics (PV), in the energy mix of islands and rural areas in the Mediterranean (MED) region without compromising grid stability. The main objective of StoRES is to boost self-consumption in the MED region with the integration of optimal storage solutions. Testing coupled PV-ESS solutions in different pilot sites and taking into account local particularities for optimization, current barriers concerning grid reliability with higher RES deployment will be eliminated. In addition to this, the development and integration of the proposed solution at both residential and community levels and the application of different policy scenarios will lift the barriers related to the grid integration of ESS and will extend the practical knowledge about this technology. It is expected that all the shortcomings regarding the intermittent nature of PV energy for increased penetration into the energy mix will be addressed whilst maintaining smooth operation of the grid.

The project started on the 1st of November 2016 and is expected to be completed within 36 months.

6. Introduction to Deliverable 4.3.1

This deliverable covers all the dissemination activities performed by project partners with regards to workshops and meetings. In each country, different events with a varied content have been organised, These events were attended by several participants from various areas of the energy sector.

The purpose of organizing the abovementioned workshops was to effectively rollout the results of the project to interested stakeholders. This deliverable consists of a report describing the relevant aspects of the organization and the main conclusions.

7. Cyprus

The Workshop in Cyprus was held on Wednesday, 5th June 2019, by the FOSS Research Centre for Sustainable Energy of the University of Cyprus (UCY). It was entitled "*Energy Day: The Role of Battery Storage Systems in our Future Energy Mix*" and took place at the university facilities in Nicosia.

The event was free, open to the public and initially limited to 20 places, as it was aimed to serve a discussion between interested parties. However, due to the high amount of interest for participation the days before the event, which was revealed by the increased number of participation applications (more than 20 individual applications), it was decided that the event would be open to the public without any limits for attendance.

7.1 Calendar of the workshop & target audience

The workshop was held on Wednesday, 5th June 2019 and it lasted for more than 2.5 hours. The target audience of the event consisted of several stakeholders, such as the local Distribution System Operator (DSO) and Transmission System Operator (TSO), governmental authorities, municipalities, service providers, the scientific community, other interested parties and the general public.

7.2 Index and content of the workshop

The main context of the workshop was to disseminate the results of the StoRES project. Moreover, the workshop aimed to describe the effectiveness of the use of ESS coupled with PV systems, underlying the gained know-how and the barriers faced during the project, in order to encourage discussion on the use of the storage at domestic level and facilitate the spread of such technology in Cyprus.

The workshop was structured as follows:

- **17.00-17.15: Registration and Welcome Coffee**
- **17.15-17.30: Introduction to PV + Energy Storage Systems**
Welcome note by the Director of FOSS and introduction to current PV+ESS application.
- **17.30-18.00: Different Configurations and System Implementation**
Presentation of the different topologies of PV+ESS, the implemented systems in Cyprus and their preliminary results.
- **18.00-18.30: Demonstration of FOSS PV+ESS Pilot**
An interactive demonstration to the participants of the PV+ESS pilot at the PV Technology Laboratory.
- **18.30 – 19.00 Where is the PV+ESS heading to?**
Discussion on the future exploitation of residential PV+ESS.
- **19.00 – 19.15 Closing Remarks**

The workshop was held in three different places. The first one, where the participants initially arrived and all the oral presentations were held, was a large room suitable for presentations to big audience at the New University Campus of the UCY. There, a projector and all the other necessary equipment were used to present the information (in MS PowerPoint presentations) in a coherent and non-too technical way. Next, after the end of the presentations, the workshop was transferred to the facilities of the PV Technology Laboratory of the UCY, where the online portal for system monitoring and data collection of the pilots was presented. In addition, the StoRES Online PV and Storage Optimization Tool (<http://storestool.eu>) and the StoRES Living Lab (<http://www.stores-livinglab.eu/>), both resulted from the project, were demonstrated gaining significant attention. Finally, the workshop was concluded at the location where the Laboratory PV+ESS Pilot is established. There, the pilot system was introduced to the participants.

The workshop was held by the Director of the FOSS Research Centre for Sustainable Energy, Prof. George E. Georghiou, Dr Konstantina Panagiotou (post-doctoral researcher, Special Scientist/Electrical Engineer at FOSS) and Mr Nikolas Chatzigeorgiou (doctoral researcher and Special Scientist/Electrical Engineer at FOSS).

Figure 1 introduces the agenda of the workshop.





Energy Day

The Role of Battery Storage Systems in our Future Energy Mix

05 June 2019
FOSS, Research Centre for Sustainable Energy,
University of Cyprus, Nicosia

Cyprus' reliable sunshine makes it an ideal location for using Photovoltaics (PV) and thus making electricity generation and management of our own resources possible for everyone. In the near future, a considerable amount of intermittent solar generators will be connected in the electrical grid posing new challenges, in terms of secure and reliable grid operation. Therefore, it is crucial to boost PV self-consumption through optimal storage solution. The storage system allows the user to increase self-consumption from PV generation whilst controlling the amount of PV energy injected into the grid, thus not only avoiding grid congestion but also allowing for more PV installations. Citizens can turn into active prosumers, enabling the effective use of electricity grids, providing cost-effective options for a more affordable and sustainable energy supply. Empowering consumers to be active not only has a positive impact on the electricity network, but also our environment in general. We think big, start small, from residential, rural regions.

Join us for the 'Energy Day' to learn more about the latest developments in battery storage systems.

AGENDA

17.00 – 17.15	Registration and Welcome Coffee	
17.15 – 17.30	Introduction to PV + Energy Storage Systems (ESS) Welcome note by the director of FOSS, and introduction to current PV+ESS application.	Prof G.E.Georgiou
17.30 – 18.00	Different Configurations and System Implementation Present the different topologies of PV+ESS, the implemented systems in Cyprus and preliminary results.	Mr N. Chatzigeorgiou
18.00 – 18.30	Demonstration of FOSS PV+ESS Pilot Interactive. Participants will be shown how the PV+ESS pilot at PV Technology Lab works.	Mr N. Chatzigeorgiou / Dr K. Panagiotou
18.30 – 19.00	Where is the PV+ESS heading to? Discuss the future exploitation of residential PV+ESS.	Dr K. Panagiotou
19.00 – 19.15	Closing Remarks	Prof G.E.Georgiou

The event will take place at the Photovoltaic Park, University of Cyprus (see map attached) and is free and open to public. The event is limited to 20 places.

RSVP by 31 May 2019 via email: foss@ucy.ac.cy or telephone: 22-892211.

Figure 1: Agenda of the workshop in Cyprus.

7.3 Results

The target audience of the event was, among others, the local DSO and TSO, governmental authorities, municipalities, service providers (i.e. installers, engineers), the scientific community (i.e. professors and students in universities, research institutes, etc.), other interested parties and the general public.

A satisfaction survey, as it can be seen in Figure 2, was provided to the audience to be filled after the end of the workshop.



EVALUATION SURVEY

Energy Day: The Role of Battery Storage Systems in our Future Energy Mix

Please complete the evaluation survey for today's 'Energy Day'. Your feedback is valuable to us to ensure that we organize events that are effective and informative to you. The survey is optional and all data provided will be used anonymously.

Surname, Name (Optional) _____

Contact email (Optional) _____

Occupation _____

Please rate your level of agreement with the statements below (*please tick one box per statement*):

	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
The Energy Day met my expectations	☐	☐	☐	☐	☐
Length of Energy Day was sufficient	☐	☐	☐	☐	☐
Energy Day content was well organized	☐	☐	☐	☐	☐
Presentations were effective	☐	☐	☐	☐	☐
My knowledge on Energy Storage System increased as a result of the Energy Day	☐	☐	☐	☐	☐

What did you like most about the 'Energy Day'?

What aspects of the 'Energy Day' could be improved?

Other comments

Figure 2: Satisfaction survey template in Cyprus.

7.3.1 Analysis of participation

The total number of participants was 47, twice more than it was initially planned. More specifically, 35 individuals were external participants and 12 were FOSS members, either related to the project or not at all. Most of the participants (10) had a background in Electrical Engineering. In

addition, engineers from other sectors such as Mechanical Engineers, Network Engineers, Architects, as well as managers, directors, officers, etc. also participated. Furthermore, most of the participants came from private companies (11). The second most popular organization of participants was the Electricity Authority of Cyprus (8).

Figure 3 illustrates the evaluation survey summary. In general, it can be seen that the workshop received very good comments regarding all the evaluation parameters below and met the expectation of the audience to the greatest possible extent.

Evaluation Survey Summary

Statements	Number Responses	Mode	Average
The Energy Day met my expectations	12	1	1.3
Length of Energy Day was sufficient (1 = Strongly Agree, 5 = Strongly Disagree)	12	2	1.8
Energy Day content was well organized (1 = Strongly Agree, 5 = Strongly Disagree)	12	1	1.4
Presentations were effective (1 = Strongly Agree, 5 = Strongly Disagree)	12	1	1.4
My knowledge on Energy Storage Systems increased as a result of the Energy Day (1 = Strongly Agree, 5 = Strongly Disagree)	12	2	1.8

Figure 3: Evaluation survey summary in Cyprus.

Specifically, among the aspects that gained the positive opinion of the participants were the effectiveness of transferring the speakers' knowledge to the audience, the detailed explanation of storage systems and its future potential in the grid, as well as the good rhythm and relation of presentations. Some improvement recommendations from the audience regarded the use of more real data and examples as case studies, as well as giving more emphases on real bottlenecks of battery storage.

Figures 4-7 present some photos during the Workshop.



Figure 4: Opening presentation during the Workshop in Cyprus.



Figure 5: Presenters during the Workshop in Cyprus.



Figure 6: Discussion during the Workshop in Cyprus.



Figure 7: Demonstration of tools during the Workshop in Cyprus.

8. Greece

A workshop and a training session for stakeholders and policymakers took place in Thessaloniki. The event was organized by the Aristotle University of Thessaloniki (AUTH), aiming to discuss the advantages and the challenges of electrical energy storage systems integration with PVs, based on the outputs of the project activities and the experience gained so far through StoRES.

8.1 Calendar of the workshop & target audience

A workshop under the title “Towards energy systems of tomorrow and the role of electrical energy storage” was held in Thessaloniki on the 10th June 2019 and included presentations by the AUTH and other invited speakers, while the prospects of electrical storage penetration in Greece were discussed in a round table. Invited speakers included representatives from the Greek DSO and other projects related to energy storage. More than 40 people attended to the workshop and the training session, including DSO representatives, policymakers, academia, researchers and engineers, along with representatives from private companies and electricity providers.

8.2 Index and content of the workshop

During the first session of the workshop, the presentations of the StoRES partners and invited speakers were held, as shown in Figure 8. Firstly, a brief description of the StoRES project was provided, including information regarding challenges of electrical ESS integration with PVs, StoRES primary goals, as well as representative outputs and results from the project’s pilot activities. Subsequently, technical specifications for the installation of electrical ESS were presented, by a representative of the Greek DSO, for the prosumers that produce electricity using either RES or high efficiency combined heat and power plants. Furthermore, the project PEGASUS which promotes the efficient generation and the sustainable use of electricity by applying microgrids was introduced. Finally, plans and actions, which could be adopted by municipalities and could lead to an increase in energy savings and exploitation of renewables, were presented. After the presentations part, the attendants had the opportunity to participate in a round table, discussing all the above-mentioned issues.



Figure 8: First session – speakers' presentations.

At the second part of the workshop, a training session for the stakeholders was conducted, including hands-on experience on the use of the StoRES Online PV and Storage Optimization Tool through an interactive lab, as depicted in Figure 9. It should be emphasized that the presented optimization tool is the one developed within the framework of the StoRES project. The goal of the abovementioned tool is to provide relevant information to interested stakeholders, investors and researchers regarding the optimal sizing of a hybrid PV and storage system in terms of Net Present Value (NPV), based on several input parameters. Various results taking into consideration technical and financial parameters of Greece, as well as considering different options of energy policies, have been presented to the participants of the training session. Note that the training session and the demonstration of the StoRES Online PV and Storage Optimization Tool, was held by researchers of AUTH, who have previously contributed to its development.



Figure 9: StoRES Online PV and Storage Optimization Tool demonstration.

8.3 Results

As previously mentioned, the workshop was attended by DSO representatives, policymakers, academia, researchers, as well as representatives from private companies and electricity providers. It should be mentioned that the outputs of the workshop were announced by the local and national press and television.

In addition, according to Figures 10 – 15, participants assessed the event activities with the highest score available in the event evaluation forms. As illustrated in the following graphs, the workshop met participants' expectations; specifically, the majority of the participants were more than satisfied with the organization of the workshop and its duration. Furthermore, from the survey analysis it is evident that the technologies employed at the workshop have been of a great success, as most of the participants were totally satisfied with the content of the presentations presented within the framework of the workshop, but also with the interactive session where the StoRES Online PV and Storage Optimization Tool was demonstrated. Finally, it is worth noticing that many participants indicated that their knowledge on the challenges of electrical ESS integrated alongside with PVs, have been improved after the end of the workshop.

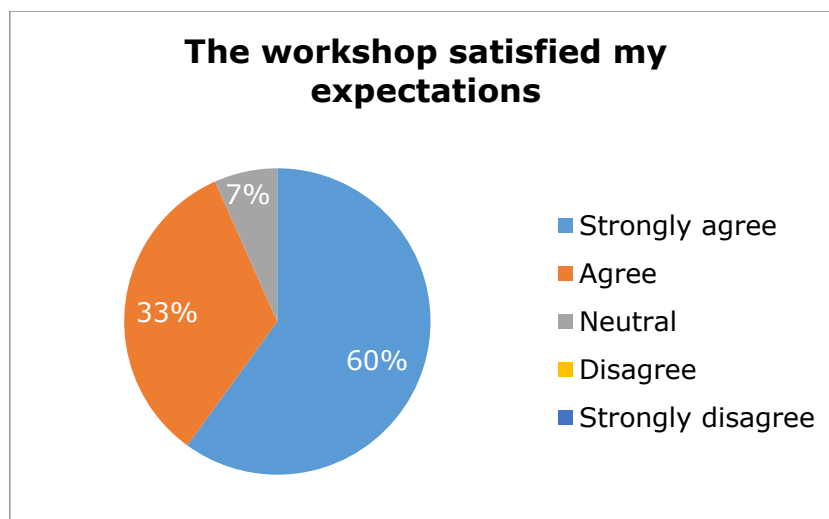


Figure 10: Workshop satisfaction survey.

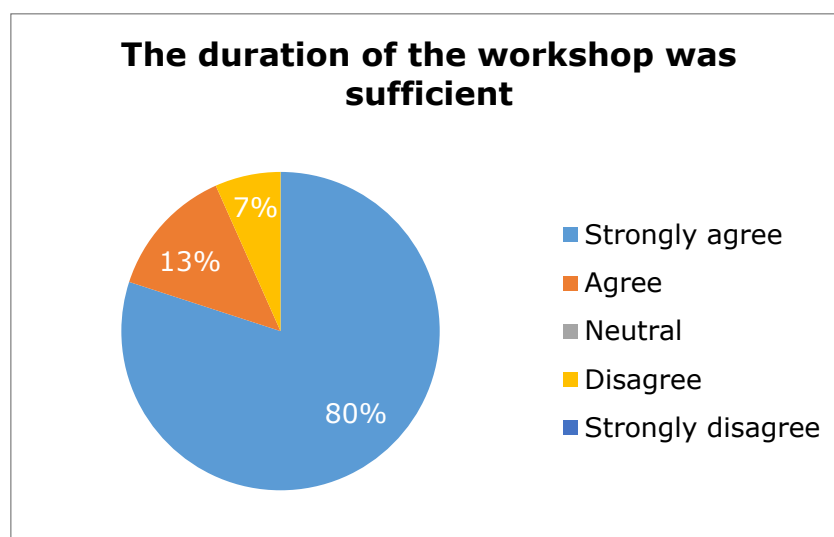


Figure 11: Duration of the workshop satisfaction survey.

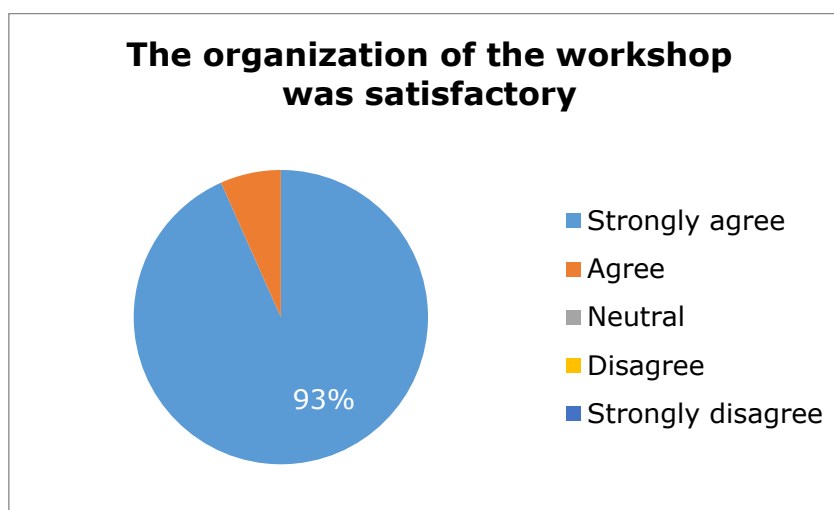


Figure 12: Organization of the workshop satisfaction survey.

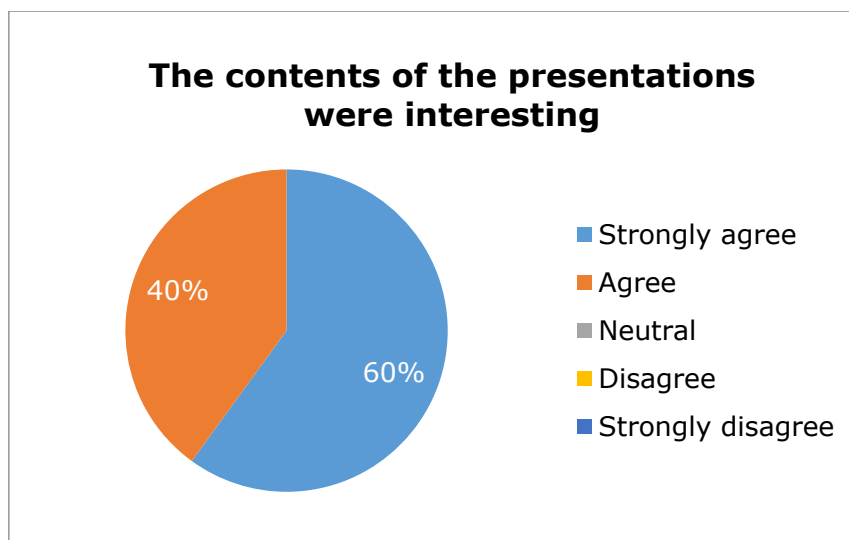


Figure 13: Workshop's presentations satisfaction survey.

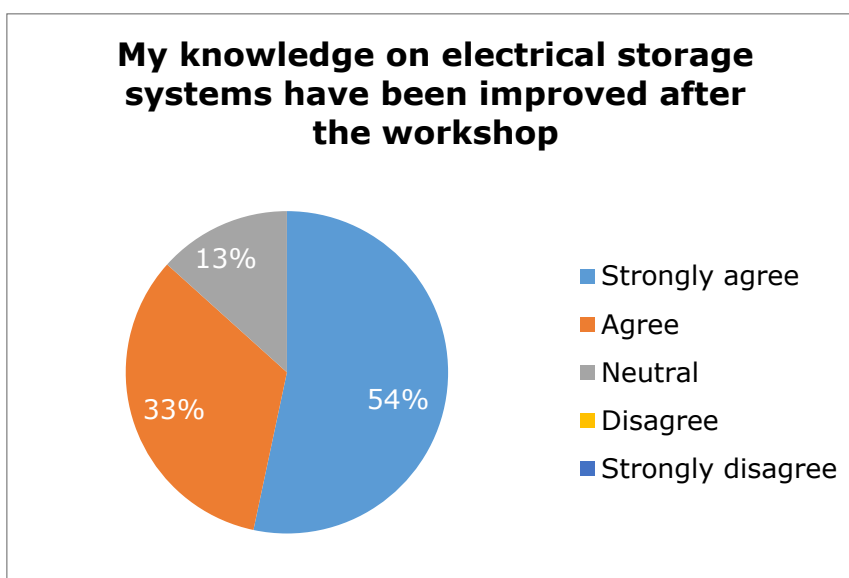


Figure 14: Improvement of knowledge on ESS satisfaction survey.

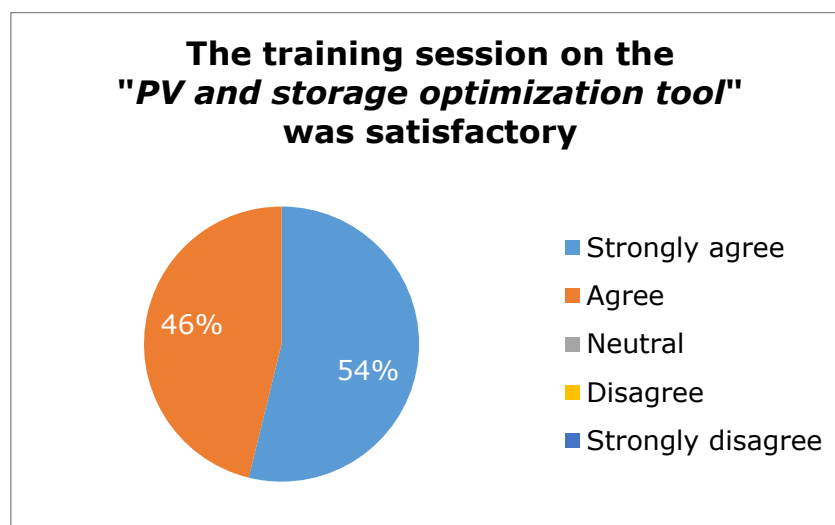


Figure 15: Training session satisfaction survey.

In Figure 16, a detailed breakdown of the participants who attended the workshop and thus completed the satisfaction surveys is provided. As depicted in Figure 16, the majority of the attendees were academics and representatives from private companies and the Greek DSO. Nevertheless, several policymakers and representatives from other electricity providers apart from the Greek DSO participated in the workshop. Finally, it is noteworthy that other attendees, such as journalists from the local and national press and television, were also present during the workshop.

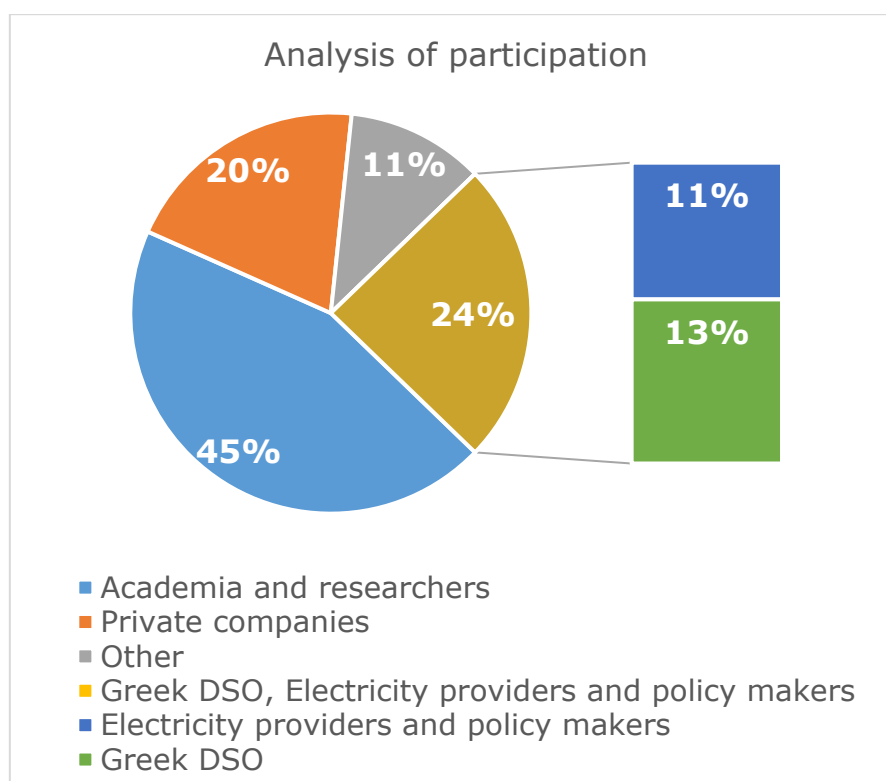


Figure 16: Analysis of participation.

As already mentioned, the outputs of the StoRES project along with real market subjects were presented by the speakers. In addition, a fruitful discussion on the prospects of electrical storage penetration in Greece was held in a round table. During this session, useful information about the current situation on the market of PV and storage in Greece was provided.

Several improvements for subsequent workshops have emerged throughout the workshop, but also with the satisfaction surveys filled out by the participants. For example, it was emphasized that more details could be provided on technical issues, such as battery energy storage systems' sizing, new inverter technologies to be employed, etc. In addition, possible market modifications or other incentives that could promote storage integration in nearly zero-energy buildings should be discussed extensively in subsequent workshops. A further insight on these issues could provide vital information regarding the viability of storage

system applications integrated alongside PVs, so as to adapt the regulatory framework to the new electricity market's needs.

9. Italy

The Workshop (combined with the Training course) was held in the Municipality of Ussaramanna (MU) in the 21st October 2019. The aim of the Workshop was to disseminate among the participants (DSO, Researchers from the University of Cagliari (UNICA) and the Sardegna Ricerche Lab) the results obtained with the StoRES project and to stimulate the politicians and DSO to promote wider adoption and replication of the project outcomes.

At the end of the Workshop a final questionnaire was circulated, in order to analyse if the participants appreciated the Workshop.

The goal was to share the lesson learned during the project with the aim of foster the presence of ESS coupled with PV. The different approaches in other StoRES participating countries were also presented.

In particular, the workshop was focused on:

- Dissemination of the results of STORES;
- Description of the effectiveness of the use of PV+ESS, underlying the gained know-how and the barriers;
- Stimulate discussion.

9.1 Calendar of the workshop & target audience

The workshop was held at the Municipality of Ussaramanna in Sardinia, Italy on the 21st October 2019 and it was mainly targeting DSOs/TSOs, researchers, governmental authorities, municipalities, politicians and the wider public.

9.2 Index and content of the workshop

The main Agenda of the Workshop is shown in Table 1.

Table 1: Agenda of the Workshop in Italy.

09:00 – 09:30	Registration
09:30 – 09:50	Introduction and welcome to the Participants - Marco Sideri (Municipality of Ussaramanna) - Fabrizio Pilo (Director of DTEE - UniCA) - Stefano Piras (Director for Energy Service and Green Economy - Autonomous Region of Sardinia) - Celestino Pitzalis (President of Union of the Municipalities of Marmilla Area)

09:50 – 10:10	Power system evolution: flexibility's role toward the energetic transition - Fabrizio Pilo (UniCA)
10:10 – 10:30	Energy storage systems and innovative technologies for energy communities - Emilio Ghiani (UniCA)
10:30 – 11:00	RES and energy efficiency: strategic project of the Sardinia Region - Stefano Piras (RAS) Related projects (<i>SEC, POSEIDON, Virtual Energy, Clear 2.0, Sun2Car</i>)
11:00 – 11:20	Coffee break
11:20 – 11:50	StoRES – The Municipality of Ussaramanna experience Marco Sideri, Andrea Rubiu
11:50 – 12:10	StoRES – Description of the project and main results - Susanna Mocci (UniCA)
12:10 – 12:30	StoRES tools demonstration - Simona Ruggeri (UniCA) • Online storage optimization tool (<i>storestool.eu</i>) • StoRES Living Lab (<i>www.stores-livinglab.eu</i>)
12:30 – 13:00	Question Time
13:00 – 14:30	Lunch
14:30 – 16:30	Prosumers point of view

9.3 Results

The workshop was addressed to local politicians, local authorities and representatives of the neighbouring municipalities, members from Academia, researchers, inhabitants of Ussaramanna, installers, representatives from industries. 30 people attended the event, and the contents of the workshop were announced by the local press and television.

In order to evaluate the effectiveness of the workshop a final questionnaire was proposed, where the level of satisfaction about the content and of the organization was asked and if the level of knowledge increased after the speeches. Moreover, the attendees were also asked to comment on possible improvements for future training sessions.

From the survey analysis, it emerged that almost all the participants appreciated the event as well as its organization, stating that it allowed increasing their knowledge on the topic. Several suggestions were provided in the second part of the questionnaire. For instance, it has been required more emphasis on specific critical aspects (e.g. during the installation and the management) and on the incurred costs, and on the use of electric vehicles. The speeches' concreteness and the presentation of the living lab and the optimization tool were appreciated too.

Figures 17 – 19 show some pictures of the event.

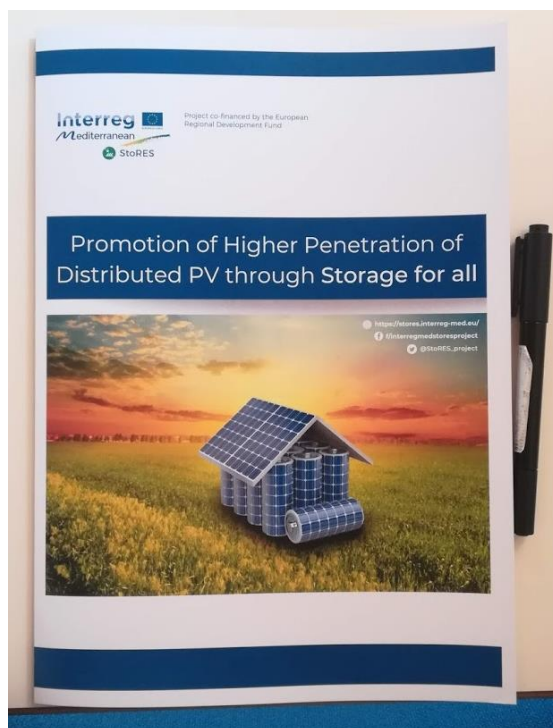


Figure 17: Folder containing the printed material.



Figure 18: Introduction and welcome to the participants.



Figure 19: Speech on the MU experience.

10. Portugal

The workshop in Portugal was delivered by the Regional Energy and Environment Agency of Algarve (AREAL), simultaneously with the training session. It was entitled "*Energy Storage Systems: Innovative Solutions to Promote Low Carbon Strategies and Increase Renewable Energy Sources in the Energy Mix*" and took place at the Palácio Gama Lobo, facilities of the Municipality of Loulé in Loulé with a duration of approximately 3.5 hours.

The event was free, open to the general public although an additional effort was made to invite municipal technicians as an essential part of complementing awareness of Memorandum of Understanding (MoU) signing with municipalities. The room capacity was approximately 50 places and 39 participants were present.

10.1 Calendar of the workshop & target audience

The workshop/training session was held on Friday, 18th October 2019, in the morning. The target audience of the event was essentially municipalities, municipal companies, public authorities, the scientific community, services providers and the general public. However, the training course was mainly targeting municipal technicians as support elements for the initiatives that may result under the signed MoU.

It was also important to note the presence of some regional media, which were particularly interested in covering the timing of the MoU Signing Ceremony.

10.2 Index and content of the workshops

The main context of the workshop/training session was to disseminate the results of the StoRES project, namely the aspects that support the implementation of renewable energy solutions with special focus on PV technology, with integration of ESS, using the appropriate instruments and services.

To this end, during the event, some experiences that resulted from the StoRES project were shared, specifically the results associated with the implemented pilots. In addition, some important tools were demonstrated and made available: StoRES Living Lab and the StoRES Online PV and Storage Optimization Tool.

In the final part, a MoU Signing Ceremony was held between several municipalities of the Algarve Region. This act aimed to involve local/regional authorities in the creation of a regional cooperation network for the self-consumption of renewable energy and energy communities with the objective of fostering the increased implementation of PV energy solutions and energy storage in the Algarve region.

Figure 20 introduces the agenda of the event.

  		Project co-financed by the European Regional Development Fund	
Sessão de Formação / Workshop “Sistemas de Armazenamento de Energia: Soluções inovadoras para promover estratégias de baixo carbono e aumentar fontes de energia renováveis no <i>mix</i> de energia” 18 de outubro de 2019 Palácio Gama Lobo, Loulé Coordenadas GPS: 37°08'29.41 N 8°01'23.67 O			
AGENDA			
09.15 – 09.30	Receção dos Participantes		
09.30 – 09.50	Projeto Europeu StoRES - Promotion of higher penetration of distributed PV through storage for all - AREAL Principais objetivos, resultados Implementação de pilotos: barreiras, soluções adotadas e perspetivas		
09.50 – 10.30	Autoconsumo Fotovoltaico na perspetiva de consumidores residenciais – Carlos Laia, CEEETA-eco Tecnologias Principais benefícios e custos associados Exemplos de instalações		
10.30 – 10.45	Coffee break		
10.45 – 11.45	Sistemas de Armazenamento de Energia – Prof. Jânio Monteiro, UAlg Contexto Internacional e Nacional Redes Energéticas Inteligentes Comunidade Energéticas Armazenamento de energia com ligação à rede Ferramenta de Otimização PV+Storage: StoRes Project		
11.45 – 12.15	Debate		
12.15 – 12.45	Cerimónia de Assinatura do Memorando de Entendimento - Municípios / Projeto StoRES		
12.45	Encerramento		

Figure 20: Agenda of the workshop in Portugal.

The workshop/training session included four complementary parts:

1. The first part served to frame the StoRES project, presenting the main objectives, results and pilot implementations.
2. The second part presented the context of PV self-consumption from the perspective of residential consumers, addressing technologies and their main benefits and associated average costs.
3. The third part allowed to expose the theme of ESS, analysing the national and international context and its importance in the concept of energy communities. In addition, the potential of the tools developed during the StoRES project (StoRES Living Lab and StoRES Online PV and Storage Optimization Tool) was demonstrated in this panel.
4. In the last part, the MoU Signing Ceremony took place.

The workshop/training session was delivered by Mr Hugo Rodrigues (AREAL project manager), Eng. Carlos Laia (Managing Director at CEEETA-eco) and Prof. Jânio Monteiro, (Adjunct Professor of the Electrical Engineering Department, Higher Institute of Engineering, University of Algarve).

10.3 Results

A satisfaction survey/questionnaire was provided to the audience to be filled after the end of the workshop/training session. From the group of 39 participants, 14 answered to the survey, available in the folder along with other documents. Most of the participants were technicians/engineers from municipalities or municipal companies, linked to the department of electricity and energy efficiency. In general, participants expressed their appreciation for the set of parameters/statements mentioned in the survey. Regarding the open questions, the participants essentially highlighted the presentation of the pilot data, the availability of StoRES tools and the clarity in the presentation of the contents by the speakers.

In the end, all participants demonstrated their satisfaction, which proved the success of the initiative. In general, everyone indicated that they learned more about implementing ESS coupled with PV, indicating the pilot installations and tools developed within the StoRES project (StoRES Living Lad and StoRES Online PV and Storage Optimization Tool) as an important support for future implementations.

Figures 21 and 22 show some pictures from the event.



Figure 21: Presentations during the StoRES workshop/training course in Portugal.



Figure 22: Group of representatives of municipalities that signed the MoU in Portugal.

11. Slovenia

11.1 Calendar of the workshop & target audience

The workshop in Slovenia was held on Tuesday, 7th May 2019, by joining forces with another Interreg MED project called Compose, in which the Municipality of Slovenska Bistrica (MSB) is participating as an associated partner. The workshop was, thus, organized by the MSB and the Slovene Chamber of Agriculture and Forestry - Institute of Agriculture and Forestry Maribor. The event was entitled "*RES in Slovenian Legislation - Placement and Support Schemes*". The event took place in Rogla and it lasted the whole day. The first part of the event included lectures and presentations of the two projects. The second part was held at the StoRES project pilot location in Slovenia where the pilot activities and the StoRES Living Lab were presented in detail. The event was free of charge and open to the public.

The target audience of the event was very diverse, as it included local, regional and national authorities, decision makers, DSOs, service providers, equipment providers, the scientific community, research institutions, associations and groups from the field of renewable energy, as well as media and the general public.

11.2 Index and content of the workshops

At first, the current situation of RES in Slovenia was aimed to be presented and then the specific issues of PV with ESS that the StoRES project is dealing with.

The workshop was structured as follows:

- **09.00-09.30: Registration**
- **09.30-09.45: Introduction**
Welcome note by the Mayors and the representative of the Ministry of Infrastructure
- **09.45-10.15: RES in Slovene legislation**
Presentation by Erik Potočar (Ministry of Infrastructure)
- **10.15-10.40: Small hydropower plants – opportunity for a greater self-sufficiency**
Presentation by Sandi Ritlop (electricity service provider)
- **10.40-11.10 PV with ESS: Presentation of the StoRES project and its activities**
Presentation by Peter Vrtič Phd (Faculty of Energy Technology)
- **11.10-11.35 Possibilities for small wind farms**
Presentation by Ksenija Golob (SME representative)
- **11.35-11.50 Coffee break**
- **11.50-12.15 Potentials of wood biomass and forest-wood chains in the local area**
Presentation by Nike Krajnc (Slovenian Forestry Institute)
- **12.15-12.45 Placing RES in the electricity grid**
Presentation by Matjaž Miklavčič (SODO - DSO representative)
- **12.45-13.15 Procedures for placing energy facilities on RES**
Presentation by Marinka Konečnik Kunst (SME representative)
- **13.15-13.30 Support schemes**
Presentation by Veronika Valentar (Institute of Agriculture and Forestry Maribor)
- **13.30-14.00 Discussion**
- **14.00-15.00 Lunch break**
- **15.00-17.00 Visit of the StoRES project pilot location and the Living lab**
Presentation of the pilot activities, data, results and functionalities of the local living lab, given by Peter Vrtič Phd (Faculty of Energy Technology)

Figure 23 introduces the agenda of the event.



OBNOVLJIVI VIRI ENERGIJE V SLOVENSKI ZAKONODAJI UMESTITVE V PROSTOR IN SISTEMI PODPOR

Partnerji: Kmetijsko gozdarski zavod Maribor ter občini Slovenska Bistrica in Zreče, v okviru projektov COMPOSE in STORES, pripravljamo celodnevno delavnico, ki bo potekala

7. maja 2019 v kongresnem centru hotela Planja na Rogli.

Namen dogodka je predstavitev novosti na področju obnovljivih virov energije ter možnosti prihodnje samoskrbe manjših podeželskih občin z obnovljivimi viri energije. Določene ukrepe je glede na nacionalno zakonodajo ter finančne instrumente mogoče izvesti, a se morda zatakne pri konkretni izvedbi zaradi ovir na lokalnem nivoju, pri pridobivanju soglasij ali pa se sprejedi civilna iniciativa.

Zaradi tega želimo, v okviru te delavnice, spregovoriti o možnostih prehoda na nizkoogljično družbo z izrabo lokalnih virov in sodelovanjem odločevalcev.

PROGRAM DOGODKA:

9.00-9.30	Registracija udeležencev
9.30-9.45	Pozdrav županov, predstavnika Ministrstva za infrastrukturo in predstavitev namena seminarja
9.45-10.15	Umetitev OVE v SLO zakonodaji in njena podpora • Erik Potočar, Ministrstvo za infrastrukturo
10.15-10.40	Male hidroelektrarne - priložnost za boljše samooskrbo? • Sandi Ritlop, Dravske elektrarne Maribor
10.40-11.10	Možnosti izgradnje sistemov na sončno energijo s shranjevanjem energije in monitoringom • Izredni prof. dr. Peter Viršič, UM, Fakulteta za energetiko
11.10-11.35	Možnosti izgradnje manjših vetrnih elektrarn • dr. Ksenija Golob, Energomaks d.o.o.
11.35-11.50	Odmor

Projekt je sofinanciran s strani Evropskega sklada za regionalni razvoj.





11.50-12.15	Potenciali lesne biomase in gozdno-lesne verige v lokalnem območju • dr. Nike Krajnc, Gozdarski inštitut Slovenije
12.15-12.45	Umeščanje OVE v elektroenergetsko omrežje • Matjaž Miklavčič, SODO
12.45-13.15	Podatki umeščanja energetskih objektov na OVE v prostor • Marinka Konečnik Kunst, ZUM Maribor
13.15-13.30	Sistemi podpor, kratek pregled in možnosti financiranja • Veronika Valentar, KGZS - Zavod Maribor
13.30-14.00	Diskusija
14.00-15.00	Pogostitev udeležencev
15.00	Odhod na ogled sončne elektrarne s sistemom shranjevanja in monitoringom proizvodnje/porabe energije (Podgrad na Pohorju)

PRIJAVA:

Delavnica je brezplačna in je namenjena vsem, ki jih tematika zanima. Zaradi lažje organizacije in omejitve števila mest, vas prosimo za **registracijo preko SPLETNEGA OBRABCA**, najkasneje **do petka, 3. maj 2019**.

Za več informacij o dogodku se obrnite na veronika.valentar@kmetijsko-gozdarski-zavod.si ali aida.uernik@slz-bistrica.si.

LOKACIJA - ZEMLJEVID

Vijudno vabljeno!

Projekt je sofinanciran s strani Evropskega sklada za regionalni razvoj.



Figure 23: Agenda of the workshop in Slovenia.

11.3 Results

The workshop was attended by 44 participants from all sectors of the target audience. A satisfaction survey was provided to the audience to be filled out at the end of the event, as it can be seen in Figure 24.



ANKETNI VPRAŠALNIK:

Obnovljivi viri energije v slovenski zakonodaji, umestitev v prostor in sistemi podpora

7. maj 2019, Rogla

- Kako ste zadovoljni z vsebino delavnice?

☐ Zelo zadovoljen
 ☐ Zadovoljen
 ☐ Nezadovoljen
 ☐ Zelo nezadovoljen
- Kako ste zadovoljni z izvedbo delavnice?

☐ Zelo zadovoljen
 ☐ Zadovoljen
 ☐ Nezadovoljen
 ☐ Zelo nezadovoljen
- Kako pomemben se vam zdi prehod na nizkoogljično družbo?

☐ Zelo pomemben
 ☐ Pomemben
 ☐ Nepomemben
 ☐ Sploh ni pomemben
- Kako pomembna se vam zdi uporaba hranilnikov v povezavi z sončnimi elektrarnami?

☐ Zelo pomemben
 ☐ Pomemben
 ☐ Nepomemben
 ☐ Sploh ni pomemben
- Čemu bi želeli posvetiti več pozornosti na naslednji podobni delavnici na temo OVE?

Zahvaljujemo se vam za sodelovanje.

Projekt je sofinanciran s strani Evropskega sklada za regionalni razvoj.



Figure 24: Satisfaction survey template in Slovenia.

Twenty nine (29) participants of the event, those not directly involved with the projects, filled out the survey. Among them are representatives of authorities, public service providers, DSOs, energy agencies, non-governmental organisations (NGOs), entrepreneurs and others.

Figure 25 illustrates the participants' evaluation of the workshop, which shows that the participants were generally satisfied with the workshop and its activities.

1-strongly agree, 2-agree, 3-disagree, 4-strongly disagree	Number of responses	Average answer
<i>The contents of the workshop was well prepared.</i>	29	1,4
<i>The organization of the workshop was good.</i>	29	1,3
<i>The transition to a low carbon society is important.</i>	29	1,3
<i>Use of ESS with PV is important.</i>	28	1,4

Figure 25: Evaluation survey summary in Slovenia.

Participants also had an opportunity to state any complaints, suggestions and comments, among which they stated that in future workshops like this, they would like to hear about specific legislation suggestions, get more information about support schemes, see more examples of good practices and concrete calculations of costs and benefits.

The second part of the event, which included the visit to the pilot site was not evaluated separately. It was attended by a smaller group of about 15 people, mostly by representatives of research and education.

Overall, the event was a very good networking experience and a good example of collaboration among related projects. In the following events a focus on specific target groups will be targeted, which will to provide information in greater detail, depending on their specific needs.

12. Spain

The workshop in Spain was held on Monday, 16th September 2019 at the Hiberus hotel in Zaragoza. It was entitled *"Use of Lithium Batteries in Residential Solar Self-Consumption Installations"*.

The event was free, open to the public with no attendance limit.

12.1 Calendar of the workshop & target audience

As mentioned above, the workshop was held on Monday, 16th September 2019 and lasted 3.5 hours. The target audience of the event was, among others, homeowners, small PV installers, governmental authorities, the university community, other stakeholders and the general public.

12.2 Index and content of the workshops

The main objective of the workshop was the dissemination of the results of the StoRes project and the technology related to the use of energy storage based on lithium batteries. In Spain, administrative barriers in the installation of these systems were encountered and these were exposed looking for a debate on this subject.

The programme of the workshop was as follows.

- 10:00-10:15 Introduction to battery-based photovoltaic energy storage systems. State of the art.
- 10:15-11:00 Installation pilots in the city of Zaragoza. Technical and administrative barriers.
- 11:00-12:00 Online demonstration of the pilots. Results obtained.
- 12:00-12:30 Coffee break and discussion
- 12:30-13:15 Economic profitability analysis of battery-supported self-consumption systems.
- 13:15-13:30 Conclusions and questions.

Figures 26 – 28 show some pictures from the event.



Figure 26: Discussion during the event.



Figure 27: Debate on administrative barriers.



Figure 28: Coffee break and discussion.

The workshop took place in a conference room, in which oral presentations were made with MS Powerpoint. There was a more experimental part, the online demonstration of the pilots, during which there was a connection to the monitoring systems of all the pilots, in which the current state was analysed (solar capture, storage in batteries, etc.) and the analysis tools were used to see what had happened on specific days and at specific times.

In this part, there was a lot of participation, as the public was very interested in knowing what was happening in each scenario and the performance of the installation.

As expected, a lot of debate arose regarding the administrative barriers that can cause this type of facilities to fail.

12.3 Results

As mentioned above, the workshop involved homeowners, small photovoltaic installers, government authorities, the university community, other stakeholders and the general public.

There was a lot of public participation, as there was a lot of interest in knowing the results of the pilots and the administrative barriers they had faced. The PV sector and especially self-consumption are a topical issue as there have been important legislative and administrative changes. The authorities aim to facilitate this type of installations although the reality is that there are still great barriers, especially those related to the permits and authorizations of the electricity producing companies.

The visualisation of the monitoring tool was a complete success. The monitoring tool responded perfectly to questions from the public and the public was very interested in the results.

Figure 29 illustrates the results of the satisfaction survey of the event.

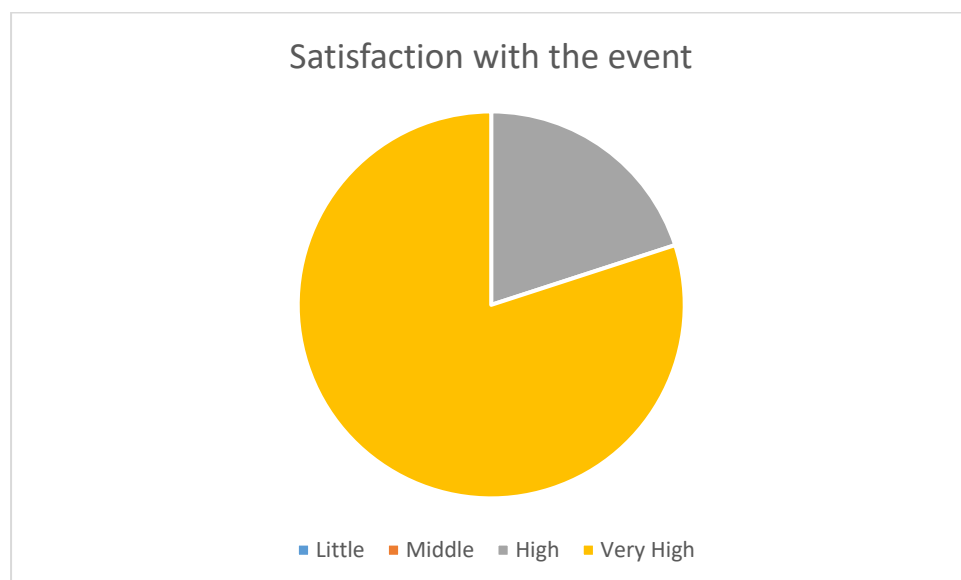


Figure 29: Satisfaction survey of the event.

13. France

The workshop took place on 16th October 2019 in AURA-EE's premises. It was organized in partnership with Tenerdis, which is a competitively cluster gathering regional start-ups and companies in the energy field.

13.1 Calendar of the workshop & target audience

The target audience was mainly professional companies, researchers and energy experts acting in the PV and storage field. The national DSO was also present. The aim was to present the results of the StoRES project and share experience with other regional projects which have research activities on self-consumption.

The calendar was as follows :

- 14:00 – 14:20: Introduction, presentation of the participants
- 14:20 – 14:50: Presentation of data results on data analysis by AURA-EE and the company Cythelia which worked with AURA-EE on this task
- 14:50 – 15:20: Presentation of the lessons learnt on the Greek pilot plants of STORES, by the AUTH
- 15:20 – 16:20: Presentation of the research activities of the ECOSESA program on collective self-consumption, by the University of Grenoble

- 16:20 – 17:00: Presentation of microgrid project in Grenoble by CSTB
- 17:00 – 17:30: Roundtable discussion about future developments and possible partnerships

13.2 Index and content of the workshop

The first presentations were devoted to the results of StoRES regarding the data analysis. The impact of storage on the self-consumption and self-sufficiency rates were presented as well as the observed performances of the storage systems. The StoRES Living Lab was presented through an on-line demonstration.

Then, Prof. Georgios Christoforidis from the AUTH presented the lessons learnt from the 5 Greek pilot plants analysed in StoRES and focused on the specific behaviour of batteries such as the charge/discharge from the grid due to maintenance reasons or metering precision. He also presented the experiment led during the summer, regarding the change of operational mode to obtain a peak shaving of the daily production so as to mitigate the impact on the grid.

The second section of the workshop opened the discussion to collective self-consumption, through the research activities led by the University of Grenoble, both on social and technical aspects. The aim is to get a deeper involvement of end-users in the projects to define together with them the way energy is self-consumed. A technical tool called OmegaAlpes is also under development to facilitate the sizing of the project for design companies. It can both tackle issues on electricity and heat.

Finally, the Technical and Scientific Centre on Building (CSTB) presented a microgrid project located in Grenoble. The aim is to develop a living lab where all the business models could be compared for each stakeholder.

The participants had a discussion on the various results and tools presented. Some ideas about the possible improvements that could be done were mentioned, such as integrating weather forecast in storage plants, balancing individual and social storage systems in microgrid projects, coupling heat and electricity needs in a more holistic approach, etc.

Figures 30 and 31 show some pictures from the event.



Figure 30: Satisfaction with the event



Figure 31: Satisfaction with the event

13.3 Results

About 15 participants attended the workshop. Some fruitful discussion took place and will serve for further developments. The approach was mostly technical but the participants expected more information on economic results, that is why the StoRES optimization tool was finally briefly presented.

The results of StoRES were highly appreciated, people were rather surprised by the way storage can improve the performances of the PV plants. Nevertheless, the market for individual storage in France does not exist yet and there is no evidence that public bodies shall strengthen the support to this type of installation, except in specific cases where there are some grid issues. There is more interest for collective approaches where consumptions and productions can be shared and where storage could bring some stability to the whole balance of the microgrid.

14. Conclusions

The aim of this report is to provide a brief description of the dissemination activity of the Stores project with regards to the workshops and meetings held by each project partner. It must be noted that all the events have been attended by a relatively significant number of participants, coming from different areas of the energy sector. Mostly, the high interest in all the events and the attendance of both specialized entities and end-users has been noted. The results and comments of the events collected through surveys have been very positive in general.