

# StoRES

Promotion of higher penetration of Distributed PV through storage for all

Issue No 2

December 2017

Dear Reader,

*It is our pleasure to welcome you to the second edition of the StoRES Newsletter! "StoRES — Promotion of higher penetration of Distributed PV through storage for all" is an ambitious Interreg MED modular project, implemented by a consortium of 18 highly capable and well established organisations (both private and public) spanning across the Mediterranean region.*

*The first year of project implementation has passed and we would like to update you about the progress of the project.*

*If you would like to keep up to date with all the latest developments of our project follow us on Facebook & Twitter.*

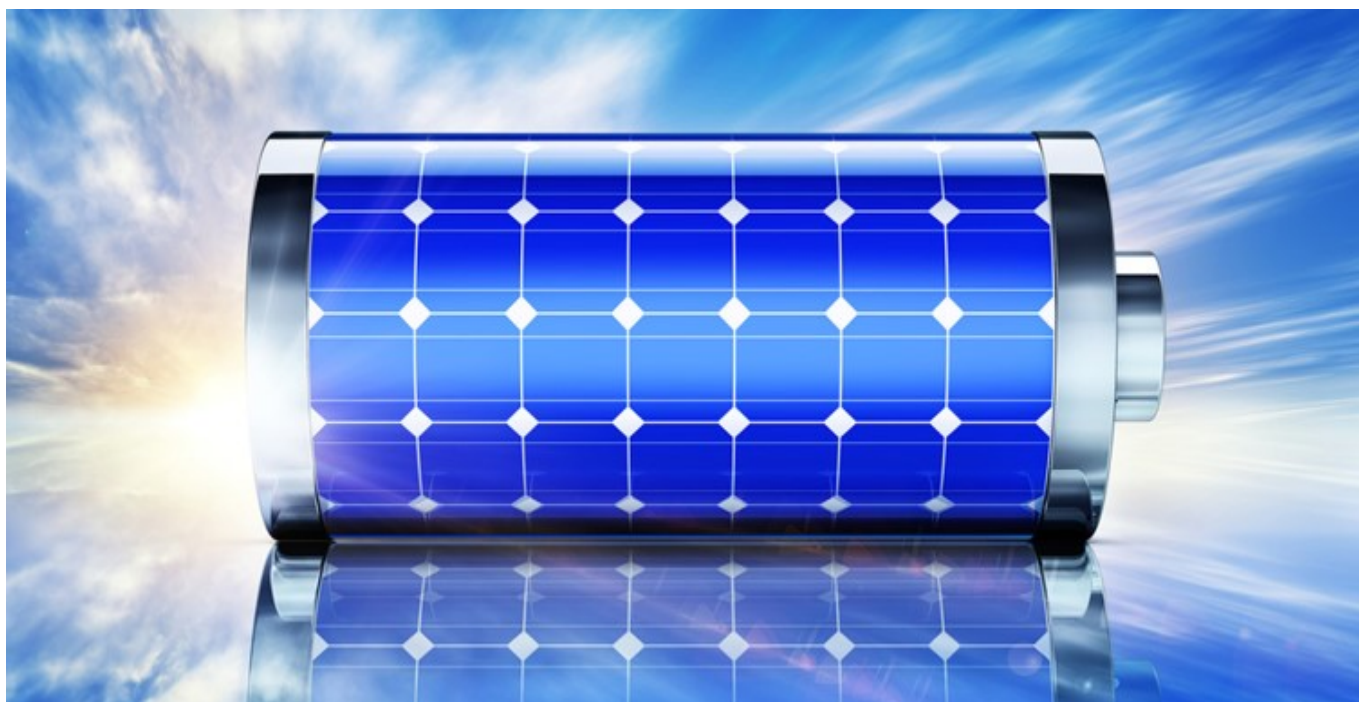
*Kind Regards,  
The StoRES Consortium*

## About StoRES

StoRES foresees the development of an optimal policy for the effective integration of photovoltaics (PV) and energy storage systems (ESS) via testing smart solutions in 5 MED islands and rural areas. StoRES aims to increase the PV penetration in the energy mix of islands and rural areas in the MED by integrating PV and ESS under an optimal market policy by removing the constraints of grid reliability and RES intermittency. The challenge is to achieve high PV penetration in their energy mix through solving all market/technical/grid/tariff issues without compromising grid stability and security of supply.

The project involves regions facing specific needs and challenges: islands with isolated networks, almost 100% fossil-fuel dependency and increasing energy demand; rural areas exhibiting weaker networks, possibly greater energy needs, and higher environmental impact.

StoRES focuses on 7 EU regions namely Cyprus, France, Greece, Italy, Portugal, Slovenia, Spain.



**StoRES started on 1<sup>st</sup> November 2016 and will be completed by the end of April of 2019.**

# Pilot installations in MED islands

In order to develop an optimal policy for the effective integration of photovoltaics (PV) and energy storage systems (ESS), the StoRES project will be testing smart solutions in six islands and rural areas. Pilot installation areas include Cyprus, Greece, Italy, Portugal, Slovenia and Spain. The objective of the pilots is to achieve a high PV penetration in the energy mix of each area, while solving all market/technical/grid/tariff issues without compromising grid stability or security of supply.

The demonstration sites with existing PV systems (3-5 kWp) and smart meters feature:

1. Local weather forecasts for solar power generation prediction
2. Control for all compliance household devices
3. Maintain on-grid connectivity during system frequent disturbance incidents
4. Time of Use tariffs

The pilot installation has already been completed in Spain by [SARGA](#), while the others are expected to be finalized by the end of March.



**The pilot installations in Spain are fully completed**

## Project meeting in Maribor

The StoRES Consortium met in Maribor (Slovenia), on the 29th-30th November 2017 for their 3rd project meeting in order to discuss the project progress to date, pilot implementation in particular, and plan the next steps of the project.



During the meeting, each partner presented the situation and progress in their region, the technology used, system purchased and monitoring system that will be used. In addition, the development of the online storage optimization tool is progressing well and the foundations are laid for the effective transferring of results.

Partners also participated in team-building activities and explored the Slovenska Bistrica area. Project Partner Municipality of Slovenska Bistrica arranged a visit at the Bistrica Castle and hosted the official dinner.



**The 3rd project meeting in Slovenia (November 2017)**

## Participation in External Events

### GreenCAP Meeting in Barcelona

StoRES participated in the thematic event "Energy Challenges in Islands and Rural Contexts" held in Barcelona in September 27, 2017. The aim of the event was to identify strategic and priority aspects from legal, social, technological and planning point of view related to development of renewable energies in island and rural context.



### UPEC 2017 Conference

A paper was submitted and presented during the 52nd International Universities Power Engineering Conference in August 28-31, 2017, that took place in Greece by Project Partner Aristotle University of Thessaloniki.



### AEIT 2017 International Annual Conference "Infrastructures for Energy and ICT - Opportunities for Fostering Innovation"

A paper on the "Promotion of higher penetration of distributed PV through storage for all (StoRES Project) in Italy" was submitted to the AEIT 2017 Conference, that was organised by the Italian Association of Electrical, Electronics, Automation, Information and Communication Technology on September 20-22, 2017 in Cagliari, Italy. The conference, which hosted academics, utilities, policy-makers and professionals, showcased Italian and international research activities in the fields of electricity, automation, telecommunications and information technology and elaborated on the opportunities that will increase Italy's competitiveness.



## International Congress on Engineering and Sustainability in the XXI cEntury – INCREaSE 2017

During the INCREaSE 2017 Conference that was held in October 11-13, 2017 in Faro, Portugal, the StoRES Coordinator (University of Cyprus) presented the paper that was submitted on the "Promotion of higher penetration of distributed PV through storage for all" (StoRES). The aim of the conference which gathered the industry, professionals, and academics was to contribute to sustainable development in a multidisciplinary way, exploring transversal challenges including Renewable Energy and Energy Efficiency.



## European Mobility Week in Slovenska Bistrica

During the European Mobility Week in Slovenska Bistrica, on September 22, 2017, the StoRES project was presented at a local high school. The event was attended by local/regional public authorities, academics, students and other stakeholders. The European Mobility Week event focuses on clean transportation, and StoRES was presented in connection with clean transportation - PV with the storage solutions that can also be used to provide clean energy for electric cars.



## Smart Energy Week

The StoRES Coordinator (FOSS Research Centre for Sustainable Energy of the University of Cyprus) hosted the "Smart Energy Week" during the week of 20-24 November of 2017, in Nicosia (Cyprus), where the StoRES project was also showcased. A series of state of the art technology events and workshops took place, showcasing the potential of smart grid technologies for the seamless integration in the energy mix of PV systems.

Attendants included the Cypriot Ministry of Energy, the Department of Environment, Ministry of Agriculture, Rural Development and Environment, the Distribution System Operator of Cyprus, the Joint Research Center (JRC) of the European Union, European Technology and Innovation Platform (ETIP), the Smart Technology Network for Energy Transition (ETIP SNET), the Smart Specialization Platform for Smart Grids in the EU, the European Technology and Innovation Platform for PV (ETIP PV), the Austrian Institute of Technology (AIT), Denmark Technology University (DTU) and the MED Platform for Smart Grids (MedTP4SG).



## StoRES Consortium



### University of Cyprus (UCY)

UCY, through its Research Centre for Sustainable Energy (FOSS), plays a key role in research and technological development activities in the field of sustainable energy within Cyprus and at international level with the aim of contributing to the achievement of the relevant energy and environment objectives set out by Europe. In particular, FOSS strives to become a centre of excellence in energy that will act as a structure where world-standard R&D work can be performed, in terms of measurable scientific production (including training) and/or technological innovation.

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POWER SYSTEMS LABORATORY  
ARISTOTLE UNIVERSITY OF  
THESSALONIKI

### Aristotle University of Thessaloniki

The project will be executed by the Power Systems Laboratory (PSL) which is running since 1980 and has been involved in 140+ European, bi-lateral and national projects, related to research and development of power systems, renewable energy sources, electric power and consumption control, environmental impacts from power generation, applications of Information Technologies and energy efficiency (<http://power.ee.auth.gr/>). The PSL and the team members involved in this project have significant experience in all topics related to power systems analysis, operation and control, modelling, power line, communications, distributed generation and smart grids, power electronics, harmonics, power quality, electrical drive systems and renewable energy sources.

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### AREAL – Regional Energy and Environment Agency of Algarve

AREAL is a non-profit private Association which has as Associates some of the most important Algarve public and private organizations. AREAL's main goal is to collaborate in the definition and implementation of Regional Energy Politics as a way to contribute for the Algarve Sustainable Development. In this framework AREAL in contribution with the local partners and open to international cooperation, will look for a More Efficient Use of Energy aiming to improve the actual usage of Algarve great potential of renewable Energy Sources as well. AREAL will also benefit from the project by internalizing and disseminate the knowledge that will be acquired from the cooperation of the partners in the project.

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## SARGA – Government of Aragon

SARGA executes and provides assistance and advice to the Government in the passing of regulations and strategy definition. Through the Aragon Strategy for Climate Change and Clean Energies & Energy Plan for Aragon, it has developed & implemented an energy policy that aims to contribute to the maintenance of energy supply quality and the improvement of energy efficiency. This is in consonance with the priority 4C of Aragon ERDF Operational Plan: O.4.3.1 "Improvement of energy efficiency and emissions reduction in public buildings" & OE.4.3.2 "increase the use of renewable energies for the production of electricity and use of thermal solutions in public buildings and infrastructures, placing specific interest in micro-generation".

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OBČINA  
SLOVENSKA BISTRICA



## Municipality of Slovenska Bistrica

The Municipality of Slovenska Bistrica is organized under the Local Self-Government Act (Official Gazette of RS, no. 94/07) and is the basic local self-governing community of settlements, which are associated with common needs and interests of their citizens. Municipality is managing 45 public buildings and want to (in the frame of energy management) implement some of the actions from the Local energy concept. For example: extended energetic examination of public buildings, case studies about possibilities for Hydro, Wind, Solar, biomass and Bio gas usage/exploitation, new PV installations on public buildings etc.

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## Regional Energy and Environment Agency in Rhône-Alpes

The Regional Energy and Environment Agency in Rhône-Alpes is in charge for the development of sustainable energy projects and programs both at regional, but also local levels. The objective of the Regional Energy and Environment Agency in Rhône-Alpes is to mobilize public authorities and other key stakeholders at regional and local levels in order to develop new policies and introduce new instruments having a significant impact on the development of sustainable energy projects within the region.

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## Ministry of Energy, Commerce, Industry and Tourism

The Energy Service has the overall responsibility of Energy in Cyprus, including the promotion and utilization of RES & the formation of the national energy policy for Cyprus. In this capacity the Energy Service is keenly interested in the further development of PV in Cyprus through the adoption of appropriate policy, market rules and supporting technologies. To this effect the proposed project StoRES is aligned with the objectives of the Energy Service and thus the Energy Service is interested to play an active role in completing the planned installations and identifying the benefits of using distributed storage facilities in support of PV sources of energy.

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## Municipality of Ussaramanna

The members of municipality of Ussaramanna can share important skills and experiences in European project design as well as in the Sustainable Energy field. They have in particular a good know-how in electrical engineering such as electrical power system, and good knowledge of electrical distribution networks and smart grids. In addition, administrators have several experience and skills in managing European projects. The Municipality of Ussaramanna is already signatory of the Covenant of Mayors and the relevant SEAP implementation is already started and in progress. This SEAP involves local integrating actions of 18 Municipalities, as well as global actions for the whole territory of the "Municipalities Union of Marmilla".

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Αρχή Ηλεκτρισμού Κύπρου  
Electricity Authority of Cyprus

## Electricity Authority of Cyprus/Distribution System Operator

The DSO is the organisation responsible for the efficient, reliable and secure operation, maintenance & expansion of the electricity distribution system. The DSO is responsible for the integration of distributed RES in the distribution network of Cyprus. The technical staff have great experience regarding the integration of PVs into the energy mix, identifying possible problems and troubleshooting. Also, it has great experience in designing technical solutions for the integration of domestic PV systems to the electricity grid. The involvement of the DSO of Cyprus in this project is of vital importance.

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# Associated Partners

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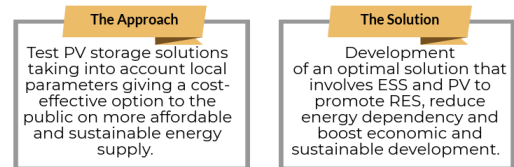
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## Project Coordinator

For more information please contact the project coordinator Dr. George E. Georghiou, Director of FOSS Research Centre for Sustainable Energy, University of Cyprus, Tel. +357 22892272, email: [geg@ucy.ac.cy](mailto:geg@ucy.ac.cy).

## Promotion of higher penetration of distributed PV through storage for all



### RES in MED countries

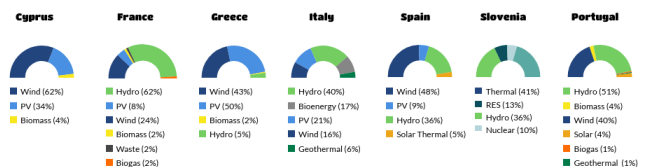
Electricity generation from RES



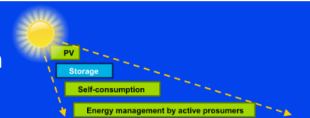
Share of RES in the gross final consumption of energy (%) for the participating MED countries and the national targets by 2020



### RES Penetration Breakdown



Effective use of storage with PV for achieving high PV penetration levels



### Demonstration Sites with existing PV systems (3-5 kWp) & Smart Meters

6 Pilot Regions

Cyprus  
Spain  
Greece  
Italy  
Portugal  
Slovenia

#### Features:

- 1 Local weather forecasts for solar power generation prediction
- 2 Control for all compatible household devices
- 3 Maintain on-grid connectivity during system frequency disturbance incidents
- 4 Time of Use tariffs

### ESS Integration Barriers

- Technological and safety issues
- High capital costs
- Lack of financial compensation mechanisms

### Solutions

- Develop a sustainable compensation scheme
- Appropriate incentives
- Customized framework to every country's electricity network

#### Project Coordinator

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## Project Infographic