



Energy Storage on Islands

How Industry and Policymakers Can Work Together to Support the Islands Decarbonisation Agenda

Brussels, November 2019



Support the Islands Decarbonisation Agenda

On 21 November, over 80 participants met during the EASE Energy Storage on Islands Workshop to learn about the latest advances in energy storage technologies, assess the energy storage applications and business cases on islands, and propose policy recommendations to ensure a faster roll-out of innovative solutions to support the island decarbonisation agenda.

Islands face unique challenges in terms of ensuring a secure and cost-effective energy supply. Many islands have been early adopters of renewables and have seen some of the world's first deployments of energy storage projects. These projects not only showcase the diversity of storage technologies and applications, but also highlight some of the most pressing challenges when it comes to the energy transition and deep decarbonisation.

The workshop kicked off with a focus on the main challenges and opportunities for decarbonisation of islands, both from a policy and technical point of view. Gianni Chianetta, Director of Greening the Islands, noted that this is the perfect time to focus on the role of storage, since the 2017 Political Declaration on Clean Energy for EU Islands is expected to be updated under the Croatian Presidency of the EU in 2020.

Is there a “one size fits all” solution?

Each island has unique characteristics – e.g. energy intensity, seasonality of energy demand, interconnection status, policy and market framework – which makes it impossible to develop ‘one size fits all’ solutions from a technical or strategic point of view. For each island, a holistic approach must be developed to ensure security of supply. This strategy, built upon consistent planning and reliable implementation, must take into account current and planned capacity of generation (both thermal generation and renewables), storage, demand-side response, and interconnections.

Energy storage to the rescue!

Energy storage systems are uniquely suited to supporting decarbonisation of islands, whatever their characteristics. Speakers explored cutting-edge storage projects from around the world, covering Bermuda, Greece, Italy, France, the Canary Islands, Orkney Islands (Scotland), and Taiwan, among others. Different storage solutions – li-ion batteries, pumped hydro storage, flywheels, supercapacitors, and hydrogen – have proven their ability to cost-effectively provide a variety of services, for instance helping reduce fossil fuel use when coupled with diesel generators or drastically cutting renewables curtailment. Storage can also provide key grid services such as spinning reserve to prevent load shedding and blackouts.

Is there something that needs to be improved?

However, without proper market start of the day and regulatory frameworks, it can be difficult to build a robust business case for storage. This can be especially true in deregulated islands such as the UK and Ireland, where the storage business case depends on ‘stacking’ multiple revenue streams. In most cases, the key barrier to deployment of energy storage projects on islands is not technology performance, but rather related to lack of enabling policies, long-term investment certainty, and/or social acceptance.



After presentations and discussions focused on technologies, applications, and business cases, as well as policy and regulation, participants divided into four Focus Groups to elaborate recommendations to speed up deployment of energy storage projects on islands and support the transition to decarbonised island energy systems:

Technologies & Applications

- Energy storage technologies have proven their ability to provide valuable applications on islands of all sizes. The key challenge is to have enough revenue streams to build up a robust business case with long-term certainty to attract investors.
- Given that each island has a unique context, it is important to carefully match the storage system to the specific needs of that particular location. It is important to keep in mind the interplay between storage and other generation and flexibility technologies to ensure an optimal integration and operation of the whole system. This requires close collaboration between the energy storage providers, grid operators, and local authorities.
- Advances in energy storage technology developments should focus on increasing energy density, optimising the CO2 footprint, improving the control architecture, and enabling interoperability and efficient maintenance.

Financing and Business Cases

- There is a need to develop specific island-related financial instruments focused on derisking, fit to an island's size, with appropriate duration.
- One of the biggest challenges is the complexity of storage projects from a technical and business case point of view, which can make it difficult for investors to evaluate project attractiveness and technical assistance in these cases would be needed.
- For successful projects a holistic approach is needed to look at the project in a larger scale (e.g. grid solutions level) for investors to understand the part that energy storage projects play in the bigger picture.
- Another issue is the lack of coherence between the regulatory framework and financing needs. Regulatory and policy frameworks need to ensure long-term certainty for revenue streams to allow investments to flourish. Some islands, particularly small islands, are not attractive to private finance or finance other than grants; this should be taken into account by policymakers.

Policy and Long-Term Decarbonisation Strategy

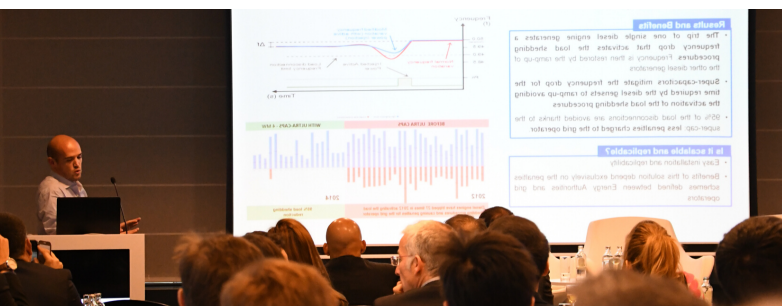
- Policymakers at EU and national level must focus more on the specific needs and challenges of islands. For instance, National Energy and Climate Plans (NECPs) tend to focus excessively on interconnectors, at the expense of examining concrete measures to support clean energy projects, including those involving energy storage, on islands.

- There is a lack of alignment and collaboration between EU, national, and local decisionmakers when it comes to decarbonisation of islands. A permanent body at EU level could help support these important discussions among decisionmakers involved in islands while also facilitating knowledge-sharing between industry and policymakers. These discussions can help capacity building on topics such as energy storage use cases, what is needed in terms of remuneration of revenue streams, and how energy storage projects fit into the island's broader transition strategy.
- At local level, social acceptance is a prerequisite for the success of clean energy projects. Energy communities and similar concepts should be promoted in order to allow island communities to take an active role in driving the energy transition.
- Islands are often mentioned as 'lighthouses' for the energy transition. Participants agreed that energy storage projects on islands clearly demonstrate that the technologies are ready and can provide a huge added value. However, it is difficult to translate the experience faced by islands into broader lessons learned for the energy transition, since each island tends to face unique challenges. Deregulated islands, however, can be important test cases for new system services and remuneration schemes, which could be interesting also for mainland energy systems in the future.

The way forward

The recommendations elaborated by the workshop participants will be shared with policymakers as well as our partners at Greening the Islands and Clean Energy for EU Islands.

EASE will continue to work on supporting the deployment of energy storage projects on islands in order to meet their ambitious decarbonisation targets. We will prioritise the main barriers and action points identified during the workshop, and will seek to engage more closely with island authorities and key stakeholders to address the big challenges ahead.





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