Interreg Mediterranean StoRES

EUROPEAN UNION

Project co-financed by the European Regional Development Fund

Promotion of Higher Penetration of Distributed PV through **Storage for all**

Duration:
36 months

Budget:
€2m

9
Partners

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Main Outcomes

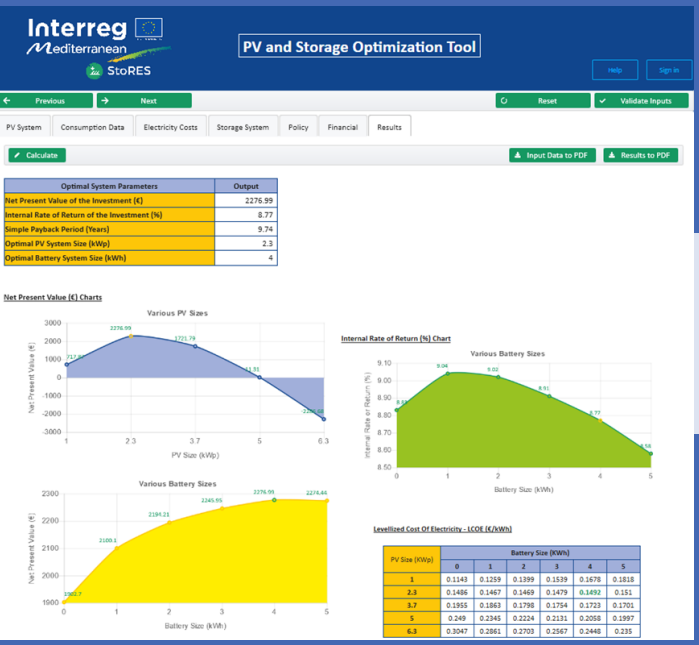
Implementation and testing of Residential and Community Storage in the Mediterranean (MED) region (6 islands and rural areas with high solar irradiance)

Policy recommendations for further photovoltaic (PV) penetration through Storage

Development of algorithm for the optimum PV+Storage sizing in the participating countries

Assessment of Residential (Behind-the-Meter) and Community Storage benefits

Online Optimization Tool



The Optimization Tool aims at calculating the optimal size of a hybrid PV+Storage system in terms of the net present value of the investment.

The tool requires as inputs:

- → electricity consumption
- → solar irradiation
- → PV and battery size
- → electricity costs

A financial analysis is undertaken for a period of 20 years, taking into consideration technical and financial parameters as well as various options of energy policies.

Living Lab

The Living Lab provides an interactive web platform where the measured data acquired from the pilot sites can be displayed. In addition, multiple **indicators** are depicted, including the **self-consumption** and **self-sufficiency** rates. The platform also enables the display of average profiles and the comparison between different pilot installations. The platform can be used for PV+Storage installations, as long as the required installation data is provided accordingly.

Cost & Benefit Analysis

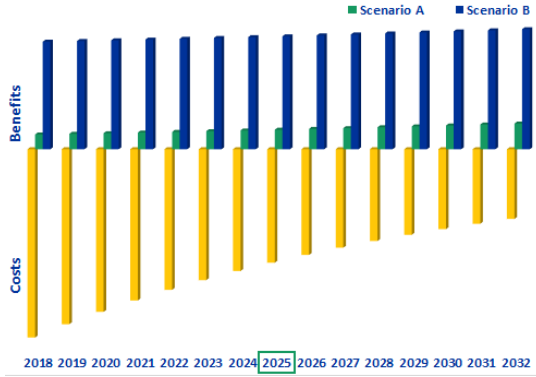
The table presents the set of benefits of an Energy Storage System (ESS) installation for each storage functionality - the green rows illustrate the benefits offered to the end-users involved in the StoRES project.

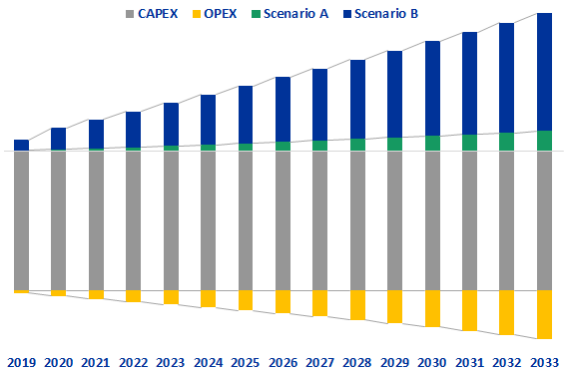
Benefits	Functionalities						
	Accurate power measurements	Enable communication between components	System control and quality of supply	Store generated PV energy	Store energy from the grid	Provide energy to the house	Provide energy to the grid
1. Ancillary services	•	•	•	•	•		•
2. Congestion relief				•		•	
3. Transmission support				•		•	
4. Substation on-site power				•	•	•	•
5. Extending life of infrastructures				•		•	•
6. Black-start				•	•		•
7. Increase of self-consumption				•	•		
8. Decrease peak dependence				•	•		
9. Maximise ToU	•	•			•	•	
10. Participating in DR	•	•		•	•	•	•
11. Emergency backup				•		•	
12. Electricity resilient				•	•	•	
13. Reduction of CO_2 emissions				•		•	•

Scenarios

A The realised and measured conditions with the ESS (StoRES house with PV and limited exploitation of the residential ESS) – Benefits 7&8 of the table

B Future conditions of ESSs (house with PV and fully exploited residential ESS) – Benefits 1-13 of the table





Main Lessons Learnt

1. With the current conditions, such as high Storage prices, existing policies, pricing schemes, etc., a PV system without Storage is a more profitable investment under most circumstances in the studied MED countries.

2. Policymakers should aim at the encouragement of Storage alongside PVs, by considering the adaptation of existing schemes in order to enhance the competitiveness of ESSs.

3. The main parameters for PV+Storage system profitability as quantified during the StoRES project include:

   - **Consumption and generation power profiles**
   - **Electricity costs**
   - **Existing policies and pricing schemes**
   - **Solar irradiance profile of the installation location**

   The optimal sizing of the PV+Storage system should take into account at least all the above parameters.

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