European Commission

Clean energy
for EU islands

Study on regulatory barriers and recommendation for clean energy transition on EU islands

ENERGY

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Author: Clean energy for EU islands secretariat managed
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clean-energy-islands.ec.europa.eu |
info@euislands.eu | European Commission | DG ENER

Written by: Andries De Brouwer (3E), Lucija Rakocevic (Th!nk E)

Reviewers: Leen Peeters (Th!nk E), Jan Cornillie (3E)

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FROM CLEAN ENERGY VISION
TO CLEAN ENERGY ACTION

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Executive summary

While islands are particularly vulnerable to climate change, they enjoy a naturally high potential of renewable energy sources to harness. Many islands have abundant renewable energy potential, which can be tapped to lead decarbonisation. However, access to reliable, clean and competitive sources of energy remains a main concern of island communities in the EU.

Although it is often technically and financially possible to develop renewable energy projects on islands, legal and regulatory frameworks, whether EU, national, regional or local, are not always fit-for purpose.

In order to better understand how legal and regulatory frameworks help or hinder the development of local decarbonised energy systems on EU islands of seven specific Member States, the Clean energy for EU islands secretariat examined the frameworks of Greece, Ireland, Italy, Spain, Sweden, Croatia and Estonia. The study identifies regulatory and policy barriers to the clean energy transition on the islands and formulates concrete recommendations to overcome them. For each of the Member States these findings were discussed with diverse national stakeholders in two online Focus Group Meetings and a physical National Stakeholder Meeting.

This study is deliverable of the Task Force 2 – Think Tank on legislation and regulation for islands of the Clean energy for EU islands secretariat. It builds further on the Regulatory inventory of legal and regulatory national frameworks that support clean energy development for 15 Member States, available online on the website of the Clean energy for EU islands secretariat.

There are several barriers that were put forward as priority barriers across all assessed Member States. They are summarised below and linked to general recommendations.

Strategic and systematic planning, coordination, monitoring of energy transition on the islands with local input –For some Member States, islands are mentioned in National Energy and Climate Plans (NECP) and several Member States have national plans and strategies for the sustainable development of the islands. However, these plans often lack concreteness, implementation, and follow-up due to a lack of attention to this topic at the national level. Local energy needs, challenges and priorities should be identified and made visible to regional and national level in a national strategy/plan for the islands. Islands challenges and opportunities should receive particular attention in national energy and climate plans and strategies, and island stakeholders and experts should be involved in the process.

Grid constraints and security of supply - The electricity grids on the islands are often underdeveloped and unable to incorporate additional renewable energy production. Capacity on the grid is often already reserved. Grid connection procedures and grid modernisation methodologies are not always suitable for renewable energy projects with island characteristics, blocking the development of such projects on the islands. In the long run, this barrier can be tackled by expanding and modernising grids on and around the islands, via changes in the regulations and mandates for the grid operators. In the short run, concrete frameworks for energy storage and reassessment of connection requirements for renewable projects in both interconnected and non-interconnected islands systems are required.

Spatial planning and stringent constraints – Land-use conflicts form a major barrier on islands. Spatial planning legislation is often not adjusted to island's characteristics as renewable energy projects are seen as conflicting to environmental protection. There is a lack of capacity and resources at local and regional level to deal with the complex matter of renewable energy on the islands. An island specific strategic document that will find compromises between sectors needs to be developed. Such a document can take the form of a detailed masterplan per island or group of islands coordinating the different land-uses and indicating go-to zones for renewable energy. At the same time a one-stop shop for clean energy projects on the islands, either at national or regional level needs to be created. Local and regional governments should be adequately staffed and trained to help prepare, implement, and monitor the materialization of these plans.

Community involvement in energy projects –Local stakeholder support is key for the clean energy transition. While the islanders are highly motivated to participate in the energy transition, there is often a lack of capacity and information. Also, the lack of supporting frameworks for energy sharing and, via energy communities and peer-to-peer trading, poses a particular challenge. National regulators and legislators should further work towards practical implementable concepts of energy communities and peer-to-peer trading, while creating simple procedures for involvement of local stakeholders in energy projects. At the same time awareness raising and capacity building activities should be directed to island communities.

Other barriers marked as priority in several, but not all Member States, are complex and lengthy authorisation and permitting procedures and lack of support mechanisms tailored to islands needs and characteristics.

The visual overview below presents these priority barriers for seven studied Member States.

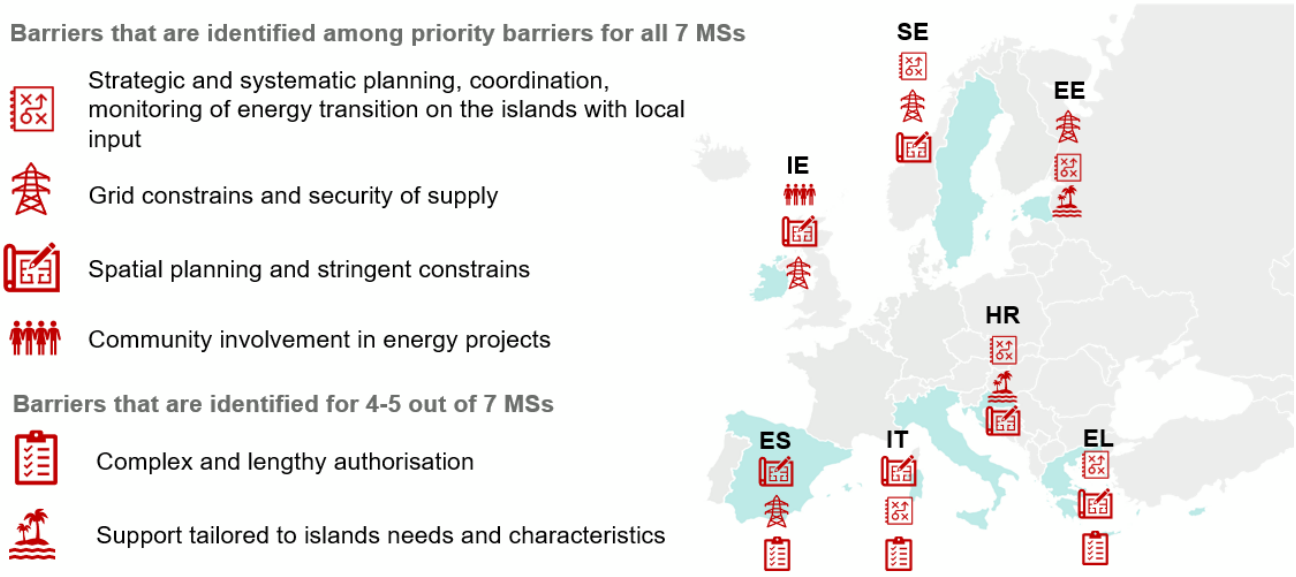


Figure 1 - Priority barriers in the different Member States

The findings per Member State are summarised below, with some concrete example barriers and recommendations. The more detailed analysis per Member State is provided in the following chapters.

Spain

Spain has recently implemented national and regional policy measures to facilitate the energy transition on the Spanish islands. However, several major challenges remain. The barriers identified relate to grid constraints, inflexible thermal power plants, lack of legal frameworks for renewable system integration, complex and lengthy permitting procedures, spatial planning issues, and need for improvement of coordination between the national and regional governments.

Grid constraints and security of supply

Barrier

Substantial funds are allocated to island grids, but:

- Grid infrastructure limitations and stringent requirements for renewables on islands are a barrier to renewable energy development. Congestion of the islands' electricity grids prevents further renewable development.
- Grid planning is slow and follows the same regulation as on the mainland, although the situation on islands is different.

Recommendations

- Align grid development planning with the ambitions and challenges of renewable energy on islands.
- Revise the network connection criteria to foster hybrid projects (RES + storage).

Lengthy and complex procedures for permits and authorisations

Barrier

There are some exemptions and simplified procedures for certain categories of RES projects, but:

- Procedures for RES projects on islands are too complicated and too many authorities and governments at different levels are involved.
- There is a shortage of skilled staff in in the local authorities in charge of issuing permits.

Recommendations

- Extend the simplified procedures, accelerate and simplify procedures for RE projects on the islands.
- Create a one-stop shop for clean energy projects on the islands.
- Build capacity at local level and provide permitting guidance.

Ireland

The Irish islands have been frontrunners in the energy transition. Multiple community-led renewable energy projects have been developed on islands such as the Aran islands, Cape Clear and Bere island. Several actions taken by the Irish national government have contributed to this objective. However, several major challenges remain. The barriers identified in Ireland relate to bottlenecks and gaps in the legal framework for energy communities, grid issues, land-use conflicts and spatial planning constraints and lack of consultation of island stakeholders.

Strategic planning and follow-up

Barrier

- Energy sector strategies and the long-term energy planning are highly centralised.
- There is no clear strategy for the energy transition on the islands in the NECP.
- Island stakeholders are not consulted in a systematic manner.

Recommendations

- Develop a national policy with involvement of the island stakeholders to address the specific needs of the islands.
- Relaunch the initiative to create an intergovernmental department to specifically focus on sustainable development of islands.

Grid constraints and security of supply

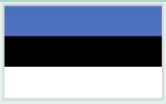
Barrier

- Underwater connection cables are currently too small to allow export of excess energy.
- Grids on the islands lack capacity and flexibility to incorporate any substantial amount of additional renewable energy generation facilities.
- Grid capacity upgrades are demand led, not based on potential future renewable generation capacity.

Recommendations

- Adapt the grid development methodology from an ad-hoc approach to a future-oriented approach.
- Islands should plan RES generation in coordination with the Distribution System Operator.
- Designate go-to zones for targeted grid upgrades.

Estonia



Estonia has recently implemented national measures to facilitate the energy transition on the Estonian islands. However, several major challenges remain. The barriers identified in Estonia relate to grid constraints and absence of frameworks for solutions to cope with it, islands not being consulted in a systematic manner, and lack of national vision/strategy on clean energy development for the islands. There is limited support from the national government in planning and implementation of clean energy projects and action plans. In addition, local opposition to renewable energy projects, lack of energy community framework to foster renewable energy projects, and spatial planning constraints also form barriers.

Grid constraints and security of supply

Barrier

- Electricity grids are upgraded based on expected consumption, which leads to grids on the islands not being strong enough to incorporate larger amounts of renewable energy: both offshore wind and PV.

Recommendations

- Improve grid development planning to ensure needed grid capacity for implementation of renewable energy projects, taking into account future offshore wind energy and onshore renewable energy plants.

Community involvement in energy projects

Barrier

There is potential for offshore wind energy, but:

- There is strong opposition from the island inhabitants against more wind turbines, caused by lack of clear benefits.
- Specific regulations related to energy sharing, energy communities, or prosumers is missing.
- Authorisation procedures are too stringent for community initiatives.

Recommendations

- Develop facilitating services for energy community projects and a framework for engagement of the island stakeholders in the energy projects.
- Local info office for energy communities and energy sharing.
- Shifting the logic from 'tolerance fee' to a real renewable energy projects co-ownership structure.

Croatia

Croatia and its island stakeholders have been very active on the European level in bringing to focus the agenda of the energy transition of the islands. In the past two years, the national legislation was improved by the creation of a framework for energy transition which includes the islands. However, challenges to the implementation of the energy transition still remain. The main barriers identified in Croatia relate to local, regional and national energy planning, coordination and monitoring and the need for better integration of energy priorities in sectoral policies. Moreover, the lack of support mechanisms tailored to islands, lengthy permitting procedures, lack of involvement of island communities in energy projects, and grid constraints and inflexibility came into focus as well.

Strategic planning and follow-up

Barrier

Many development plans exist, but:

- Vision or priorities for regional and local energy development are not clear.
- Various sector priorities are too generic and not aligned, making it difficult to find locations for clean energy projects on the islands.
- Feedback loop from local/regional needs and priorities to national level for energy planning is missing.
- There is a lack of best practice examples of clean energy projects on the islands for both the local stakeholders and the governments.

Recommendations

- In the short term, a National Taskforce for islands' clean energy transition should be formed under the existing Island Council. In the long term, such Taskforce should have an effective mandate and provide support and advise to relevant departments of the national government.
- Overall energy transition, and not just energy efficiency, should be managed and monitored on regional and local level by existing regional coordinators and local action groups (LAGs).
- The Energy Act should recognise the need for regional and local energy transition planning, coordination and monitoring.

Support tailored to islands needs

Barrier

There is funding that islands can use but:

- There is a lack of island stakeholders applying for this support for clean energy projects on the islands.
- Timing of the funding calls and deadlines are too unpredictable and too short for island stakeholders to prepare qualitative applications.
- No calls are currently tailored to islands and their projects.
- There is a lack of knowhow on the islands to prepare qualitative projects and applications.

Recommendations

- NECP should include island energy transition as one of the priorities in order to plan island specific support by the Environmental Protection and Energy Efficiency Fund (EPEEF).
- Provide annual calls with predictable timing and similar requirements.
- EPEEF to provide calls for technical assistance to the islands, mobilizing national energy experts to help identify and prepare viable projects for funding on the islands.

Greece

Energy legislation in Greece has been developing to allow for the energy transition in all sectors. Greece has put special focus on the energy transition on the islands. Many innovative projects are already being implemented on pilot islands. In addition, the GReco Islands initiative promises to accelerate the energy transition and sustainable development on the islands. However, challenges to the implementation of the energy transition still remain. The barriers identified in Greece relate to the strategic planning and coordination of the energy transition on the islands, local energy planning, complex authorisation, grid constraints and energy communities.

Grid constraints and security of supply

Barrier

Greece has adopted and is implementing the 10-year plan to interconnect island systems but:

- There is insufficient capacity of island grids.
- To ensure security of supply, a 30% share is defined for RES electricity penetration for the island systems.
- No renumeration for use of storage capacities is foreseen.
- Storage can only be used within hybrid system (RES + storage), or behind-the-meter.

Recommendations

- Allow use of regulatory sandboxes for innovative solutions.
- Create supporting regulatory frameworks for storage use and demand-side management.
- Encourage utilisation of flexible loads and sector coupling with RES for more flexible electricity systems.

Lack of island specific planning and integration with spatial planning

Barrier

- Lack of local spatial plans on the islands.
- RES special spatial plan combined with national heritage and building preservation restrictions lead to disproportionately negative effects on clean energy transition on the islands.
- Unclear how energy planning integrates into spatial planning.

Recommendations

- Reassess spatial planning guidelines for implementation of clean energy projects on the islands, included in special spatial plan.

- Adopt national and regional master plans for clean energy projects.
- Mandate island or group of islands energy plans.

Sweden

Innovative pilot projects on the Swedish islands are showing how the energy transition can be implemented, where the transport sector, both road and marine has been leading the way. However, challenges to the implementation of the energy transition still remain. The barriers identified in Sweden relate to the need for increased visibility of the islands' energy situation and challenges, grid constraints, lengthy authorisation processes, and need for local stakeholder involvement in the energy transition.

Strategic planning and follow-up

Barrier

Sweden has 984 inhabited islands but:

- There is a lack of visibility of island energy challenges on the national level.
- There is no specific island policy or strategy or coordinated action from the national level.

Recommendations

- A group of experts should be mandated to analyse the current energy situation on the Swedish islands.
- Based on the analysis, they should provide guidelines and indicators for national stakeholders on best support for energy transition on the islands.
- Island energy transition should be recognised in the National Energy and Climate Plan and it should support innovation and multifunctional projects.

Lack of security of supply on the islands

Barrier

Sweden has traditionally a centralised energy system that depends on transmission system connections:

- Restricted capacity does not allow large RES projects on the islands.
- Transmission System Operators (TSO) and Distribution System Operators (DSO) lack guidelines for electricity system operation on the islands.
- Grid constraints due to 10-year winter operation conflicts with the need for flexibility of the grid.
- Grid constrains are tackled with the need for additional timely and expensive transmission grid expansions.

Recommendations

- Develop long-term planning for island security of supply assessing various options, aside from new grid lines.
- Support the development of storage, demand-response and smart-grids on the islands.
- Channel funding from the EU towards smart grid development, and research & innovation on the islands.

Italy

Italy has recently implemented national and regional policy measures to facilitate the energy transition on the Italian islands. However, several major challenges remain. The barriers identified in Italy relate to spatial planning constraints with stringent and generic restrictions, lack of attention for the local level within the national strategic energy planning and complex and lengthy permitting procedures. The system of unified prices and the existence of regulated monopolies as well as grid constraints also pose barriers for the clean energy transition on Italian islands. As island energy projects are mainly community driven, the fact that support measures focus on household level and not on community level, combined with a rather underdeveloped regulatory framework for energy communities, poses a particular barrier for those type of projects.

Support tailored to islands needs

Barrier

Many funding programs exist, but:

- There is a lack of coordination and monitoring of different funding programs.
- There is no feedback loop from local/regional to national level for national strategic and funding planning.
- There is no visibility of local priorities in the National Climate and Energy Plan and national planning.

Recommendations

- Mandate the development of regional energy and climate targets and plans.
- Set up annual monitoring of implementation of all funding programs, similar to how it is done for National Recovery and Resilience Plan.
- Develop a National Taskforce for island energy transition.

Spatial planning and stringent constraints

Barrier

Spatial planning is different for different regions:

- The national planning law from 1942 is outdated and a new one has been unsuccessful so far. This makes it unclear how spatial planning practices should interact with other sectoral policies.
- Regional territorial and landscape plans are ambiguous, causing discrepancies in implementation.
- Renewable energy projects are not possible in many areas due to restrictions related to special areas of conservation and special protected areas.

Recommendations

- Guidelines to regional level through adoption and implementation of the new national framework law for spatial planning.
- Regional energy master plans with identification of suitable areas for islands should be mandatory.
- Involve regional and local stakeholders in the process of landscape planning.

Key recommendations

Strategic planning
Local island energy needs and challenges need to be identified and made visible to regional and national level. Islands' challenges and opportunities should **receive particular attention in national energy and climate plans and strategies**. Islands' stakeholders should be involved in the strategic planning process: island policy should be made with them. The **energy transition on the islands should be guided** - for example via guidelines and technical assistance - **and monitored** by a taskforce or working group uniting stakeholders from different institutions and levels.
Grid and security of supply
Grid operators should receive the mandate and the funding to **expand and modernise grids on and around the islands**. At the same time regulatory **frameworks for energy storage and demand-response** are needed. There is need for a legal definition, access to markets and revenue streams for storage, both large and small scale. Regulatory sandboxes should be used to test storage and demand response operation on the islands. **Connection requirements for renewables projects** in the island system need to be reassessed.
Spatial planning and permitting
Building on a national strategy/plan for islands, a detailed **masterplan per island or group of islands** needs to coordinate the different land-uses and should indicate go-to zones for renewable energy **Projects in those plans should be fast-tracked** and/or exempt from certain stages of the permitting procedure and considered as being of overriding public interest. Create a one-stop shop for clean energy projects on the islands, either at national or regional level. Local and regional governments should be **adequately staffed and have a know-how** to make and follow-up such plans. Funding from the national level directed to this purpose is needed, through guidelines, trainings and technical assistance.
Energy Communities
Clear and supporting regulation allowing practical implementation of the concepts of energy communities and peer-to-peer energy sharing should be developed. Create **simple procedures** for involvement of local stakeholders in energy projects, for example via a minimum share of citizen/energy communities participation. Moreover, introduce requirements for local stakeholder involvement in clean energy projects. **Awareness raising and capacity building** activities should be directed to island communities.
Island tailored support systems

Existing incentive schemes of residential PV, heat-pumps and storage should consider **support for the higher costs of installation and maintenance** on the islands. This could be done via an uplifted grant system for example. Additional **island-specific support systems** could be set up using national and EU funding. The support systems should be based on the national island policy and local energy plans.
Capacity building and exchange of best practises
Provide **technical assistance** to island stakeholders for identifying and preparing local projects for financing and **capacity building for DSOs and TSOs**. **Pilot projects** on islands should use regulatory sandboxes to learn how to manage islands with RES and storage etc. **Exchange of best practices** among islands and involvement in European projects (support network outside of member state) should be fostered.

Introduction

The Clean energy for EU islands initiative has been tasked to analyse the existing and emerging regulatory framework that supports island clean energy transition, identify policy and regulation that enables and hinders energy transition and shape recommendations for overcoming them. Based on this work, the secretariat has advised Memorandum of Split member states and DG ENER on policy and regulatory issues for clean energy transition on islands.

In 2021 the Secretariat published the Regulatory inventory for 15 Member States with inhabited islands. It provides an overview of national policy and regulation that supports clean energy transition on the islands that was in force by 31st of July 2021.

In order to identify Member State specific policy and regulatory barriers, the Secretariat started the process of detailed analysis for seven Member States (Croatia, Estonia, Greece, Italy, Ireland, Spain and Sweden). These seven Member States were selected because their islands offer diversity, both in terms of geography and the applicable regulatory framework for energy transition, and replicability of their frameworks to other Member States. The detailed analysis has been done based on the methodological approach explained in this study.

The study is presented in two parts. In a first part, the big picture view of the EU policy and legislation for clean energy transition on the islands is presented, which includes resulting recommendations on the EU level. The second part details the analysis for each of the seven Member States. Each Member States analysis further includes two subparts: an overview of national policy and regulation that enables clean energy transition on the islands and a list of identified barriers and recommendations for overcoming them. The identification of priority barriers and shaping of the recommendations has been done by the Secretariat, in collaboration with relevant Member State stakeholders.

This study presents the conclusions from the whole exercise and includes the seven country studies. A comprehensive analysis per Member State is also published as a separate study, together with short visual booklet, available on the website of the Clean energy for EU islands secretariat.

EU Policy and Legislation for clean energy on islands

Legal framework for islands

As insularity and remoteness pose particular challenges for their development, islands are recognised as distinct territories in EU legislation. Articles 174 and 349 of the Treaty on the Functioning of the European Union (TFEU) establish islands to be territories with certain geographical specificities and create a clear legal basis for special measures for Outermost regions.

Although there is not a specific definition of "island", Article 174 TFEU states that "island regions can include island States in their entirety, subject to the necessary criteria being met".

> Article 174 TFEU, paragraph 3, on economic, social and territorial cohesion, provides that the Union shall pay particular attention to the "regions which suffer from severe and permanent natural or demographic handicaps", such as islands.
>
> Article 175 TFEU, paragraph 1, states that the implementation of the internal market shall take into account the objectives of article 174, thereby presenting a possibility for exemptions to the liberalised energy market on islands.
>
> Article 349 provides for a derogatory regime for nine so-called 'outermost regions', which are territories located remotely from the European continent; Guadeloupe, French Guiana, Martinique, Réunion, Saint-Barthélemy, Saint-Martin, the Azores, Madeira and the Canary Islands. On the basis of this article derogations to the core of the liberalised market regime (unbundling, third party access, freedom of choice of the supplier) have been granted by the European Commission for these outermost regions, mostly on an indefinite basis[1].
>
> On the other hand, for islands located closer to the European continent (Greek islands for example) the derogation analysis is much stricter and the ones granted are limited in time[2]. The ultimate goal of EU fundamental energy law is undoubtedly to establish "a system of open and competitive markets [through] interconnection and interoperability of national [energy] networks", and this includes as much as possible islands (TFEU, art. 170)[3].

On non-interconnected islands a vertically integrated energy operator often is charged with energy generation and distribution, while interconnected islands have to abide by the general EU Energy rules. However, there are some possible derogations to liberalisation rules according to the 2019 Electricity Market Directive if the island can be considered as a small isolated or small connected system and if the European Commission grants such derogations[4]. Article 66 (2) of the 2019 Electricity Market Directive states that derogations shall "aim to increase competition in and the integration of the internal market and […] not hamper the transition towards renewable energy,

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[1] Jan Papsch, Derogations and exemptions, in Christopher Jones (ed.), EU energy law, volume I, The internal energy market, 4th edition (Claeys & Casteels Publishing 2016), pp. 549-552.

[2] Jan Papsch, Derogations and exemptions, in Christopher Jones (ed.), EU energy law, volume I, The internal energy market, 4th edition (Claeys & Casteels Publishing 2016), pp. 552-553

[3] Mauger, R. (2021). Cast Away? How EU Energy Law Provides for a Just Transition for EU Islands. *OGEL*, *2021*(1), 1-16. https://research.rug.nl/en/publications/cast-away-how-eu-energy-law-provides-for-a-just-transition-for-eu

[4] For the definition of the small isolated and small connected systems, see Directive (EU) 2019/944 of the European Parliament and of the Council of 5 June 2019 on common rules for the internal market for electricity and amending Directive 2012/27/EU (2019 Electricity Market Directive), art. 2 (42) & (43).

increased flexibility, energy storage, electromobility and demand response." This article embodies the **logic of EU energy law when it comes to islands: derogations to the general regime can be granted, but the priorities are (i) harmonisation with the liberalisation rules applicable to the mainland and (ii) the energy transition**[5].

Also noteworthy is that the Renewable Energy Directive[6] states that, in order to increase the generation of energy from renewable sources in the outermost regions and small islands, Member States may adapt financial support schemes for projects located in those regions in order to take into account the production costs associated with their specific conditions of isolation and external dependence.

The clean energy for EU islands initiative

In May 2017 the European Commission, together with 14 Member States, signed the "Political Declaration on Clean Energy for EU Islands" in Valetta, Malta. This Declaration was born out of the recognition that islands and island regions face a particular set of energy challenges and opportunities due to their specific geographic and climatic conditions. These opportunities have the potential to make Europe's island communities innovation leaders in the clean energy transition for Europe and beyond - a fact the European Commission explicitly recognised in its Communication on "Clean Energy for All Europeans". Furthermore, the Commission confirmed its commitment to ensure that the energy concerns of island inhabitants are at the forefront of the energy transition and related policy developments. This was later repeated in its communication on the European Green Deal.

Shortly after the Declaration was signed, the Commission launched the Clean energy for EU islands initiative. The Initiative promotes the energy self-reliance of islands, encourages the reduction of the dependency on costly imported fossil fuels, and aims to facilitate the delivery of the best available clean technologies to islands. The Commission is committed to ensuring that the energy concerns of island inhabitants are at the forefront of the energy transition and are central to policy developments.

In cooperation with the European Parliament, the Commission in 2018 set up the Clean energy for EU islands secretariat to deliver the objectives of the Clean energy for EU islands initiative. The secretariat acts as a platform of exchange of best practice for islands' stakeholders, provides dedicated capacity building and advisory services to islands and advises DG ENER on policy and regulatory issues for clean energy transition on islands.

The Memorandum of Split, signed in June 2020, establishes a structure for the cooperation of the Member States and the European Commission, consisting of a High Level Group, a Working Group and the Clean energy for EU islands forum. It identifies three work areas for cooperation: (1) Development of specific technology solutions for islands or groups of islands, (2) Creating an enabling environment, including legal and regulatory aspects, and (3) Providing a support framework and finance. The secretariat supports the implementation of this cooperation structure and provides assistance to islands in developing and implementing their transition agendas.

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[5] Mauger, R. (2021). Cast Away? How EU Energy Law Provides for a Just Transition for EU Islands. *OGEL*, *2021*(1), 1-16. https://research.rug.nl/en/publications/cast-away-how-eu-energy-law-provides-for-a-just-transition-for-eu

[6] Directive (EU) 2018/2001 of the European Parliament and of the Council of 11 December 2018 on the promotion of the use of energy from renewable sources

REPowerEU

On 18 May 2022 the European Commission has presented the REPowerEU Plan, its response to the hardships and global energy market disruption caused by Russia's invasion of Ukraine. There is a double urgency to transform Europe's energy system: ending the EU's dependence on Russian fossil fuels, which are used as an economic and political weapon and cost European taxpayers nearly €100 billion per year and tackling the climate crisis. There are three main axes:

- Saving energy.
- Accelerating the rollout of renewables.
- Diversifying supplies and supporting our international partners.

A massive scaling-up and speeding-up of renewable energy in power generation, industry, buildings and transport will accelerate our independence, give a boost to the green transition, and reduce prices over time. The Commission proposes to increase the headline 2030 target for renewables from 40% to 45% under the Fit for 55 package. Setting this overall increased ambition will create the framework for other initiatives, including among others:

- A dedicated EU Solar Strategy to double solar photovoltaic capacity by 2025 and install 600 GW by 2030.
- A Solar Rooftop Initiative with a phased-in legal obligation to install solar panels on new public and commercial buildings and new residential buildings.
- A Commission Recommendation to tackle slow and complex permitting for major renewable projects, and a targeted amendment to the Renewable Energy Directive to recognise renewable energy as an overriding public interest. Dedicated 'go-to' areas for renewables should be put in place by Member States with shortened and simplified permitting processes in areas with lower environmental risks. To help quickly identify such 'go-to' areas, the Commission is making available datasets on environmentally sensitive areas as part of its digital mapping tool for geographic data related to energy, industry and infrastructure.

These two last tools are particularly relevant for islands as renewable energy development is often hampered by spatial planning constraints and complicated permitting procedures. Where relevant references to these tools are made in text boxes in the country studies.

On the same day the European Commission (DG ENER) published the report "Technical support for RES policy development and implementation – Simplification of permission and administrative procedures for RES installations (RES Simplify)". The aim of the report is to provide insights on the most important obstacles impeding the diffusion of renewable energy technologies in the permitting and grid connection procedures. It also discusses best practice examples deployed by the EU Member States and general best-practice recommendations which can be promoted with regard to permitting new and repowered renewable energy installations and connecting them to the grid.

Actions to be taken at EU level

In the follow-up and assistance in implementation of the REPowerEU package, the Commission could pay particular attention to efforts and actions regarding simplification of authorisation procedures and provide capacity building to authorities involved in these procedures, paying

particular attention to the challenges and opportunities brought forward in this study. Specific policy support from the Commission could focus on grid flexibility and security of supply (storage, demand-side response, etc.).

By 30 June 2023, Member States will submit to the Commission draft updated NECPs. The Commission has published guidance to Member States on the process and scope of this update. The Commission could, within that guidance, refer to the recommendations and best practice examples within this study. Beyond mentioning islands in the NECP, an island strategy or at least the ambition of developing an island strategy could be included. We recommend that the Member State define goals, not only on national level but also on regional or even island level. Actions in the Member State NECPs should ensure that spatial planning is aligned with energy, climate, and other sector planning.

While most of the Recovery and Resilience plans are already approved, it could be envisaged, in its implementation, in concertation with the Commission, to target the funding towards multifunctional projects on islands and require involvement of local stakeholders within those projects.

In its cooperation with grid operators, the European Commission could provide support on how to adjust their grid planning and financing to meet the requirements of the energy transition on the islands, as presented throughout this study.

Within the existing Research and Innovation funding instruments at EU level – Horizon Europe, InvestEU, Connecting Europe Facility, etc. - support could be redirected towards decarbonisation of the European islands. This could be one of the Key Actions under the revision of the Strategic Energy Technology Plan.

Methodological approach

Different methods of information collection were used by the Think Tank to complete the information needs for the detailed inventory:

- Desk research completing the information for the selected Member States, starting from analysis of the Regulatory inventory, was conducted.
- In-depth surveys were created and sent to the consortium's network.
- Information templates were sent to regulators, national authorities and relevant stakeholders.
- Semi-structured open-ended interviews with national and regional legislators, regulators and academic institutions and relevant actors (local Distribution System Operators (DSOs), citizens, authorities, businesses and communities) of local energy initiatives were organised. These helped to clarify the rationale behind and interpretation of existing legal developments. In these interviews, we identified the key actions' drivers, opportunities and obstacles for the implementation of the action plans, including possible ways to address or overcome them.
- Two online Focus-Group discussions where held per Member State, one to discuss the identified barriers and one to discuss the formulated recommendations to overcome the barriers. Focus Groups included representatives of various stakeholders relevant for the island energy transition in the Member State.
- A National Stakeholder Meeting was held in each country, bringing together representatives of various national stakeholders relevant for island energy transition.
- Experiences from local stakeholders, available through one-on-one contacts, articles in local newspapers or as part of communication provided by (local) advocacy groups were integrated. The contacted actors included those that were identified during the project work from Phase I of the Secretariat and project experiences that have arisen from the technical assistance in Task Force 1.

A visual overview of the process is presented below.

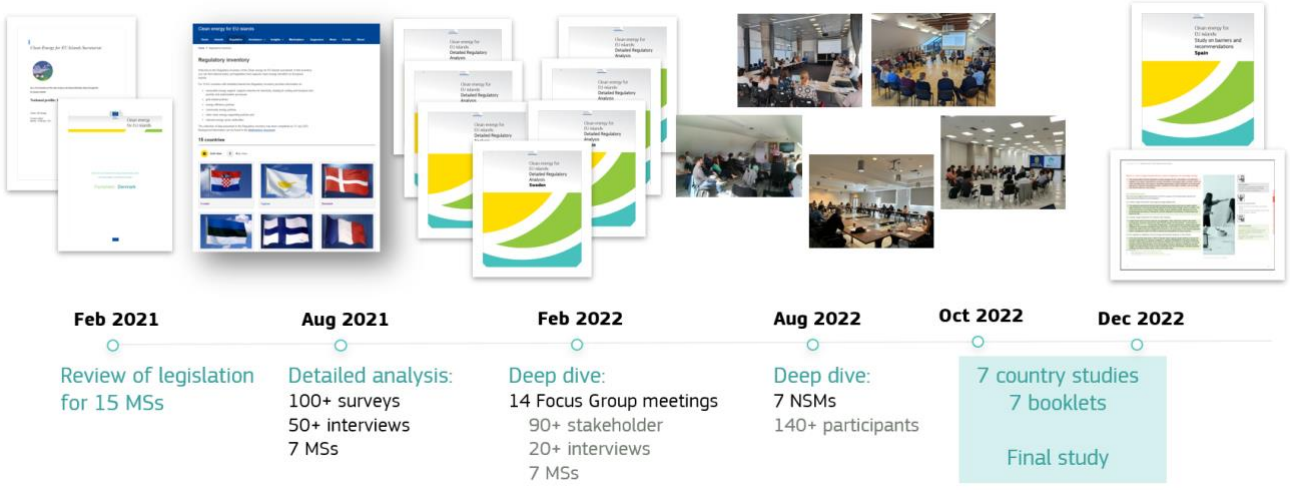

Figure 2 - Visual overview of the process for the development of this study

Country sections

For each of the seven Member States a detailed assessment was carried out. The full country studies, with annexes, can be found online at in the publications corner of the secretariat website.

Each of the country sections below is a summary of those full studies. REPowerEU references are shortened as they are in full available in Annex A.

Spain

The first Chapter of this Spain country section provides an overview of the existing policy and legislation for clean energy on Spanish islands. The second Chapter contains the identified legal and regulatory barriers, based on the survey and the interviews, and the recommendations, based on the Focus Group Meetings and the National Stakeholder Meetings.

Policy and Legislation for clean energy on Spanish Islands

Introduction to the Spanish Energy Market – Relevant Actors

Throughout the study several key stakeholders in the Spanish Energy Market will be referred to. Therefore hereunder a short overview of these actors and their role is given.

The Iberian Electricity Market – MIBEL[7] resulted from the cooperation between the Portuguese and Spanish Governments with the aim of promoting the integration of both countries' electrical systems. This market is supervised by the CNMC[8] — National Commission of Market and Competition, the Spanish independent competition regulator responsible for enforcing competition law.

Different players are active on this market. There are players that produce the energy (Producers) and others that consume energy (Consumers). Between production and consumption there are several stages, such as: the control of production and the establishment of prices (Regulators and Market Operators), the transport of energy (Transmission Operators), the distribution of energy (Distributors), and the sale of energy to the final customer (Marketers or Utilities).

OMIE[9] is the Nominated Electricity Market Operator (NEMO) for managing the Iberian Peninsula's day-ahead and intraday electricity markets.

Red Eléctrica de España (REE)[10] is the company dedicated to the transmission of electricity and the operation of the transmission electrical system (the national grid). Transport networks, as a rule, have a voltage higher than 220 kV ("High voltage"). The legislation establishes a single carrier, which is REE.

[7] https://www.mibel.com/en/home_en/
[8] https://www.cnmc.es/
[9] https://www.omie.es/en
[10] https://www.ree.es/en

Distribution system operators have the function of distributing energy, which means that they are responsible for expanding, maintaining and operating the distribution networks, designed to transfer the energy to the final consumers. Endesa S.A.[11] is a Spanish-based multinational electric utility company, the largest in the country. This is the main distribution system operator on the islands.

The Ministry for the Ecological Transition and the Demographic Challenge (MITECO)[12] is a Department of the General Administration of the State responsible for the proposal and execution of the National Government's policy in the fight against climate change, prevention of pollution, protection of natural heritage, biodiversity, forests, the sea, water and energy for the transition to a more ecological productive and social model, as well as the preparation and development of the Government's policy in the face of the demographic challenge and territorial depopulation.

The Institute for Energy Diversification and Savings (IDAE) is a body attached to the MITECO, through the Secretary of State for Energy, to whom IDAE reports organically. It works in the areas of energy efficiency, renewable energy sources and transport. It advises the ministry on the implementation of energy policies.

Instituto Tecnológico de Canarias (ITC) is one of the largest technical institutes on the EU islands, with 200 people on board of which 40 dealing with renewable energy only. ITC works and collaborates (as consultants) with all local governments (local councils, responsible for Sustainable Energy and Climate Plans (SECAPs) for Convent of Mayors) on the Canary Islands, the regional government and the national government. ITC is focused on strategic and technological aspects. They are responsible for preparing energy plans together with regional governments, in charge of statistics on the energy on Canary Islands and work on defining and implementation projects together with local governments[13].

The Balearic Energy Institute is the public energy company of the Balearic Islands and its mission is to promote the energy transition and the democratisation of energy. Its main actions focus on the promotion of a new energy model through the development of shared self-consumption facilities and the socialisation of renewable energy projects, the promotion of actions to reduce the electricity bill of the Government of the Balearic Islands, mainly through the self-consumption of electricity, and the stimulation of electric mobility.

Spanish islands and their governance

Spain has a total of 48 islands, 16 of which are inhabited[14]. There are two major archipelagos: the Balearic Islands with the islands of Ibiza, Formentera, Mallorca, and Menorca; and the Canary Islands with the islands of Fuerteventura, La Gomera, Gran Canaria, El Hierro, Lanzarote, La Palma, and Tenerife. The four Balearic islands cover a total of 4 992km². The largest island is Mallorca (3 640 km²). The Spanish islands around peninsular Spain tend to be smaller in size (<10 km²). The Canary Islands together cover 7 493 km², which corresponds to 1.9% of the total area of Spain. Tenerife is

[11] https://www.endesa.com/
[12] https://www.miteco.gob.es/
[13] https://www.itccanarias.org/web/images/areas/ITC_Canary_Islands_Renewable_Energies_Dpt_2021.pdf
[14] Ministerio de Politica Territorial: https://www.mptfp.gob.es/dam/es/portal/politica-territorial/local/sistema_de_informacion_local_-SIL-/registro_eell/estudios/estudios_generales/parrafo/01/LASISLASENESPA-A.pdf

the largest island in the Canary Islands archipelago (2 034 km²). Of the total population of Spain, 7% lives on the Balearic and Canary islands[15]. This corresponds to 3 447 717 people[16].

From the point of view of electricity regulation, Ceuta and Melilla, the two autonomous cities bordering Morocco, are considered as electrical islands as well. Therefore, the Canary Islands, Balearic Islands, Ceuta, and Melilla are defined as Non-Peninsular Territories of Spain.

The Autonomous Community of the Canary Islands has its own Parliament and President. The Canary Islands are regarded as outermost regions[17]. The islands have 14 seats in the Spanish Senate. The autonomous island status and their own tax system are both mentioned in the Spanish Constitution. Furthermore, there is special legislation set up for the autonomous regions.

General Policy

The Integrated National Energy and Climate Plan for Spain for the period 2021-2030 aims to increase the share of renewable energy in final energy consumption of electricity to 74% in 2030. In the heating and cooling sector, the target is to increase the share of renewable heating and cooling (RES-H&C) to 31% by 2030. The Spanish target for 2030 is to reach a 28% share of renewables in the final energy consumption of the transport sector.

Strategic energy transition planning on the Spanish islands has its legal foundation in Article 10 of Law 24/2013 which provides special regulations for the "Insular and Extra-peninsular Electricity Systems". This term refers to four territories composed of 10 subsystems, in terms of electrical power generation: (1) and (2) the cities of Ceuta and Melilla on the coast of Morocco; (3) the four Balearic Islands; and (4) the Canary Islands: Tenerife, Gran Canaria, El Hierro, La Palma, La Gomera, Lanzarote, and Fuerteventura (the latter two are interconnected), constituting six differentiated subsystems. Given their isolated position and small size, Insular and Extra-peninsular Electricity Systems present their own limitations and constraints affecting the electricity supply, resulting in higher investment and operating costs than a typical interconnected mainland grid system. In the same way, the electricity generation in these territories is not regulated according to the mainland model of a wholesale market. The wholesale market model would not be able to respond to the aim of guaranteeing the electrical power supply by meeting demand efficiently, in cost terms. Today's generation in Insular and Extra-peninsular Electricity Systems is through fuel-oil, or combined cycle generators, and, to a lesser extent, by wind, PV, and cogeneration facilities.[18]

Strategic planning also happens at island level. In 2019, Menorca published its energy transition roadmap: 'the Menorca 2030 Strategy', which includes concrete objectives to cover 85% of the island's energy demand from renewable energy by 2030 and to reduce the island's current emissions by 71%. Key actions identified to achieve this objective include the expansion and reconversion of the Milà area (currently dedicated to waste treatment), which will create a public area of renewable generation through wind, photovoltaic, and biogas hybridisation. The plan further includes a commitment to promote photovoltaic self-consumption and the installation of renewables in urban areas; the establishment of local energy markets, the introduction of smart

[15] National Statistics Institute INE: https://www.ine.es/jaxiT3/Tabla.htm?t=2910&L=0
[16] Eurostat 2019: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=File:Demographic_balance,_2019_(thousands).png
[17] https://ec.europa.eu/regional_policy/en/policy/themes/outermost-regions/
[18] Uche-Soria, M.; Rodríguez-Monroy, C. Special Regulation of Isolated Power Systems: The Canary Islands, Spain. *Sustainability* 2018, *10*, 2572. https://doi.org/10.3390/su10072572

grids and storage technologies, and the commitment to energy efficiency in buildings particularly the public sector and through synergies with the private sector (especially in business parks), as well as the tourism infrastructure. Another key element is terrestrial mobility, for which the Menorca 2030 Strategy proposes an innovative integration of electric vehicles on the island, together with a holistic approach to the reformulation of mobility on an island scale. There are similar plans in the Canary and Balearic islands.

In May 2021, Spain adopted the country's first Climate Change and Energy Transition Law, which commits the country to cutting emissions by 23% by 2030, compared with 1990 levels. This law includes the obligation of islands to define low emissions zones before 2024, and it allows islands to restrict the use of cars and vans running on fossil fuels. That is linked to the provision in the Climate Change Law of the Balearic Islands that forbids the entrance of diesel vehicles starting from 2027 and other combustion engines from 2035.

Insular systems, due to the high levels of isolation, have higher investment and operating costs which would normally be reflected on the electricity prices the consumers pay. In Spain, the Law 24/2013, introduced a system of **unified prices**, known in Spain as the 'Solidarity Tariff Principle'. According to this principle, a consumer will pay the same price regardless of its location within Spain. This avoids consumers in Non-Peninsular Territories having to pay electricity generating costs higher than in mainland. Article 10 of Law 24/2013 provides the base for the regulation of the electricity activities, which is different from the mainland, as explained further below.

The current energy sales price in the dispatch was established by Ministerial Order TEC/1172/2018 from the price of the mainland market and affected by a coefficient that takes into account hourly changes in daily demand in Non-peninsular Territories. According to the Ministry, this system protects consumers while ensuring that the energy in the production dispatch is sold at a higher price during the hours when demand is higher in Non-Peninsular Territories. In such a way, a price signal is maintained for consumers to adapt their consumption and for generators to operate when energy is needed.

Although the market is liberalised (with Law 54/1997), Endesa is the only company responsible for thermal generation and distribution of energy on the islands. Several new developers, mainly for renewable energy, are gaining market share.

In the Spanish Islands, renewable penetration is still small compared to the mainland systems. For instance, in the Canary Islands renewable energy represented 18% of the electricity demand in 2020, far from the 47% in mainland Spain. Therefore, it is necessary to foster the deployment of renewable energy. This will require an increase of its contribution, on an annual basis, in unprecedented volumes. For instance, a decarbonised energy system for the Canary Islands by 2040 would require between 15 and 20 times the current amount of renewable capacity on these islands.

RD738/2015 establishes the dispatching procedure in Non-Peninsular Territories as well as the remuneration scheme for the production of electricity, particularly the remuneration scheme for installations from manageable sources of energy. The main goal of the Royal Decree 738/2015 is to regulate the procedures to produce and dispatch power in these island systems, with special focus

on the remuneration scheme for conventional generation. In Annex 2 of the Spanish country study[19], we provide for a detailed assessment of this system.

The regulatory framework for renewable sources has a specific legal framework with specific regulations based on the Law 24/2013, especially Royal Decree 413/2014. The remuneration scheme for PV and wind installations is developed in this **RD413/2014** (explained in more detail below).

ITC has finished the Canary Islands Energy Transition Plan (PTECan) which includes eight strategies[20], such as for example for PV, E-mobility and wind energy[21].

The Monitor Deloitte Report "*Los Territorios No Peninsulares 100% descarbonizados en 2040: la vanguardia de la transición energética en España*"[22] demonstrates how the non-peninsular territories (Canary Islands, Balearic Islands and the Autonomous Cities of Ceuta and Melilla) can lead the ecological transition and implement a completely decarbonised energy system by 2040, a decade ahead of the emission reduction targets set by the European Union and Spain for 2050. The report proposes a set of measures for their decarbonisation.

Renewable energy

Support systems

Spain supports various kinds of renewable energy technologies: PV and wind for electricity production and biogas, biomass, geothermal and solar thermal energy for heating and cooling. In the transport sector, Spain subsidises the purchase of electric vehicles (EV) and the implementation of EV charging infrastructure, as well as supports the use of biofuels.

In Spain, RD 738/2015 applies to Non-Peninsular Territories that are not integrated in the mainland system, even though they are partially connected, such as the Balearic islands. The **Royal Decree 738/2015** sets the remuneration scheme for generation and regulates the criteria and the parameters to determine the additional remuneration scheme for dispatchable sources, hydro, thermal and cogeneration groups of more than 15 MW. The additional remuneration scheme is based on regulated parameters of a standard installation managed by an efficient and well-run undertaking. If this remuneration is higher than market price (incomes from the dispatch at regulated price), the difference is compensated (50% by State General Budget and 50% through electricity charges). If the remuneration is lower than incomes from the dispatch at regulated price, generators give back the difference (for example, this is happening now, as a consequence of the higher wholesale price). Therefore, island generators receive a remuneration based on technical and economic criteria, determined to cover the cost of a well managed and efficient operator. In Annex 2 of the Spanish country study[23], we provide a detailed assessment of this system.

[19] Available online at: https://clean-energy-islands.ec.europa.eu/insights/publications/regulatory-barriers-spain-findings-and-recommendations
[20] https://www.canariastransicionecologica.com/transicion-energetica/normas-y-planes-transicion-energetica/plan-de-transicion-energetica-de-canarias/
[21] On the website of ITC one can find any information needed regarding energy planning and statistics for Canary Islands: https://www3.gobiernodecanarias.org/ceic/energia/oecan/
[22] https://www2.deloitte.com/es/es/pages/strategy/articles/territorios-no-peninsulares-descarbonizados-2040.html
[23] Available online at: https://clean-energy-islands.ec.europa.eu/insights/publications/regulatory-barriers-spain-findings-and-recommendations

The **specific remuneration scheme for renewable energy was established in RD413/2014**. This renewables remuneration scheme under RD413/2014 is an addition to the remuneration received from the sale of the energy valued at the regulated price and aims to cover the difference between the extra costs and the income. For the calculation of this compensation, the initial investment costs, the income from the sale of energy at the market price, and the operating costs for a company managing its assets efficiently are considered. Exceptionally, the specific remuneration scheme may also incorporate an extra incentive for the investment, when the installation helps to a significant reduction of the costs in the systems of non-peninsular territories. This incentive will be established based on the reduction of the costs generated and not so much of the characteristics of the type of installation. Note that contrary to the remuneration scheme under RD 738/2015, the remuneration for renewables can never be negative[24].

There are several island specific support systems for clean energy development. For example, the Institute for Diversification and Saving of Energy (IDAE), in cooperation with European Regional Development Funds (ERDF), is entitled to allocate financial support (non-repayable grants) to projects intended to generate electricity from wind power or PV, exclusively located in non-peninsular territories. Order TEC/1380/2018[25] established the regulatory bases for the award of grants for these projects. Based on this order, the IDAE has opened different programmes to grant aid. To get the grant, producers need to participate in the competitive mechanism organised per each call for proposal. Order TEC/1380/2018 states that the maximum amount of aid that may be granted to each investment project, expressed in €/MW, will be established in the corresponding call for proposals. There have been at least five auctions that will lead to the incorporation of a significant amount of capacity (more than 750 MW).
Besides the above-mentioned support schemes, an (non-limitative) overview of the generally available support schemes is presented below:

- Grants for wind and PV projects in non-peninsular territories and grants for investment in renewable electricity and thermal projects.
- Grants for Sustainable Urban Development - DUS 5 000 Programme: Grants to local authorities for clean energy projects in small municipalities, including the production of electricity from renewable energy sources for self-consumption of public buildings.
- Tenders / Auctions: Economic Regime for Renewable Energies – allocation of a sliding feed-in premium and a Specific Remuneration Regime - Allocation of a sliding feed-in premium[26].
- Tax regulation mechanisms: allowance on the Real Estate Tax for solar energy systems – 50% rebate of the full amount of the tax for properties where a solar energy system for thermal or electrical use has been installed and allowance on the Tax on Constructions, Installations and Works (up to 95% rebate in favour of constructions, installations or works in which systems for the thermal or electrical use of solar energy are incorporated).
- Renewable energy in electricity building obligation: minimum generation quota from renewable energy in non-residential buildings. Buildings larger than 3 000 m^2 shall install a renewable energy generation system (between 30 kW and 100 kW).

[24] Royal Decree 413/2014, of 6 June. Annex XIII. 2.a)... In no case shall the net asset value be negative; if a negative value is obtained from the above formulation, the net asset value (VNj,a) shall be considered to be zero.
[25] Order TEC/1380/2018, of 20 December, which establishes the regulatory bases for the granting of aid for investment in electricity production facilities using wind and photovoltaic technologies located in non-peninsular territories, co-financed with ERDF Community Funds
[26] The existing provisions do not foresee specific auctions for islands, so a regulatory development is additionally required in order to implement this mechanism in non-peninsular territories that are not effectively integrated with the mainland.

- IDAE/ ERDF grants (EU level) for non-refundable subsidies to renewable energy electricity project.
- Grants for investment in renewable energy electricity and thermal projects: allocation of non-refundable grants for thermal projects using renewable energy and subsidies for energy refurbishment actions in existing buildings, using renewable energy sources, regardless of their use and the legal status of their owners).
- renewable energy for heating/cooling in building obligations: minimum renewable energy contribution to cover heating of water in buildings – minimum quota of 70% from RE to cover total annual demand.
- Subsidies for the purchase of EVs and for the implementation of EV charging stations. The tax rates of the Special Tax on Certain Means of Transport are based on the CO_2 emissions of the vehicle.

RES projects authorisation process

When a suitable project site is found, a developer will start with requesting access and connection permits from the TSO or DSO. When those are obtained an Environmental Impact Assessment will be conducted, where different public and private stakeholders will be given the opportunity to get information and participate in the process. The authority will issue an Environmental Impact Declaration that may include requisites and conditions under which the project shall be conducted.

The project developer shall also apply for administrative authorisations. In particular, they will need a Prior Administrative Authorisation, an Administrative Authorisation for Construction, and local permits. In the cases where an easement or expropriation is needed, the project developer shall apply for a Declaration of Public Utility.

Permitting and authorisation procedures consist of many steps. Various actors from the national, regional, and local public administrations are involved in the permitting and authorisation process. For example, the EIA will be processed at the National level when the installation is greater than 50 electrical MW located in non-peninsular territories, when their electrical systems are effectively integrated with the peninsular system or when the installation is in located in the territorial sea (Art. 3.13.d Law 24/2013). In other cases the EIA will be processed at the Autonomous Community level (see Annex 4 of the Spanish country study[27] for more details).

There are some exemptions and simplified procedures for certain categories. For example, rooftop PV installations for self-consumption, depending on their size and location, may benefit from a simplified and shorter procedure. Units with an installed power up to 100 kW and connected to the low-voltage distribution system, should in principle not require an Environmental Impact Assessment or a Declaration of Public Utility for example.

In the Balearic Islands small-scale projects within medium and high interest projects have fast-track procedures with little or no involvement of the environmental and the agriculture departments, whereas projects requiring an area larger than four hectares require positive assessment from both of those departments. Projects requiring an area larger than 10 hectares require specific procedures for land use permit. Simplified permitting procedures exist in the Canary Islands for self-consumption systems (particularly below 100 kW).

[27] Available online at: https://clean-energy-islands.ec.europa.eu/insights/publications/regulatory-barriers-spain-findings-and-recommendations

End of March 2022, the Spanish Ministry for the Ecological Transition and the Demographic Challenge (Miteco) approved a new package of measures, including the promotion of renewables[28]. Given the emergency caused by international energy prices, an accelerated temporary authorisation procedure is enabled until 31 December 2024 to determine the environmental approval of new wind plants of less than 75 MW generation capacity and new solar parks not exceeding 150 MW in size. These plants will have to be located outside the Natura 2 000 Network and in low or moderate-sensitivity areas, according to the country's environmental zoning system for renewable energy. This demonstrates that accelerated procedures are a possible measure, however this only goes for projects that depend on the national administrations.

Grids

In the dispatching of generators to cover expected demand, renewable energy installations shall have priority under equal economic conditions in the market. There is one transmission operator, *Red Eléctrica de Espana*. There are 333 local distribution system operators (including five legally unbundled). The country has a smart meter penetration rate of 99.6%. The electricity supplier switching rates for household customers in 2018 was 10.4%.

The Canary islands are not electrically interconnected to the mainland. There is an interconnection between Fuerteventura and Lanzarote, two Canary Islands.

Supported energy efficiency measures

When it comes to improving energy efficiency, IDAE plays a key role on the administration and the granting of energy efficiency aids. Public actors on all levels (National, Autonomous Communities, and Municipalities) are committed to improving the energy efficiency of their public administrations´ buildings and in outdoor lighting installations. Among other programmes, the *Programa de ayudas para actuaciones de rehabilitación energética de edificios existentes* (PAREER) II programme grants subsidies and soft loans to households and other public and private actors to undertake renovation actions in buildings that improve energy efficiency standards.

Supporting policies

The Spanish RES policies encourage the development and deployment of renewable energies. Spain offers multiple vocational training opportunities and certification of professional skills and knowledge for professionals interested in working with renewable energy installations through the National System of Qualifications and Vocational Training. Thermal solar collectors and prefabricated thermal solar panels shall comply with international standards (UNE-EN and ISO).

Self-consumption and community energy

The Spanish legal system recognises the right to self-produce and self-consume renewable energy in multiple forms, which allows for flexibility in the self-consumption design. Collective self-consumption, sharing of self-produced electricity among customers connected at low voltage within a distance of 2000 m is also allowed. For collective self-consumption no grid fees are charged

[28] Real Decreto-ley 6/2022, de 29 de marzo, por el que se adoptan medidas urgentes en el marco del Plan Nacional de respuesta a las consecuencias económicas y sociales de la guerra en Ucrania: https://www.boe.es/buscar/act.php?id=BOE-A-2022-4972 https://www.eleconomista.es/empresas-finanzas/noticias/11696876/04/22/el-gobierno-acelera-el-tramite-de-de-proyectos-renovables-en-2024.html

for the electricity exchanges within the scheme. Renewable Energy Communities are not fully regulated. RDL 23/2020 partially transposed the RED II EU Directive, since it adopted the definition of these communities and entitled them to participate in auctions.

Spatial planning

Spatial planning in Spain is the responsibility of multiple government levels[29]. The Ministry of Ecological Transition is the authority responsible for the coast and the marine environment as well as for biodiversity. The Ministry of Agriculture, Fisheries and Food is the authority responsible for fisheries. Terrestrial spatial planning is the exclusive responsibility of the autonomous regions, which exercise full powers over legislation, regulation and execution[30]. Even if the autonomous regions are exclusively responsible for Land Planning and Land Management, this responsibility has certain limitations established in the Spanish Constitution, as the Central Government can approve basic legislation, for example related to the territorial wates[31].

[29] https://www.oecd.org/regional/regional-policy/land-use-Spain.pdf

[30] Spanish spatial planning legislation was initially set up in 2007 through the Land Law 8/2007 of 28 May. However, a Legislative Royal Decree, of 30 October 2015, approving the revised text of the Land and Urban Renewal Law was recently approved. Spatial Allocation Plans for Natural Resources follow Law 42/2007

[31] https://maritime-spatial-planning.ec.europa.eu/sites/default/files/download/spain_november_2020.pdf

Identified barriers and recommendations to overcome them

The Clean energy for EU island Secretariat's Think tank has identified legal and regulatory barriers, based on the detailed assessment of the current regulatory framework and consultation with relevant Spanish stakeholders through surveys and the interviews (see Annex 1 of the Spanish country study[32] for a detailed assessment). For each of the regulatory barriers, the Secretariat identified multiple recommendations. Those barriers and recommendations were presented and discussed within the Focus Group Meetings and the National Stakeholder Meeting (see Annex 3 of the Spanish country study[33] for more information).

Regulatory barriers are presented in the order of their priority for the energy transition on the Spanish islands. Some of the barriers that were identified via the surveys and interviews are barriers that exist both on the islands and on the mainland. In the recommendations below, the focus lies on the concrete issues with these regulatory barriers encountered by islands.

The table below represents the list of barriers (marked in dark blue) ordered based on their priority, and the proposed recommendations (marked in white).

Table 1 - Barriers and Recommendations Spain

Barrier 1**. Grid constraints and inflexible thermal plants**
Recommendations:
1.1 Improve grid development planning
1.2 Modernise the existing thermal generation to allow flexibility
1.3 Revise the grid connection criteria
Barrier 2. **Lack of legal frameworks for system integration of renewable energy**
Recommendations:
2.1 Create a legal framework encouraging storage deployment
2.2 Create a legal framework for demand-side response
2.3 Use regulatory sandboxes to test storage and demand response on the islands
Barrier 3. **Complex and lengthy permitting and authorisation procedures**
Recommendations:
3.1 Extend the simplified procedures, accelerate and simplify procedures for renewable energy projects on the islands
3.2 Create a one-stop shop for clean energy projects on the islands
3.3 Build capacity at local level and provide permitting guidance
Barrier 4. **Confusion and misunderstandings about the price signal**
Recommendations:
4.1 Provide capacity building on the price signal and engage with island stakeholders on possible improvements

[32] Available online at: https://clean-energy-islands.ec.europa.eu/insights/publications/regulatory-barriers-spain-findings-and-recommendations
[33] Available online at: https://clean-energy-islands.ec.europa.eu/insights/publications/regulatory-barriers-spain-findings-and-recommendations

Barrier 5. **Spatial planning: Lack of long-term vision on how different land uses on islands are coordinated to assure sustainable economic development**

Recommendations:

5.1 Provide guidelines from the national level and ensure integration of the energy sector strategy with spatial planning at regional level

5.2 Develop regional unified criteria

Barrier 6. **The lack of coordination of energy sector priorities between the national and regional governments**

Recommendations:

6.1 Create an 'island department' at national level

6.2 Support the development and implementation of Clean Energy Transition Agendas

Barrier 7. **Lack of clear regulation for energy communities**

Recommendations:

7.1 Adopt a clear regulatory framework for energy communities with identified benefits

7.2 Provide capacity building and information for municipalities

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Note that for several barriers and recommendations, suggestions from the Monitor Deloitte report *Los Territorios No Peninsulares 100% descarbonizados en 2040: la vanguardia de la transición energética en España*, available here, have been reproduced. This report analyses the characteristics of non-peninsular territories and provides a set of solutions to decarbonise these regions.

1. Grid constraints and inflexible thermal power plants

Firstly, grid infrastructure constraints are a barrier for renewable energy developments on the islands. While some islands have managed to make significant developments, for example the Canary Islands with 20.8% renewable power capacity[34], congestion of the island's electricity networks prevents further deployment of renewables on the islands, even if most of them have so far very little penetration of PV and solar.

The modernisation plans for the transmission grids emanate from the central government conducted by Spain's General State Administration, the autonomous communities, the National Commission on Markets and Competition, Red Eléctrica de España and all of the sector actors[35]. Demand and generation are not planned, but indicative forecasts are made to efficiently and effectively plan the transmission grid. By law, a plan has to be prepared every four years, and it must cover a six-year period. In the Electrical Plan for 2021-2026[36], according to the network operator, the Balearic and Canary Islands are the ones that are going to receive the most investment.

[34] https://www.ree.es/sites/default/files/07_SALA_PRENSA/Documentos/2021/20210312_PR_CanaryIslands_ENGW.pdf
[35] https://www.ree.es/en/activities/electrical-planning/new-transmission-grid-planning
[36] https://www.planificacionelectrica.es/sites/webplani/files/2022-04/REE_Plan_Desarrollo.pdf

However, the island stakeholders do not (or only partially) see these investments happening. The grid development plans are for six years, and hence can lock in the development for that period since they do not foresee any significant grid upgrades on the islands. With the current evolution of the installation of renewables, such long planning periods are a major barrier, as they do not allow for substantial modifications to the transmission grid according to the needs of the moment. This is even worse considering that any installation of more than 0.5 MW in non-peninsular territories is considered to affect the transmission grid and therefore authorisation must be obtained from the transmission grid operator. This burdens project development.

Every year, the DSOs send the authorities (regional, central and the CNMC) the investment plan for the distribution grid to be approved, covering the entire Spanish territory. According to the network operator, plans are being currently finalised, and the Balearic and Canary Islands are the ones that are going to receive the most investment, precisely because the network needs to be improved.

Secondly, thermal systems provide the basis for the current generation mix on the islands. While a decarbonised energy future of the islands does not allow space for the fossil fuel based generation, the transition period needs to find optimal solutions that help accelerate the clean energy transition taking into account the existing system. A significant part of the thermal fleet is beyond 25 or even 35 years of age, which renders them almost obsolete. While this could be an opportunity for the clean energy transition, as they could be replaced with renewable generation assets, the age of the thermal generation fleet on the islands has become an obstacle for renewable energy integration and security of supply.

The lack of flexibility of the current thermal fleet reduces the amount of renewable generation that can be dispatched. The high minimum loads of the engines translate to a significant thermal capacity that needs to be permanently connected. An electricity system with several generators must be prepared to withstand incidences such as the failure of one of them. This requires having some units that are providing spinning reserve, working below their available capacity, so that they can rapidly increase their generation to compensate a failure. Ideally, these spinning reserve units would be dispatched at zero, to minimise costs and emissions, and to leave the maximum space to renewable production. Unfortunately, this is technically impossible: these units will have to be dispatched at their technical minimum, the lowest production that they can provide. That technical minimum prevents more renewable generation from being dispatched as they “occupy” part of the available room for renewable production. Older units tend to have higher technical minima: 60% for the aged diesel engines present on the Spanish islands as opposed to for example 7% of a new gas turbine. This leads to higher emissions and costs and reduces the revenues of renewable generation (since this situation reduces their expected production). It can be considered that the lack of flexibility due to dated technology used for thermal generation is an obstacle to the development of renewable generation.

Current legislation establishes that the authorisation of new investments will be done through competitive procedures leading to a “compatibility resolution”, which is required to obtain the regulated remuneration. However, the regulation of these competitive procedures has not yet been put in place. State Aid approval at European level took longer than foreseen, namely until 2020. But since this approval the legal frameworks at Spanish national level have not been worked out. This means that all investments in firm and flexible generation, be it investments in new units or

refurbishments of existing units, have been paralysed since before 2013. As a result of this, the generation systems of the islands continue to rely to a very large extent on thermal generation, particularly in the Canary Islands, where all thermal generation is based on oil. Existing units are becoming old and obsolete, without the opportunity to be modernised. Therefore, risks to security of supply are increasing as well as renewable energy spill overs.

Thirdly, stringent grid connection requirements for renewable energy projects form a barrier on islands. Current regulations on access and connection to the networks are set out in Royal Decree 1183/2020, of 29 December, on access and connection to the electricity transmission and distribution networks[37], and in Circular 1/2021, of 20 January, of the National Markets and Competition Commission, which establishes the methodology and conditions for access and connection to the transmission and distribution networks of electricity production facilities[38]. Current regulation on grid connection requirements takes into account renewable energy sources that are coupled with storage or those that are used for self-consumption:

Royal Decree 1183/2020:	**CNMC Circular 1/2021:**
Article 19. Criteria applicable to competitions. 1. Tenders organised in accordance with the provisions of this chapter shall have the following characteristics: a) The asset to be awarded shall be the access capacity to evacuate electrical energy, expressed in MW. b) Participants must be interested in building storage facilities, or **electricity generation facilities that use renewable primary energy sources, which may also incorporate storage facilities**. (c) They may relate to all or part of the available access capacity of the node. Likewise, all or part of the capacity that is tendered may be exclusively for self-consumption generation facilities. Article 27. Hybridisation of electricity generation facilities with access and connection permits granted. 1. In accordance with the provisions of article 33.12 of Law 24/2013, of 26 December, the owners of electricity generation facilities with access and connection permits granted and in force, who hybridise these facilities by incorporating electricity generation modules that use renewable primary energy sources **or by incorporating storage facilities**, may evacuate electricity using the same connection point and the access capacity already granted.	Article 3. Content of the request for access and connection. (…) i) Identification of the electricity generation facility, including the technology and access capacity for which the permits are requested, as well as the UTM coordinates of the polygonal line that circumscribes the facility. (ii) **in the case of hybridisation, identification of the different technologies** and the power of the corresponding electricity generation modules; and (v) In the case of **electrical energy storage elements**, a description of those elements, including their storage capacity. ANNEX I In order to determine the accessibility of an electricity generating installation to a network at a connection point, a specific study shall be carried out at that connection point. This study shall be valid for 12 months from its completion and may determine different **access capacities depending on the technology of the electricity generating installations applying for the permits, as well as, where appropriate, hybridisation of generating installations and storage units**. ... 5. The provisions of this Annex shall also apply to the assessment of the **access capacity of a production facility associated with a form of self-consumption** with surplus supply...,

However, there seem to be difficulties in the application of the regulation on the islands.

In some cases, when asking for permits for a hybrid system of renewable energy plus storage, the storage capacity is added to the capacity of the renewable energy production facility, and it thus effectively counts as generation capacity. In already saturated grids on the islands, this means that such projects are blocked when they would actually help relieving the grid.

[37] Real Decreto 1183/2020, de 29 de diciembre, de acceso y conexión a las redes de transporte y distribución de energía eléctrica.
[38] Circular 1/2021, de 20 de enero, de la Comisión Nacional de los Mercados y la Competencia, por la que se establece la metodología y condiciones del acceso y de la conexión a las redes de transporte y distribución de las instalaciones de producción de energía eléctrica.

Also, there are certain projects that have a very low environmental impact (for example solar PV on rooftops or in urban areas). The administrative authorisation cannot be started though until the connection permit is available. For example, self-consumption projects of above 500 kW with surplus require a report not only from the distributor but also from the Transmission System Operator (TSO) (or system operator) and this substantially increases the procedures.

Some steps in the right direction have been taken. For example RD-law 6/2022 has introduced a new obligation to invest in increasing access capacity for renewable generation and self-consumption. Additionally, there is an obligation for DSOs to include in their annual investment plans actions to increase access capacity for new renewable generation and self-consumption.

Recommendation 1.1: Improve grid development planning in line with the RE ambitions and challenges of the islands

Grid reinforcements are highly necessary to achieve the decarbonisation objectives of the islands, but as mentioned above the transmission and distribution gird development plans do not sufficiently take into account the ambitious islands plans. Therefore the preparation of these grid development plans needs to involve a wider scope of islands' stakeholders in order to address islands' plans and characteristics.

Firstly, it is necessary to strengthen cooperation between those responsible for the electricity transmission and distribution networks, political leaders, and the local island stakeholders to plan a network prepared for the challenges that arise in the medium term, taking into account the changing energy situation on the islands (and modify the already approved plans to the extent possible).

Article 4 of the Law 24/2013 establishes that the transmission network plans are an exclusive competence of the Central Government (national level). Autonomous Communities and Cities of Ceuta and Melilla, and the regulator National Markets and Competition Commission are involved in the development and investment decisions of the transmissions grid plans, but the final decision stays at National level, based on a proposal of the transmission network manager. However, as explained above, although this cooperation legally exists, island particularities are not always taken sufficiently into consideration. While there are thus provisions for Non-Peninsular Territories involvement, a more structural cooperation could be envisaged as solution. This is key for the development of renewables so that islands can achieve a higher rate of self-sufficiency.

This structural cooperation could fall under the activities of the Spanish islands department, as recommended under recommendation 6.1. To foster the involvement of island stakeholders in national strategic long-term energy planning, funding distribution and improvement of the concreteness and effectiveness of instruments and actions at national level, we recommend creating an 'island department'.

This recommendation goes in line with the **REPowerEU** measures on **grid planning and connection, requiring** Member States to implement long-term grid planning and investment consistent with the planned expansion of renewable energy production capacities, taking into account future demand and the objective of climate neutrality. See Annex A for more details.

Secondly, we recommend classifying distribution grid development on the islands as projects of strategic interests. While a system for 'Unique Investments' ('*Inversiones singulares*') exists for transmission (art 19 of Royal Decree 1047/2013[39]) it could be envisaged to further develop this concept for Non-Peninsular Territories. It could be used for example for the deployment of new lines, substations or transformation centres in key areas. Or to increase evacuation capacity due to the concentration of renewable resources) This while speeding up their development and authorisation[40]. At the same time this existing framework 'Unique Investments' for transmission should be used to execute the most urgently needed strategic upgrades to the transmission grids on the islands.

This recommendation goes in line with the **REPowerEU** measure to ensure that plants for the **production of energy from renewable sources, their connection to the grid, the related grid itself or storage assets** are presumed to be of **overriding public interest** for specific purposes. See Annex A for more details.

Specifically for the Balearic islands, MITECO and Red Eléctrica de España should begin studies of the seabed in order to advance in the planning of the second Mallorca-Menorca submarine link and to ensure that construction of this link begins at the latest at the beginning of the next planning period 2027-2032.

Lastly, more agile grid planning is also required. Once the plans are made, it is difficult to deviate or revise. Certainly in light of the current high energy price context, the current planning times do not allow for islands to adapt to reality fast enough.

Actors involved:

- **MITECO, Ministry for the Ecological Transition and the Demographic Challenge**
- CNMC, *Comisión Nacional de los Mercados y la Competencia* (regulator)
- IDAE, Institute for Diversification and Saving of Energy
- **Transmission Grid Operator**
- **Distribution Grid Operators**
- Autonomous Communities
- Relevant Island stakeholders

Recommendation 1.2: Modernisation of existing thermal generation to increase flexibility and reduce reserve requirements

We recommend having a sufficient state-of-the-art balancing capacity. One option could be to relaunch the competitive procedures to modernise (a part of) the existing thermal fleet. This would require the completion of the necessary regulation for the remuneration of the costs of generation, as well as upgrading the current dispatching procedures to make possible the dispatching by the system operator of these new refurbished units, as well as other necessary technologies such as storage and demand response. As mentioned above, the modernisation of existing thermal generation could facilitate the development of RES on the islands. This would increase flexibility and reduce reserve requirements (through lower technical minimums and the hybridisation of thermal generators with batteries) allowing much greater injection of renewable energy.

[39] Real Decreto 1047/2013 - https://www.boe.es/buscar/act.php?id=BOE-A-2013-13766
[40] Monitor Deloitte report

Refurbishing existing units (for instance, the hybridisation with batteries, or more modern engines) would reduce the reserve requirements from thermal units. This would allow decreasing the minimum load at which they need to keep running for security reasons. Such a hybrid generation/storage unit could provide reserve without being constrained by the technical minimum. The thermal generator does not need to be running; in case of demand the battery would immediately inject energy in the system for the necessary time to start-up the generator. This way, all the capacity of a thermal generator (such as a gas turbine) would be available without requiring the unit to be spinning.

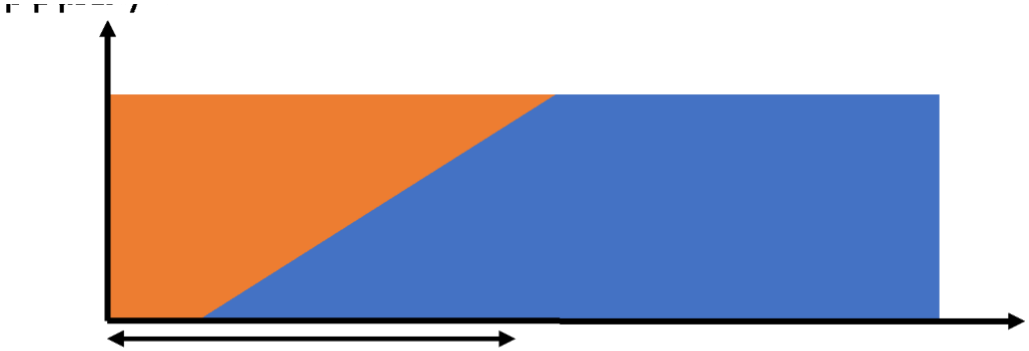

Figure 3 - Visualisation of start-up time hybrid generator - Source: Endesa internal analysis

The investment required to make this possible is relatively low and can be recovered in a very short period (around one year) because of the cost savings (in fuel and emission allowances) generated by this solution. This modernisation could also be partially funded by the Spanish recovery, transformation and resilience plan, which includes funding for the energy transition in the islands.

Actors involved:

- **MITECO, Ministry for the Ecological Transition and the Demographic Challenge**
- CNMC, *Comisión Nacional de los Mercados y la Competencia* (regulator)
- **Distribution Grid Operator**

Recommendation 1.3: Revise the grid connection criteria

As mentioned above, the Royal Decree 1183/2020 and Circular 1/2021 does already take into account storage and self-consumption. The Royal Decree defines access capacity '*capacidad de acceso*' as the 'maximum active capacity that can be injected in the grid':

> *Article 2. Definitions.*
> (…)
> *(k) "access capacity" shall mean the maximum active power that may be fed into the grid by an electricity generating installation or taken into the grid by a demand-side installation in accordance with the terms of the access permit and the access technician contract.*

Based on the Circular and Annex I, a specific study is to be carried out with scenarios on each specific installation to understand for what capacity the permit would need to be required. Uncertainties and complexities of this system render the development of hybrid projects complex.

On the one hand we recommend that the CNMC provides comprehensible guidelines on how developers should prepare their permits for hybrid projects. On the other hand, **we recommend using the option of '*especificaciones de detalle*' (detailed specifications) foreseen in Article 13 of the CNMC circular 1/2021 to request changes to the methodology and the conditions for connection to the transmission and distribution networks.** This is to be requested by the Distribution System Operator:

> *Article 13:*
> *The Comisión Nacional de los Mercados y la Competencia shall approve by resolution any detailed specifications that may be necessary to develop the methodology and conditions for access and connection to the transmission and distribution networks established by this Circular, including those that may be necessary to adapt the criteria established in Annex I to the particularities of the distribution networks.*

Lastly, this circular foresees, in article 5, 13 and Annex 3, that in non-peninsular territories, installations of 0.5 MW or more connected to the distribution grid are considered to affect the transmission grid and therefore authorisation must be obtained from the transmission grid operator:

> *'Article 13. Procedure for approval of detailed specifications.*
> *(..)*
> *Second additional provision. Value of the parameters, percentages and ratios contained in the annexes. Without prejudice to what may be established through the resolutions provided in the annexes to this Circular, the following values are determined for these parameters, percentages and ratios, mentioned in the aforementioned annexes:*
> *(..)*
> *3. The value to be exceeded by the sum of powers to be considered to determine the influence on the transmission network of the connection to the distribution network is set at 10 MW, in accordance with the provisions of section 1 of annex III. In non-peninsular territories, said value will be 1 MW. However, the calculation will only be made when the installed power of the request under study is greater than 5 MW (or greater than 0.5 MW in non-peninsular territories).*
> *4. The value to be exceeded by the sum of powers to be considered to determine the influence on a distribution network of the connection to another distribution network connected to the first, in accordance with the provisions of section 2, is set at 5 MW. .a) of annex III. In non-peninsular territories, this value will be 0.5 MW. However, the calculation will only be made when the installed power of the request under study is greater than 500 kW (or greater than 100 kW in non-peninsular territories).'*

This additional requirement complicates the connection procedures for small-scale installations**. We therefore recommend revising this stipulation to expressly indicate that the 0.5 MW corresponds to the discharge power and not to the installed power, as well as to make this criterion more flexible depending on the point of access to the distribution grid,** taking into account the consumption that can dissipate the energy generated before reaching the transmission grid node.

Actors involved:

- **CNMC, *Comisión Nacional de los Mercados y la Competencia* (regulator)**
- MITECO, Ministry for the Ecological Transition and the Demographic Challenge
- **Transmission Grid Operator**
- **Distribution Grid Operators**
- Academia
- Relevant Island stakeholders

2. Lack of legal frameworks for system integration of renewable energy

The legal and regulatory frameworks (support systems, regulations and procedures) are not adapted to the island's characteristics. There is a lack of specific legislation for licensing and operation of innovative technological solutions significant for the islands' clean energy transition such as storage and demand response.

For storage, an important step has been taken already by the Spanish government with the adoption of:

- Energy Storage Strategy proposed by MITECO, which takes a specific 'line of action' (*línea de acción*) in this regard by recognising the specific need for storage and formulating specific measures[41].
- Criteria and application procedures for the application, processing and granting of access and connection permits to the electricity transmission and distribution networks for, among others, storage facilities[42].
- Provisions that regulate the application process for storage facilities, both whether they are hybrid alongside a generation facility or are stand-alone storage facilities, that are able to feed energy into the transmission and distribution networks[43]. In essence, RD 1955/2000 is amended to establish that facilities of this kind will be given the same treatment as generation facilities, applying both to the authorisation process and their registration on the Administrative Register of Electricity Production Facilities.

While it is good that these strategic objectives have been defined, regulatory frameworks now need to be changed and adopted to fit the island realities. There is a need for clarity on the applicable rules; for example on how storage assets will be able to participate in the energy system.

For demand response, there is no clear definition yet in Spanish legislation[44]. While smart meters and dynamic pricing are already available for residential consumers, the Spanish market has been slow to enable consumer participation in any form of programme. There is no possibility for aggregated demand side resources to take part in the Spanish electricity market yet, since demand response is not regulated.

Recommendation 2.1: Create a legal framework encouraging storage deployment
Building further on the Energy Storage Strategy and the RD1183/2020, the government should work on a particular legal framework for the remuneration and operation of stand-alone storage systems on the islands. It would not be sufficient to complete the regulatory development of the mainland, because this mostly refers to wholesale market and system operation issues that are not applicable on the islands.

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[41] 'Island systems have unique energy storage needs due to their energy isolation and low interconnection, so energy storage solutions are more pressing in these systems than on the mainland to allow greater integration of renewables in the electricity and thermal sectors, as envisaged in Measure 1.12 of the PNIEC, aimed at "Singular projects and strategy for sustainable energy on islands.'
Measure 8.1 Generate incentive mechanisms for the deployment of energy storage in island and isolated systems.
Measure 8.2 R&D&I in isolated and low-interconnected areas
Measure 8.3 Using energy storage as a source of technological and industrial development

[42] RD 1183/2020

[43] Royal Decree-law 6/2022

[44] There is only one programme allowing explicit demand response, called "the interruptible load", which is reserved for large industrial customers connected to the high voltage grid. See Ministerio de Industria, Energía y Turismo, «Orden IET/1752/2014, de 26 de septiembre, relativa al servicio de gestion de la demanda de interrumpibilidad.,» 26 September 2014

MITECO should work on developing legislation to include defined mechanisms allowing energy storage to participate in the energy markets on the islands and offer incentive to use them. Specifically for the islands, in light of the security of supply issues due to their insularity and remoteness, there is a specific need for a remuneration mechanism and operating procedures for storage. It should provide investors with clear visibility on the remuneration parameters of this technology and encourage its penetration. This need has been incorporated into the Energy Storage Strategy (Measure 1.4 'Modify the operating procedures to incorporate the involvement of the storage'[45]) and can build further on the CNMC resolution of 10 December 2020[46] (which can however not apply to non-peninsular territories as there is no ancillary services market designed, but it can serve as an example).

Few countries currently provide a comprehensive regulatory framework for energy storage, with the majority of jurisdictions currently allowing storage to be defined as "generation" for the purposes of licensing and other regulatory requirements. However, some countries like the UK and Belgium have provided a more elaborate framework to create revenue streams to help different storage technologies to develop through capacity markets, ancillary services and other grid services.

While most countries do not have specific policies promoting energy storage, development is ongoing as demonstrated in Annex B – Examples of frameworks for Storage.

The development of a Spanish framework for energy storage could be done in the framework of the Recovery, Transformation and Resilience Plan (*Plan de Recuperación, Transformación y Resiliencia* or 'PRTR'), however the regulation must be 'island-specific' as there is no wholesale market on the islands, and their contribution is particularly important to assure security of supply and reduce the reliance on thermal generation.

Actors involved:

- CNMC, *Comisión Nacional de los Mercados y la Competencia* (regulator)
- **MITECO, Ministry for the Ecological Transition and the Demographic Challenge**
- IDAE, Institute for Diversification and Saving of Energy
- Transmission Grid Operator
- Distribution Grid Operators
- Relevant Island stakeholders

Recommendation 2.2: Create a legal framework for demand-side response

Building further on what is determined under Measure 1.3 'Define flexibility services at distribution network level'[47] in the Energy Storage Strategy, it is envisageable to create legal frameworks for explicit demand response and aggregation, specifically taking into account the island particularities.

[45] Pg 41 of the Energy Storage Strategy

[46] Resolución de 10 de diciembre de 2020, de la Comisión Nacional de los Mercados y la Competencia, por la que se aprueba la adaptación de los procedimientos de operación del sistema a las condiciones relativas al balance aprobadas por Resolución de 11 de diciembre de 2019: https://www.boe.es/diario_boe/txt.php?id=BOE-A-2020-16964

[47] The regulatory framework will be analysed to enable and incentivise distribution system operators to obtain flexibility services, as well as to define the requirements and obligations adapted to distributed storage assets, including behind the meter assets, such as storage and generation by active customers or prosumers, electric vehicles, or related to demand-side management. This framework should provide for the possibility for storage systems to provide several services simultaneously, establishing the regulation in this respect.

In developing new rules for the participation of demand response in the market, Spain should consider global best practices to fast-track its deployment[48].

It is necessary to develop and improve the different demand management mechanisms, such as the figure of the demand aggregator, battery management systems for electric vehicles and interruptibility for large consumers. A system for remunerating these services and a competitive mechanism should be defined so that it is provided by the most efficient operators and agents.

The development of a Spanish framework for demand-side response could be done in the framework of the Recovery, Transformation and Resilience Plan (*Plan de Recuperación, Transformación y Resiliencia* or 'PRTR'), however the regulation must be 'island-specific' as there is no wholesale market on the islands. The contribution of both recommendations related to storage (recommendation 2.1 and 2.1) is particularly important to assure security of supply and reduce the reliance on thermal generation.

Actors involved:

- CNMC, *Comisión Nacional de los Mercados y la Competencia* (regulator)
- MITECO, Ministry for the Ecological Transition and the Demographic Challenge
- **IDAE, Institute for Diversification and Saving of Energy**
- Transmission Grid Operator
- Distribution Grid Operators
- Relevant Island stakeholders

Recommendation 2.3: Use regulatory sandboxes to test storage and demand response frameworks on the islands

In line with what has been done in other EU Member States, Spanish islands could be put forward as innovative laboratories, via regulatory sandboxes[49]. Considering the islands have their own specificities (insularity, remoteness, consumption peak in summer), they can be used as test beds for energy transition with the implementation of new technologies, innovative operation, tariffing and business models. A Royal Decree[50] that allows sandboxing has been recently approved.

The islands could work with the regulator, DSOs, technology providers and research institutes to test the implementation and operation of storage technology in combination with RES plants, e-mobility and demand side management to provide flexibility on the existing grids. Such pilot projects would help provide testing grounds for what is possible with the island system and its particular constraints and to identify gaps in the existing practices and regulation to accelerate the energy transition on the islands. Funds could be allocated for research and innovation e.g., via tax benefits, with special focus on energy storage systems that could help provide security of supply in cases of higher integration of RES. The coordination of such testing and research activities, development of regulation, strategic plans and available funds can be a responsibility of the Spanish 'islands Department' (see recommendation 6.1).

[48] https://www.raponline.org/wp-content/uploads/2020/07/rap-kolokathis-spain-power-system-transformation-july-2020.pdf
[49] https://www.consilium.europa.eu/en/press/press-releases/2020/11/16/regulatory-sandboxes-and-experimentation-clauses-as-tools-for-better-regulation-council-adopts-conclusions/
[50] Royal Decree 568/2022, of July 11, which establishes the general framework of the regulatory test bench for the promotion of research and innovation in the electricity sector.

We recommend using the regulatory sandbox approach to allow specific islands to experiment. Regulatory sandboxes are ways for authorities, tasked with implementation and enforcing of specific legislation, to test innovative approaches and technologies in real-life situations through time and geographically limited implementation of exceptions to the existing legislation. This way incentives for clean energy transition on the islands can be tested without a permanent change in legislation. It also gives room to evaluate the success of the experiment. The choice of the islands and grids within which different regulatory sandboxes should be implemented can be decided in collaboration with the Spanish islands department (see recommendation 6.1) which will assure local inputs. Based on the results from innovative projects and regulatory sandboxes in Spain, but also experiences from other EU member states, the enabling framework needs to be defined between the Energy Regulatory Dept, the Ministries involved and DSOs operating on the islands.

Regulatory sandboxes have been implemented in Italy[51], Austria, Germany and Netherlands for temporary tests of specific energy tariffs[52].

This recommendation goes in line with the **REPowerEU** measures requiring the Member States to **promote the testing of new renewable energy** technologies while applying appropriate safeguards. See Annex A for more details.

Actors involved:

- CNMC, *Comisión Nacional de los Mercados y la Competencia* (regulator)
- MITECO, Ministry for the Ecological Transition and the Demographic Challenge
- **IDAE, Institute for Diversification and Saving of Energy**
- Transmission Grid Operator
- Distribution Grid Operators
- Relevant Island stakeholders

3. Complex and lengthy permitting and authorisation procedures

Clean energy projects are facing complex and lengthy authorisation and permitting procedures. Renewable energy installations in Spain must obtain certain administrative authorisations and fulfil technical requirements in order to be granted the right to produce electricity and operate in the market. The participation across the different governance levels can lead to a poor coordination and lack of evenly distributed tasks, adding an extra obstacle to the permitting. The details on the permitting procedures are provided in Annex 4 of the Spanish country study[53]. The main barrier is that the procedures are too complicated and too many authorities and governments at different levels are involved.

The local governments (insular councils) are overwhelmed by the rapid increase in wind and solar projects. The shortage of skilled workforce in the governmental sector and the understaffing of authorities in charge of delivering the permits create additional burdens. In addition to bureaucratic barriers, the lack of political support of the regional and local communities can limit and slow down

[51] https://www.iea-isgan.org/wp-content/uploads/2021/10/Regulatory-Sandbox-2.0_For-Publication.pdf
[52] https://fsr.eui.eu/regulatory-sandboxes-in-the-energy-sector-the-what-the-who-and-the-how/
[53] Available online at: https://clean-energy-islands.ec.europa.eu/insights/publications/regulatory-barriers-spain-findings-and-recommendations

the permitting and authorisation process. Local authorities' staff is often unaware of or not trained on renewable energy project development and can be unwilling to engage in renewable energy project permitting.

Recommendation 3.1: Extend the simplified procedures, accelerate and simplify procedures for RE projects on the islands

Given the positive results of the simplified procedures we advise it to be extended. An accompanying impact assessment can identify implementation bottlenecks (e.g., parts of regulation which are still too complex, unnecessary requirements, etc.). The identified bottlenecks can be removed by amending regulation to further simplify the procedure or easing the permitting requirements. Stakeholders that have a role in the implementation and execution of the procedure (e.g. national governments, local governments, grid operators) should be involved in the evaluation process and preparation of the future simplified procedure. National stakeholders should provide guidance to the Autonomous Communities on how to do this.

The **RES Simplify report** contains some useful recommendations and examples for eased procedures for RES self-supply and small-scale RES. See Annex A for more details.

Against the backdrop of the temporary accelerated authorisation procedure at national level mentioned above, it could be envisaged to extend this idea to all renewable energy projects on islands; for instance for any clean energy project on the islands or for a specific size and type of the project which is considered priority in strategic documents. This would fall under the responsibility of the Autonomous Communities. This could perhaps be done for go-to zones (see recommendation 5.1)

It is important to mention that in such small systems the compliance of projects with the technical requirements is key to ensure the stability of the grid with high RES integration even for the smallest plants.

This recommendation goes in line with the **REPowerEU** measure to provide for **accelerated procedures** for projects in go-to zones. See Annex A for more details.

Other additional recommendations for simplification of the procedures are:

- Simplify and harmonise the criteria across the different institutional levels (municipal, island, regional and national).
- Digitalise the permitting process as much as possible. Implementation of standardised and digitalised authorisation procedures across all the levels of governance needs to be encouraged to reduce the administrative weight on permit granting.

The **RES Simplify report** contains some useful recommendations and examples for the **use of e-communication, including a mechanism for monitoring project progress**. See Annex A for more details.

Specifically for the Canary Islands, our recommendation is to classify renewable energy projects urgent and instore minimal binding deadlines for processing. The use of the declaration of general interest for renewable projects should be reactivated. This would make it possible to reduce the

necessary procedures – remaining however within the boundaries of environmental legislation, shorten deadlines, and free up restrictions on installation on certain types of land.

Actors involved:
- **Autonomous Communities**
- **MITECO, Ministry for the Ecological Transition and the Demographic Challenge** (Directorate General for Energy Policy and Mines & Directorate-General for Environmental Quality and Assessment)
- Industry and Energy Departments of the National Government Delegations
- Municipalities
- CNMC, *Comisión Nacional de los Mercados y la Competencia* (regulator)
- Transmission System Operator
- Distribution Grid Operators

Recommendation 3.2: Create a one-stop shop for clean energy projects on the islands

We recommend creating a one-stop shop at the level of each of the Autonomous Communities, based on guidelines and regulations from the national level. The one-stop shop is managed by a designated body on the regional or local level. The applicant for a clean energy project provides needed documentation and communicates with only this one authority at the regional or local level. This authority is ultimately responsible for the distribution of the documentation to the relevant bodies for approval, the follow-up with those bodies to deliver their responses in time and to coordinate between those bodies and the applicant.

The **RES Simplify report** contains some useful recommendations and examples for one **Stop Shop / consolidation into one single application process**. See Annex A for more details.

A one-stop shop would make coordination and monitoring of clean energy projects easier. It would also help identify bottlenecks in implementation, understanding where there is a need for additional training or improved legislation. Moreover, one-stop shops function even better when a regional or local strategic energy document indicates identified priorities for an area.

This recommendation goes in line with the **REPowerEU** recommendation on permitting which stipulates that Member States should design a **one-stop-shop** for granting permits for renewable energy projects required in Directive (EU) 2018/2001 in such a way as to limit the number of authorities involved to what is necessary and maximise efficiency, taking into account public resources and the benefits of concentrating technological, environmental and legal expertise. See Annex A for more details.

Actors involved:
- **Autonomous Communities**
- MITECO, Ministry for the Ecological Transition and the Demographic Challenge
- Municipalities

Recommendation 3.3: Build capacity at local level and provide permitting guidance

IDAE together with the Industry and Energy Departments of the National Government Delegations and other relevant stakeholder should develop guidelines for authorisation and implementation of clean energy projects taking into account their characteristics. IDAE can build further on the experience of developing a guide for the installation of self-consumption projects. The guidelines should define clear, definitive and unambiguous recommendations under which conditions clean energy projects can be implemented in restricted areas. The guidelines should be used for training and education of the local governments involved in the permit and authorisation process is needed.

The **RES Simplify report** contains some useful recommendations and examples to **ensure that responsible authorities are fit for purpose**. See Annex A for more details.

Lastly, it should also be assessed if additional staffing in the administrative authorities is required or temporary posts or technical assistance to the local governments is needed.

This recommendation goes in line with the **REPowerEU** recommendation on permitting, which stipulates that Member States should **ensure sufficient and adequate staffing**, with relevant skills and qualifications, for their **permit-granting bodies** and environmental assessment authorities. See Annex A for more details.

Actors involved:

- **IDAE, Institute for Diversification and Saving of Energy**
- MITECO, Ministry for the Ecological Transition and the Demographic Challenge (Directorate General for Energy Policy and Mines & Directorate-General for Environmental Quality and Assessment)
- Ministry of Territorial Policy
- Industry and Energy Departments of the National Government Delegations[54]
- Autonomous Communities
- Municipalities

4. Confusion and misunderstandings about the price signal

As explained in the first Chapter on Policy and Legislation above, and detailed in Annex 2 of the Spanish country study[55], on the Spanish peninsula there is an hourly price signal which is the hourly price signal of the wholesale market. The RD 738/2015, according to the obligation established in Law 24/2013, defined a price signal that "modulates" the price from peninsula market taken as a reference. The price on the islands is calculated as the average price of the peninsular daily market, corrected by the aiming factor calculated on an hourly basis as the quotient of the hourly demand and the average daily forecast demand. The aim is to flatten the demand curve. Prior to the introduction of the current price system, there was a pricing system based on the cost of generation, which did not result in matching demand and supply and reducing peak demand. Through discussion with various stakeholders, it became apparent that there is no common understanding of the current price signal and its use.

[54] https://www.mptfp.gob.es/portal/delegaciones_gobierno/servicios.html#industria
[55] Available online at: https://clean-energy-islands.ec.europa.eu/insights/publications/regulatory-barriers-spain-findings-and-recommendations

Recommendation 4.1: Provide capacity building on the price signal and engage with island stakeholders on possible improvements

Although the pricing system has been revised with the aim of fostering renewable energy generation, it is not always understood as such by island stakeholders. Therefore, it could be envisaged for the national government (and more specifically MITECO) to provide clear and comprehensible information on the functioning and advantages of this pricing signal. It should be clearly explained how this pricing system, together with the additional remuneration mechanism (see section on Support systems above) can provide for long-term certainty for the investment in renewable energy generation on the island.

Workshops and trainings could also be provided by IDAE in this regard. It is recommended to take into account the comments and different points of view of the island stakeholders on possible improvements and adaptations to the system to further foster the development of renewable energy. For example instead of flattening the demand curve, it could be shaped to shift demand to moments of high renewable generation as well as its incentivising effect for storage and demand response.

The current price signal might not be suitable as a signal for the operation of explicit demand management. Instead of providing an incentive to store energy when the marginal cost of electricity production is low, it provides an incentive to store energy when demand is low, which can occur during night-time periods of lower renewable production and higher marginal cost[56]. It could thus be assessed whether the price system needs revision in order to be better fitting demand side and demand response implementation, as well as the operation of storage – in light of the development of a clear remuneration mechanism (following our Recommendation 2.1). As an assessment of this pricing system could take some time, it would be advised to use regulatory sandboxes (see recommendation 2.3) to allow the DSO to experiment with different price signals.

Actors involved:

- CNMC, *Comisión Nacional de los Mercados y la Competencia* (regulator)
- **MITECO, Ministry for the Ecological Transition and the Demographic Challenge**
- **IDAE, Institute for Diversification and Saving of Energy**
- Distribution Grid Operators
- Relevant Island stakeholders

5. Spatial Planning: Lack of long-term vision on how different land use on islands are coordinated to assure sustainable economic development

Access to land and land use conflicts are key challenges to the development of projects. Fostering spatial planning, multiple uses of land, and RES-integrated environmental assessments are essential for future deployment of renewable energy projects on the islands

[56] Monitor Deloitte

Land-use conflicts form a major barrier, specifically on islands. Energy generation is in conflict with agriculture, tourism and secondary residency. There are also problems with landscape integration; municipalities are competent to determine it for themselves, however the regional government imposes the obligation that at least 70% of the energy consumption is met with production on the islands.

Recommendation 5.1: Provide guidelines from the national level and ensure integration of the energy sector strategy with spatial planning at regional level

In light of the division of competencies described above we recommend that the national government defines guidance for regional Master Plans for energy based on the National Energy And climate Plans (NECP). These regional Master Plans have to be integrated with the spatial planning in coordination with the local government.

Integration of spatial planning and sectoral strategies is fundamental in identifying and accessing suitable land for renewable energy projects but is not a common practice. We recommend developing an integrated approach via the creation of a detailed Master Plan per island that investigates and approves the areas or sites for clean energy development. This Master Plan should define go-to areas specifically for one or more renewable energy sources. Consequently, projects in these zones should be subjected to fast-track and simplified permitting procedures or lightened environmental impact assessments.

This recommendation goes in line with the **REPowerEU** measure to define '**renewables go-to areas**' which are particularly suitable areas for the installation of production of energy from renewable sources. See Annex A for more details.

As islands are part of local government but also covered by the spatial and sectoral specifications of the respective regional governments, they need to be involved in the discussion.
The local government is often not included in the process of energy planning. While the energy plan might say that the planned energy projects are spatially feasible, local governments still have to approve this once the energy project goes into authorisation procedure. Therefore we recommend that the regional government (Autonomous Communities) should assure involvement of the local government (municipalities), as well as private sectors, local actors and energy experts, in preparation of local spatial plans.

The development of land databases or zoning plans, including clear identification of land qualifications (agricultural land, natural land) and land ownership, are necessary and should be coupled with regular spatial planning exercises to identify areas available for renewable energy project development.

The **RES Simplify** report contains some useful recommendations and examples for **political backing of RES**. See Annex A for more details.

Actors involved:

- MITECO, Ministry for the Ecological Transition and the Demographic Challenge
- Ministry of Agriculture, Fisheries and Food

- Ministry of Territorial Policy
- Industry and Energy Departments of the National Government Delegations[57]
- **Autonomous Communities**
- Municipalities

Recommendation 5.2: Develop Regional unified criteria (for all Non-Peninsular Territories)

Regional requirements beyond national standards can complicate the permitting process, making projects less attractive to investors and difficult for any local initiative. We recommend developing more unified criteria that hold for the whole region (for example Non-Peninsular Territories). Now, there is a disparity of criteria depending on the island and also depending on the entity that will finally inform the environmental permit.

We recommend drawing up land development plans, coordinated by the local councils and town councils, aimed at promoting the installation of renewable energies.

Actors involved:
- **MITECO, Ministry for the Ecological Transition and the Demographic Challenge**
- Autonomous Communities
- Municipalities
- Distribution Grid Operators

6. The lack of coordination of energy sector priorities between the national and regional governments

The barriers discussed above emanate from gaps in information sharing between different levels of government. While each level of government makes plans for the energy transition within their respective competence there seems to be a lack of coordination. While the national actors indicate that there are specific measures foreseen for islands in the NECP and funding from the Recovery and Resilience Facility will go to the islands, island stakeholders indicate that these plans not always reflect the real needs of the islands. While some steps in the right direction are taken by IDAE, the plans lack execution with concrete actions. Above that, these plans are often top-down and often priorities of local stakeholders are not taken into account in strategic planning, as explained in the previous barriers. The impact of this lack of coordination is particularly relevant for the decarbonisation of the islands, since the division of competences between the national and regional governments, the latter do not have decision making powers regarding some of the main greenhouse gas emitting activities like aviation and maritime transport, and cooperation is thus needed.

Recommendation 6.1: Create an 'island department' at national level
To foster the involvement of island stakeholders in national strategic & long-term energy planning and funding distribution while improving the concreteness and effectiveness of instruments and

[57] https://www.mptfp.gob.es/portal/delegaciones_gobierno/servicios.html#industria

actions at national level, we recommend creating an 'island department'. This can either be as a sub directorate for Non-peninsular Territories in the Ministry of Ecological transition (General Directorate for Energy Policy and Mines), or this could be taken up by IDAE. A dedicated island department would allow for two-way communication and cooperation. One or more representatives from the regional level (Autonomous Communities) should be part of the department to improve the coordination between regional and national government on the topic of clean energy.

As mentioned under Recommendation 1.1, this department could also assist in the grid development planning to ensure the island realities are taken into account.

Actors involved:

- **MITECO, Ministry for the Ecological Transition and the Demographic Challenge (possibly within the Directorate General for Energy Policy)**
- **IDAE, Institute for Diversification and Saving of Energy**
- National governments Ministries
- Autonomous Communities
- Relevant Island stakeholders

Recommendation 6.2: Support the development and implementation of Island Clean Energy Transition Agendas

The above-recommended 'island department' could also provide support to islands in drawing up and implementing climate and energy plans, with clear targets for 2030, outlining solutions to achieve an energy model centred on renewable sources and addressing the challenges of proper circular management of the water and waste cycle. This support could lead to accelerated realisation of clean energy projects on islands. The involvement of key stakeholders in preparation of such island specific strategic documents should be fostered.

The support should be coupled with capacity building and technical assistance from the 'island department'. Capacity building can take the form of, for instance, workshops for municipalities, guidelines for energy transition and examples of roadmaps from similar municipalities or regions. Where there is not enough capacity on the islands, the taskforce can provide support through technical assistance (IDAE) to engage external support for short-term projects.

Lastly, it is needed to allocate adequate resources to the islands to develop such plans. Islands need local transition teams to develop and drive Clean Energy Transition Agendas[58]. A local transition team is the smaller team of organisations and associations that represent larger segments of the island's population. The transition team is the core team that drives the clean energy transition process and has an important facilitation and coordination role. They are the main participants in the transition dialogues and look for inputs from the broader community. Since the transition team assumes the responsibility over the island's clean energy transition, it is important that the organisations are committed with both resources and availability. They are also the ones that provide feedback and information to the regional representatives in the Island Department (recommendation 6.1).

[58] https://clean-energy-islands.ec.europa.eu/assistance/clean-energy-transition-agenda

Actors involved:

- **MITECO, Ministry for the Ecological Transition and the Demographic Challenge**
- IDAE, Institute for Diversification and Saving of Energy
- Autonomous Communities
- Relevant Island stakeholders

7. Lack of clear regulation for energy communities

While Spain has adopted some legislation on community energy and (collective) self-consumption (as can be found in Annex 5 of the Spanish country study[59]), the regulation is not clear. Although there is a decree that transposes the European Directive, there is no clear view on how to create energy communities.

A specific barrier in this regard might be the geographical limitation of self-consumption: collective self-consumption, without grid charges, is possible for communities that are in the radius of 2000 m from the generation plant and connected at low voltage. It should be 'cheaper' to consume locally produced renewable energy instead of consuming fossil fuel produced electricity over island connecting cables.

Recommendation 7.1: Adopt clear regulatory framework for energy communities with identified benefits

While regional legislation has recognised the need for involvement of local stakeholders[60], there is no clear way of how the local stakeholder can get involved in energy communities.

Therefore development of enabling regulatory framework for energy communities should be one of the priorities for clean energy transition on the Spanish islands. A possible start is providing a legal base for experiments as you move towards full legislation on communities. There is a need for clear rules on distribution tariffs, contractual relations, remuneration mechanisms etc.[61]. Several EU and national projects identify legal barriers and provide solutions and best practices such as Bridge, Lightness, Interreg prospect 2030, etc.

This recommendation goes in line with the **REPowerEU** measures and recommendations to **facilitate citizen and community participation**. See Annex A for more details.

Actors involved:

- **MITECO, Ministry for the Ecological Transition and the Demographic Challenge**
- IDAE, Institute for Diversification and Saving of Energy

Recommendation 7.2: Capacity building and information for municipalities

[59] Available online at: https://clean-energy-islands.ec.europa.eu/insights/publications/regulatory-barriers-spain-findings-and-recommendations

[60] The Balearic Climate change and Energy Transition Law, approved in February 2019, requires the public administrations of the Balearic Islands to support participation of citizens, civil society organisations and local renewable energy communities in the deployment and management of renewable energy systems, specifically minimum 20% share for projects with installed capacity of more than 5 MW.

[61] https://elperiodicodelaenergia.com/comunidades-energeticas-ya-disponen-de-ayudas-pero-aun-carecen-de-regulacion/

Lack of training of professionals was indicated as a barrier. We recommend raising awareness on the side of municipalities so that they know what energy communities are and how they can be part of it. Clear communication and capacity building targeted to municipalities about the progress of the legislation is necessary. Here also lies a role for IDAE and the Island Department.

Additionally, communication is important. Ministries should provide clear and transparent communication about what is possible. As specifically indicated by several stakeholders, there is a lack of information on the possible benefits of energy communities, communication should focus on that. This should be easy to access and written clearly in non-technical and easy-to-understand language. Awareness and clear communication can also be a task for the 'islands department' as proposed under the previous barrier.

Actors involved:

- **IDAE, Institute for Diversification and Saving of Energy**
- MITECO, Ministry for the Ecological Transition and the Demographic Challenge
- Municipalities

Conclusions for Spain

Based on an inventory of the current legislation and information gathered via surveys and interviews, the Clean energy for EU islands secretariat has brought together all relevant stakeholders in Focus Groups and a National Stakeholder Meeting to identify barriers to the clean energy transition on Spanish islands, and formulated recommendations to overcome them. This mission has gained in importance since the publication of the #REPowerEU package.

Despite important recent measures to facilitate the energy transition, several major challenges for the clean energy transition on the Spanish islands remain. These barriers relate to grid constraints, inflexible thermal power plants, lack of legal frameworks for RE system integration, complex and lengthy permitting and authorisation procedures, spatial planning issues and lack of coordination of energy sector priorities between the national and regional governments.

The good news is that they can be overcome by constructive collaboration between the relevant actors. Regular dialogues and interaction between the island stakeholders and the stakeholders at national level should be further fostered by IDAE. This will allow for the involvement of island stakeholders in national strategic & long-term energy planning and funding distribution, and it would improve the concreteness and effectiveness of instruments and actions at national level (Recommendation 6.1).

Areas where constructive collaboration could result in major breakthroughs are grid planning, the management of the thermal power capacity, supportive frameworks for storage and demand response and permitting.

Grid development planning should be improved to be in line with the renewable energy ambitions and challenges of the islands. The thermal generation infrastructure should be modernised to increase flexibility and reduce reserve requirements. Actions from MITECO and the TSO and DSO are required to implement recommendations 1.1 and 1.2. To cope with challenges of intermittent renewables and fluctuating demand, MITECO and IDEA should work on a particular legal framework for the remuneration and operation of stand-alone storage systems on the islands, rules for the

participation of demand response in the market and use regulatory sandboxes to test these (and other) innovative solutions (recommendations 2.1 – 2.3).

Permitting is another area where collaboration between levels of government could lead to a stimulating environment for clean energy development. The Autonomous Communities should assess the possibilities to streamline spatial planning and accelerate permitting procedures via solutions such as go-to zones, single permits, exemptions, one-stop-shops, capacity building etc. as proposed under recommendations 3.1-3.3 and 5.1-5.2. MITECO and IDAE should provide support and guidance in this matter to the Autonomous Communities.

Energy communities and cooperatives are part of the landscape that can allow citizens to participate in the clean energy transition and share in the advantages. Therefore, we recommend further completing the legal framework to enable their development.

Lastly, the process of identifying barriers, discussing them between stakeholders and assess possible solutions in a collaborative way has shown its merit. We recommend stakeholders continue these discussions. The Spanish islands will benefit from them.

Ireland

The first Chapter of this Ireland country section provides an overview of the existing policy and legislation for clean energy on Irish islands. The second Chapter contains the identified legal and regulatory barriers, based on the survey and the interviews, and the recommendations, based on the Focus Group Meetings and the National Stakeholder Meetings.

Policy and Legislation for clean energy on Irish Islands

Introduction to the Irish Energy Market – Relevant Actors

Throughout the report, several key stakeholders in the Irish Energy Market will be referred to. A short overview of these actors and their role is given below.

The All-Ireland Single Electricity Market[62] (SEM) is the wholesale electricity market for the island of Ireland. It is regulated jointly by the Commission for Regulation of Utilities (CRU)[63] in the Republic of Ireland and the Utilities Regulator in Northern Ireland. The islands are part of the SEM.

Different players are active on this market. There are players that produce the energy and others that consume energy. Between production and consumption there are several actors, such as: the control of production and the establishment of prices (Regulators and Market Operators), the transport of energy (Transmission Operators), the distribution of energy (Distributors) and the sale of energy to the final customer (Suppliers or Utilities).

The SEM is operated by the Single Electricity Market Operator (SEMO)[64] – which is a joint venture between the transmission system operators in both jurisdictions – EirGrid and System Operator Northern Ireland (Soni).

EirGrid[65] is the Transmission System Operator (TSO) and ESB Networks[66] is the Distribution System Operator (DSO). All Marketers or Utilities sell across the entire grid.

The Department of the Environment, Climate and Communications[67] (DECC) is responsible for the development and delivery of policies and programmes in the areas of communications, postal, energy, natural resources, climate action, waste, and the environment.

The Sustainable Energy Authority of Ireland[68] (SEAI) is a governmental body established to promote and aid in the development of sustainable energy in Ireland.

Irish islands and their governance

Ireland is the second-largest island of the British Isles, located in the Atlantic Ocean. The Republic of Ireland covers 70 273 km², or about 83% of the island. Off the coast of Ireland there are 83 offshore islands, 23 of which are inhabited. The largest of the inhabited Irish Isles, Achill Island, has an area

[62] https://www.cru.ie/professional/energy/energy-market/wholesale-market-design/
[63] https://www.cru.ie/
[64] https://www.sem-o.com/
[65] https://www.eirgridgroup.com/
[66] https://www.esb.ie/
[67] https://www.gov.ie/en/organisation/department-of-the-environment-climate-and-communications/
[68] https://www.seai.ie/

of 148 km². Many of the islands are much smaller, with an area below 30 km². Ireland has a total offshore island population of 8,756 inhabitants[69], which corresponds to 0.2% of its population[70].

The islands are under the jurisdiction of a county. Irish islands do not have their own local authorities but depend on counties on the mainland. However, each of Irish islands has a very specific culture and community. Community development cooperatives play an important role in the administration and day-to-day life on the islands. In addition, island cooperatives are currently there to interact with the regional and national government and push for islands' priorities. For example, on the Cape Clear island[71] there is a cooperative that deals with all the relevant issues for the local community, including energy. Therefore, the implementation of clean energy on the island would optimally involve the cooperatives. The Irish islands are represented by the Irish island federation[72].

General policy

The Integrated National Energy and Climate Plan for the Republic of Ireland aims to achieve a share of renewable electricity of 70% by 2030, a share of renewable heating and cooling of 24% by 2030 and a share of renewable energy in the transport sector of 13.4% by 2030.

Regarding **Strategic Planning**, specific attention is given to islands in the Policy Document 'Our Rural Future: rural development policy for 2021-2025'[73]. The plan spans over 120 pages and details 150 different actions to revive rural Ireland. Chapter 10 'Supporting the Sustainability of our Islands and Coastal Communities' is especially relevant from the perspective of the clean energy on EU islands initiative. There are 12 Policy Measures mentioned for the Islands and Coastal communities, the main one being the 10 Year policy for Islands Development to 2030. It promises an extensive consultation process with island communities and will address issues such as housing, health, energy, utilities, waste management, climate change, education, digital connectivity, employment, infrastructure and transport.

Specifically for islands, the Irish Government is developing a new national policy for the development of the islands around Ireland, called the 'new National Policy for the Future Development and Sustainability of Communities on the Offshore Islands of Ireland'[74]. This new '10-year Policy for Islands Development to 2030'[75] will focus on developing new opportunities for islanders and building sustainable futures for island communities.

"*The Programme for Government commits to the production of a long term plan outlining how Ireland will take advantage of the significant potential of offshore energy on the Atlantic Coast and achieve 5GW capacity in offshore wind by 2030 off Ireland's Eastern and Southern coasts. This plan will position Ireland to become a major contributor to a pan-European renewable energy generation and transmission system.*"
The focus with the Irish islands when it comes to energy transition is on using the islands as testing sites for the innovative technologies and behavioural change. The Department of Rural &

[69] CNA17: Population by Off Shore Island, Sex and Year (Link)
[70] Eurostat 2020 (Link)
[71] http://www.capeclearisland.ie/Comharchumann
[72] http://oileain.net/
[73] https://www.gov.ie/en/publication/4c236-our-rural-future-vision-and-policy-context/
[74] https://www.gov.ie/en/publication/02a4d-island-policy-consultation-paper/
[75] https://www.gov.ie/pdf/?file=https://assets.gov.ie/132413/433aebac-f12a-4640-8cac-9faf52e5ea1f.pdf#page=91

Community Development is working on finalising the Islands Policy, which had stalled since the end of 2019. The goal is to have this ten-year action plan ready by the end of 2022. The interdepartmental committee that is currently drawing up the plan will also be following up its implementation with sequential three-year action plans.

Ireland's planning hierarchy in relation to energy policies is done at different levels, namely national, regional and municipal.

The National Planning Framework (NPF) and the National Development Plan (NDP) are the two pillars of Project Ireland 2040, setting out a shared vision for coordinated planning and investment, linking national spatial development priorities and enhancement of physical Infrastructure. Project Ireland 2040 is the government's long-term overarching strategy to make Ireland a better country for all of its citizens[76]. It is about doing things differently. Ireland has changed how it invests in public infrastructure, moving away from the approach of the past which saw public investment spread too thinly and investment decisions which did not align with a clearly thought out and defined strategy.

Project Ireland 2040 is committed to the delivery of the NPF as a blueprint for spatial planning in Ireland to 2040, with the National Development Plan supporting the delivery of the 'Ten National Strategic Outcomes of the NPF out to 2027'[77]. The National Strategic Outcomes (NSO) are the tools which the NPF will use to deliver its goals.

NSO 8. TRANSITION TO LOW CARBON AND CLIMATE RESILIENT SOCIETY[78]
The National Climate Policy position establishes the national objective of achieving a transition to a competitive, low carbon, climate-resilient and environmentally sustainable economy by 2050. This objective will shape investment choices over the coming decades. New energy systems and transmission grids will be necessary for a more distributed, renewables focused energy generation system, harnessing both the considerable on-shore and off-shore potential from energy sources such as wind, wave, and solar, as well as connecting the richest sources of that energy to the major sources of demand.

The Irish Government published a Climate Action Plan in 2021. This plan provides a detailed plan for taking decisive action to achieve a 51% reduction in overall greenhouse gas emissions by 2030 and setting Ireland on a path to reach net-zero emissions by no later than 2050, as committed to in the Programme for Government and set out in the Climate Act 2021[79].
The Plan lists the actions needed to deliver on climate targets and sets indicative ranges of emissions reductions for each sector of the economy. It will be updated annually, including in 2022, to ensure alignment with a legally binding economy-wide carbon budget and sectoral ceilings.

Citizens, communities and business will all have a role to play. The government will support the changes through the €165 billion National Development Plan which includes funding for retrofitting homes, building new public transport, reskilling workers and supporting a just transition.

[76] https://www.gov.ie/en/campaigns/09022006-project-ireland-2040/
[77] https://assets.gov.ie/37937/12baa8fe0dcb43a78122fb316dc51277.pdf
[78] https://assets.gov.ie/128921/8ee8ecc9-dd53-40ae-bc5d-48fa15db5066.pdf
[79] https://www.gov.ie/en/publication/6223e-climate-action-plan-2021/

In the Public Sector, the plan aims to:

- Reduce emissions from the public sector by 51% by 2030 with Green Teams in every public body.
- Prohibit new fossil fuel heating systems in public buildings after 2023 (limited exceptions).
- Mandate all new fleet purchases to be electric from 2023 (where vehicle type available).
- Improve energy efficiency of the public sector from 33% in 2020 to 50% by 2030.

The Climate Action Fund (CAF) was established to provide assistance and financial support to projects which will help Ireland achieve its climate and energy targets[80]. The CAF will provide at least €500 million in government funding up to 2027 towards this aim.

Regional Spatial and Economic Strategy (RSES) sets out the key strategic assets, opportunities and challenges and sets out policy responses to ensure that people's needs – such as access to housing, jobs, ease of travel and overall well-being – are met, up to 2030 and beyond[81]. Included in these regional strategies are the region's Climate Action Strategy – to accelerate climate action, ensure a clean and healthy environment and to promote sustainable transport and strategic green infrastructure. The North West Regional Assembly is responsible for the North West Renewable Electricity Support Scheme (NW RESS) (2020-2032).

The Government's Climate Action Plan 2019[82] requires each Local Authority to identify and develop plans for one decarbonisation zone - an area in which a range of climate mitigation, adaptation and biodiversity measures are identified to address local low carbon energy, greenhouse gas emissions and climate needs, to contribute to national climate action targets. After identifying the most suitable area for the zone, each Local Authority must develop their implementation plan ahead of the deadline (December 2021)[83].
Furthermore, local authorities in Ireland are now charged with developing individual climate action plans[84]. They are supported, on a regional level, and connected through the coordinating role and work of the Climate Action Regional Offices (CAROs).

Specific funding under the Climate Action Fund for community initiatives will be routed through the local authority framework. In addition, the Sustainable Authority of Ireland partners with Local Authorities to provide bridge funding for community energy upgrades. A new partnership between the SEAI and the Atlantic Seaboard North Climate Action Regional Office, which consists of counties Donegal, Sligo, Mayo and Galway, will pay communities up to €25 000 towards the upfront costs of their energy upgrade projects.

Energy transition discussion for the islands is currently mainly focused on electricity, as this is centrally controlled and planned. Heating is managed locally. Energy performance of Irish buildings needs to improve not just on the islands but also on the mainland. Most transport from and to the island is locally owned.

[80] https://www.gov.ie/en/publication/de5d3-climate-action-fund/
[81] An example: https://emra.ie/rses/
[82] https://www.gov.ie/en/publication/ccb2e0-the-climate-action-plan-2019/
[83] https://www.caro.ie/news/local-authority-decarbonisation-zones
[84] https://www.lgma.ie/en/publications/local-authority-sector-reports/delivering-effective-climate-action-2030.pdf

Renewable energy

Support systems

There are no island specific support systems in Ireland. The generally applicable support systems are described below. The Renewable Electricity Support Scheme (RESS) is the main government support to help deliver on Ireland's 70% renewable electricity target by 2030. The scheme has a number of community features designed to ensure community participation. Of particular interest to island communities are the provisions of the Community Benefit Fund and the Community-led category. The former provides for all RESS projects, including offshore projects, to share project revenues with local communities for sustainable purposes and the latter provides a route to market for community-led projects.

According to the Sustainable Energy Authority Ireland, around 90% of the residents on islands are part of a community and the vast majority of islands is represented in the community's programme. Although it does not have a specific island mandate, it significantly contributes to the clean energy development on islands. According to a certain interviewee the reason for this high interest in sustainable energy communities on the islands is that there are full-time people employed in community cooperatives on the islands. These employees are looking into renewable energy to provide for their (small) island community. That is the reason islands make so much use of the support system.

Ireland offers several incentives for the deployment of renewable technologies in the electricity generation, heating and cooling, and transport sector. Support for larger RES projects (both solar and wind power) is allocated through auctions. Additionally, a solar PV scheme provides subsidies for the purchase and installation of roof-mounted PV. The heating and cooling sector is addressed through a grant scheme for heat pumps, an operational tariff for biomass/biogas installations, and grants for the energy upgrading of dwellings. In the transport sector, grants are provided for the purchase of private and commercial EVs and the installation of public and private chargers. Ireland has a biofuel obligation scheme and offers tax relief and tax exemption for electric vehicles.

Support schemes:

- A Solar PV scheme offers grants for the purchase and installation of roof-mounted PV. Battery storage is also eligible for support.
- The RESS 1 auction offers support to medium and large wind and solar power projects and has a specific Community Preference Category to support communities.
- The Pig & Poultry Investment Scheme offers grant aid to pig and poultry farmers for specific investments in renewable generation and energy efficiency measures.
- The Young Farmers' Capital Investment Scheme offers grant aid to young farmers for renewable generation and energy efficiency measures.
- The tax regulation mechanism 'Accelerated Capital Allowance' is a tax-relief scheme that promotes renewable generation, measures on energy efficiency and electric mobility to enterprises located in the Republic of Ireland through accelerated depreciation.
- The tax regulation mechanism 'VAT Refund for farmers' refunds the VAT for farmers that purchase wind turbines or PV plants.
- The support scheme 'Renewable Heat' provides grants for the purchase and installation of heat pumps.
- The subsidy 'Better Energy Homes' provides grants for the energy upgrading of dwellings.

- The subsidy 'Electric Vehicle Grant Scheme' provides grants for the purchase of private and commercial EVs.
- Under the tax regulation mechanism 'Vehicle Registration Tax', electric vehicles are exempted from the vehicle registration tax.
- Ireland has a biofuel quota scheme under which fuel suppliers are required to include a certain percentage of biofuels in their annual fuel sales.
- The 'Electric Vehicle Home Charger Grant' & 'Electric Vehicle Public Charger Grant' offer grants for the installation of electric chargers.

RES projects authorisation process

A range of permits must be obtained for renewable energy projects including from the local planning authorities, the national regulator, the distribution and/or transmission grid operator and the national valuation office. The permit and authorisation process for RES in the Republic of Ireland includes the following steps:

- Site selection: project developers should consider specific planning regulations, which are stated in the Local Development Plans. For onshore wind, specific guidelines are available (currently under revision).
- Application preparation: This step includes the preparation of the Environmental Impact Assessment Report (EIA Report) and/or the Natura Impact Statement (NIS) for onshore wind/ ground-mounted PV and expectedly for offshore wind.
- Electricity production licence: This step foresees the issue of the Licence to Generate (operation licence) by the Commission for Regulation of Utilities (CRU). Its application can follow the Authorisation to Construct licence (see below), or a single application is possible. Planning permission and grid connection offer is mandatory for the issue of this licence.
- Administrative authorisation: This step includes the issuing of the planning permission by the Planning Authority or An Bord Pleanála. The application includes all accompanying documents, such as the EIA Report and the NIS.
- Grid connection procedure: The Enduring Connection Policy (ECO) follows a standard approach since 2018. The last one took place in 2020. The TSO Eirgrid, and the DSO ESB Networks are tasked to announce the initiation of the application window. ECP defines the categories and the number of projects which will be offered a connection ('batch process'). By accepting the connection offer, project developers can realise their grid connection works.
- Corporate legal-fiscal: This step concerns the 'Revaluation' process, which is the periodic update of commercial property rates in local authorities.
- Other: This step foresees the issue of the Authorisation to Construct by the CRU . Application for Authorisation to Construct can come first and then the Licence to Generate may follow. However, the project developer can submit a single application for both licences. In any case, planning permission is necessitated while a proof of grid connection suffices for the application submission

Grid

The Irish islands are fully interconnected. The grid connection procedure is defined by the Enduring Connection Policy (ECP). Additional grid connection and development works are classified as contestable i.e., they can be carried out by the project developer and or non-contestable i.e. they

are carried out by the TSO/DSO. Grid access is non-discriminatory. Ireland has one distribution system operator and one transmission system operator. The country has a smart meter penetration rate of 3.7%. The electricity supplier switching rates for household customers in 2018 was 14.2%.

Supported energy efficiency measures

Several of the schemes under 'supported RES technologies', such as the Pig & Poultry Investment Scheme and the Better Energy Homes, offer grants to energy efficiency measures as well. Apart from that, the Energy Efficiency Obligation Scheme requires every energy supplier to achieve a certain energy efficiency target by carrying out energy efficiency projects in the domestic or non-domestic sectors. The Excellence in Energy Efficiency Design grant scheme offers subsidies to public and private organisations for the design and implementation of energy efficient projects. Finally, the Better Energy Communities is a comprehensive scheme that finances energy efficiency projects to Irish Communities.

Regulatory best practice

Contrary to the Renewable Electricity Support Scheme (RESS), the grants for energy efficiency projects foresee a 'grant uplift' of 50% for islands. Island inhabitants could thus ask for 50% more funding for energy efficiency renovations. The special funding applied to two schemes – phase three of the greener homes scheme[85], which allows homeowners to install energy efficient technologies such as geothermal heat pumps, solar panels and biomass boilers and stoves, at a subsidised cost; and the home energy saving scheme. This extra allocation is still active on the Better Energy Homes Scheme (previously Greener homes) and the grant is uplifted by 50% when there is an application from an eligible island.

Also, the SEAI 'Community Grant' supports energy efficiency community projects through capital funding, partnerships, and technical support. Offshore islands score more favourably in the selection process, due to their more challenging installation requirements.

Supporting policies

Ireland has an official training and certification programme called Renewable Energy Installers. The National Standards Authority of Ireland also offers certification for energy efficiency measures, while additional accreditation for energy auditors is required in order to qualify for the Excellence in Energy Efficiency Design grant scheme. The Public Sector Energy Programme provides support to public sector entities for energy savings. Ireland also issues annual calls for RD&D projects on clean energy transition.

Self-consumption and community energy

A community preference category was taken up in the country's first RES auction, the Renewable Electricity Support Scheme (RESS). Currently, there is no specific legal framework with regard to prosumers, but the distribution system operator is planning to introduce a micro-generation support scheme for prosumers.

Regulatory best practice

[85] https://www.iea.org/policies/4632-greener-homes-scheme

Unlike commercial projects, energy communities do not need to have a planning permission before their grid application, making it less burdensome. On top of that, a new bill has recently passed simplifying authorisation procedure for community projects[86].

Spatial planning

At the national level two main organisations are responsible for planning: the Department of Housing, Heritage and Local Government and the An Bord Pleanála, which is an independent, statutory, quasi-judicial body that decides on appeals from planning decisions made by local authorities. As the main body responsible for oversight of the planning system in Ireland, the Department of Housing, Heritage and Local Government is responsible for framing planning legislation as well as the preparation and issue of policy guidance[87]. In addition, the eight regional authorities are responsible for drawing up and implementing Regional Planning Guidelinesto support strategies for regional development. The implementation of the physical planning system in Ireland is the responsibility of the 88 local planning authorities. Development Plans and Local Plans are made by the 29 County Councils, five City Councils and 49 Towns.

Figure 4 - Overview of the Spatial Planning system in Ireland - Source

The Planning and Development Act 2000[88] (as amended) forms the foundation for planning in Ireland. This Act covers a huge range of planning-related issues, and merges a wide range of different legislation into one Act. It sets out regional planning guidelines, development plans and local area plans. It further sets out how the process for planning permission works. It contains special requirements for protected structures, conservation areas and areas of special planning control.

[86] Planning and Development (Solar Panels for Public Buildings, Schools, Homes and Other Premises) (Amendment) Bill 2021 https://www.oireachtas.ie/en/debates/debate/seanad/2021-06-28/18/
[87] http://residentsalliancegroup.com/docs/planning%20in%20Ireland.pdf
[88] https://www.gov.ie/pdf/?file=https://assets.gov.ie/118297/b65e91a5-ea82-460a-9f8c-cc6bb8c754f5.pdf#page=null

Identified barriers and recommendations to overcome them

The Clean energy for EU island secretariat's Think Tank has identified legal and regulatory barriers. The research is based on the detailed assessment of the current regulatory framework and consultation with relevant Irish stakeholders, through surveys and interviews (see Annex 1 of the Irish country study[89] for a detailed assessment). For each of the regulatory barriers, the Secretariat identified multiple recommendations. Those barriers and recommendations were presented and discussed within the Focus Group Meetings and the National Stakeholder Meeting (see Annex 2 of the Irish country study[90] for more information).

The identified regulatory barriers are presented in the order of their priority for energy transition on the Irish islands. Some of the barriers also exist on the mainland. In the recommendations below, the focus lies on the concrete regulatory barriers encountered by islands.

The table below represents the list of barriers (marked in dark blue) ordered based on their priority, and the proposed recommendations (marked in white).

Table 2 - Barriers and Recommendations - Ireland

Barrier 1**. Bottlenecks and gaps in framework for community energy projects and energy sharing**
Recommendations:
1.1 Revise permitting procedures and especially the Enduring Connection Policy
1.2 Accelerate the regulatory work on P2P trading and energy communities
1.3 Set-up a one-stop-shop for support and provide capacity building for (island) communities
Barrier 2. **Spatial planning constraints and complicated permitting procedures**
Recommendations:
2.1 Provide spatial planning guidelines for implementation of clean energy projects
2.2 Designate go-to areas and create simplified permitting procedures
Barrier 3. **Grid constraints and absent framework for storage to cope with it**
Recommendations:
3.1 Adapt grid development methodology from an ad-hoc approach to a future-oriented approach
3.2 Develop suitable frameworks for storage with particular attention for islands
Barrier 4. **Renewable energy support system not adapted to island challenges**
Recommendations:
4.1 Develop support systems with particular attention for islands
4.2 Use regulatory sandboxes for testing of innovative solutions

[89] Available online at: https://clean-energy-islands.ec.europa.eu/insights/publications/regulatory-barriers-ireland-findings-and-recommendations
[90] Available online at: https://clean-energy-islands.ec.europa.eu/insights/publications/regulatory-barriers-ireland-findings-and-recommendations

Barrier 5. **Islands are not consulted in a systematic manner**

Recommendations:

5.1 Integrate island views in the policy for the development of the islands around Ireland

5.2 Relaunch the initiative to create an intergovernmental department to specifically focus on islands

Barrier 6. **Lack of support from the regional and national government**

Recommendations:

6.1 Mandatory follow-up on decarbonisation zones, mandatory development of Local Authority Renewable Energy Strategies together with national guidance

6.2 Channel funding from the EU towards clean energy development on islands

1. Bottlenecks and gaps in framework for community energy projects and energy sharing

On the Irish islands, there is a strong sense of community. Cooperatives play a big role in the daily lives of island citizens. There are island cooperatives and communities that focus on renewable energy. For example on the Aran Islands the residents formed the Aran Islands Energy Cooperative in 2012. Through this cooperative the islands participate in several innovative pilots funded by the Horizon 2020 and InterReg programmes. At the same time, the energy cooperative is working to develop a wind power plant of 2.7 MW. Planning, grid connection and feed-in tariffs are some of the issues they face in achieving this goal. The example of the Aran Islands shows how an engaged island community can move forward with small citizen-scale investments. The Aran Islands developed a Clean Energy Transitions agenda[91]. Bere Island has an energy group that is working with the sustainable energy authority of Ireland to produce an energy master plan that will guide the islanders on their journey[92]. Cape Clear and its island community have been frontrunners on clean energy[93]. The community developed an integrated wind energy system in 1987, which operated until the early nineties. Other islands on the road of their energy transition are for example Rathlin[94] and Valentia[95].

As presented in the Chapter on Policy and Legislation above, a community preference category was taken up in the country's first RES auction, the Renewable Electricity Support Scheme. Several other supportive systems are available for energy communities as demonstrated on the visual below.

[91] https://www.aranislandsenergycoop.ie/wp-content/uploads/2020/01/ARAN_FinalTransitionAgenda_20191118.pdf
[92] https://clean-energy-islands.ec.europa.eu/index.php/countries/ireland/bere-island
[93] https://clean-energy-islands.ec.europa.eu/countries/ireland/cape-clear
[94] https://clean-energy-islands.ec.europa.eu/index.php/countries/ireland/rathlin
[95] https://clean-energy-islands.ec.europa.eu/index.php/countries/ireland/valentia

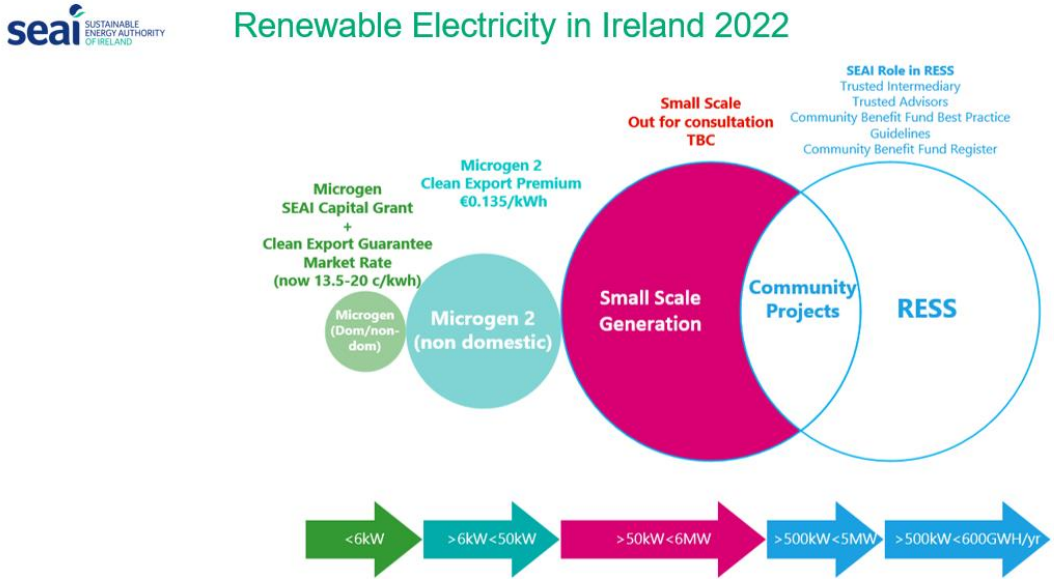

Figure 5 - Overview of RES-E support systems available for Communities - Source SEAI

Besides support systems, supportive actions by SEAI are foreseen:

- Sustainable Energy Communities: Network of 700 communities, supported with mentors, training and energy master planning grants.
- Better Energy Communities: Panel of project coordinators who can deliver large scale energy retrofit projects (circa €100 million per year).
- Renewable Energy Communities: Community category for large scale community led generation projects with trusted advisors and early-stage grant support.
- Mandatory Community Benefit funds: Communities near new large-scale wind and solar, onshore and offshore projects will have access to €1-2 billion over the coming decades that could support climate action ambitions.

In spite of these initiatives, the legal and regulatory frameworks for community energy projects and energy sharing are partially missing. As also identified by the LECo policy paper[96] there is a lack of national community energy strategy, and a lack of national targets for community energy projects. This is a barrier for the whole of Ireland, but as clean energy projects on islands are mainly community driven, this barrier is particularly relevant for islands. Additionally, there is no framework for prosumers yet[97]. This creates an obstacle for the viable business case for small scale renewable energy on the islands. Finally, there is no specific legal framework for energy communities nor for Peer-to-Peer (P2P) Trading.

As also identified by the LECo policy paper[98] there are bureaucratic barriers to grid connection including: complicated application procedures, uncertainty of approval, costs, and time-consuming administration. There is also no priority grid access for community projects. Complicated grid access and lengthy procedures to secure a connection to ensure a FIT (large scale community renewable project), make it particularly difficult for community projects.

[96] https://leco.interreg-npa.eu/subsites/leco/PESTLE_Analysis_LECO_A4_190110-singlepages.pdf
[97] It was stated that from 2022 a new support system would start, supporting individual use of res up to 50 kW for self-consumption. If energy is used for self-consumption, then 33 % of the total consumption injected to the grid will be provided benefits for. There is however at the time of report writing a framework published.
[98] https://leco.interreg-npa.eu/subsites/leco/PESTLE_Analysis_LECO_A4_190110-singlepages.pdf

While there is the national Sustainable Energy Communities program, which allows for 100% funding to develop an energy master plan at municipality level, and the availability of a grant program of €75 million for communities to apply to do projects in their own locality, the issue is lack of capacity of the island stakeholders.

A specific issue that makes developing energy projects complicated for communities are the strict timelines in permitting and support schemes. An overview of the planning and authorisation process is given in the Policy and Legislation chapter – section RES projects authorisation process above. For the grid connection procedure, a standard approach named the Enduring Connection Policy (ECP) is followed since 2018. The transmission system operator (TSO) Eirgrid and the distribution system operator (DSO) ESB Networks announce the initiation of the application window. ECP defines the categories and the number of projects which will be offered a connection ('batch process'). By accepting the connection offer, project developers can realise their grid connection works.

The issue around planning permission for community projects stems from this grid connection procedure. In order to stop projects reserving too much grid capacity, all developers must have a planning permission before they seek a grid connection. Community led projects do not have to have planning permission to apply for a grid connection, but the actual connection offer itself will not be issued until planning permission is granted. Community projects instead are issued with a 'connection assessment' following some early engagement meetings with ESB Networks.
Once the connection assessment is issued, communities have two years to secure planning permission. If they fail to do so, this capacity on the grid is released again to another project. This constitutes a real barrier: once the connection assessment is issued, communities have two years to secure planning permission, which is a too short timeframe since it takes much longer for communities than professional developers to develop these projects.

Recommendation 1.1: Revising permitting procedures and especially the Enduring Connection Policy
Under the Electricity Regulation Act [99], the Commission for Regulation of Utilities (CRU) may give directions to EirGrid, the transmission system operator (TSO) and ESB Networks, the distribution system operator (DSO), on the terms and conditions of access to the transmission and distribution systems. Based on the CRU's policy directions, the system operators issue connection offers to generators and storage projects. Since 2018, the CRU has published these grid connection procedures known as 'Enduring Connection Policies'(ECP). The TSO and the DSO announce the initiation of the application window. ECP defines the categories and the number of projects which will be offered a connection ('batch process'). By accepting the connection offer, project developers can realise their grid connection works.

In order to address the barrier mentioned above the secretariat recommends that the CRU, and the TSO and DSO reconsider the ECP to create a level playing field. The strict timelines for obtaining the planning permission (two years) should be revisited, at least for wind projects for which this is a particular short timeframe, when looked at from a community perspective. And even more so on islands where there are severe Special Area of Conservation restrictions. This could be done by

[99] Electricity Regulation Act 1999 - section 34

extending or enlarging the two-year limit for community-led projects Category C (Community-led Energy[100]) in the ECP. Instead of losing the grid connection assessment if the community led project does not get a planning permit within two years, a more flexible approach could be adopted. If a community led project could demonstrate on the basis of transparent KPIs that it has advanced in its project development process and would only needs some months more to obtain planning permission, a deadline extension could be granted. Projects that have stalled would still be removed after two years to make place for other community led projects waiting in line.

Actors involved:

- **Commission for Regulation of Utilities (CRU)**
- **Department of Environment, Climate and Communications**
- Local Planning Authorities
- An Board Pleanála (Planning Authority)
- Sustainable Energy Authority (SEAI)
- Eirgrid – Transmission system operator
- ESB Networks – Distribution system operator
- Energy communities and cooperatives

Recommendation 1.2: Accelerate the regulatory work on P2P trading and energy communities

The CRU is in the process of developing an enabling regulatory framework that will facilitate the participation of active consumers and energy communities in the Irish electricity sector. Different 'Calls for Evidence'[101] and a Consultation Paper[102] on the topics of energy communities and active consumers have been launched by the CRU.

The CRU should prioritise further development of the regulation (financing, permitting procedures, social support) for energy communities. The regulation should provide a clear advantage to forming an energy community. The support can be in the form of incentives for specific projects, tax benefits, technical assistance for starting an energy community and simplified procedures for clean energy projects. Moreover, the regulation for energy communities on the islands could be coupled with the regulatory sandboxes to allow controlled environments for testing of the new tariffs and innovative technologies. Regulatory sandboxes[103] are ways for authorities, tasked with the implementation and enforcement of specific legislation, to test innovative approaches and technologies in real-life situations through time limited implementation of except to the existing legislation. This way incentives for clean energy transition on the islands can be tested without a permanent change in legislation. It also gives room to evaluate the success of the experiment.

This recommendation goes in line with the **REPowerEU** measures and recommendations to **facilitate citizen and community participation**. See Annex A for more details.

A specific measure that can be taken in this regard is the creation of soft loans for energy communities. While a developer might have the money to execute required studies for planning

[100] Projects with maximum export capacity (MEC) greater than or equal to 0.5 MW and less than or equal to 5 MW utilising one or more of the following renewable energy generation technologies (and not in combination with non-renewable generation technologies); wind turbines (wind), solar photovoltaic panels (solar), hydraulic turbines (hydro) excluding pumped storage, waste to energy projects, biomass projects and biogas projects, and who meet the following requirements: (a) at all relevant times, be at least 51% owned by a Renewable Energy Community2 (the "Relevant REC") either by way of (i) a direct ownership of the ECP project's assets, or (ii) a direct ownership of the shares in the generator; and (b) at all relevant times, at least 51% of all expected profits, dividends and surpluses derived from project are returned to the Relevant REC

[101] https://www.cru.ie/wp-content/uploads/2021/01/CRU20098_Call-for-Evidence-on-Active-Consumers-and-Jointly-Acting-Active-Consumers-under-the-Clean-Energy-Package.pdf & https://www.cru.ie/document_group/energy-communities-and-active-consumers/

[102] https://www.cru.ie/document_group/energy-communities-and-active-consumers/

[103] Regulatory sandboxes and experimentation clauses as tools for better regulation: Council adopts conclusions - Consilium (europa.eu)

permission (EIA, grid studies, surveys etc.), energy communities do not have that money available. In this regard up-front finance for community owned projects, such as soft loans and grants should be made available – to cover the preparation costs. Concretely this loan would be repaid if the project succeeds and starts operating. If the project fails because it does not get the planning permission, then the loan is cancelled (partially).

Another measure for supporting citizen involvement, could be to 'oblige' mandatory citizen participation in renewable energy projects. For example, the Balearic Climate change and Energy Transition Law[104], approved in February 2019, requires the public administrations of the Balearic Islands to support participation of citizens, civil society organisations and local renewable energy communities in the deployment and management of renewable energy systems. More precisely, Article 49 of the Law defines that the local participation of at least 20% should be encouraged or obliged for RES projects with less than 5.0 MWp or more than 5 MWp, respectively.

Actors involved:

- **Commission for Regulation of Utilities**
- Department of Environment, Climate and Communications
- Sustainable Energy Authority (SEAI)
- Energy communities and cooperatives

Recommendation 1.3: Set-up a one-stop-shop for and provide capacity building for (island) communities.

Energy communities are beneficial from the point of view of involvement of local communities and achieving just transition. Moreover, involvement of energy communities in the energy transition aims to help increase knowledge of energy topics, implementation of energy efficiency measures and uptake of renewable energy.

As also identified by the LECo policy paper[105] there is a fragmentation of roles and responsibilities across government departments, agencies, local authorities and other bodies is a barrier for effective planning. There is also a lack of an intermediary body. Energy sector regulation is a complex matter. In order to get the right information to set up energy communities, it is worthwhile to look at one-stop-shops. The national government could help set up a platform, trainings or conferences with island stakeholders to foster the discussion, promote best practices or even provide funding for mentorship programmes. This can be coordinated and monitored by the intergovernmental department focusing on islands (cfr. Barrier 'islands are not consulted in a systematic manner' and the recommendation 5.2 to relaunch the initiative to create an intergovernmental department to specifically focus on islands).

Additionally, communication is important. The SEAI should provide clear and transparent communication about advantages and disadvantages of forming an energy community and available support. This should be easy to access and written clearly in easy language. Designing the level and details of communication can also be a task for the intergovernmental department focussing on islands.

[104] http://www.caib.es/sites/canviclimatic2/es/llei_de_ccite/
[105] https://leco.interreg-npa.eu/subsites/leco/PESTLE_Analysis_LECO_A4_190110-singlepages.pdf

This recommendation goes in line with the **REPowerEU** measures and recommendations to **facilitate citizen and community participation**. See Annex A for more details.

Actors involved:

- **Sustainable Energy Authority (SEAI)**
- Department of Environment, Climate and Communications
- Local and regional authorities
- Energy communities and cooperatives

2. Spatial planning constraints and complicated permitting procedures

An overview of the planning and authorisation process is given in the Policy and Legislation chapter – sections Spatial Planning and RES projects authorisation process above. Land-use conflicts form a major barrier, specifically on islands. Energy generation can be in conflict with historical buildings and tourism and the designation of an island as a Special Area of Conservation. Spatial planning legislation related to these protected areas impose restrictions on RES installations that are not adjusted to the local island's characteristics. Due to spatial planning constraints, the authorisation and licensing procedures for clean energy projects are too complex for individuals or communities which do not have expertise in the sector.

Partly due to these spatial planning constraints, the authorisation and licensing procedures for clean energy projects are too complex for people or communities which do not have expertise in the sector.

As also identified by the LECo policy paper[106] the fragmentation of roles and responsibilities across government departments, agencies, local authorities and other bodies is a barrier for effective planning.

Recommendation 2.1: Provide spatial planning guidelines for implementation of clean energy projects

While the Development Plans and Local Plans are realised – every six years - by the regional authorities and local planning authorities, the clean energy transition on the islands is already ongoing and should not wait for their implementation. Therefore, there is a need for the guidelines from the national level, namely the Department of Housing, Heritage and Local Government, on how clean energy projects should be planned and implemented in regard to the land use priorities. Such guidelines have to take into account the characteristics of islands and seek compromises between environment conservation, agriculture, preservation of historical sites, tourism and sustainable and clean energy. The guidelines should embody a long term vision on how different land use on islands are coordinated to assure sustainable economic development. The use of the guidelines would help assure that the approval process is not additionally complicated or delayed during the process of adoption of local plans.

The **RES Simplify** report contains some useful recommendations and examples for **political backing of RES and public provision of guidelines** and documentation templates on the national level. See Annex A for more details.

[106] https://leco.interreg-npa.eu/subsites/leco/PESTLE_Analysis_LECO_A4_190110-singlepages.pdf

While the guidelines should be prepared on the national level by the Department of Housing, Heritage and Local Government, the preparation process should involve representatives of the Department of Environment, Climate and Communications, SEAI, regional authorities, local planning authorities who will be implementing the guidelines and experts and academia involved in the realisation of clean energy projects on the islands. Even though the guidelines represent a temporary document until the local spatial plans are developed, they can also be used as one of the guiding documents for integration of energy transition topics in the preparation of Development Plans and Local Plans.

Actors involved:

- **Department of Housing, Local Government and Heritage**
- An Bord Pleanála, the planning appeals board
- Department of Environment, Climate and Communications
- Environmental Protection Agency (EPA)
- Sustainable Energy Authority of Ireland (SEAI)
- The Office of the Planning Regulator (OPR)
- Regional authorities,
- Local planning authorities
- Irish Planning Institute

Recommendation 2.2: Designate go-to areas and create simplified permitting procedures
Integration of spatial planning and sectoral strategies is fundamental in identifying and accessing suitable land for renewable energy projects but is not a common practice. In light of the land-use conflicts mentioned above, we recommend developing an integrated approach via the creation of a detailed Master Plan per island that investigates and approves the areas or sites for clean energy development. This Master Plan should define go-to areas specifically for one or more renewable energy sources. Consequently, projects in these zones should be subjected to fast-track and simplified permitting procedures or lightened environmental impact assessments.
Concretely the Department of Housing could propose certain zones for a Ministerial exception.

This recommendation goes in line with the **REPowerEU** measure to define '**renewables go-to areas**' which are particularly suitable areas for the installation of production of energy from renewable sources. See Annex A for more details.

A possible simplification can be to explore options for a single permit, for instance for any clean energy project on the islands or for a specific size and type of the project which is considered priority in strategic documents. For instance, in Greece the national government has introduced a simplified procedure for ground mounted PV plants with installed capacity lower than 1 MW where some steps in the authorisation process are removed (certification of the RES producer), while others are simplified to the single permit (administrative authorisation and grid connection).

This recommendation goes in line with the **REPowerEU** measure to provide for **accelerated procedures** for projects in go-to zones. See Annex A for more details.

In light of the grid planning constraints, described in more detail in the previous barrier, it could be envisageable to develop a plan, indicating go-to areas for community energy projects, which could foster accelerated planning permission procedures. It could be considered to have special

conditions for these energy community go-to zones. Projects in these zones should be subjected to fast-track and simplified permitting procedures or lightened environmental impact assessments.

In addition, the permitting process should be digitalised as much as possible. Implementation of standardised and digitalised authorisation procedures across all the levels of governance needs to be encouraged to reduce the administrative weight on permit granting.

Actors involved:

- Department of Housing, Local Government and Heritage
- An Bord Pleanála, the planning appeals board
- Department of Environment, Climate and Communications
- Sustainable Energy Authority (SEAI)
- **Regional authorities,**
- **Local planning authorities**
- Irish Planning Institute

3. Grid constraints and absent framework for storage to cope with it

Several of the Irish islands are connected to the mainland electricity grid. According to ESB[107], island interconnection started in the 1940s – 1960s when a number of islands close to the mainland were connected as part of the Rural Electrification Scheme including Arranmore and Achill. In 1976, Under The Electricity Supply Act 1976 (Final phase of Rural Electrification) some islands qualified for connection to the grid including Dursey (1979) and Inishbiggle (1978). In the late 1970s – early 1980s a request for supply to three more islands, Inishturk, Clare Island and Inishbofin were made by the government who believed supply should be available to these islands at the same standard and rate as mainland customers. ESB looked into costs for connections to the mainland grid, but it was not feasible at that time. In the 1990s – 2000s improved technology and European funding allowed a number of islands who previously had no ESB supply and many of those who had ESB Generators to receive connection to mainland grid via submarine cable connections.

While this interconnection is good for the islands, several of the underwater connection cables are too small to allow for clean energy development in and around the islands. Islands are unable to export excess energy beyond the capacity of the cable connecting them to the mainland. At the same time, the grids on the islands are not strong enough to incorporate any substantial amount of additional renewable energy generations. Projects have to be downscaled due to grid constraints on the island. There is thus less opportunity for revenue compared to onshore RE projects.

There are no plans on upgrading the grids on and to the islands. In Ireland in general, grid capacity for demand related reasons is socialised and centrally planned. It is based on 10-years development plans. Grid capacity upgrades are demand led. This means that the DSO projects how demand will grow and upgrades the grids accordingly. It is not based on potential generation capacity. So any (renewable) energy project, whether on an island or not, has to apply and then the grid could get upgraded if needed. It is acknowledged that a grid upgrade on the mainland would be cheaper, quicker and easier than the grid upgrades on islands. As a consequence, this general policy on grid development for generation has a disproportionate impact on (island) grid development.

[107] https://esbarchives.ie/2020/06/04/islands/

To cope with the insufficient grid capacity, energy storage is of critical importance. There is however no comprehensive framework for energy storage in Ireland. The Solar PV scheme provides subsidies for the purchase and installation for roof-mounted PV (up to 2 kWp and with battery storage up to 4 kWp). The 2 kWp of PV systems are subsidised (€900 per kWp). If the roof-mounted PV is combined with battery storage, then an additional grant for further 2 kWp is offered (€300 per kWp). Consequently, the maximum level of support reaches €2 400 (ch. Two Solar PV Scheme). But there is no support system for (residential/small-scale) storage as 'stand-alone'.

Recommendation 3.1: Adapt grid development methodology from an ad-hoc approach to a future-oriented approach.

If there is no availability on the network the community will either have to pay for the network to be upgraded or downscale the size of the project. To allow Irish islands to fully benefit from the renewable energy potential they have, this logic should be turned around and a more forward-looking grid development policy is needed. The DSO should look, together with the islands, at the potential production capacity from renewable energy on the islands and tailor its grid development policy to this anticipated growth.

This requires strong pro-active steps and public engagement in long-term planning, assessing costs and working with citizens on social acceptance. These efforts can nonetheless be partly integrated in renewals of ageing network assets. To allow for projects with bigger capacity to be developed, the underwater connection cables should be modernised and strengthened. More grid reinforcement and expansions on the islands are necessary to connect larger generation facilities and match demand patterns, geographically and in time.

This recommendation goes in line with the **REPowerEU** measure to ensure that plants for the **production of energy from renewable sources, their connection to the grid, the related grid itself or storage assets** are presumed to be of **overriding public interest** for specific purposes. See Annex A for more details.

As mentioned under the second recommendation on the second barrier on Spatial Planning, having designated go-to zones would contribute to targeted grid upgrades. Grid operators could plan based on these areas where and when to upgrade the network and the island stakeholders would know which areas are planned to be upgraded and when to plan their projects.

Practically, this could be done by revising or updating the Multi-year DSO/TSO Work Plan Covering 2022 - 2026[108] and it should become standard practice to update this planning at regular intervals to cater for evolving energy policy and renewable energy developments. This could be partly based on 'Shaping Our Electricity Future Roadmap' prepared by EirGrid and SONI[109], which identifies the transmission network reinforcements needed to manage (growth in) renewable generation and demand growth.

Actors involved:

- **ESB Networks – Distribution System Operator**
- EirGrid – transmission system operator
- Commission for Regulation of Utilities
- Department of Environment, Climate and Communications

[108] https://www.esbnetworks.ie/docs/default-source/publications/esb-networks-national-network-local-connections--eirgrid-multi-year-dso-tso-work-plan-covering-2022-2026.pdf?sfvrsn=5613bda_8

[109] https://www.eirgridgroup.com/site-files/library/EirGrid/Shaping_Our_Electricity_Future_Roadmap.pdf

Recommendation 3.2: Develop suitable frameworks for storage with particular attention for islands

There is currently a 3MW sub-sea cable coming to the island Aran Islands, and the 2018 Energy Masterplan showed that 52% of electricity that comes from the mainland is lost in transmission[110]. If electricity is generated and used (and thus also stored) locally on the island, every unit consumed would replace more than two which would otherwise be imported[111]. To cope with the insufficient grid capacity, energy storage is of critical importance. An (island specific) support system for storage would help overcome this barrier. The Irish electricity regulatory framework does not currently recognise electricity storage as a licensable activity in its own right[112]. Absent such recognition, the business of an entity engaged in the storage of electricity falls to be regulated on the basis of the separate licensable activities that such business entails:

- Planning permission – from the local authority (which may be referred to An Bord Pleanála – the Planning Board). An environmental impact statement may be required as part of this.
- Grid connection – from EirGrid.
- Authorisation to construct - from the Commission for Regulation of Utilities (CRU).
- Licence to Generate - from the Commission for Regulation of Utilities (CRU).

The framework for storage should provide investors with clear visibility on the remuneration parameters of this technology and encourage its penetration. Most of the battery energy storage in Ireland is short duration (half an hour or one hour). Longer duration storage for energy balancing to compensate for the variability in output from wind and solar generation is not currently financially viable. There are three possible revenue streams:

- Fast response and reserve services to stabilise the grid. There is a good market for this, but the same MW capacity cannot be used to provide these services and also to provide energy balancing to compensate for the variability in output from wind and solar generation over the timeframe of minutes to several hours e.g. eight hrs.
- Energy arbitrage: The difference between the energy price used for charging when there is excess wind/solar generation and the price received for discharging when there is a deficit in wind/solar generation is not sufficient, and should be reviewed
- Capacity payments: These are derated depending on the storage duration e.g 10MW of half an hour storage is only counted as 1.4MW. 10MW of 4hr storage is counted as 6MW. We recommend that the methodology for calculating these derating factors should be reviewed. We would also recommend that capacity payments be linked to carbon emissions to incentivise low carbon capacity. As the CO_2 emissions of grid electricity falls with greater renewable generation, this will incentivise energy storage compared to OCGT.

Few countries currently provide a comprehensive regulatory framework for energy storage, with the majority of jurisdictions currently allowing storage to be defined as “generation” for the purposes of licensing and other regulatory requirements. However, some countries like the UK and Belgium have provided a more elaborate framework, mainly for revenue streams to help different storage technologies to develop, for example capacity markets, ancillary services and other grid

[110] https://www.seai.ie/community-energy/sustainable-energy-communities/tools-and-resources/energy-master-plan/Sample_Energy_Master_Plan.pdf
[111] https://www.iesve.com/products/case-studies/27353/inishmore-community-microgrid?platform=hootsuite
[112] https://www.mhc.ie/uploads/ER2020Ireland.pdf

services. A more detailed overview is given in the Annex B - Examples of frameworks on Energy Storage.

To help cover the investment costs, and this particularly in the light of higher costs of technical equipment installation and maintenance, the system of an uplifted grant as foreseen for energy efficiency projects on islands could be used. As mentioned above, the grants for energy efficiency projects foresee a 'grant uplift' of 50% for islands. Island inhabitants could thus ask for 50% more funding for energy efficiency renovations. In line with that existing system, when designing a support system for (stand-alone) energy storage applicable for the whole of Ireland, it could be envisaged to have an uplifted grant for islands.

Actors involved:

- **Commission for Regulation of Utilities**
- **Department of Environment, Climate and Communications**
- Sustainable Energy Authority (SEAI)

4. Renewable energy support system not adapted to island challenges

Contrary to countries such as Greece[113] and Estonia[114], with island specific (energy) support schemes, or countries such as Croatia, with a high percentage coverage for islands within the general support system, there are no island specific support systems in Ireland. The Renewable Electricity Support Scheme (RESS) – described in the Policy section above - is the main government support. Additionally, a solar PV scheme provides subsidies for the purchase and installation for roof-mounted PV. The heating and cooling sector is addressed through a grant scheme for heat pumps, an operational tariff for biomass/biogas installations and grants for the energy upgrading of dwellings. In the transport sector, grants are provided for the purchase of private and commercial EVs and the installation of public and private chargers. Ireland has a biofuel obligation scheme and offers tax relief and tax exemption for electric vehicles.
Most recently, the SEAI launched the National Energy Research Development and Demonstration (RD&D) Funding Programme 2022[115], which invests in innovative energy RD&D projects which contribute to Ireland's transition to a clean and secure energy future.

The absence of island specific support systems or at least, particular attention to islands within the existing support systems pose difficulties for clean energy development on islands. It costs more to bring out technicians and equipment to do renovations and thus islanders are in different position as:

- Investments on the islands are usually higher.
- Maintenance is more difficult and more expensive.
- It is harder to have access to skilled workforce.

[113] RES projects in Greece on non-interconnected islands can benefit from a Feed-in Tariff, regardless of the capacity (size) of the project, whereas on interconnected islands there is a maximum threshold of 400kw. There is also a subsidy for RES plants on non-interconnected islands employing two or more RES technologies.
[114] Small Islands Programme aimed to contribute to the availability and quality of essential services for the inhabitants of the small islands that are included in the list of small islands under the Small Islands Act. The programme supported improvement of electricity connections and installation of electric vehicles loading stations to islands.
[115] https://www.seai.ie/grants/research-funding/research-development-and-demonstration-fund/SEAI-RDD-Call-Document.pdf

In the application for support systems, the extra costs put the islands at a disadvantage. The funding and support under the existing schemes and funds are thus allocated to projects on the mainland since there is more value for money compared to island projects. Also, finding the right site is more expensive, as nature conservation designations entail high upfront costs (for example bird studies for wind energy projects).

Recommendation 4.1: Develop support systems with particular attention for islands
It is necessary to provide additional support to the islands, within the existing frameworks for renewable energy. Within those, the SEAI should provide additional support for the islands, taking into account island characteristics and energy peculiarities. This could be done by providing preferential categories or providing uplifted grants, as has been done before in Ireland.

As mentioned above, the grants for energy efficiency projects foresee a 'grant uplift' of 50% for islands. In line with that existing system, it could be envisaged to have an uplifted grant for islands in the existing subsidy Solar PV Scheme which provides grants for homeowners of dwellings for the purchase and installation of roof-mounted PV up to two kWp and roof-mounted PV + battery storage up to four kWp.

In the design of the next RESS (auction) the terms and conditions could provide for an adjusted calculation method, with a specific island coefficient, taking into account the higher investment and maintenance costs. However, this RESS auction is only for projects above 0.5MW. There is nothing foreseen for selling electricity below that threshold of 0.5MW. It could thus be envisaged to (i) increase the maximum capacity of the solar PV scheme (ii) lower the RESS threshold, and (iii) extend the eligible parties to community projects as done under the RESS.

Actors involved:
- **Sustainable Energy Authority (SEAI)**
- Commission for Regulation of Utilities
- Department of Environment, Climate and Communications

Recommendation 4.2: Use regulatory sandboxes for testing of innovative solutions

Considering the islands have their own specific requirements when it comes to energy system and market, the implementation of new technologies, innovative operation, tariffing and business models, the islands can be used as a testing site for energy transition.

We recommend using the regulatory sandbox[116] approach to allow specific islands to experiment with, for example different designs of electricity tariffs (hourly tariff, time of use tariff, etc.). Regulatory sandbox are ways for authorities, tasked with implementation and enforcing of specific legislation, to test innovative approaches and technologies in real-life situations through time limited implementation of except to the existing legislation. This way incentives for clean energy transition on the islands can be tested without a permanent change in legislation. It also gives room to evaluate the success of the experiment.

[116] https://www.consilium.europa.eu/en/press/press-releases/2020/11/16/regulatory-sandboxes-and-experimentation-clauses-as-tools-for-better-regulation-council-adopts-conclusions/

Choice of the islands and grids within which different regulatory sandboxes should be implemented can be decided in collaboration with the intergovernmental department focussing on islands (cfr. Barrier 'islands are not consulted in a systematic manner' and the recommendation to relaunch the initiative to create an intergovernmental department to specifically focus on islands). This will assure local inputs.
Regulatory sandboxes have been implemented in Italy[117], Austria, Germany and the Netherlands for temporary tests of specific energy tariffs[118].

Islands could then be used for research and innovation projects if planned in line with local needs or to solve local issues in innovative ways. Research projects do not only have to be focussed on innovative technologies, they could also look at new ways of applying technology or innovative financing for new business models – crowdfunding, etc.

This recommendation goes in line with the **REPowerEU** measures on innovation and **sandboxing** requiring the Member States to promote the testing of new renewable energy technologies while applying appropriate safeguards. See Annex A for more details.

Actors involved:
- **Sustainable Energy Authority (SEAI)**
- Commission for Regulation of Utilities
- Department of Environment, Climate and Communications

5. Islands are not consulted in a systematic manner

Both the energy sector strategies and the long-term energy planning are highly centralised. The Department of Environment, Climate and Communications is responsible for the energy sector and the regional development department is under the Department of Rural and Community Development. The National Energy and Climate Plan for Ireland does not provide a clear strategy for the energy transition on the islands. It is currently not clear how islands and their energy potential or needs will contribute to the energy transition in Ireland.

Island stakeholders are not consulted in a systematic manner to ensure that the island needs and priorities are addressed. The islands are relatively small, and they make up a small portion of the population, therefore their political power is limited. Currently islands' priorities are not very visible on the national level. There is not much traction from the island side in Ireland or from the policy for islands and the ministry dealing with energy.

Specifically for islands, the Irish Government initiated a consultation in 2019 regarding policy development for the development of the islands around Ireland, called the 'new National Policy for the Future Development and Sustainability of Communities on the Offshore Islands of Ireland'[119].

The Department of Rural & Community Development is working on finalising the Islands Policy, which had stalled since the end of 2019. The goal is to have this ten-year action plan ready by the

[117] https://www.iea-isgan.org/wp-content/uploads/2021/10/Regulatory-Sandbox-2.0_For-Publication.pdf
[118] https://fsr.eui.eu/regulatory-sandboxes-in-the-energy-sector-the-what-the-who-and-the-how/
[119] https://www.gov.ie/en/publication/02a4d-island-policy-consultation-paper/

end of 2022. The interdepartmental committee that is currently drawing up the plan will also be following up its implementation with sequential three-year action plans.

On the other hand, islands are very active in energy transition on the local level; Aran Islands developed a Clean Energy Transitions agenda[120]. Bere Island has an energy group that is working with the sustainable energy authority of Ireland to produce an energy master plan that will guide the islanders on their journey[121]. Cape Clear and its island community have been frontrunners on clean energy. The community developed an integrated wind energy system in 1987, which operated until the early nineties. The island is about to take part in a pilot project that will use electric minibuses and charge them with green electricity units. In the long term, the island hopes to generate clean energy locally to charge these electric vehicles. Cape Clear further aims to become a Smart Island, taking advantage of the digital technology available to advance the clean energy transition. Other islands on the road of their energy transition are for example Rathlin[122] and Valentia[123].

In conclusion, there is a disconnection between national energy planning and lack of strategy for the islands and the local activities of the islands to accelerate their own energy transition.

Recommendation 5.1: Integrate islands views in the policy for the development of the islands around Ireland

Ireland has signed the Memorandum of Split[124], committing itself to supporting the Clean energy for EU islands initiative and to accelerating the clean energy transition on all EU islands. We recommend having a national policy – coming from the national government – to address the specific needs of islands. It should contain targets & objectives, concrete guidelines as well as a set of concrete measures to be taken.

The barriers and recommendations formulated in this study can serve as examples for actions to be taken in the short-, mid and long term. Key points to be considered in this policy are the additional costs of equipment, installation and maintenance and obsolete grid infrastructure. It is also worthwhile to link some of the advantages that the energy transition can bring to other sectors such as employment.

In the 2019 consultation it was envisaged that: '*consultation workshops will be organised in collaboration with local island organisations and promoted widely so that a broad spectrum of the island community can attend and participate.*' Before finalising this Islands Policy we recommend submitting it for public consultation to the Irish island community. The policy should not be made for them but with them.

Actors involved:
- **Department of Rural and Community Development**
- Department of Housing, Local Government and Heritage
- Department of Environment, Climate and Communications

[120] https://www.aranislandsenergycoop.ie/wp-content/uploads/2020/01/ARAN_FinalTransitionAgenda_20191118.pdf
[121] https://clean-energy-islands.ec.europa.eu/index.php/countries/ireland/bere-island
[122] https://clean-energy-islands.ec.europa.eu/index.php/countries/ireland/rathlin
[123] https://clean-energy-islands.ec.europa.eu/index.php/countries/ireland/valentia
[124] https://ec.europa.eu/regional_policy/sources/policy/themes/sparsely-populated-areas/eu2020_mou_split_en.pdf

- Sustainable Energy Authority (SEAI)
- Regional authorities,
- Local planning authorities

Recommendation 5.2: Relaunch the initiative to create an intergovernmental department to specifically focus on islands

The energy sector strategies and the long-term energy planning are highly centralised. To foster the involvement of island stakeholders in national strategic & long-term energy planning and funding distribution, we recommend relaunching this initiative. This would help bring in different views from different island stakeholders up to the national level. There is a clear need for a link between islands and national level in a cross-departmental way. This department would also help to align islands priorities and needs with the national planning and to coordinate across sectors needed for island energy transition.

The department would be a dedicated team that would take charge of all aspects related to the clean energy transition on the islands and coordinate at the national level to ensure all tasks are aligned. The department can also be used to provide guidelines to the regional and local authorities while taking into account overall sustainable development of the islands.

The department would be responsible for defining the short-, mid- and long-term strategy on how national goals identified in NECP can be further developed and implemented through actions on the local level and in coordination with the local island priorities and with other sector priorities.

The Department of Environment, Climate and Communications (DECC) is used to working with cross-departmental task forces, such as for example on offshore energy. The islands department could be organised under the DECC in coordination with other national bodies responsible for spatial planning, environment, culture and history and tourism or it could be envisaged to enlarge the mission of the current interdepartmental committee that is developing the Islands Policy. In addition it should be assisted with representatives of the relevant regional governments, representatives of academia, civil sector, private sector (including energy companies) who are experts and highly involved in the clean energy transition on Irish islands.

In addition to strategic planning and coordination with the various sectors on the national level and with the stakeholders from the different levels, the department could be responsible for:

- Monitoring and evaluating the implementation of clean energy projects in regard to foreseen targets.
- Identifying bottlenecks and gaps in implementation and coordinating with responsible bodies to overcome them.
- Providing support through funding, training, technical assistance or advice to local or regional governments, energy communities and local stakeholder in planning and implementation of clean energy projects.
- Provide guidelines documents to national and local government for implementation of new procedures.
- Provide a platform for exchange of experiences among various islands and island stakeholder.

Actors involved:

- **Department of Rural and Community Development**
- **Department of Environment, Climate and Communications**
- Sustainable Energy Authority (SEAI)
- Local and regional authorities
- Energy communities and cooperatives

6. Lack of support from the regional and national government

The Government's Climate Action Plan 2019, and notably Action 165, requires each Local Authority to identify and develop plans for one decarbonisation zone - an area in which a range of climate mitigation, adaptation and biodiversity measures are identified to address local low carbon energy, greenhouse gas emissions and climate needs, to contribute to national climate action targets. After identifying the most suitable area for the zone, each Local Authority must develop their implementation plan before the deadline. Some of the Irish islands have been designated as the carbon free zone by the local authority but there has been no support from that local government in taking concrete actions. This was also identified by the LECo policy paper[125], which mentioned that there is a lack of supportive local authorities and/or local energy agencies.

While certain regions of Ireland – for example the Midlands due to the presence of Peat - receive particular attention for the national government under the Just Transition Fund, islands are not particularly envisaged with supportive actions. Up to €84.5 million has been allocated to Ireland under the EU Just Transition Fund over the period to 2027. In the draft Ireland's Territorial Just Transition Plan[126] the chapter 'Identify the outermost regions and islands with specific challenges within territories listed under Section 1.1 and the specific amounts allocated for those territories with corresponding justification' is empty.

Recommendation 6.1: Mandatory follow-up on decarbonisation zones, mandatory development of Local Authority Renewable Energy Strategies together with national guidance
Our recommendation is to introduce a mandatory follow-up and monitoring/reporting (with concrete actions, KPIs, Etc. within a certain time limit) of the implementation of the regional/local decarbonisation zones. A monitoring framework typically adopts indicators, with baselines and targets, to measure progress against certain goals and objectives. Indicators help to outline goals in specific terms, monitor progress, and provide feedback to stakeholders. Many examples of such frameworks for zero-energy districts[127], sustainable city monitoring and evaluation systems[128] exist[129]. This can be annual or bi-annual and focus on local and regional authorities with the guidelines provided by the intergovernmental department focussing on islands.

[125] https://leco.interreg-npa.eu/subsites/leco/PESTLE_Analysis_LECO_A4_190110-singlepages.pdf
[126] https://assets.gov.ie/211810/2da58ad1-2153-498e-9fba-6a7b3b3c4a8a.pdf
[127] From nearly-zero energy buildings to net-zero energy districts, JRC, 2019 - https://publications.jrc.ec.europa.eu/repository/handle/JRC115188
[128] Vandevyvere, Han. (2013). Evaluating the sustainable performance of an urban district: Measured score or reflexive governance?. International Journal of Sustainable Development and Planning. 8. 36-58. 10.2495/SDP-V8-N1-36-58. Available on ResearchGate; Asian Green City Index - https://eiuperspectives.economist.com/economic-development/asian-green-city-index
[129] SCIS KPI framework (2018), CITYkeys, Syn.ikia - Sustainable Plus Energy Neighbourhoods (2020), REPLICATE Renaissance of Places with Innovative Citizenship and Technologies, MATCHUP Maximizing the Upscaling and replication potential of high-level urban transformation strategies, SMARTEnCITY Towards Smart Zero CO2 Cities across Europe, MySMARTLIFE Smart Transition of EU cities towards a new concept of Smart Life and Economy, SHARINGCITIES Building Smart Cities Together, TRIANGULUM The Three Point Project / Demonstrate. Disseminate. Replicate, GROWSMARTER Transforming Cities for a Smart, Sustainable Europe, +CityxChange Positive City ExChange, STARDUST Enlightening European Cities

In 2013, SEAI published a Methodology for Local Authority Renewable Energy Strategies (LARES)[130] to provide guidance to local authorities engaging with spatial planning for renewable energy. This methodology aims to facilitate consistency of approach in the preparation of LARES, and to assist local authorities in developing robust, co-ordinated and sustainable strategies in accordance with national and European obligations. However, this is a voluntary methodology and only six out of 31 local authorities participated.

In addition to mandatory rules, the Department of Rural and Community Development & the Department of Housing, Local Government and Heritage could provide guidelines for the development and implementation of local energy and climate plans. It could recommend implementing support schemes to provide capacity building and/or technical assistance for realisation of the decarbonisation zone. These can take the form of workshops for municipalities and communities, guidelines for energy transition and examples of roadmaps from similar municipalities or regions. Where there is not enough capacity on the islands, the department can provide support through technical assistance to engage external support for short-term projects.

Actors involved:

- **Department of Rural and Community Development**
- **Department of Housing, Local Government and Heritage**
- Sustainable Energy Authority of Ireland (SEAI)
- Regional authorities,
- Local authorities
- County and City Management Association (CCMA), the 'representative voice' of the local government management network
- Climate Action Regional Offices (CARO)

Recommendation 6.2: Channel funding from the EU towards clean energy development on islands

Ireland should pay particular attention to the island regions when developing plans allocating EU funding. In doing so, the responsible authorities should align the funding with the other plans for the energy transition on the islands, as discussed in the barriers and recommendations above (go-to zones, island-specific policy), but also keeping the link with the objectives set-out in the NECP. This could be coordinated and managed by the intergovernmental department on islands (mentioned above).

Earmarking the budget from EU funds to island specific clean energy development has already been done by Greece and Spain for example.

> The Just Transition Fund prioritises the least developed regions, outermost territories and islands of the EU. The Greek government provides financial support to six Greek islands through the Just Transition Fund in order to tackle issues expected following planned withdrawals of local petrol-fuelled power stations[131]. Ireland could envisage in its implementation of the Just Transition to channel funding towards clean energy projects on islands because of their remoteness, vulnerability, as well as the higher costs for the energy transition on the islands.

[130] https://www.seai.ie/publications/Methodology-for-Local-Authority-Renewable-Energy-Strategies.pdf
[131] https://energypress.eu/jtf-support-for-6-islands-closing-high-cost-polluting-local-power-units/

Spain has a dedicated budget for clean energy development on islands under the Recovery and Resilience Facility. The Spanish NECP already provided for the need for progress in the energy transition in the islands. Within this axis of ecological transition, the Spanish Recovery and Resilience plan, in its Component 7 “Deployment and integration of renewable energies", includes in line with the provisions of the NECP, a vision of island specificity in the energy transition and the promotion of renewable energies in the islands, the improvement of the functioning of their energy systems through storage and the implementation of "Smart Islands" projects, as well as citizen participation through renewable energy communities. There is even a chapter called ‘Sustainable energy on the islands through the promotion of an Agenda for Energy Transition in the Islands, support for projects for the penetration and integration of renewable energies in island and non-mainland systems". The allocated budget amounts to €700 million with one third of the funds going to the Balearic Islands and two thirds to the Canary Islands, given their larger population and the fact that they do not have systems connected to the mainland.

While the Irish Recovery and Resilience plan is already approved by the Commission it could be envisaged, in its implementation, in concertation with the Commission, to dedicate budget for clean energy development on islands. This could come from, on the one hand, the €155 million in energy efficiency in residential and public buildings, and on the other hand the budget foreseen for onshore and offshore wind energy. Budget under these headings could specifically be dedicated to projects on the islands.

Actors involved:

- **Department of Public Expenditure and Reform** (for the RRF)
- **Department of Environment, Climate and Communications** (for the JTF)
- Sustainable Energy Authority (SEAI)

Conclusions for Ireland

The Irish islands have been frontrunners in the energy transition. Community engagement has always been very strong on the islands. Cooperatives are used on the islands to provide services regarding waste, water, transport etc. for the benefit of the island inhabitants. Providing clean, affordable, and secure energy has become one of the key-actions of these community driven initiatives. Several actions taken by the Irish national government have contributed to this objective such as for example an uplifted grant for islands within the energy efficiency programmes. Nonetheless several challenges for the clean energy transition on the islands remain.

A community preference category has been integrated in Ireland's main renewable electricity support system and a range of supportive actions and programmes are foreseen by the Sustainable Energy Authority Ireland. However, the legal and regulatory frameworks for community energy projects and energy sharing are missing. There is a lack of national community energy strategy and national targets for community energy projects. This is a barrier for the whole of Ireland, but as clean energy projects on islands are mainly community driven, this is a barrier particularly relevant for islands. The Commission for Regulation of Utilities should thus accelerate the regulatory work on Peer2Peer trading and energy communities. In addition, implementation of clean energy project by community initiatives should be made simpler and easier. For example, the DSO should work on levelling the playing field, by for example revising the strict timelines in the grid connection procedures (Enduring Connection Policy). This should go hand in hand with communication, systematic information sharing (through one-stop shops) and capacity building targeted at island communities and their projects.

The electricity grids on the islands lack capacity to absorb any substantial amount of additional locally produced renewable energy, while keeping security of supply. At the same time the connection cables are unable to transport any excess electricity that would be produced. Above that, around 50% of the electricity imported from the mainland is lost in transmission. Producing and consuming energy locally is thus of utmost importance against that backdrop. To enable this, grid planning by the distribution system operator should take a forward-looking approach, looking at where there are generation opportunities and how best to support them. The islands have the RES potential, and they should thus be given more attention in the grid modernisation plans. In the short term energy storage should be supported via legal and regulatory frameworks and support systems. The system of uplifted grants used within the energy efficiency programmes could serve as an example for a storage-specific support system with particular attention for islands. This approach of uplifted grants could also be used within the existing support systems for renewable energy to take into account island characteristics and energy peculiarities.

The Irish islands have beautiful landscapes which attracts many tourists. They are also a habitat for rich fauna and flora. While this must be preserved, a balance between nature conservation and clean energy generation must be sought as having access to clean, affordable and reliable energy is important on the islands. Moreover, in light of climate change, clean energy transition is a partner to nature conservation aiming for the same sustainable development. The Department of Housing, Local Government and Heritage and all other involved stakeholders in spatial planning should identify go-to zones on and around the islands where renewable energy projects and grid upgrades should benefit from simplified and accelerated permitting and connection procedures. This should be accompanied by guidelines on how to implement clean energy projects as navigating through the Irish spatial planning system is not always easy for community led projects on the islands.

Living on an island has always brought and will always bring additional costs. Many of the supplies need to be imported by boat or plane. Decarbonising this transport is a particular important challenge on itself. Importing, installing and maintaining solar panels, heat pumps, batteries, etc. on the islands inevitably costs more than on the mainland. These additional costs should be taken into account within the existing support systems This could be done by providing preferential categories or providing uplifted grants, as has been done before in Ireland. It is also important to build local capacity; technical assistance can be provided to bring needed technical workforce to the islands when needed.

Recommended actions and measures should be included in the Islands Policy, called the 'new National Policy for the Future Development and Sustainability of Communities on the Offshore Islands of Ireland'. The interdepartmental committee or taskforce should be empowered to follow up and implement the Island Policy. With all the identified barriers and recommendations in mind, Irish national and regional stakeholder should always involve the island communities in the (re-)shaping and implementation of the Island Policy and legislative and regulatory framework aimed at Irish islands. Islands policy and regulatory framework should not be made for island stakeholder, but with them.

Estonia

The first Chapter of this Estonia country section provides an overview of the existing policy and legislation for clean energy on Estonian islands. The second Chapter contains the identified legal and regulatory barriers, based on the survey and the interviews, and the recommendations, based on the Focus Group Meetings and the National Stakeholder Meetings.

Policy and Legislation for clean energy on Estonian Islands

Introduction to the Estonia Energy Market – Relevant Actors

Throughout the study several key stakeholders in the Estonian Energy Market will be referred to. Hereunder a short overview of these actors and their role given.

The Estonian electricity market was fully opened to all consumers in the beginning of 2013, creating the preconditions for the entry of new sellers into the market. The Electricity Market Act ended the sale of electricity at a regulated price as of 1 January 2013, giving all consumers the opportunity to buy electricity from competing suppliers[132]. Estonia is highly interconnected with the Baltic and Nordic countries and is part of the Baltic-Nordic electricity market. Estonia is part of Nord Pool's open electricity market together with Norway, Sweden, Finland, Denmark, Latvia and Lithuania.

The Estonian Competition Authority (Konkurentsiamet)[133] is the regulator for gas and electricity network tariffs and sets prices for district heating.

Different players are active on this market. There are players that produce the energy (Producers) and others that consume energy (Consumers). Between production and consumption there are several stages, such as: the control of production and the establishment of prices (Regulators and Market Operators), the transport of energy (Transmission Operators), the distribution of energy (Distributors) and the sale of energy to the final customer (Marketers or Utilities).

The Ministry of Economic Affairs and Communications (Majandus- ja Kommunikatsiooniministeerium)[134] drafts and implements the state's energy policy. The Energy Department has the main responsibility for energy while the Building and Housing Department is responsible for the energy efficiency of the housing stock, and the Transport Department and the Energy Department are co-responsible for fuel issues[135].

The Ministry of the Environment (Keskkonnaministeerium)[136] organises and co-ordinates environmental policy, including the management of the use, protection, recycling and registration of natural resources.

The Ministry of Finance (Rahandusministeerium)[137] is responsible for state budget, tax policies and regional development.

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[132] https://iea.blob.core.windows.net/assets/21965e0d-c9a9-4617-b1ad-5b4539d91ad7/Estonia_2019_Review.pdf
[133] https://www.konkurentsiamet.ee/en
[134] https://www.mkm.ee/en
[135] https://iea.blob.core.windows.net/assets/21965e0d-c9a9-4617-b1ad-5b4539d91ad7/Estonia_2019_Review.pdf
[136] https://envir.ee/en
[137] https://www.fin.ee/en

Elering AS[138] is the state-owned electricity and gas transmission system operator (TSO) and electricity network service provider.

There are 34 electricity distribution system operators. Elektrilevi[139] is the largest Distribution System Operator in Estonia, owning, maintaining and repairing almost 61 000 kilometres of power lines and more than 24 000 substations for almost 510 000 customers across Estonia.

Tartu Regional Energy Agency (TREA)[140] is an energy agency located in Tartu, Estonia, providing services to citizens, SMEs and municipalities. TREA consists of experts on energy efficiency, energy planning, sustainable transport, energy renovation and energy communities. TREA supports the energy transition of the South Estonian region but also in other regions and at the national level.

TÜ Energiaühistu[141] is a broad-based company owned by its members and active nationally. It is setting up renewable energy parks in Estonia in cooperation with local communities.

Estonian islands and their governance

Estonia has 2 222 islands, of which 22[142] are permanently inhabited. The largest islands are Saaremaa (2 673 km²) and Hiiumaa (989 km²). Most of Estonian islands have an area of below 100 km². Of the total population of Estonia, 3% lives on the islands. This corresponds to 44 100 people.

Whereas Estonia is a unitary state, some islands are separate municipalities and will as such have the same municipal autonomy as mainland municipalities. In addition, Saaremaa and Hiiumaa are regional authorities (counties).

General Policy

The **Integrated National Energy and Climate Plan for Estonia** for the period 2021-2030 aims to increase its electricity from renewable energy sources consumption from 19% in 2020 to 40% in 2030. In the heating sector, the target is to increase the share of renewable energy heating sources from 55% in 2020 to 63% out of total consumption by 2030. The Estonian target for 2030 is to reach a 14% share of renewable in the final share of transport sector consumption. The new NECP is being prepared. In this process the government has specific measures to involve local municipalities and private companies in the process.

The general structure of the political and administrative system is as follows (based on VASAB – Vision & Strategies around the Baltic Sea – Estonia Country Fiche, available here). The state administrative organisation in Estonia consists of the national governmental institutions and the local governmental institutions, which operate on different levels – national, regional or local. Depending on the specification of a particular plan, most of them could be involved in a planning process, as well as the relevant political bodies. National administration consists of the Government of the Republic (supported by the Government Office), ministries and different government

[138] https://elering.ee/en
[139] https://www.elektrilevi.ee/en/ettevottest/elektriturg?tabgroup_1=electricity_market
[140] https://www.trea.ee/eng/
[141] https://energiayhistu.ee/
[142] https://www.stat.ee/et/uudised/2017/10/23/pusielanikud-on-22-saarel

agencies. Those operate on the national level, but the ministries and the government agencies might also have regional offices and operate on regional level. Local administrations are governing both urban and rural municipalities. Local administration operates on the local level, but there are also activities performed on the regional and national levels. The municipalities have adopted the following functions previously fulfilled by the County Governments: regional public transport, regional development, and regional health promotion. The municipalities have to exercise those activities jointly through the Regional Associations of the Local Governments, the Regional Entrepreneurship and Development Centres, Public Transport Centres or other forms of cooperation. The Association of Estonian Cities and Rural Municipalities is representing the local governments on national level.

Estonian islands are seen as the frontrunners in the energy transition in Estonia. Islands Saaremaa[143], Hiiumaa[144], Ruhnu[145] and Muhu[146] have adopted climate and energy plans until 2030. Saaremaa previously had a dedicated position for an energy expert, but not anymore. Important topics for islands are tourism, agriculture, forestry and industry. The main concern for the islands is how to prevent depopulation.

While the Ministry of economic affairs and communication is responsible for the energy sector, the regional development department is under the Ministry of Finance[147]. They are responsible for the islands' policy including not just energy but also other sectors.

National government, specifically the Ministry of economic affairs and communication, is collaborating with the Association of municipalities including island municipalities. This collaboration considers mainly the planning of the land use for renewable energy. This collaboration is realised through monthly meetings with the Association of municipalities. The islands are seen on the national level as municipalities and are not distinguished from other municipalities on the mainland.

Within the framework of collaboration with the municipalities, the Ministry organised a workshop in Spring 2022 to provide a platform for municipalities to exchange experience and know-how on energy transition planning and activities. Currently, ten local energy and climate plans will be prepared and presented based on the funded project. The national government's guidance for local energy and climate plans will be made available for local governments, even though these plans are not mandatory.

Regarding transport, most of the transfers to and from islands are fossil fuel based. There are ongoing research projects looking at hydrogen or electric driven ferries[148], as well as busses running on low-carbon fuels. The tenders for organising the ferries are administered by the national Ministry of Economic affairs and not by the islands.

[143] https://www.sasak.ee/application/files/7216/1191/5181/SECAP_Saaremaa_saadetud_05.10.pdf
[144] https://hiiumaaarenduskeskus.kovtp.ee/uudised2/-/asset_publisher/XLok6exD3kIK/content/hiiumaa-energia-ja-kliimakava-2030
[145] https://www.sasak.ee/application/files/7016/1191/5181/SECAP_Ruhnu_saadetud_05.10.pdf
[146] https://sasak.ee/est/uuringud-analuusid/secap-energia-ja-kliimakavad
[147] https://www.rahandusministeerium.ee/en/regional-development-and-policy
[148] https://www.offshore-energy.biz/estonias-first-hybrid-ferry-toll-starts-service/

Renewable energy

Support systems

In Estonia there are no island-specific support systems for renewable energy or energy efficiency, nor are there island-specific permitting procedures.

Clean energy development on Estonian islands is supported in the framework of cross-sectoral programmes. For example, from 18 January to 11 March 2021, the Ministry of Finance of Estonia ran the Small Islands Programme, which aimed to contribute to the availability and quality of essential services for the inhabitants of the small islands that are included in the list of small islands under the Small Islands Act. Hiiumaa, Muhumaa and Saaremaa were not included in the programme area. The programme supported improvement of electricity connections and installation of electric vehicles loading stations to islands. The maximum grant was €130 000 per project. The self-financing or co-financing rate was 15% of the total cost of the project.

Estonia supports PV, wind, biogas/biomass for electricity production and heat pumps and biomass energy for heating and the electrification of public transport (busses) and the use of biofuels. Support schemes:

- For RES-E, Estonia focuses on technology neutral auctions limiting capacity to 50kW to one MW.
- For the heating sector, the support schemes focus for installation of heat pumps for the building sector or for small residences.
- Subsidy for acquisition of electric busses and creation of charging infrastructure is aimed to contribute to the development of electric public transport.
- There are schemes aimed at facilitating deployment of RES-T technologies, such as further use of biofuels (biomethane) and schemes supporting consumers and municipalities at switching from fossil fuels to RES in the transport sector.

RES projects authorisation process

The permit and authorisation procedure can vary in length according to the specific technology, as well as the size of the project - as often authorisation is simplified for installations under a certain capacity. Permitting and authorisation is the most complicated for wind onshore; for rooftop PV, the least authorisations are needed. Overall, the local municipalities are the competent authority for administrative authorisation as they are in charge of granting the relevant permits. An exception here is the Ministry of Defence, which plays a role in the site selection for wind energy developments.

Electricity and heating grids

In the electricity and heating networks, the RES plants are not given priority (non-discriminatory criteria). Local authorities determine the heat producers' development requirements and grid expansion obligations.

There are 34 electricity distribution system operators. The country has a smart meter penetration rate of 98.9%.

Supported energy efficiency measures

There are voluntary energy efficiency measures for buildings, industry and public buildings but there are also mandatory measures, for example energy savings obligations. For improving energy efficiency, financial support is offered both for apartment buildings as well as private residences. For the buildings owned by the public sector and central government, yearly renovation target is set.

Supporting policies

The Estonian RES policies largely rely on the exemplary role of public entities and on voluntary schemes, either by the business sector or municipalities. There are not legally binding, compulsory instruments for e.g., mandatory training for the installers of RES. Various vocation certification programmes related to RES exist. The body responsible for organising the allocation of qualifications and naming the bodies responsible for setting the standards is the Estonian Qualifications Authority.

Self-consumption and community energy

The current legal system in Estonia enables the creation of renewable energy communities (under the general Commercial Code of the country) and the production of renewable energy for own consumption. However, specific regulations related to energy sharing, energy communities or prosumers have not been adopted yet.

Spatial planning

The responsibilities for spatial planning span over multiple government levels. In general, the planning responsibilities in Estonia are divided between national and municipal levels. The authorities that carry out planning responsibilities are the Ministry of Finance (department for spatial planning), other relevant government agencies and local authorities.

Estonian spatial planning system consists of the plans that are the national responsibility and the plans that are the responsibility of the municipalities. The spatial plans prepared by the national authorities are national spatial plan (and the respective thematic plan), national designated spatial plans, and county-wide spatial plans (and the respective thematic plans). The spatial plans prepared by the local authorities are comprehensive spatial plans (and the respective thematic plans), local government designated spatial plans, and detailed spatial plans.

Figure 6 - A general structure of planning system in Estonia – Source

The National Spatial plan Estonia 2030+[149] tackles the issues of spatial planning, infrastructure and energy production. In there it is specifically mentioned that:

'*Estonia's western coastal waters are suited for the construction of offshore wind farms. Based on the result of investigations conducted for the identification of suitable areas and given the specific character of every individual region, offshore wind farms may be planned via county plans, providing the wind farms with sufficient distance from small islands, preserving heritage and nature-conservation assets, and migration corridors and habitats for species. The construction of offshore wind farms needs to consider national-defence interests. Thematic plans need to be based on an integrated approach to balance the interests of various sectors in the utilisation of offshore and coastal areas.*'

'*Specifically, due to the natural conditions and national-defence requirements, Estonia's northern coastal waters, Lakes Peipsi and Võrtsjärv are not suited for the construction of wind farms.*'

[149] https://eesti2030.files.wordpress.com/2014/02/estonia-2030.pdf

Identified barriers and recommendations to overcome them

The Clean energy for EU island Secretariat's Think Tank has identified legal and regulatory barriers, based on the detailed assessment of the current regulatory framework and consultation with relevant Estonian stakeholders through survey and interviews (see Annex 1 of the Estonia country study[150] for a detailed assessment). For each of the regulatory barriers, the Secretariat identified multiple recommendations. Those barriers and recommendations were presented and discussed within the Focus Group Meetings and the National Stakeholder Meeting (see Annex 2 of the Estonia country study[151] for more information).

Regulatory barriers are presented in order of their priority for energy transition on the Estonian islands. Some of the barriers that were identified via the surveys and interviews are barriers that exist both on the islands and on the mainland. In the recommendations below, the focus lies on the concrete issues encountered by islands with these regulatory barriers.

The table below presents the list of barriers (marked in dark blue) ordered based on their priority, and the proposed recommendations (marked in white).

Table 3 - Barriers and Recommendations - Estonia

Barrier 1. **Grid constraints and absence of frameworks for solutions to cope with it**
Recommendations:
1.1 Improve grid development planning
1.2 Support the development of storage, demand response and smart grids on the islands
1.3 Channel funding from the EU towards infrastructure on the islands
1.4 Use regulatory sandboxes to test innovative solutions on the islands
Barrier 2. **Islands are not consulted in a systematic manner and lack of national vision/strategy on clean energy development for the islands**
Recommendations:
2.1 Set up an island energy agency
2.2 Develop an island specific policy (Regional Action Plan)
Barrier 3. **Lack of support from the national government in planning and implementation of clean energy projects and action plans**
Recommendations:
3.1 Provide guidance and support the development and implementation of Clean Energy Transition Agendas
3.2 Ensure mandatory and regular follow-up on island energy action plans
3.3 Adapt the support systems with particular attention for islands
Barrier 4. **Local opposition and lack of energy community frameworks to foster RES projects**
Recommendations:

[150] Available online at: https://clean-energy-islands.ec.europa.eu/insights/publications/regulatory-barriers-estonia-findings-and-recommendations
[151] Available online at: https://clean-energy-islands.ec.europa.eu/insights/publications/regulatory-barriers-estonia-findings-and-recommendations

4.1 Develop facilitating services for energy community projects and a framework for implication of the island inhabitants

4.1 Increase stakeholder awareness on advantages of clean energy projects

Barrier 5. **Spatial planning constraints for the islands: Energy generation in conflict with nature conservation and military activities**

Recommendations:

5.1 Seek compromises with Ministry of Defence to open zones for RE development and adaptation of wind turbine height constraints

5.2 Provide spatial planning guidelines for implementation of clean energy projects

5.2 Designate go-to areas and develop simplified permitting procedures

1. Grid constraints and absence of frameworks for solutions to cope with it

The grid operator is obliged by law to develop the grid within his area of service in such a way as to maintain grid services for all electricity producers and to be able to connect additional electricity plants to the grid (§ 66 par. 1 Electricity Market Act[152])[153]. The TSO plans its investments based on general public interest in ensuring the technical operation of the electricity system, the security of supply and the requirements of a functioning electricity market. In practice this means that the grids are upgraded based on a 'most-economically-rational' approach, based on the potential consumption (on the island). While the grids are well developed to cover the local consumption, they are not strong enough to incorporate larger amounts of renewable energy. This insufficient grid capacity on the Estonian islands forms a major obstacle for development of renewable energy, both on and around the islands. On the islands, integrating large amounts of solar energy, and around the islands, integrating offshore wind, proves to be difficult.

More precisely, the grid on the mainland is build-up of 330 kV overhead lines, while the grid on the biggest island Saaremaa is build-up of lines up to 110 kV and there are no transmission lines on and among the other islands. This is especially problematic given the significant offshore wind energy potential around the Estonian islands. The fact of not laying priority on islands for upgrading the grid is thus not justified, given the expected potential growth of renewable energy production on the coasts of the islands.

[152] https://www.riigiteataja.ee/akt/ELTS

[153] § 66. of the Electricity Market Act: Network development obligation: (1) The network operator shall develop the network in its service area in such a way as to ensure the possibility of providing network services in accordance with the legal provisions and the terms of the licence to customers, energy communities, producers, line owners and other network operators connected to the network on a continuous basis, taking into account their reasonable needs, and to connect to the network the appropriate electricity installation of a market participant in its service area. When developing the network, the network operator shall respect the need for security of supply, efficiency and market integration, taking into account the results of studies in these areas.
§ 71. of the Electricity Market Act Network charges (..) (5) Network charges shall be designed in such a way as to ensure continuity: (..) 2) investments to meet the operational and development obligations;

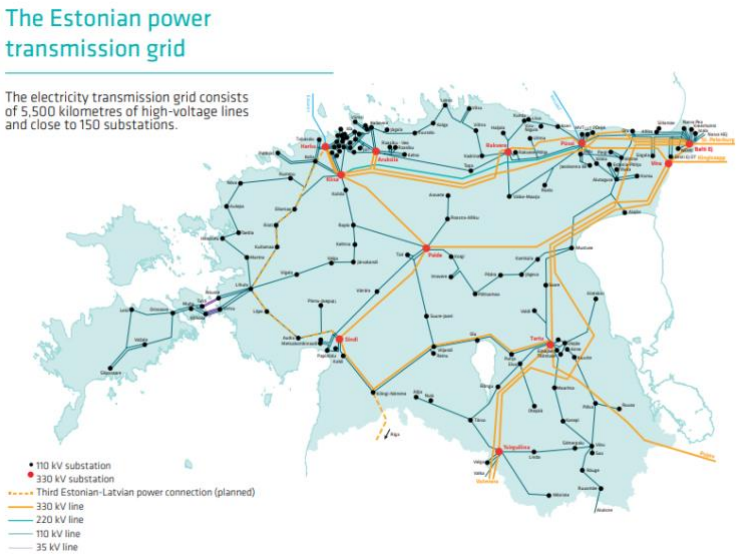

Figure 7 The Estonian power transmission grid - Source: Elering

The issue is not a lack of willingness to upgrade these grids but rather the lack of budget. The planning of the expansion of the TSO happens based on the demand on the islands and not on the planned generation facilities.

Aside from building up new TSO lines and connections there are other options that can be utilised. While security of supply is a big issue on the islands, there is no support or supportive framework for innovative solutions - such as storage, smart grids and demand response - to cope with the obsolete grid capacity. This absence of frameworks for storage has been identified by island stakeholders, but it has also already been brought forward by other Estonian stakeholders, for example in the Ida-Virumaa Green Plan[154]. The experts pointed out that granting permits under normal conditions takes a very long time (five to ten years), which inhibits the development and implementation of energy storage projects under normal conditions.

As a general rule, a plant operator or developer may demand that the grid operator upgrades the grid if the upgrade is necessary to connect a plant, but the plant operator bears the costs of connecting a plant to the grid (§ 71 par. 1 no. 3 Electricity Market Act and §24 and §25 of the grid code[155]).

Lastly, in some cases grid capacity has been reserved by (fossil fuel) generation plants, which are not or will most likely not become in operation. They deprive new (renewable) energy projects to be developed since all the foreseeable grid capacity is reserved.

Recommendation 1.1: Improve grid development planning

Given the relatively lower consumption on the islands compared to the mainland, it might seem logical from an economic perspective to focus grid development on the mainland. However, such

[154] https://stratlab.ee/en/ida-virumaa-green-plan/
a project led by project was led by DD StratLab (DDS), the Social Innovation Laboratory (SiLab) and the Institute of Baltic Studies (IBS) commissioned by the Estonian Fund for Nature (ELF), the Estonian Green Movement (ERL) and the Centre for Environmental Justice (KÕK) in close cooperation with the Ministry of Finance. It aimed at collectively carrying out a co-creation process which would result in specific proposals on the topic of Just Transition of Ida-Virumaa in the field of renewable energy.
[155] https://www.riigiteataja.ee/akt/121022019002?leiaKehtiv

an approach is creating a barrier for RES deployment overall. The grids on the islands should be upgraded to be able to integrate larger amounts of renewable energy, following a future oriented approach. This is especially relevant in light of the national target to deploy large amounts of offshore wind in the Estonian seas[156], including the locations close to the islands. The government committed to 1 GW of offshore wind and there is 7 GW in the pipeline. The challenge is to connect both the offshore wind farms and the islands and the neighbouring countries through an improved grid. Saaremaa for example could become a 'renewable electricity power hub' if a West-East cable is built. It is therefore recommended to revise the existing grid planning procedures.

The need for grid upgrades has already been recognised in the National Spatial plan Estonia 2030+[157], tackling the issues of spatial planning, infrastructure and energy production: '*In the development of energy networks, the EU expects the construction of new external links for the electricity and gas markets to function. A shift toward wind energy may entail the need to adapt electricity networks also locally*.' Strengthening interconnectors is one of the objectives mentioned in that National plan: '*Options for supplying Estonia with energy need to be expanded by creating external connections with energy networks in the Baltic Sea region.*' And lastly: '*A potential trend is seen in the replacement of the existing 220 kV with a 330 kV line. To ensure the security of supply on islands and to exploit local renewable energy sources, a high-voltage ring line connecting the islands of western Estonia with the mainland will need to be constructed, in order to enable offshore wind farms to be better connected to the network.*'

The TSO and DSO should align their grid planning in this sense. To be able to do this a revision of the Electricity Market Act, the Grid Code, the national development plan for the energy industry and the government approved development plan for the electricity industry, by the regulator (Estonian Competition Authority (Konkurentsiamet)) and Ministry of Economy and Communication is necessary, since the grid development based on forecasted generation is not foreseen (§ 66 and §71 Electricity Market Act). It could be legally foreseen in these articles that the network development plans should be, among other things, based on future forecasted growth of renewable energy. This obligation can then be checked by the regulator when these plans are presented.
Planning of the grid upgrades should not only focus on local energy consumption but should be forward-looking in light of the connection of future renewable generation plants (e.g. offshore wind parks). The Marine Spatial Planning,[158] recently adopted, can serve as guidance for grid upgrade planning as it makes clear where the offshore wind parks will be developed. Grid upgrades on Saaremaa could be classified as 'overriding public interest' (see REPowerEU box below), to benefit from fast-track grid upgrades.

Grid planning and upgrading should be underpinned, by the TSO and DSO, with detailed assessments on how to integrate planned RES into the electricity system of Estonia and its islands. This could for example look into:

- Necessity of grid upgrades on the main islands from 110 kV lines to 330 kV overhead lines or whether it would be more economically beneficial to invest in storage facilities, demand side flexibility and other alternatives.
- In light of the offshore developments in the Baltic Sea, the construction of interconnectors with other countries, over and around the islands (for example Saaremaa) to be able to

[156] https://www.fin.ee/en/state-local-governments-spacial-planning/spatial-planning/maritime-spatial-planning
[157] https://eesti2030.files.wordpress.com/2014/02/estonia-2030.pdf
[158] https://www.fin.ee/en/state-local-governments-spacial-planning/spatial-planning/maritime-spatial-planning

transport the large amounts of offshore wind energy from and to other countries when needed, or whether it would be more economically beneficial to invest in storage facilities, demand side flexibility and other alternatives. This would not only benefit the energy system as a whole but also bring local advantages.

A balance must be struck between investments on the two main islands Saaremaa and Hiiumaa, and the smaller islands.

Update – Elering mandated to build 330 kilovolt transmission line on Saaremaa
During the National Stakeholder Meeting on Saaremaa 30 September 2022 (see Annex 2 for more details), organised to discuss and underpin this study, our key recommendation was to upgrade the electricity grid on the island of Saaremaa with the dual objective of transportation future offshore wind energy to the mainland and ensuring grid capacity for the development of renewable energy projects on the island itself.
Two months later, the Ministry of Economic Affairs and Communications has indeed issued guidelines to the transmission system operator Elering for planning a 330 kilovolt transmission line to Saaremaa.
More info can be found here.

Finally, it is recommendable to relaunch the initiative for common grid investment planning set up a few years ago between the grid operators. Techno-economic analysis were carried out to find optimal ways to improve the transmission and distribution grids, which could be further assessed.

This recommendation goes in line with the **REPowerEU** measure to ensure that plants for the **production of energy from renewable sources, their connection to the grid, the related grid itself or storage assets** are presumed to be of **overriding public interest** for specific purposes. See Annex A for more details.

Actors involved:
- **Elering AS (TSO)**
- **Elektrilevi OÜ (DSO)**
- **Konkurentsiamet - Estonian Competition Authority - Energy Regulatory Dept (ECA)**
- **Ministry of economic affairs and communication (MKM)**
- Ministry of Finance (department responsible for regional development)
- Ministry of the Environment
- Island municipalities of Association of Municipalities

Recommendation 1.2: Support the development of storage, demand-response and smart-grids on the islands

To cope with the insufficient grid capacity, energy storage is of critical importance. This insufficient grid capacity is recognised by the main actors and the DSO is looking to alternative solutions such as storage on the island of Hiiumaa[159]. In Estonia, storage is currently allowed to connect under the same principles as generation assets, as is in many European countries (see Annex B – Examples of frameworks for Energy Storage). At transmission level the technical requirements for connection[160] of generation and consumption are applied with some specific modalities, while a European grid code for storage (currently under development by among others ENTSO-E) is being developed.

[159] https://arileht.delfi.ee/artikkel/120028934/paikeseelektri-tootjatele-lahendus-leitud-elektrilevi-uus-idee-toodangu-vorku-mahutamiseks
[160] https://www.elering.ee/en/connection-conditions

However, since a specific policy framework for storage is currently missing, it is recommended that the Estonian government accelerates its legal and regulatory developments in this direction. This need has been identified by island stakeholders, but it has also already been brought forward by other Estonian stakeholders. According to The Ida-Virumaa Green Plan[161] energy storage pilot projects could be brought to Estonia to increase energy storage capacity, and funding could be provided for the construction of plants with ready technologies on a needs basis. The authorisation process should be accelerated and simplified. Simplifying the permitting process will contribute to the start-up of energy storage-centric pilot projects and stimulate the flow of initiatives. Reducing bureaucratic hurdles will help to stimulate interest in testing and developing energy storage technologies.

While this is needed for the whole country, an (island specific) support system for storage would help overcome the barrier of insufficient grid capacity on the islands and provide an alternative solution. National policies can have a strong positive influence on making electricity storage more or less attractive.

It is worth mentioning here that this issue is highlighted in the National Climate Policy 2050[162]. One of the long-term goals of the energy and industry sector is to promote the development of smart grids to harmonise the surpluses and deficits of capacity and energy that arise at different times for producers and consumers, by creating an appropriate regulatory environment. This objective is aimed at ensuring the reliability of the system and avoiding the excessive volatility that arises in the transition to renewables. Thus, planning legislation needs to be thoroughly discussed in order to meet this objective effectively.

The MKM is currently carrying out a study on storage and possible support mechanisms and support measures are already under early stages of discussion. The recommendations and examples can feed in into this policy making.

While most countries do not have specific policies promoting energy storage, development is ongoing as demonstrated in in Annex B – Examples of frameworks for Storage.

Shifting consumption in function of over or undercapacity and (lack of) availability of renewable energy could help to cope with the obsolete grid capacity, while awaiting grid upgrades. This would allow to continue renewables deployment and their grid integration. While the Estonian government and the TSO have been intensely exploring the options to extend the use and application area of Demand Response during the last couple of years – several background studies[163] have been commissioned, explicit Demand Response participation is currently very limited to non-existent and there is currently no aggregator model framework in place yet in the Estonian market[164]. Building further on the existing 'Demand response Working Group', formed by the Estonian Competition Authority, Elering AS (Estonian TSO) and the Ministry of Economic Affairs and Communications, it is recommended to create legal frameworks for explicit demand response and aggregation, specifically taking into account the island particularities. In developing new rules

[161] https://stratlab.ee/en/ida-virumaa-green-plan/
[162] https://envir.ee/media/885/download
[163] https://elering.ee/tarbimise-juhtimise-aruanne-3/
[164] https://smarten.eu/wp-content/uploads/2017/04/SEDC-Explicit-Demand-Response-in-Europe-Mapping-the-Markets-2017.pdf

for the participation of demand response in the market, Estonia should consider global best practices to fast-track its deployment[165].

Actors involved:
- **Ministry of economic affairs and communication (MKM)**
- Ministry of Finance (department responsible for regional development)
- Konkurentsiamet – Estonian Competition Authority – Energy Regulatory Dept (ECA)
- **Elering AS (TSO)**
- **Elektrilevi OÜ (DSO)**
- **Island municipalities of Association of Municipalities**

Recommendation 1.3: Channel funding from the EU towards infrastructure on the islands

As there is limited budget for transmission grid upgrades and distribution grid upgrades are at the cost of the entity making the connection request (thus forming a barrier for the project developers), Estonia should pay particular attention to the island regions when developing plans allocating EU funding. While RRF funding is already directed to west Estonia and the island of Saaremaa, other islands should be targeted as well.

Earmarking budget from EU funds to island-specific clean energy development has already been done by Greece, Italy and Spain for example. This should take a holistic approach and investments should be directed to grid upgrades but also generation, storage and demand.

The Trans-European Networks for Energy (TEN-E) is a policy that is focused on linking the energy infrastructure of EU countries[166]. As part of the policy, nine priority corridors and three priority thematic areas have been identified. Relevant for Estonia is the Baltic Energy Market Interconnection Plan in electricity (BEMIP Electricity): Interconnections between Member States in the Baltic region and the strengthening of internal grid infrastructure, aim to end the energy isolation of the Baltic States and to foster market integration. This includes working towards the integration of renewable energy in the region. Every two years, the European Commission draw up a new list of projects of common interest (PCIs). [167] Since PCIs have the right to apply for funding from the Connecting Europe Facility (CEF)[168] the Estonian government should apply for PCI status for its grid developments to connect neighbouring countries, via the islands of Saaremaa and Hiiumaa. CEF has a budget of 25 billion with 5.8 billion for energy for the period 2021-2027.

The Just Transition Fund prioritises the least developed regions, outermost territories and islands of the EU. The Greek government provides financial support to six Greek islands through the Just Transition Fund in order to tackle issues expected following planned withdrawals of local petrol-fuelled power stations[169]. Estonia could envisage in its implementation of the Just Transition to channel funding towards clean energy projects on islands because of their remoteness, vulnerability, as well as the higher costs for the energy transition on the islands.

[165] https://smarten.eu/wp-content/uploads/2017/04/SEDC-Explicit-Demand-Response-in-Europe-Mapping-the-Markets-2017.pdf
[166] https://energy.ec.europa.eu/topics/infrastructure/trans-european-networks-energy_en
[167] More information on the benefits of PCI can be found here.
[168] https://ec.europa.eu/inea/en/connecting-europe-facility
[169] https://energypress.eu/jtf-support-for-6-islands-closing-high-cost-polluting-local-power-units/

Spain has a dedicated budget for clean energy development on islands under the Recovery and Resilience Facility. The Spanish NECP already provided for the need for progress in the energy transition in the islands. Within this axis of ecological transition, the Spanish Recovery and Resilience plan, in its Component 7 “Deployment and integration of renewable energies", includes in line with the provisions of the NECP, a vision of island specificity in the energy transition and the promotion of renewable energies in the islands, the improvement of the functioning of their energy systems through storage and the implementation of "Smart Islands" projects, as well as citizen participation through renewable energy communities. There is even a chapter called ‘Sustainable energy on the islands through the promotion of an Agenda for Energy Transition in the Islands, support for projects for the penetration and integration of renewable energies in island and non-mainland systems". The allocated budget amounts to €700 million with one third of the funds going to the Balearic Islands and two thirds to the Canary Islands, given their larger population and the fact that they do not have systems connected to the mainland.

While the Estonian Recovery and Resilience plan is already approved by the Commission it could be envisaged, in its implementation, in concertation with the Commission, to dedicate budget from the 45 million foreseen for the ‘strengthening the electricity grid and piloting energy storage to increase renewable energy production capacity’[170], specifically to projects on the islands.

The Ministry of Economics has directed RRF funds in order to strengthen the grid in the west of Estonia as well as on the island of Saaremaa. The TSO and DSO are the ones that decide how and where the funds are allocated[171].

Actors involved:

- **Ministry of economic affairs and communication (MKM)**
- **Ministry of Finance (department responsible for regional development)**
- **Transmission System Operator**
- Distribution System Operators
- Ministry of the Environment

Recommendation 1.4: Use regulatory sandboxes to test innovative solutions on the islands

In line with what has been done in other EU Member States, Estonian islands could be put forward as innovative laboratories, without making inequal market situations, however. Considering the islands have their own specificity when it comes to energy system and market, the implementation of new technologies, innovative operation, tariffing and business models, the islands can be used as a testing site for energy transition.

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170 https://www.google.com/search?q=estonia+recovery+and+resilience+plan+renewable+energy&rlz=1C1GCEU_nlBE860BE860&oq=estonia+recovery+and+resilience+plan+renewab&aqs=chrome.1.69i57j33i10i160l3.13032j0j4&sourceid=chrome&ie=UTF-8

171 RRF programme investments are currently Under construction and all investments will be completed by June 2026.
Under planning there are two big projects that influence grid transmission capacity and those projects also have significant impact on the capability to install RES:
EstLink3 HVDC interconnector between North Estonia and Southern Finland with estimated capacity of 700 MW. Together with EstLink 3 it is planned several internal 330 kV network reinforcements that have positive effect on internal transmission capacities.
Estonia-Latvia 4th interconnector is additional either HVAC or HVDC connection between western Estonia and wester Latvia with capacity approximately 1000 MW. The exact alternative is not decided yet. One of the alternatives ist o construct 330 kV transmission line until western-Saaremaa and to continue from there by a sea cable until Ventspils area in Latvia. The 330 kV substation on western-Saaremaa could also enable to connect potential off-shore wind power capacities that could be constructed on the Western-Saaremaa coastal seabed Offshore wind planning area.

According to the MKM, there are already innovation areas in the maritime spatial area around the island of Saaremaa, which can be used as innovation hubs for some off-shore R&D.

The islands could work with the regulator, DSOs, technology providers and research institutes to test implementation of storage technology in combination with RES plants, e-mobility and demand side management to provide flexibility on the existing grids. Such pilot projects would help provide testing grounds for what is possible with the island system constraints and to identify gaps in the existing practices and regulation to accelerate energy transition on the islands. Funds could be allocated for research and innovation e.g. via tax benefits, with special focus on energy storage systems that could help provide security of supply in cases of higher integration of RES. The coordination of such testing and research activities, development of regulation, strategic plans and available funds can be a responsibility of the Estonian islands Energy Agency (see recommendation 2.1).

We recommend using the regulatory sandbox[172] approach to allow specific islands to experiment with, for example different designs of electricity tariffs (hourly tariff, time of use tariff, etc.). Regulatory sandbox are ways for authorities, tasked with implementation and enforcing of specific legislation, to test innovative approaches and technologies in real-life situations through time limited implementation of except to the existing legislation. This way incentives for clean energy transition on the islands can be tested without a permanent change in legislation. It also gives room to evaluate the success of the experiment.

Choice of the islands and grids within which different regulatory sandboxes should be implemented can be decided in collaboration with the Estonian islands agency (see recommendation 2.1) which will assure local inputs. Regulatory sandboxes have been implemented in Italy[173], Austria, Germany and the Netherlands for temporary tests of specific energy tariffs[174].

In order to increase the RES share on the islands and to help their integration into the existing networks, an enabling framework - regulation, grid codes and support schemes -, supporting the implementation of storage devices needs to be adopted. Based on the results from innovative projects and regulatory sandboxes in Estonia, but also experiences from other EU member states, the enabling framework needs to be defined between the Energy Regulatory Dept, the Ministries involved and DSOs operating on the islands. Storage systems can also help provide security of supply for the non-interconnected islands and decrease the dependence on the oversized thermal plants and use of fossil fuels.

This recommendation goes in line with the **REPowerEU** measures on **innovation and sandboxing** requiring the Member States to promote the testing of new renewable energy technologies while applying appropriate safeguards. See Annex A for more details.

While it is up to the MKM to develop frameworks, whether or not applicable for the whole of Estonia in light of the non-discrimination principle, the municipalities, in light of their competences

[172] https://www.consilium.europa.eu/en/press/press-releases/2020/11/16/regulatory-sandboxes-and-experimentation-clauses-as-tools-for-better-regulation-council-adopts-conclusions/
[173] https://www.iea-isgan.org/wp-content/uploads/2021/10/Regulatory-Sandbox-2.0_For-Publication.pdf
[174] https://fsr.eui.eu/regulatory-sandboxes-in-the-energy-sector-the-what-the-who-and-the-how/

in energy have a role to play in engaging with the TSO and DSO to test and develop storage, demand-response and smart grids on the islands.

Actors involved:

- **Ministry of economic affairs and communication (MKM)**
- Ministry of Finance (department responsible for regional development)
- **Konkurentsiamet - Estonian Competition Authority - Energy Regulatory Dept (ECA)**
- **Elering AS (TSO)**
- **Elektrilevi OÜ (DSO)**
- **Island municipalities of Association of Municipalities**

2. Islands are not consulted in a systematic manner and lack of national vision/strategy on clean energy development for the islands

Both the energy sector strategies and the long-term energy planning are highly centralised. The National Energy and Climate Plan for Estonia does not provide a clear strategy for the energy transition on the islands. The Ministry of Economic Affairs and Communications is responsible for the energy sector and the regional development department is under Ministry of Finance[175]. They are responsible for the islands' policy including not just energy but also other sectors. In addition, there is no centralised initiative to bring all needed stakeholders for the clean energy transitions to the table and coordinate on the long-term approach for the islands.

Island stakeholders are not consulted in a systematic manner to ensure that the island issues and priorities are addressed. The current National Energy and Climate Plan (NECP), drafted by the Ministry of Economic Affairs and Communications and the Ministry of the Environment, is very abstract and island stakeholders were not involved in the design process. The islands are relatively small, and they make up a small portion of the population, therefore their political power is limited. The visibility of the island issues on the national level is not so great. Priorities from the local level are mainly communicated to the Ministry responsible for energy through association of local governments, which includes mainland municipalities as well.

All this while islands are very active in energy transition as they are one of the first municipalities that adopted their energy and climate plans. For instance, the strong focus on offshore wind in the NECP has not considered the opinion of islands' stakeholders, who generally oppose to large windfarms (see further below Barrier 4 - Local opposition and lack of frameworks for local stakeholders to participate).

Besides the 'small islands programme'[176], support to projects that help increase the availability and quality of essential services, the regional policy – which is under the competence of the Ministry of Finance[177] - towards islands is rather underdeveloped compared to other regional policies. There are special plans for several regions (e.g. Eastern part – old mining region) on the mainland but not

[175] https://www.rahandusministeerium.ee/en/regional-development-and-policy
[176] https://www.rtk.ee/meede-vaikesaarte-programm
[177] https://www.rahandusministeerium.ee/en/regional-development-and-policy & https://www.espon.eu/sites/default/files/attachments/Regional%20strategies%20for%20sustainable%20and%20inclusive%20territorial%20development%20-%20Estonia.pdf

for the islands. Stakeholders asked the government for the same type of incentive programs for the islands, but this has not led to concrete proposals.

At the beginning of 2022, the Ministry of finance has adopted an action plan for regional development, called 'regional development action plan' (RETK)[178], which includes the regionally targeted activities of the line ministries.

Recommendation 2.1: Set up an island energy agency

The energy sector strategies and the long-term energy planning are highly centralised. To foster the involvement of island stakeholders in national strategic & long-term energy planning and funding distribution, we recommend assessing the creation of a regional energy agency, which can be named 'Island Energy Agency' or 'Western Estonian Energy Agency'. This could be based on the example of the Tartu Regional Energy Agency (TREA)[179] which has been established in 2009 by the Tartu City Government and the Tartu Science Park to implement efficient energy management methodologies and practices in the Tartu region. The agency is focused on sustainable energy development and deals with the main issues of modern energy management: energy efficiency, efficient mobility and renewable energy resources. This 'Agency could focus on capacity building and technical assistance to (island) municipalities. In line with the experience from TREA, this could be formed in collaboration with a university (for example Kuressaare College | Tallinn University of Technology) and a municipality.

By working with and for islands, they could become examples for the rest of Estonia on how the energy transition can be implemented and lessons learned could be transferred to municipalities on the mainland.
The Agency could be organised in coordination with other national bodies responsible for spatial planning, environment, culture and history and tourism. In addition, it should involve representatives of the relevant regional governments, representatives of academia, civil sector, private sector (including energy companies) who are experts and highly involved in the clean energy transition on Estonian islands.

This would help bring in different views – also beyond energy - from different island stakeholder up to the national level. There is a clear need for a link between the islands and the national level in a cross-departmental way. The Agency is a dedicated team that would take charge of all aspects related to the clean energy transition on the islands and coordinate at the national level to ensure all tasks are aligned. The Agency can also be used to provide guidelines to the regional and local authorities while taking into account overall sustainable development of the islands.

The Agency would be responsible for defining the short-, mid- and long-term strategy on how national goals identified in NECP can be further developed and implemented through actions on the local level and in coordination with the local island priorities and with other sector priorities.

In addition to strategic planning and coordination with the various sectors on the national level and with the stakeholders from the different levels, the Agency could be responsible for:

[178] https://fin.ee/riik-ja-omavalitsused-planeeringud/regionaalareng-ja-poliitika/regionaalpoliitika-kujundamine#Alusdokumendid
[179] https://fedarene.org/member/tartu-regional-energy-agency/

- Monitoring and evaluating the implementation of clean energy projects with regards to foreseen targets.
- Identifying bottlenecks and gaps in implementation and coordinating with responsible bodies to overcome them.
- Providing support through funding, training, technical assistance or advice to local or regional governments, energy communities and local stakeholder in planning and implementation of clean energy projects.
- Provide guidelines documents to national and local government for implementation of new procedures.
- Provide a platform for exchange of experiences among various islands and island stakeholder.

The formation of such an islands energy agency should be guided and framed by the Ministry of Economic Affairs and communication, for example, in the process of updating ENMAK (Energy sector development plan). However, the concrete set-up of the islands' energy agency would have to be done by the island municipalities. It should be a municipality-centred initiative, in line with the experience from the Tartu Energy Agency. This was initiated by Tartu local municipality. This also follows from the division of competences. The legislation delegating local competences delegates a large part of energy actions to the local government. The national government (MKM) can (only) support by providing subsidies and support in the creation of such an agency.
The main questions to tackle to launch such an initiative are (i) who are to be the founding members, (ii) what would be the funding (EU, Ministry of Finance, Municipalities,…) and (iii) what are the concrete tasks that could lead to a viable business model for this agency. Inspiring examples of successful regional energy agencies can be found on the website of FEDARENE[180].

Actors involved:
- **Island Municipalities from the Association of municipalities**
- **Ministry of economic affairs and communication**
- Ministry of Finance (department responsible for regional development)
- Ministry of the Environment

Recommendation 2.2: Develop an island specific policy (Regional Action Plan)
Against the backdrop of the highlighted barrier(s) above, it would be recommendable to develop an island specific policy. This could be done building further on the experience from specific Regional Action Plans, such as the East-Virumaa Action Plan 2015-2020[181] and the South-East Estonia Action Plan 2015-2020[182]. However, as just recently a new action plan for regional development has been published, it is recognised that it will be difficult to develop additional regional action plans. The implementation plan for the action plan reflects the program of strengthening the electric grid as an activity of the Ministry of economic affairs and communication to increase the production capacity of renewable energy and to adapt to climate change, the implementation of which is directed to Western Estonia with a more limited grid power.

At the proposal of the Ministry of economic affairs and communication, the implementation plan of the RETK could be supplemented with other activities in the field of energy aimed at the islands as

[180] https://fedarene.org/
[181] https://www.fin.ee/media/2031/download
[182] https://www.fin.ee/media/1379/download

they are developed. In the case that it would be decided to develop a regional action plan for clean energy, it should be decided by the Ministry of economic affairs and communication, presumably also in the process of updating ENMAK (Energy sector development plan).This plan could also be in a holistic approach, covering for example housing, health, energy, industry, utilities, water and waste management, climate change, education, digital connectivity, employment, infrastructure and transport or specifically focused on clean energy. Building further on the previous recommendation, this could be a specific objective of the Estonian islands energy agency, which would bring together all the relevant stakeholders.

In the process of drafting sectoral strategies in Estonia, consideration of regional impacts, including assessing impact on rural and coastal areas, is mandatory. The Ministry of Economic Affairs and Communication should take the lead role in the field of energy policy and should strongly support the consideration of regional aspects, including impact on islands.

This strategic document should serve as a guide, a vision shared by the whole sector and based on a balance of stakeholder interests.
The starting point is to find a balance of interests in which regional interests and the positive impact on the climate can be taken into account as well as local support interests or local environmental impact. The document should take into account the balance between local effects and regional and global benefits of renewable energy development. This would allow for a shared vision of renewable energy development and avoid the debates that occur at the local level (see further below barrier 4 on local opposition and lack of frameworks for local stakeholders to participate).

It is essential to carry out a prospective territorial reflection of a reasoned and sustainable renewable energy development on the Estonian islands. The perspectives should be framed at the regional level but operationalised and planned by the island municipalities in an increased dialogue between regions and the population. Although indispensable and constraining, the existence of this framework must allow the necessary flexibility to meet non-objectifiable data, such as the questions related to the landscape and territorial specificities.

Some examples of such island-specific policies are presented in the Regulatory Best Practice box below.

Regulatory best practice

Island specific policies

Ireland
Strategic Planning is done in a cross-sectoral way and particular attention is given to islands in Ireland in the Policy Document 'Our Rural Future': rural development policy for 2021-2025[183]. In Chapter 10 'Supporting the Sustainability of our Islands and Coastal Communities' 12 Policy Measures are mentioned for the Islands and Coastal communities, the main one being the 10 Year policy for Islands Development to 2030. It promises an extensive consultation process with island communities and will address issues such as housing, health, energy, utilities, waste management, climate change, education, digital connectivity, employment, infrastructure and transport. Specifically for islands, the Irish Government is developing a new national policy for the development of the islands around Ireland, called the 'new National Policy for the Future Development and Sustainability of Communities on the Offshore Islands of

[183] https://www.gov.ie/en/publication/4c236-our-rural-future-vision-and-policy-context/

Ireland'[184]. This new 10-year Policy for Islands Development to 2030[185] will focus on developing new opportunities for islanders and building sustainable futures for island communities. "*The Programme for Government commits to the production of a long-term plan outlining how Ireland will take advantage of the significant potential of offshore energy on the Atlantic Coast and achieve 5GW capacity in offshore wind by 2030 off Ireland's Eastern and Southern coasts. This plan will position Ireland to become a major contributor to a pan-European renewable energy generation and transmission system.*" The focus with the Irish islands when it comes to energy transition is on using the islands as testing sites for the innovative technologies and behavioural change.

Italy

In Italy, the Decree of Ministry of Economic Development of 14 February 2017 defined objectives and incentive methods for renewable energy in the small Italian islands non-interconnected with the electricity grid of the continent. Specifically, it established the minimum development objectives for the production of electricity and thermal energy from renewable sources, and the methods for supporting the investments needed for their realisation. According to several stakeholders, this Decree has been proven very useful for all Italian Islands. On Salina Island for example, a project of 200kW PV has been developed for the association of hoteliers of Salina. Via the Decree this project receives Feed-in Tariffs, which is now, with high energy prices, particularly relevant. Also for Pantelleria the Decree was effective: the municipality has presented five projects on energy efficiency in municipal buildings that have been all financed via the Decree.

Actors involved:

- **Ministry of economic affairs and communication**
- **Island municipalities of Association of Municipalities**
- Ministry of Finance (department responsible for regional development)
- Ministry of the Environment
- Konkurentsiamet - Estonian Competition Authority - Energy Regulatory Dept (ECA)
- Elering AS (TSO)
- Elektrilevi OÜ (DSO)

3. Lack of support from the national government in planning and implementation of clean energy projects and action plans

The general structure of the political and administrative system has been outlined in the first Chapter on Policy and Legislation under the section General Policy.

Estonian islands have been proactive in planning and implementation of clean energy plans through various initiatives. There are currently good example practices on Estonian islands, such as Saaremaa[186], Hiiumaa[187], Ruhnu and Muhu. However, there is currently no institution supporting the implementation of these plans or encouraging exchange of experiences and lessons learned between the islands to assure successful projects are replicated on the islands with similar issues. Also, these local climate and energy plans prepared by municipalities are not always very specific, and it is not clear which specific actions should be implemented based on it. In many cases

[184] https://www.gov.ie/en/publication/02a4d-island-policy-consultation-paper/
[185] https://www.gov.ie/pdf/?file=https://assets.gov.ie/132413/433aebac-f12a-4640-8cac-9faf52e5ea1f.pdf#page=91
[186] https://www.islepact.eu/userfiles/ISEAPs/Report/saaremaa/ISEAP_SAAREMAA_31.10.2012.pdf
[187] https://www.islepact.eu/userfiles/ISEAPs/Report/hiiumaa/ISEAP%20Hiiumaa%20EN.pdf

municipalities do not have the know-how to judge the plans developed by the consultants or to understand how to further apply the recommendations from these plans.

Recommendation 3.1: Provide guidance and support the development and implementation of Clean Energy Transition Agendas

Islands require guidance or roadmaps from the national government on how they could accelerate energy transition. The more island-specific support the national government would provide, the faster islands would be able to develop renewable energy projects. Local capacity building is important. Local expertise and exchange of best practices is needed. Energy strategy/policy for the islands should look at this. Education and training on islands are important.

The Ministry of Economics and Communication already provides some form of guidance via workshops, such as for example a workshop on how to improve awareness about energy and on how to improve the analytical capabilities in order to develop energy plans and take decisions on renewables[188], organised by kik, which is an environmental investment centre in Estonia. There is also information available on the webpage of Energiatalgud[189]. Additional workshops and trainings on how to get from vision to action, thus from plan to concrete projects are recommended.

The Ministry of Economics and Communication and the Ministry of the Environment could assess whether it would be beneficial to mandate through legislation the adoption of local or regional energy and climate plans that would be aligned with the NECP. These plans can provide clear visions for clean energy development at a local level, specifically on islands. Such an island specific strategic document could find compromises between environment conservation, agriculture and preservation of historical sites. Involvement of key stakeholders in the preparation of an island-specific strategic document is critical.

In cases where local governments lack capacity to develop their own energy and climate plans, the plan could be developed for a group of municipalities, islands or on a regional level. The Island Energy Agency (recommendation 2.1) could provide assistance in how to implement projects or could provide island-specific funding.

Whether or not the development of these plans would be mandatory, the Estonian islands energy agency could provide in any case guidelines for the development and implementation of local energy and climate plans, in collaboration with its academic and research members. Even more, the island energy agency could recommend and, in coordination with national and regional bodies, implement support schemes to provide capacity building and/or technical assistance for realisation of such plans. These can take the form of, for instance, workshops for municipalities, guidelines for energy transition and examples of roadmaps from similar municipalities or regions. Where there is not enough capacity on the islands, the island energy agency can provide support through technical assistance to engage external support for short-term projects.

Lastly, it is needed to allocate adequate resources to the islands to develop such plans. Islands need local transition teams to develop and drive Clean Energy Transition Agendas[190]. A local transition team is the smaller team of organisations and associations that represent larger segments of the

[188] https://taltech.ee/kursus/33025
[189] https://energiatalgud.ee/node/8923?category=1710
[190] https://clean-energy-islands.ec.europa.eu/assistance/clean-energy-transition-agenda

island's population. The transition team is the core team that drives the clean energy transition process and has an important facilitation and coordination role. They are the main participants in the transition dialogues and look for inputs from the broader community. Since the transition team assumes the responsibility over the island's clean energy transition, it is important that the organisations are committed with both resources and availability. They are also the ones that provide feedback and information to the regional representatives in the island energy agency.

The **RES Simplify** report contains some useful recommendations the **provision of guidelines** and documentation templates on the national level. See Annex A for more details.

Actors involved:

- **Ministry of economic affairs and communication**
- **Ministry of the Environment**
- Ministry of Finance (department responsible for regional development)
- Island municipalities of Association of Municipalities

Recommendation 3.2: Ensure mandatory and regular follow-up on island energy action plans

To ensure the island energy actions plans (regardless of the fact that their drafting is mandatory) are implemented by concrete actions, our recommendation is to introduce a mandatory follow-up and monitoring/reporting (with concrete actions, KPIs,.. within certain time limit) of the implementation. This would also help the national ministries since it could feed in into the monitoring of the implementation of the NECP.

A monitoring framework typically adopts indicators, with baselines and targets, to measure progress against certain goals and objectives. Indicators help to outline goals in specific terms, monitor progress, and provide feedback to stakeholders. Many examples of such frameworks for zero-energy districts[191], sustainable city monitoring and evaluation systems[192] exist[193]. This can be annual or bi-annual and focus on local and regional authorities with the guidelines provided by the intergovernmental department focussing on islands.

In addition, the Ministry of economic affairs and communication – who is already providing support to the municipalities for the development and implementation of local energy and climate plans – could provide guidelines and training on monitoring implementation. It could recommend, and in coordination with national and regional bodies, implement support schemes to provide capacity building and/or technical assistance. These can take the form of, for instance, workshops for municipalities and communities, guidelines for energy transition and examples of roadmaps from similar municipalities or regions. Where there is not enough capacity on the islands, the Ministry of Finance can provide support through technical assistance to engage external support for short-term projects.

Follow-up could also be digitised so that it is easier to collect info from the municipalities/islands.

[191] From nearly-zero energy buildings to net-zero energy districts, JRC, 2019 - https://publications.jrc.ec.europa.eu/repository/handle/JRC115188

[192] Vandevyvere, Han. (2013). Evaluating the sustainable performance of an urban district: Measured score or reflexive governance?. International Journal of Sustainable Development and Planning. 8. 36-58. 10.2495/SDP-V8-N1-36-58. Available on ResearchGate; Asian Green City Index - https://eiuperspectives.economist.com/economic-development/asian-green-city-index

[193] SCIS KPI framework (2018), CITYkeys, Syn.ikia - Sustainable Plus Energy Neighbourhoods (2020), REPLICATE Renaissance of Places with Innovative Citizenship and Technologies, MATCHUP Maximizing the Upscaling and replication potential of high-level urban transformation strategies, SMARTEnCITY Towards Smart Zero CO2 Cities across Europe, MySMARTLIFE Smart Transition of EU cities towards a new concept of Smart Life and Economy, SHARINGCITIES Building Smart Cities Together, TRIANGULUM The Three Point Project / Demonstrate. Disseminate. Replicate, GROWSMARTER Transforming Cities for a Smart, Sustainable Europe, +CityxChange Positive City ExChange, STARDUST Enlightening European Cities

So concretely, the follow-up and monitoring should be done by the municipalities while guidance on how to do this needs to come from the Ministry of economic affairs and communication. It is also up to the municipalities to indicate to the Ministry what specific support they require.

Actors involved:
- **Island municipalities of Association of Municipalities**
- **Ministry of economic affairs and communication (MKM)**
- Ministry of Finance (department responsible for regional development)
- Ministry of the Environment

Recommendation 3.3: Adapt the support systems with particular attention for islands

While it might not be envisageable to create island-specific support systems, it is recommended to provide additional support within the existing frameworks for renewable energy. In Estonia, the government supports the construction and operation of RES-E projects by two main measures: technology-neutral renewable energy tenders and premium tariff. The production of heat from renewable energies is subsidised through support schemes, mainly geared towards renovating buildings. Support schemes are provided for aerothermal, geothermal, hydrothermal, solar thermal and biomass and biogas technologies. For improving energy efficiency, financial support is offered both for apartment buildings as well as private residences. It is recommended to assess the existing support schemes to see how they can cover the needs of the energy transition on the islands. It might be needed to develop support packages targeted to the islands. This could be done with support from the Island Energy Agency (recommendation 2.1)

Some examples of such island specific policies are presented in the Regulatory Best Practice box below.

Regulatory best practice

In **Ireland**, the grants for energy efficiency projects foresee in a 'grant uplift' of 50% for islands. Island inhabitants could thus ask for 50% more funding for energy efficiency renovations. The special funding applied to two schemes – phase three of the greener homes scheme, which allows homeowners to install energy efficient technologies such as geothermal heat pumps, solar panels and biomass boilers and stoves, at a subsidised cost; and the home energy saving scheme. This extra allocation is still active on the Better Energy Homes Scheme and the grant is uplifted by 50% when there is an application from an eligible offshore island.

In **Croatia**, investment subsidies are available for small scale projects based on Public Calls from Croatian Fund for Environment Protection and Energy Efficiency. Within those calls, Islands can receive a larger subsidy than other areas. In general, islands can receive a subsidy of 80% or 60%, based on their economic development. For example, in the Public Call for energy renovation of family houses (EnU-2/21), published by Fund for Environmental Protection and Energy Efficiency on 15.09.2021[194],the 'first group of islands and areas of special state concern are subsidised with up to 80% of eligible costs, the second group of islands and hilly and mountainous areas with up to 60% of eligible costs and other areas of the Republic of Croatia with up to 40%, according to call conditions'. Measures co-financed are: (i) complete energy renovation, (ii) increase of thermal protection, (ii) installation of RES systems.

Actors involved:
- **Ministry of economic affairs and communication (MKM)**

[194] https://www.fzoeu.hr/hr/natjecaj/7539?nid=165&fbclid=IwAR0J5QC6bayYPVfgWROlfsV4X1fpZ4sMbvTpyEH5kaBajOmbd-S-XZa3Kuc

- TSO
- Renewable energy sector federation(s)
- Island stakeholders

4. Local opposition and lack of energy community frameworks to foster RES-projects

While Estonia has big ambitions for offshore wind energy, several studies have shown that there is strong opposition from the island inhabitants against more wind turbines. Recently the government has introduced a so-called "tolerance fee", according to which a percentage of the revenue generated by offshore wind farms, would be given to the coastal communities to compensate for the nuisances. This 'tolerance fee' is already a step in the right direction, however measures should go beyond mere compensation and aim to involve the impacted stakeholders in a positive way.

It was brought forward in interviews and stakeholder meetings that some island inhabitants do not see economical or other interest of the offshore wind projects for them if their access to renewable energy is not improved at the same time. Possible ways to enable benefit sharing could be strengthening the local grid (see recommendation 1.1 above) or enabling island energy communities around renewable energy assets. The current legal system in Estonia enables the creation of renewable energy communities (under the general Commercial Code of the country) and the production of renewable energy for own consumption. However, specific regulations related to energy sharing, energy communities or prosumers have not been adopted yet[195].

Among (island) citizens there is little interest and knowledge on energy sharing and energy communities. There is insufficient experience of community operations and management and local governments have little to no capacity to help citizens organisations, local companies and households to understand the advantages of other sources than wind energy PV, heat pumps, demand response, energy efficiency investments.

Recommendation 4.1: Develop facilitating services for energy community projects and a framework for implication of the island inhabitants

Energy communities are beneficial from the point of view of involvement of local communities and achieving just transition. Moreover, involvement of energy communities in the energy transition aims to help increase knowledge of energy topics, implementation of energy efficiency measures and uptake of renewable energy.

This recommendation goes in line with the **REPowerEU** measures and recommendations to **facilitate citizen and community participation**. See Annex A for more details.

The NIMBY focus mainly lies on (offshore) wind and it should be made clear to island inhabitants that there are options for diversification in energy sources and carriers and also in terms of the scale; both large scale and (local) small scale. Small scale in the sense of the island being able to supply for its own needs. This requires increased knowledge-sharing and capacity building of citizens, local actors, municipalities. While there is some political willingness to deal with the topic of renewable energy, we recommend to install a local contact point charged with (renewable) energy topics at municipal level, and specifically advising island inhabitants on the frameworks for energy communities and energy sharing.

[195] https://energycommunitieshub.com/country/estonia/

This need has been identified by island stakeholders, but it has also already been brought forward by other Estonian stakeholders. According to the Ida-Virumaa Green Plan[196], to foster renewable energy and Energy Communities, support via financial and non-financial measures should be offered to encourage the creation of citizens' energy cooperatives

The **RES Simplify** report contains some useful recommendations and examples for **early engagement in local information, dissemination, and discussion**. See Annex A for more details.

This recommendation goes in line with the **REPowerEU** recommendation on permitting, which stipulates that Member States should **ensure sufficient and adequate staffing**, with relevant skills and qualifications, for their **permit-granting bodies** and environmental assessment authorities. See Annex A for more details.

The 'tolerance fee', is already a step in the right direction, but we recommend shifting the logic from rather 'compensating for the nuisances' to a real and concrete financial participation to the offshore wind projects. This could be done by creating a solid legal framework, policy and guidance on the topic. This direct citizen participation could consist of enabling (partial) ownership of the renewable energy project, whether or not via cooperatives, implying a capacity for direct control over the decisions taken... in addition to profit sharing. Even more it could be envisaged to allow for the use of the energy produced through electricity supply cooperatives, governed by the same production cooperatives and thus controlled by the citizens. Beyond that the benefit sharing should be extended to the whole island, through for example lower grid tariffs.

This need has been identified by island stakeholders, but it has also already been brought forward by other Estonian stakeholders. According to the Ida-Virumaa Green Plan[197] to foster renewable energy, a local benefits model could be introduced. This model is a framework, approved by the State, which determines the extent and manner of compensation for the inconvenience caused by the location of a wind turbine, for example to a person living under or near it. The model also determines the revenue accruing to the local authority. This is not a specific measure for Ida-Viru County, but for the country as a whole. The experts consider that one option is to offer a financial reward to people (and local authorities) if a wind farm is located near them. This would provide financial compensation to people who live near wind farms and whose interests are affected by the existence or establishment of wind farms. The proximity measurement would then be implemented on a radius basis.

The **RES Simplify** report contains some useful recommendations and examples **for financial participation of affected municipalities**. See Annex A for more details.

Some best practices are given in the best practice box below.

Regulatory best practice

Scotland – Local Energy Scotland developed a 'Community and Renewable Energy Scheme (CARES) Toolkit', a step-by-step guide for the process of developing a renewable energy project. A specific module of this toolkit deals with

[196] https://stratlab.ee/en/ida-virumaa-green-plan/
[197] https://stratlab.ee/en/ida-virumaa-green-plan/

'Shared Ownership[198]', explaining some of the legal structures that exist such as, Owner operator, Commercial developer led, Joint ventures, Shared revenue, Split ownership, etc.
Spain, Balearic Islands - The Balearic Climate change and Energy Transition Law[199], approved in February 2019, requires the public administrations of the Balearic Islands to support participation of citizens, civil society organisations and local renewable energy communities in the deployment and management of renewable energy systems. More precisely, Article 49 of the Law defines that the local participation of at least 20% should be encouraged or obliged for RES projects with less than 5.0 MWp or more than 5 MWp, respectively. The Balearic government is currently thinking of taking this a step further. In the distribution of NextGen funds there would be compulsory requirements to involve vulnerable homes, either by requiring a certain percentage of the project to be devoted to self-consumption projects in vulnerable homes, or by requiring a certain percentage of the energy to be sold to at cost-price to vulnerable homes.

Actors involved:
- **Ministry of economic affairs and communication (MKM)**
- Ministry of Finance (department responsible for regional development)
- Ministry of the Environment
- Konkurentsiamet - Estonian Competition Authority - Energy Regulatory Dept (ECA)

Recommendation 4.2: Increase stakeholder awareness on advantages of clean energy projects
Much of NIMBY-ism starts at the first information meetings, where citizens do not get answers to their questions and then get frustrated. To overcome this problem of misinformation or lack of information we recommend developing a central platform for information on (wind) energy in general and collect information on the individual projects, the subject of these information meetings. Also, it is recommended that an independent body is involved to guarantee participation and to act as a mediator in conflict situations, in order to guarantee effective public participation processes, whether at the planning stage or during permit procedures. This body would ensure that the exchanges are balanced and that the observations made during the information meetings and public enquiries are taken into account. However, for each clean energy project, it is recommended to ensure dialogue between the various stakeholders at each stage of the project via existing local structures, focus should thus also lie on training municipal staff in providing information on renewable energy projects to citizens.

We also recommend to counter misinformation with information campaigns (e.g. documentaries) aimed at the general public. One of the focal points of such information campaign, beyond the positive impact for the climate, could be that renewable energy solutions offer an important potential for job creation. It has been estimated that 1GW of offshore capacity can generate around 100 jobs to operate and maintain them. At the same time, training and education programs on the islands should be incentivised.

This recommendation goes in line with the **REPowerEU** measures and recommendations to **increase public acceptance of renewable energy projects**. See Annex A for more details.

As mentioned under the barrier 'Islands are not consulted in a systematic manner and lack of national vision/strategy on clean energy development for the islands', there is no clear view on what the targets, the objective and more general, the strategy is. Therefore, we recommend communicating clearly about the objectives for the islands, following the development an island

[198] https://localenergy.scot/wp-content/uploads/2021/08/cares-toolkit-shared-ownership-dec2020.pdf
[199] http://www.caib.es/sites/canviclimatic2/es/llei_de_ccite/

specific policy (Regional Action Plan) as recommended under recommendation 2. This can be done by means of a strategic document, including the demonstration of the sustainable development value of clean energy (via the analysis of the life cycle from manufacture to implementation) rather than just the financial benefits. In this sense, if a concerted document exists, the island municipalities, in direct contact with the population, will be able to give their support and be a bridge between the national and local level.

Another option is to create a one-stop shop at national level – which is looked at in the project UP-Stairs[200] - to address some of the specific challenges. The focus should lie on training and education. The national government could help setup a platform, trainings or conferences with island stakeholders to foster the discussion, give light to the best practices or even provide funding for mentorship program. This can be coordinated and monitored by the Estonian islands agency (see recommendation 2.1).

This recommendation goes in line with the **REPowerEU** recommendation on permitting which stipulates that Member States should design a **one-stop-shop** for granting permits for renewable energy projects required in Directive (EU) 2018/2001 in such a way as to limit the number of authorities involved to what is necessary and maximise efficiency, taking into account public resources and the benefits of concentrating technological, environmental and legal expertise. See Annex A for more details.

The **RES Simplify report** contains some useful recommendations and examples for one **Stop Shop / consolidation into one single application process**. See Annex A for more details.

Actors involved:

- **Ministry of economic affairs and communication (MKM)**
- Ministry of Finance (department responsible for regional development)
- Ministry of the Environment

5. Spatial planning constraints for the islands: Energy generation is in conflict with nature conservation and military activities

The general structure of the political and administrative system in Estonia has been outlined in the first Chapter on Policy and Legislation under the section Spatial Planning.

Land-use conflicts form a major barrier, specifically on islands. Energy generation not seldom is in conflict with nature conservation and military activities. This while, access to land suitable for renewable energy are key to the development of projects. More concrete there are three specific barriers:

- Many of the Protected Areas in Estonia cover islands (see map below). Several nature-conservation areas, nature reserves and two of the six national parks (Matsalu and Vilsandi) are situated there.
- In Western Estonia and particularly on the islands there is a large bird population. Stringent requirements hinder the development of renewable energies. The western part of Estonia,

[200] https://www.h2020-upstairs.eu/

especially closer to the islands and coastline, is a vital resting place for migrating birds and home for plenty of local species.

- The height restrictions set for national defence reasons are a particular obstacle for wind development (particularly in and around the islands).[201]

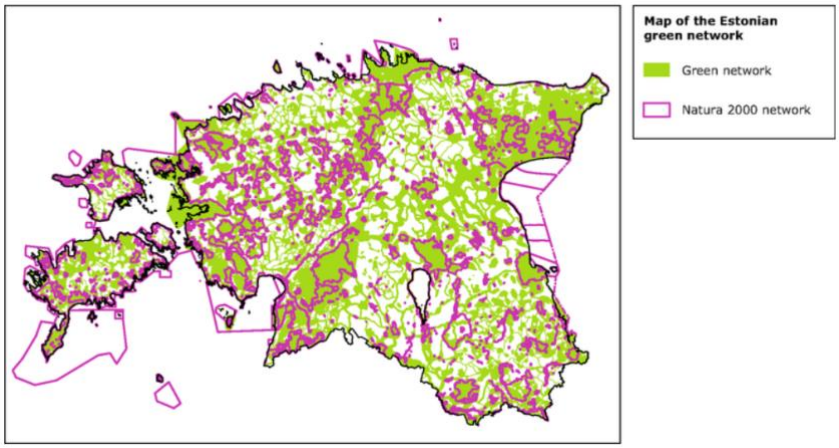

Figure 8 - Map of the Estonian green network - Source

Fostering holistic spatial planning, allowing multiple uses of land, and RES-integrated environmental assessments are essential for future deployment of renewable energy projects on the islands.

Recommendation 5.1: Seek compromises with Ministry of Defence to open zones for RE development and adaptation of wind turbine height constraints

Many aeronautical constraints prohibit or limit the height of wind turbines. Technical solutions[202] exist, however, to ensure that night lighting (beaconing) only comes into operation when there is an actual presence of aircraft in the vicinity. Experience from the United Kingdom - with the Offshore Wind Sector Deal in March 2019[203] and the cooperation between the wind sector and the military that followed[204] - has shown that it is possible to adapt military training areas in order to find an adequate balance between energy, climate and air protection issues. In addition, the wind energy sector has developed a technical solution for dynamic beaconing of wind turbines in military training areas in order to reduce the night-time visual impact on local residents.

Negotiations between the competent ministries should thus take place regarding (i) opening military training zones (in and around islands) to renewable energy development and (ii) adapting the height restrictions for wind turbines in military zones (conditioned to technical mitigation measures for interference with radars). This need has been identified by island stakeholders, but it has also already been brought forward by other Estonian stakeholders. According to the Ida-Virumaa Green Plan[205] to foster wind energy, the focus should lie on removing constraints by working with the Ministry of Defence to find opportunities for new wind farms, using the local benefits model to increase support for residents and finding a solution to phantom mergers. Improved cooperation will help to speed up the approval of planning and shorten the time needed for this objective.

[201] https://energiatalgud.ee/Tuuleenergia_ressurss
[202] https://tuuleenergia.ee/radar-system-upgrade-to-enable-establishment-of-wind-farms-to-cost-eur-74-5-mln/?lang=en
[203] https://www.gov.uk/government/publications/offshore-wind-sector-deal
[204] The Air Defence and Offshore Wind Windfarm Mitigation Task Force was formed as a collaboration between MOD, Department for Business, Energy and Industrial Strategy (BEIS), the Offshore Wind Industry Council (OWIC) and The Crown Estate (TCE) in August 2019. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1021252/Air_defence_and_offshore_wind.pdf
[205] https://stratlab.ee/en/ida-virumaa-green-plan/

Actors involved:

- **Ministry of economic affairs and communication (MKM)**
- **Ministry of Defence**
- **Ministry of Finance** (department for spatial planning)
- Ministry of the Environment
- Konkurentsiamet - Estonian Competition Authority - Energy Regulatory Dept (ECA)

Recommendation 5.2: Provide spatial planning guidelines for implementation of clean energy projects

As mentioned above the clean energy transition on the islands is already ongoing and should be supported instead of obstructed by spatial planning constraints – without however circumventing nature conservation requirements. Given this complexity and multitude restrictions, alongside the other barriers already mentioned such as NIMBY and lack of capacity of civil servants at municipal level, there is a need for the guidelines from the national level, namely the department of Spatial Planning under the Ministry of Finance, on how the clean energy projects should be planned and implemented in regard to the **land use priorities**. The Estonian islands energy agency (see recommendation 2.1) could also contribute to this. Such guidelines have to take into account the characteristics of islands and seek compromises between nature conservation, military activities, preservation of historical sites, tourism and sustainable and clean energy. It should embody a long-term vision on how different land use on islands are coordinated to assure sustainable economic development. The use of the guidelines would help assure that the approval process is not additionally complicated or delayed during the process of adoption of local plans.

While the guidelines should be prepared on the national level by the Ministry of Finance (department for spatial planning) in coordination with the Estonian islands energy agency (see recommendation 2.1), the preparation process should involve representatives of the other relevant government agencies and local authorities who will be implementing the guidelines and experts and academia involved in realisation of clean energy projects on the islands. Even though the guidelines represent a temporary document, used until the local spatial plans are developed, if prepared well they can also be used as one of the guiding documents for integration of energy transition topics in the preparation of Comprehensive Plans and Detailed Special Plans.

Actors involved:

- Ministry of economic affairs and communication (MKM)
- Ministry of Defence
- **Ministry of Finance (department for spatial planning)**
- Ministry of the Environment
- Konkurentsiamet - Estonian Competition Authority - Energy Regulatory Dept (ECA)

Recommendation 5.3: Designate go-to areas and develop simplified permitting procedures

Integration of spatial planning and sectoral strategies is fundamental in identifying and accessing suitable land for renewable energy projects but is not a common practice. In light of the land-use conflicts mentioned above, we recommend developing an integrated approach via the creation of a detailed Master Plan (per island) that investigates and approves the areas or sites for clean energy development island by island. This Master Plan should define go-to areas specifically for one or

more renewable energy sources. Consequently, projects in these zones should be subjected to fast-track and simplified permitting procedures and lightened environmental impact assessments.

This recommendation goes in line with the **REPowerEU** measure to define '**renewables go-to areas**' which are particularly suitable areas for the installation of production of energy from renewable sources. See Annex A for more details.

A possible simplification can be to explore options for a single permit, for instance for any clean energy project on the islands or for a specific size and type of the project which is considered priority in strategic documents. For instance, in Greece the national government has introduced a simplified procedure for ground mounted PV plants with installed capacity lower than 1 MW where some steps in the authorisation process are removed (certification of the RES producer), while other are simplified to the single permit (administrative authorisation and gird connection).

This recommendation goes in line with the **REPowerEU** measure to provide for **accelerated procedures** for projects in go-to zones. See Annex A for more details.

The **RES Simplify report** contains some useful recommendations and examples for **eased procedures for RES self-supply and small-scale RES**. See Annex A for more details.

Actors involved:

- Ministry of economic affairs and communication (MKM)
- **Ministry of Finance (department of spatial planning)**
- **Ministry of the Environment**
- Island Municipalities

Conclusions for Estonia

Based on an inventory of the current legislation and information gathered via surveys and interviews, the Clean energy for EU islands secretariat has brought together all relevant stakeholders in Focus Groups and a National Stakeholder Meeting to identify barriers to the clean energy transition on Spanish islands, and formulated recommendations to overcome them. This mission has gained in importance since the publication of the #REPowerEU package.

Despite important recent measures to facilitate the energy transition, several major challenges for the clean energy transition on the Spanish islands remain. These barriers relate to (i) grid constraints and absence of frameworks for solutions to cope with it, (ii) islands not being consulted in a systematic manner and lack of national vision/strategy on clean energy development for the islands, (iii) lack of support from the national government in planning and implementation of clean energy projects and action plans, (iv) local opposition and lack of energy community frameworks to foster RES-projects, (v) spatial planning constraints for the islands: Energy generation is in conflict with nature conservation and military activities.

The good news is that they can be overcome by constructive collaboration between the relevant actors. Regular dialogues and interaction between the island stakeholders and the stakeholders at national level should be further fostered. This could be done by creating an Island Energy Agency as recommended in recommendation 2.1. This will allow for the involvement of island stakeholders in national strategic & long-term energy planning and funding distribution, and it would improve the concreteness and effectiveness of instruments and actions at national level.

Areas where constructive collaboration could result in major breakthroughs are grid planning, supportive frameworks for storage and demand response, benefit sharing via energy communities and permitting.

For offshore wind and interconnections, in particular a consensus is needed aiming at three goals at the same time: (i) realising the offshore wind potential of Estonia (1 GW commitment by government and 7 GW of plans), (ii) realising benefits for the islands in terms of clean energy provision through a reinforced grid and offshore service industry at selected ports, (iii) implementing a transmission grid which connects the offshore wind parks, Latvia, Finland and the islands. The connection of offshore wind and the islands is a non-marginal event for the TSO and is unlikely to be taken up in its current mandate and tariff structure. A policy decision at a higher level is needed (recommendation 1.1).

Lastly, the process of identifying barriers, discussing them between stakeholders and assess possible solutions in a collaborative way has shown its merit. We recommend stakeholders continue these discussions. The Estonian islands will benefit from them.

Croatia

The first Chapter of this Croatia country section provides an overview of the existing policy and legislation for clean energy on Croatian islands. The second Chapter contains the identified legal and regulatory barriers, based on the survey and the interviews, and the recommendations, based on the Focus Group Meetings and the National Stakeholder Meetings.

Policy and Legislation for clean energy on Croatian Islands

Introduction to the Croatian Energy sector – Relevant Actors

Throughout the study several key stakeholders in the Croatian Energy Sector will be referred to. Hereunder a short overview of these actors and their roles is given.

In Croatia, energy policy is mainly the responsibility of the **Ministry of economy and sustainable development, Directorate for Energy**[206]. The islands development policy is the responsibility of the **Ministry of Regional Development and EU funds, Directorate for Islands**[207]. As the energy transition affects not only the energy sector but also other sectors (transport, water, waste, tourism, agriculture, industry etc.) and allows for decentralisation of energy sector, other sector policies and regional and local government bodies and stakeholders, such as academia, civil sector, private sector, are also relevant and important for implementation of measures.

For energy policy and regulation, The Ministry of economy and sustainable development is supported by the **Croatian Energy Regulatory Agency** (HERA)[208]. In addition to HERA, policy makers are also supported by nationally owned **Energy Institute Hrvoje Požar** (EIHP)[209].
Croatian energy markets, both electricity and gas, are operated and managed by **Croatian Energy Market Operator** (HROTE)[210]. In addition, HROTE is responsible for managing support for renewable energy generation.

The Croatian electricity transmission system (110 kV and above) is owned and operated by nationally owned **Croatian transmission system operator** (HOPS)[211]. The electricity distribution system is owned and operated by single nationally owned distribution system company, **Croatian electricity company distribution system operator (HEP-ODS)**. HEP-ODS is part of **HEP Group**, which also owns the HEP supplier and HEP generation companies, as well as other electricity and gas related companies. Aside from HEP there are other electricity supply and generation companies in Croatia.

Croatian islands and their governance

The Croatian archipelago lies along the eastern coast of the Adriatic Sea and has 1 244 natural formations, of which 78 are islands, 524 are islets, 642 are cliffs and reefs. Of the 78 islands, 52[212] are permanently inhabited, all of which are located relatively close to the shore. Cres and Krk are the largest islands, both with a land area of around 406 km². According to the Croatian Islands

[206] https://mingor.gov.hr/
[207] https://razvoj.gov.hr/
[208] https://www.hera.hr/en/html/index.html
[209] https://eihp.hr/en/
[210] https://www.hrote.hr/
[211] https://www.hops.hr/en/Home/Index
[212] 53 (if Pelješac is included) https://registar-otoka.gov.hr/

Act[213], the peninsula Pelješac is also considered an island. The Croatian legal framework includes it in all island regulations and documents. The Croatian island population makes up 3.3 % of the country's total population, which corresponds to 128 508 people[214].

Croatia has seven coastal counties, of which six have inhabited islands. At the local level, islands have, in general, their own municipalities within these counties, just like the mainland area does. However, more than 30 inhabited islands do not have their own municipality. They are part of the city municipality on the coast or of other islands. There is specific legislation to support economic development of islands, the Islands Act which defines strategies and subsidies for inhabitants and businesses on islands. Notably, the Act on Islands introduced 'Island coordinators' who are designated people responsible for organising and coordinating plans and projects pertaining to the sustainable development of islands.

General policy

The **Integrated National Energy and Climate Plan for the Republic of Croatia** for the period 2021-2030 sets a national RES target of 63.8% in the gross direct consumption of electricity, 36.6% in the gross direct consumption of energy for heating and cooling and 13.2% in the gross direct consumption of energy in transport. The **Strategy for energy development of the Republic of Croatia until 2030, with the view until 2050**[215], documents the alignment with EU policy and need for energy transition. While it indicates that the possibilities and potential for energy development on the islands is different than on the mainland, it does not detail how this will affect implementation.

A special **Islands Act** from 1999 contained all necessary measures, administrative provisions and requirements, technical and environmental standards, and other basic rules in order to provide all conditions for a safe, environmentally sustainable and secure development and management of the Croatian islands.[216] This includes the management of other services such as water and waste, as well as energy sources needed for electricity, heating/cooling and transport. While energy is important, water, waste and transport to/from the islands are equally important. The islands should benefit from innovative solutions that provide cross-sectoral approaches, solving multiple issues.

Taking into account the uniqueness of the islands and balanced regional development as one of the main goals of the Government, at the end of 2018 a new Islands Act (OG 116/2018) was adopted, with additional changes in 2020 (73/20) and 2021 (70/21). The new Islands Act was adopted in order to stimulate the economic development of islands and improve the quality of life of islanders, providing them with new development and economic opportunities through a number of modern mechanisms and solutions to island development policies.[217] The Islands Act includes specific measures such as encouraging the development of civil society and cooperatives on the islands and other measures aimed at demographic and economic revitalisation of Croatian islands. The Croatian Government adopted the **National Island Development Plan 2021-2027**, as a medium-term strategic document.[218]

[213] The Islands Act (Zakon o otocima 116/18, 73/30, 70/21) last updated in 2021 https://www.zakon.hr/z/638/Zakon-o-otocima
[214] https://popis2021.hr/
[215] https://mingor.gov.hr/o-ministarstvu-1065/djelokrug-4925/energetika/energetska-politika-i-planiranje/strategije-planovi-i-programi-2009/2009
[216] https://www.ecolex.org/details/legislation/island-law-lex-faoc120129/
[217] The Islands Act (Zakon o otocima 116/18, 73/20, 70/21) last updated in 2021 https://www.zakon.hr/z/638/Zakon-o-otocima
[218] https://razvoj.gov.hr/o-ministarstvu/djelokrug-1939/otoci/nacionalni-plan-razvoja-otoka-2021-2027/4473

At the end of 2021, the new Electricity Market Act (ZOTEE)[219] – which transposes the fourth Electricity Directive[220], has been presented alongside the new Renewable energies Act (ZOIEVUK),[221] which replaces the existing Act on Renewable Energy Sources and High-efficiency Cogeneration, regulates important issues for the implementation of energy transition in accordance with the Energy Development Strategy until 2030 with an outlook to 2050 and the Integrated National Energy and Climate Plan (NECP) for the period 2021 – 2030.
Croatian islands are interconnected to the mainland. There is not much electricity production on the Croatian islands. Therefore, the main problem occurs due to need for balancing in the periods of higher demand during the tourist season, as the infrastructure is constructed to support the average demand on the islands.

The cost of energy production on most Croatian islands is not higher than on the mainland and there is thus not a system of socialised costs, compared to countries such as Greece, Spain, Italy. However, most of the technical know-how, technology and maintenance companies are located on the mainland. Therefore maintenance can be more expensive on the islands as it is not locally available.

The national energy institute (*Energy Institute Hrvoje Požar*, EIHP)[222] helps different ministries with the development of action plans and strategies, but there is not one national clean energy action plan for the Croatian Islands. However, the institute does help with regional and local clean energy planning (SEAPS and SECAPS).

Regulatory best practice

The Croatian Regional Development Act[223] defines the regional coordinator as a regional development agency. The responsibilities are further detailed in Article 25 of the Regional Development Act. The Croatian Islands Act[224] in Article 19, further identifies one person within the regional coordinator to be the island coordinator. The responsibility, among other of the island coordinators is to organise, initiate and coordinate plans and projects important for the development of the islands in their region. Regional island coordinators are installed starting from 2021 and are currently in the process of developing longer term collaboration with local governments on islands or with islands in their territory.

[219] Pursuant to this Act, a producer of electricity licensed to produce electricity may produce electricity in the basic or variable mode of operation, including electricity to cover losses in the transmission and distribution network, as well as electricity energy for balancing the electricity system (hereinafter: "balancing energy") and provide ancillary services. Exceptionally, legal or natural persons may perform the activity of electricity production without a license to perform electric power activity if they have provided professional management and operation of power plants in accordance with technical regulations, requirements and conditions and exclusively for performing the activity: • production of electricity using generating plants whose sum of installed powers is up to and including 500 kW or • production of electricity exclusively for own needs or • production of electricity during the trial operation of production facilities. The main novelty that ZoTEE brings for projects renewable sources and high-efficiency cogeneration, energy but also electricity storage plants, is an energy approval awarded in a public tender at the very beginning of project development.

[220] Directive (EU) 2019/944 of the European Parliament and of the Council of 5 June 2019 on common rules for the internal market for electricity and amending Directive 2012/27/EU

[221] https://www.zakon.hr/z/827/Zakon-o-obnovljivim-izvorima-energije-i-visokou%C4%8Dinkovitoj-kogeneraciji

[222] http://www.eihp.hr/

[223] https://www.zakon.hr/z/239/Zakon-o-regionalnom-razvoju-Republike-Hrvatske

[224] https://www.zakon.hr/z/638/Zakon-o-otocima

Renewable energy

Support systems

Currently, in the Republic of Croatia there are no special support systems for the development of renewable energy sources on the islands. However, depending on the tender, islands falling under a specific category can get preferential treatment through additional points (the Islands Act NN 116/18, 73/20, 70/21). So far, there are no specific subsidies, special feed in tariffs or premiums. Nor are there specific permitting or grid policies in place. However, investment subsidies are available for small scale projects based on Public Calls from the Croatian Environment Protection and Energy Efficiency Fund (EPEEF).[225] Within those calls, beneficiaries from islands can receive a larger subsidy than other areas. In general, islands can receive a subsidy of 80 % or 60%, based on their economic development. For example, in the Public Call for energy renovation of family houses (EnU-2/21), published by EPEEF on 15 September 2021[226],the 'first group of islands and areas of special state concern are subsidised with up to 80% of eligible costs, the second group of islands and hilly and mountainous areas with up to 60% of eligible costs and other areas of the Republic of Croatia with up to 40%, according to call conditions'. Measures co-financed are: (i) complete energy renovation, (ii) increase of thermal protection, (ii) installation of RES systems. The EPEEF launched similar calls in the past years:

- Public Call for co-financing the use of energy efficiency and renewable energy sources in industrial systems, craft manufactories and family farms.
- Public Call for co-financing the use of renewable energy sources (photovoltaic systems) in tourism to natural persons - registered renters and family farms.
- Public Call for co-financing the use of renewable energy sources for the production of heat or heat and cooling energy in households, for own consumption.
- Public Call for co-financing the use of renewable energy sources in public buildings.
- Public Call for co-financing the use of renewable energy sources for the production of electricity in households, for own consumption.

Croatia supports a wide range of technologies for electricity generation, energy efficiency, heating, cooling and transport through different schemes. The Croatian Bank for Reconstruction and Development offers lending instruments to promote energy efficiency and renewable energy projects. Electricity generation from renewable energy sources such as solar and wind power is supported by a feed-in tariff/premium. For transport there is support through a subsidy scheme for low- or zero-emission vehicles and there is a quota for the use of biofuel.
Support schemes:

- Technology-neutral investment loans for renewable energy and energy efficiency projects.
- Feed-in tariffs and Feed-in Premiums are awarded through tender procedures operated by the Croatian Energy Market Operator.
- A net metering system applies to electricity-producing consumers, mainly households. Produced electricity must be used primarily for own consumption.
- Subsidies are granted for the purchase of private electric vehicles and public transportation buses with low and very low CO_2 emissions.
- Croatia has a biofuel quota that obliges fuel producers to include a percentage biofuel into their products.

[225] https://www.fzoeu.hr/en/activities-of-the-fund/1325
[226] https://www.fzoeu.hr/hr/natjecaj/7539?nid=165&fbclid=IwAR0J5QC6bayYPVfgWROlfsV4X1fpZ4sMbvTpyEH5kaBajOmbd-S-XZa3Kuc

- Croatia co-finances the development of the alternative fuels infrastructure such as charging infrastructure.

Grids

The Croatian electricity grid provides non-discriminatory connection for renewable energy sources and priority access to deliver renewable electricity to the grid. There is a single distribution system operator. For installations connecting to the low-voltage network that do not require technical adjustments, the grid access is simplified, as it does not require a study (Annex 3 of the Croatia country study[227]). The country has a smart meter penetration rate of 14.1%. The electricity supplier switching rates for household customers in 2018 was 2.5%[228].

RES projects authorisation process

A range of permits must be obtained for renewable energy projects including from the county and municipality, national level ministries, Croatian Air Traffic Control, the national distribution and transmission system operators and the energy regulator. For rooftop PV and net metering the procedure is simplified.

Supported energy efficiency measures

Croatia requires that all new buildings in the country adhere to the nZEB (nearly zero energy building) standard starting from January 2020. Energy efficiency measures for buildings are supported through subsidies of the Energy Efficiency and Environmental Protection Fund (EPEEF) and through low-interest loans of the Croatian Bank for Reconstruction and Development. These loans are available only for the private and public sector, not for natural citizens.

Energy efficiency action plans are mandatory for regions and for large cities above 35000 citizens, based on Art. 11 of Energy Efficiency Act. Cities of this size are not located on the islands. Therefore islands are included under regional action plans for energy efficiency. The form of these plans is defined by regulation. Energy efficiency action plans are mainly focused on building renovation and sustainable electrical mobility, and most actions are defined to identify projects that will use national funds for their implementation.

Energy Efficiency Law obliges energy supplies to ensure participation of end-consumers in the energy efficiency of the system by allowing demand response.

Supporting policies

Croatia offers recognised training programmes for installers of renewable energy installations in the housing and buildings sector, in particular for electricity, heating, and construction. Energy audits and energy certifications of buildings are carried out by certified persons. Public authorities fulfil their exemplary role through energy renovation of public buildings, with the goal of yearly renovation rate of 1,0% of surface area of all public buildings in 2021 and 2022. Currently there are not many large research, development & demonstration (RD&D) programmes in the country, but there are plans for such programmes in the future.

[227] Available online at: https://clean-energy-islands.ec.europa.eu/insights/publications/regulatory-barriers-croatia-findings-and-recommendations
[228] Eurelectric – Distribution grids in Europe: Facts and Figures 2020. https://cdn.eurelectric.org/media/5089/dso-facts-and-figures-11122020-compressed-2020-030-0721-01-e-h-6BF237D8.pdf

Self-consumption and community energy

Until recently, energy sharing (multiple users in one building sharing a RES system) and energy communities (multiple users from multiple buildings sharing a RES system) were not well-defined by the legislative framework. Prosumers are better-defined and commonly exist in Croatia, but there is still a need for improvement of the regulatory framework and implementation of more supporting measures.

The new Renewable energy (RES) Act[229] contains provisions on energy communities and active customers in order to enable all end customers to directly participate in the production, consumption or distribution of electricity. One of the most significant novelties of the new Act is the introduction of the concept of the Energy Community, whereby renewable energy communities are defined as legal entities that meet the following conditions:

- are established in accordance with applicable national law, in open and voluntary participation,
- are independent and under the effective supervision of shareholders or members located in the vicinity of renewable energy projects owned or developed by that legal entity,
- whose shareholders or members are natural persons, small and medium-sized enterprises or units of local or regional self-government, and
- whose primary purpose is to provide the environmental, economic or social benefit to the community for its shareholders or members or for the local areas in which it operates, and not for financial gain.

Renewable energy communities have the right to:

1. produce, consume, store and sell renewable energy, inter alia through renewable energy purchase agreements,
2. share, within the renewable energy community, renewable energy produced in generating units owned by that renewable energy community, subject to other requirements of this Article and retaining the rights and obligations of members of the renewable energy community as users,
3. access all relevant energy markets directly or through aggregation in a non-discriminatory.

Citizen energy communities and prosumers are defined in the Energy Market Act adopted in 2021.

[229] https://narodne-novine.nn.hr/clanci/sluzbeni/full/2021_12_138_2272.html

Identified barriers and recommendations to overcome them

The Clean energy for EU island Secretariat's Think tank has identified legal and regulatory barriers, based on the detailed assessment of the current regulatory framework and consultation with relevant Croatian stakeholders through survey and the interviews (see Annex 1 of the Croatia country study[230] for a detailed assessment). For each of the regulatory barriers, the Secretariat identified multiple recommendations. Those barriers and recommendations were presented and discussed within the Focus Group Meetings (see Annex 2 of the Croatia country study[231] for more information).

Regulatory barriers are presented in the order of their priority for energy transition on the Croatian islands. Some of the barriers that were identified via the surveys and interviews are barriers that exist both on the islands and on the mainland. In the recommendations below, the focus lies on the concrete issues encountered by islands with these regulatory barriers.
The table below represents the list of barriers (marked in dark blue) ordered based on their priority, and the proposed recommendations (marked in white).

Table 4 - Barriers and Recommendations - Croatia

Barrier 1**. Lack of clear strategy and coordination of clean energy transition on the islands**
Recommendations:
1.1 Set up a national Taskforce for islands' clean energy transition
1.2 Mandate island or group of islands energy transition plans
1.3 Improve regional and local energy coordination and monitoring
Barrier 2. **Lack of support schemes tailored to island characteristics and capacity**
Recommendations:
2.1 Improve planning and communication of planned funding calls
2.2 Provide technical assistance for clean energy projects for islands
2.3 Foster local stakeholder engagement in energy projects
Barrier 3. **Need for better integration of clean energy transition and spatial planning**
Recommendations:
3.1 Re-assess spatial planning guidelines and restrictions for clean energy projects on the islands
3.2 Identify go-to areas on the islands and adopt regional energy master plans
Barrier 4. **Lengthy permitting procedures for clean energy projects**
Recommendations:
4.1 Introduce simplified procedure and establish single permit
4.2 Set-up regional one-stop shops
Barrier 5. **Lack of support for energy communities**
Recommendations:
5.1 Prioritise regulatory framework and provide right incentives
5.2 Use regulatory sandboxes for community energy initiatives

[230] Available online at: https://clean-energy-islands.ec.europa.eu/insights/publications/regulatory-barriers-croatia-findings-and-recommendations
[231] Available online at: https://clean-energy-islands.ec.europa.eu/insights/publications/regulatory-barriers-croatia-findings-and-recommendations

5.3 Foster local awareness raising and support

Barrier 6. **Lack of security of supply on islands due to seasonality**

Recommendations:

6.1 Adapt grid development methodology from an ad-hoc approach to a future-oriented approach

6.2 Explore framework for renumeration of storage systems

1. Lack of clear strategy and coordination of clean energy transition on the islands

The lack of clear strategy and coordination of clean energy transition actions is considered in this study as the main barrier for clean energy developments on the Croatian islands. Both the National Energy and Climate Plan (NECP) and the National Island Development Plan 2021-2027 address the topic of clean energy on Croatian islands by putting forward RES generation for self-consumption to reduce the burden on the transmission system, to showcase and promote pilot projects and developed solutions in order to implement them later on the mainland, and to emphasise the need to decarbonise road and marine transport. However, both strategies are vague when defining specific goals, without specifying timelines and projects. For example, the National Island Development Plan defined a specific goal SO 3.2. as "*The development and encouragement of the construction of a system of renewable energy sources*, *the use of clean energy and energy efficiency"*.

While it is extremely important that such message is communicated from the national level, it does not indicate preferred priority measures or technologies. It is expected that concrete projects would be defined on the regional or local level. On the regional or local level there are many mandatory plans that define development measures which in one way or another include clean energy topics. These include:

- Regional Development Plans, which recently integrated Regional island development plans[232].
- Energy Efficiency plans (Energy Efficiency Act[233]), which are prepared on regional level and include mainly state funded planned energy efficiency projects on building renovation an mobility.
- Regional and local annual implementation programs (Strategic planning and development Act[234]) which also indicate if a project is relevant for energy transition.
- Regional and local spatial plans (Spatial development Act[235]).

Aside from these mandatory plans, through involvement with EU wide initiatives such as Covenant of Mayors, the Clean energy for EU islands Secretariat or other funded projects, many regional or local governments have developed or are in the process of developing local energy plans, such as Sustainable Energy (and Climate) Action Plan (SE(C)AP) or Clean Energy Transition Agenda (CETA).

[232] The guidelines for drafting regional development plans were sent to the all counties. These guidelines also include special instructions how to elaborate topics related to islands and how to define measures and activities.
[233] Article 11
[234] https://www.zakon.hr/z/975/Zakon-o-sustavu-strate%C5%A1kog-planiranja-i-upravljanja-razvojem-Republike-Hrvatske
[235] https://www.zakon.hr/z/689/Zakon-o-prostornom-ure%C4%91enju

It is currently unclear how planning of energy projects is integrated between these different mandatory and non-mandatory sectoral plans. Article 7 of Energy Act[236] indicated that the local and regional level governments should align their development plans with the national Energy Strategy and Implementation plan for energy strategy. There are no foreseen local or regional energy plans.

There is a lack of integral planning between different sectors for the development of energy transition on the islands. For example, installing RES generation on the rooftops of public buildings is supported, while for many islands this cannot be easily implemented because many public buildings are located in the protected areas. In addition, PV installations are not allowed outside of the construction zones. Therefore, such restrictions make it difficult to find a location for a PV installation. Due to lack of nationally set priorities for clean energy development on the islands and lack of integral planning, current clean energy projects are developed "as-needed", and most issues are addressed on a case-by-case basis.

Further, depending on the sector, an especially in the energy sector, there is lack of coordination and collaboration between different levels of government. This lack of feedback loop does not allow for local priorities and needs to be communicated to the national level for preparation of relevant strategies and plans. The Directorate for Energy of the Ministry of Economy and Sustainable Development manages mostly strategic energy projects, while it is expected of municipalities to approve local energy projects. However, local or regional governments often lack capacity to lead or help in implementation of the clean energy projects.

When it comes to overall sustainable development of the islands, the coordination of issues has started to improve. In the new Islands Act[237], the Directorate for Islands has recently provided financial support for one employee of the regional coordinator[238] to represent islands' priorities, as regional island coordinator. Island coordinators still need to be better integrated with islands' needs and priorities and improve collaboration with the islands' stakeholders. The Islands Act and its by-laws are a good basis for the sustainable development of the islands. However, they have been recently adopted and it is yet to be seen how their implementation will affect the energy transition on the islands.

There is a lack of collaboration among municipalities on the islands. Some islands have multiple municipalities (e.g. Brac island has seven municipalities on the island). The collaboration is discouraged due to different political opinions and priorities. To foster collaboration among municipalities, the national government has indicated that it will support intermunicipal clean energy projects. While the action is preferred, its implementation is not yet clear. In addition, some islands do not have their own municipalities, but are rather part of the mainland municipality. This makes it difficult to prioritise island specific projects.

Croatian best practice

Krk Island

Krk island has seven municipalities and there is coordination of the mayors on the political, decision-making level. They have a monthly meeting and discuss join touristic, communal and energy topics. Krk has a joint communal company for water, waste and energy for these municipalities.

[236] https://www.zakon.hr/z/368/Zakon-o-energiji

[237] The Islands Act (Zakon o otocima 116/18, 73/20, 70/21) last updated in 2021 https://www.zakon.hr/z/638/Zakon-o-otocima

[238] Regional coordinator is a regional government body assigned based on the Regional development Act https://www.zakon.hr/z/239/Zakon-o-regionalnom-razvoju-Republike-Hrvatske

Due to lack of coordination of the energy transition on the islands, only a few clean energy projects have been implemented on the islands. Aside from rare implementation of rooftop PV by proactive individual and the good example of islands Krk,[239] there is lack of examples of best practices which could help promote new projects and increase awareness among local stakeholders.

Recommendation 1.1: Set up a national Taskforce for islands' clean energy transition

Energy sector planning is highly centralised. In order to assure that the national energy plans and strategies are inclusive and help set the framework for the sustainable development of the islands in line with the needs and priorities of the islands, it is recommended to form a national Taskforce for islands clean energy transition.

The Taskforce for islands could be built on the idea behind the Island council formed under the Islands Act (Art 18). The Island council is set-up on the national level and its scope of work includes sustainable development of islands. It includes representatives of various sectors, national, regional and local governments, as well as representatives of national funds, energy companies, private sector, local stakeholders and academia. Therefore the Taskforce for islands' clean energy transition could be formed as a working group under the Islands council[240], in coordination with the Directorate for Energy. It should include external members, such as energy experts and stakeholder involved in implementation of energy projects on the islands. In addition, it is important to keep in mind that working groups under the Islands council, as the Islands council provide advice to the Ministry of Regional Development and EU funds, and their mandate is limited to advisory services. The responsibility of further action stays with the Ministry of Regional Development and EU funds.

The Taskforce is a dedicated team that would analyse all aspects related to the clean energy transition on the islands and propose ways of coordination between sectors on the national level to ensure all tasks are aligned. The taskforce can also be used to provide guidelines that can be communicated from the ministry to the regional and local bodies while taking into account overall sustainable development of the islands. The taskforce can bring together all interests and identify the strategy for clean energy on islands.

In the long term it should be considered to extend the mandate of the Taskforce, so that it can provide advice directly to the whole National government, as the responsibility for action can be with various ministries depending on the topic that needs to be improved (energy, spatial planning, construction, culture etc.). Hence, the Taskforce could outgrow into a national body, agency, for islands. This way, the Taskforce can also take a more active role in coordination of activities on national and regional level.

In addition to strategic planning and coordination with the various sectors on the national level and with the stakeholders from the different levels, the Taskforce could be responsible for:

- Monitoring and evaluating the implementation of clean energy projects with regards to foreseen targets within the National Energy and Climate Plan and National islands development plan.
- Identifying bottlenecks and gaps in implementation and coordinating with responsible bodies to overcome them.

[239] https://www.reuters.com/business/sustainable-business/croatian-island-eyes-green-energy-self-sufficiency-this-decade-2021-06-18/

[240] Working groups under the Islands council is foreseen by Artcile 10 of the Bylaw on scope and operation of the Islands Council https://narodne-novine.nn.hr/clanci/sluzbeni/2019_07_71_1508.html , and modified https://narodne-novine.nn.hr/clanci/sluzbeni/2021_10_114_1976.html

- Providing feedback on where additional support is needed. This support could be provided through Croatian Environmental Protection and Energy Efficiency Fund or in collaboration with EIHP, academia and research institutes. The support would be in the form of funding, training, technical assistance or advice to local or regional governments, energy communities and local stakeholder in planning and implementation of clean energy projects, in coordination with.
- Identify where guidelines document are needed from different sectors and provide feedback on guidelines documents to national, regional and local government for implementation of new procedures.
- Analyse and suggest the optimal way for national, regional or local governments to provide a platform for collaboration and exchange of experiences among various islands and island stakeholder.

Actors involved:
- **Ministry of Regional Development and EU Funds, Directorate for Islands**
- **Ministry of Economy and Sustainable Development, Directorate for Energy**
- Ministry of Physical Planning, Construction and State Assets
- Ministry of Tourism and Sport
- Ministry of Culture:
- Ministry of the Sea, Transport and Infrastructure
- Regional governments
- Local governments
- Local stakeholders, such as representatives of civil and private sector
- Academia
- TSO, DSO

Recommendation 1.2: Mandate island or group of islands energy transition plans

Local energy planning assesses the existing demand, the potential for energy savings and energy efficiency, the state of the electricity grid and the need for improvements and availability of integration of new projects. Most importantly, it defines priorities and needs for improvements in the existing energy system. Energy planning on the level of an island or group of islands should be mandated from the national government through the Energy Act.

As mentioned above, such plans have currently been prepared for fifteen islands[241] in collaboration with the EU initiatives such as Clean Energy Transition Agenda (CETA) from the Clean energy for EU islands Secretariat or within Covenant of Mayors. Preparation of such plans help to understand the energy balance and needs of the islands and integrate all sectors including transport (road and marine), electricity and heating/cooling. Planning on the local level helps to identify not only potentials for projects, but also to set priorities based on the sector impact on the overall energy and economy of an island.

This recommendation goes in line with the **REPowerEU** measures on **Regions energy management, requiring r**egions and cities to launch awareness and information and support schemes, energy audits and energy management plans, pledging savings targets, and ensure citizens' engagement such as through the

[241] Brac, Cres-Losinj, Hvar, Korcula and two groups of islands, Elafiti archipelago (Kolocep, Lopud and Sipan) and Zadar islands (Ist, Iz, Molat, Olib, Premuda, Rava, Silba and Skarda)

European Mission on climate-neutral and smart cities or the European Urban Initiative under cohesion policy See Annex A for more details.

Through preparation and implementation of mandatory regional Energy Efficiency Plans there are lessons learned that can help guide the design and implementation of better policy for island energy plans. Moreover, it could be considered how existing regional energy efficiency planning can be extended into much needed regional/local energy planning. Potentially one regional or local plan could cover a broader topic of sustainable energy transition and not just energy efficiency.

Actors involved:

- **Ministry of Economy and Sustainable Development, Directorate for Energy**
- **Local governments**
- Regional governments
- Regional Island coordinators
- Local stakeholders (Academia, Civil sector, Private sector)
- National/regional stakeholders (trade associations)
- TSO, DSO

Recommendation 1.3: Improve regional and local energy coordination and monitoring

Currently there is two regional and local bodies responsible for coordination and monitoring of local and regional development: regional coordinators, which include islands' regional coordinator, and Local Action Groups (LAG), based on the Regional Development Act (Art. 29)[242]. Currently neither of the two are explicitly responsible for coordination or monitoring of clean energy transition in their region. However, this function is very much needed. Clean energy transition is involved in all development sectors as energy is used for all basic functions.

We recommend that the coordination and monitoring of regional and local energy transition, and not just energy efficiency, is integrated into the responsibility of existing relevant regional (regional coordinator) and local (LAG) bodies, through national legislation. In addition, this should be done in coordinated action with the changes to the Energy Law which will recognise the need for regional and local energy transition coordination and monitoring. While this is probably needed for the whole territory of Croatia it is extremely important for the islands, as the way island territories are spread among municipalities crates complications in coordination of clean energy transition and sustainable management of local island resources. The regional and local bodies should be obliged to collaborate with regional island coordinators and local governments and their mayors.

The Ministry of Economy and Sustainable Development needs to evaluate how energy planning can be coordinated with national energy sector planning and with other regional and local sectoral plans discussed above. Based on lessons learned from Regional Energy Efficiency plans regional bodies and Taskforce for islands can prepare recommendations on how to create an effective feedback loop with regards to energy planning, coordination and monitoring from regional or local level to national level for future planning and monitoring of implementation.

Actors involved:

- **Ministry of Regional Development and EU Funds**
- **Ministry of Economy and Sustainable Development**
- **Regional coordinators**
- **Local Action Groups (LAGs)**

[242] Regional development Act https://www.zakon.hr/z/239/Zakon-o-regionalnom-razvoju-Republike-Hrvatske

- **Local governments**
- Regional governments
- Local stakeholders (Academia, Civil sector, Private sector)
- National/regional stakeholders (trade associations)

2. Lack of support schemes tailored to island characteristics and capacity

The National Recovery and Resilience Plan[243] foresees investments in the energy transition on the islands with projects focusing on transmission network improvements, distribution network improvements, modernisation of the network and on improvement of the subsea cables towards Hvar-Korcula and Krk-Losinj-Cres. The Croatian Environmental Protection and Energy Efficiency fund provides open calls for funding opportunities where islands can apply. While there is no specific funding available only for the islands, the Fund opens calls for support up to 80% of the investment costs from islands from 1st group and up to 60% for islands from the 2nd group.[244]

In addition, Ministry of Regional Development and EU funds is in the process of adoption of the Integral territorial program 2021-2027, which includes the Initiative for smart islands and energy efficiency as one of the horizontal topics. Based on this program, 150 million of grant resources will be provided for the islands, of which 33 million is for sustainable energy. Specific projects in the public sector (public buildings and areas) will be identified on the regional and local level.

While there is funding available, the way it is granted makes it difficult to be used by the island initiatives or local stakeholder. Funding is distributed through open calls and tenders for projects, depending on the national priorities recognised under NECP and other energy and energy efficiency national plans. Despite annual monthly planning from the Fund, there is still lack of consistency in their frequency or time of year when they are published, as the implementation changes depending on available resources[245]. Therefore, typically local island stakeholders can be aware of the funding opportunities only once the call is open. In addition, short deadlines for submission create additional barriers for the islands to apply. Due to lack of resources of the island municipalities and lack of local energy planning, it takes time to mobilise municipalities and to prepare quality projects and documentation. Under current conditions, only rare local projects can manage to apply and even less to receive funding.

Aside of the issues with design and timing of the funding calls and tenders, another important barrier is the lack of technical know-how by the local stakeholder. The limited resources limit the number of projects that can be well prepared for the funding. Therefore, in existing open calls there are rarely even submitted projects from the islands. There is currently no national, regional or local body that offers funding for technical assistance to the islands. Based on the request from the local government, regional island coordinator can provide support. Although when it comes to energy transition topics, regional island coordinators also require capacity building. Currently, technical assistance is accessed through EU initiatives or funded projects.

Centralised planning of sustainable energy development results in planning of larger scale financially viable projects based on the available resources. These projects sometimes do not

[243] https://ec.europa.eu/info/business-economy-euro/recovery-coronavirus/recovery-and-resilience-facility/croatias-recovery-and-resilience-plan_en
[244] https://www.fzoeu.hr/hr/natjecaj/7539?nid=165&fbclid=IwAR0J5QC6bayYPVfgWROlfsV4X1fpZ4sMbvTpyEH5kaBajOmbd-S-XZa3Kuc
[245] Currently due to Covid-19 pandemic and energy crisis caused by Ukraine-Russia war, the funding is less predictable as national budget planning changes according to the needs.

correspond to the local needs and priorities of the island stakeholders and lack support of the island civil society. In order to compete with such projects many islands and local stakeholders need to join in collaboration in order to prepare one larger scale financially viable project. This takes extensive local planning, resources, and time.

Recommendation 2.1: Improve planning and communication of planned funding calls
When it comes to available funding, in order to enable island local projects to participate in the open calls and tenders, there should be a clear annual or bi-annual frequency of calls, with the same deadline each year. Such planning of the open calls from the Environmental Protection and Energy Efficiency Fund (EPEEF)[246] creates consistency and certainty, allowing local stakeholder and local governments to organise with local stakeholders, plan and prepare viable projects for funding. Moreover the calls should be relatively consistent in the required documentation allowing streamlining of the project preparation.

The Fund refers to the national planning, and specifically NECP, for the priority topics when planning the annual funding calls. Therefore, in order to assure that the future calls can include separate calls for island projects, the NECP update in preparation for 2023 should include island energy transition as one of the priorities.

Actors involved:
- **The Environmental Protection and Energy Efficiency Fund**
- **Ministry of Economy and Sustainable Development, Directorate for Energy**
- Ministry of Regional Development and EU Funds:
  - Directorate for Islands
  - Directorate for Strategic Planning and Coordination of EU Funds
- Regional governments
- Local governments
- Local stakeholders (Civil society, private sector etc.)
- Academia
- TS0/DSO

Regulatory best practice
Island specific support policy
Italy
In Italy, the Decree of Ministry of Economic Development of 14 February 2017 defined objectives and incentive methods for renewable energy in the small Italian islands non-interconnected with the electricity grid of the continent. Specifically, it established the minimum development objectives for the production of electricity and thermal energy from renewable sources, and the methods for supporting the investments needed for their realisation. According to several stakeholders, this Decree has been proven very useful for all Italian Islands. On Salina Island for example, a project of 200kW PV has been developed for the association of hoteliers of Salina. Via the Decree this project receives Feed-in Tariffs, which is now, with high energy prices, particularly relevant. Also for Pantelleria the Decree was effective: the municipality has presented five projects on energy efficiency in municipal buildings that have been all financed via the Decree.

Recommendation 2.2 Provide technical assistance for clean energy projects for islands

[246] https://www.fzoeu.hr/en/activities-of-the-fund/1325

As mentioned above, there is a lack of resources and technically skilled personnel on the local level for planning and preparation of clean energy projects. We recommend that the NECP update identifies the need for technical assistance and capacity building in regard to clean energy transition on the regional and local level. Based on this the Environmental Protection and Energy Efficiency Fund can in the future provide funding for technical assistance to the islands from the Croatian energy experts, through a call for technical assistance. A pool of energy and island experts can be formed which would be matched with requested technical assistance. This way local and national knowledge can be mobilised to accelerate the energy transition on the islands. Technical assistance can take the form of, for instance, workshops for municipalities, guidelines for energy transition, preparation of local energy plans, preparation of technical documentation for clean energy projects or roadmaps for project implementation and involvement of local stakeholders. A starting point can be to get in contact with the regional island coordinators and local stakeholders to assess the current needs and priorities, as discussed in recommendation 2.3. Existing education programmes of the EIHP[247] or academic institutions can be consulted to find which support is already being offered.

This recommendation goes in line with the **REPowerEU** recommendation on permitting, which stipulates that Member States should **ensure sufficient and adequate staffing**, with relevant skills and qualifications, for their **permit-granting bodies** and environmental assessment authorities. See Annex A for more details.

Actors involved:

- **The Environmental Protection and Energy Efficiency Fund**
- **Ministry of Economy and Sustainable Development, Directorate for Energy**
- **Regional governments, including regional island coordinators**
- Ministry of Regional Development and EU Funds:
  - Directorate for Islands
  - Directorate for Strategic Planning and Coordination of EU Funds
- EIHP
- Local governments
- Local stakeholders (Academia, Civil sector, Private sector)
- National/regional stakeholders (trade associations)
- TSO, DSO

Recommendation 2.3: Foster local stakeholder engagement in energy projects

The currently planned energy projects aim to fulfil national goals and obligation in the most optimal way from energy and financial point of view. However, energy projects use local resources and hence should address local needs and involve local stakeholders. We recommend analysing islands energy needs and priorities. Local energy needs and priorities can be assessed using island/local energy plans discussed in recommendation 1.3 above. The Taskforce for islands can identify islands energy needs and priorities, based on existing regional and local plans and involvement of relevant regional and local experts. Based on this analysis, the Taskforce can provide recommendations to the Directorate of Energy to reassesses the allocation of EU and national funds to dedicated projects on the islands and to design policy to foster local stakeholder involvement.

This recommendation goes in line with the **REPowerEU** measures and recommendations to **increase public acceptance of renewable energy projects**. See Annex A for more details.

[247] http://www.eihp.hr/

To encourage and foster local stakeholder collaboration and provide a platform for the local energy projects to develop, the national energy policy should encourage and require local stakeholder participation in energy projects on the islands. This can be encouraged either through requirements for a share of local ownership or additional financial support for projects that foster local stakeholder involvement.

With a focus on private financial initiatives, municipalities require a push from local stakeholders to get clean energy projects off the ground. Engagement of the local stakeholders including such private parties, is therefore important. Giving these stakeholders a better voice, will help them to influence municipalities and continue to promote mobilisation of private investment.
Based on the recommendation from the Taskforce for islands with regards to local needs and priorities, with joint effort regional coordinators, including regional island coordinator and local island governments should provide a platform where local stakeholders from different islands can connect, share ideas and find common projects. Currently initiatives such as the Island Movement[248] or the Green Energy Cooperative[249] have been creating such platform to unite stakeholders and raise awareness.

Regulatory best practice
Participation of local stakeholders in energy projects
Scotland – Local Energy Scotland developed a 'Community and Renewable Energy Scheme (CARES) Toolkit', a step-by-step guide for the process of developing a renewable energy project. A specific module of this toolkit deals with 'Shared Ownership', explaining some of the legal structures that exist such as, Owner operator, Commercial developer led, Joint ventures, Shared revenue, Split ownership, etc.
Spain, Balearic Islands - The Balearic Climate change and Energy Transition Act[250], approved in February 2019, requires the public administrations of the Balearic Islands to support participation of citizens, civil society organisations and local renewable energy communities in the deployment and management of renewable energy systems. More precisely, Article 49 of the Act defines that the local participation of at least 20% should be encouraged or obliged for RES projects with less than 5.0 MWp or more than 5 MWp, respectively.

Regular meetings can be useful for stakeholders to discuss their needs and priorities. This can also serve as a platform for trade associations. Municipalities, through the island committee, are then invited to join to hear how the different municipalities and regions approach clean energy. The information shared can serve as input for the guidelines (recommendation 1.3) and for the integrated plans (recommendation 3.1). Relevant parties include:

- EPEEF[251] for funding
- EIHP[252] and HAMAG BICRO[253] for support
- HERA for tariffs
- TSO (HOPS) / DSO (HEP-ODS)
- More potential stakeholders can be found through the partners of the EIHP: https://eihp.hr/partneri/.

Actors involved:

[248] https://islandmovement.eu/en/about-us/
[249] https://www.zez.coop/
[250] http://www.caib.es/sites/canviclimatic2/es/llei_de_ccite/
[251] https://www.fzoeu.hr/en/activities-of-the-fund/1325
[252] https://eihp.hr/
[253] https://hamagbicro.hr/

- **Ministry of Economy and Sustainable Development, Directorate for Energy**
- **Ministry of Regional Development and EU Funds, Directorate for Islands**
- **Regional coordinators, including regional island coordinators**
- **Local governments**
- Local stakeholders (Academia, Civil sector, Private sector)
- National/regional stakeholders (trade associations)
- TSO (HOPS), DSO (HEP-ODS)

3. Need for better integration of clean energy transition and spatial planning

The Croatian territory is split into the city of Zagreb and 20 counties, of which six have inhabited islands. The Spatial planning includes national spatial plans, regional (county level) and local spatial plans. Each of the lower-level spatial plans has to respect restrictions defined by the above defined spatial plan[254]. Two aspects of the spatial planning disproportionately affect islands' clean energy transition: energy strategy not being one that directly impacts the space (as shown in the first figure below) and significant coverage of the island land and surrounding sea area with the protected area (Figure 10 show in the second figure below). The land use and priorities are further regulated by the regional and local spatial plans. The Spatial Development Strategy of the Republic of Croatia[255] identifies the specifics and complexity of spatial planning on the islands, amongst others due to fragmentation of islands into multiple local governments and, even in case of Pag island, multiple counties. This creates additional complexities with spatial planning.

[254] https://rainman-toolbox.eu/wp-content/uploads/2020/06/RAINMAN_Spatial-Planning_Croatia.pdf
[255] https://mpgi.gov.hr/UserDocsImages/Zavod/Publikacije/Spaltial.Development.Strategy.pdf

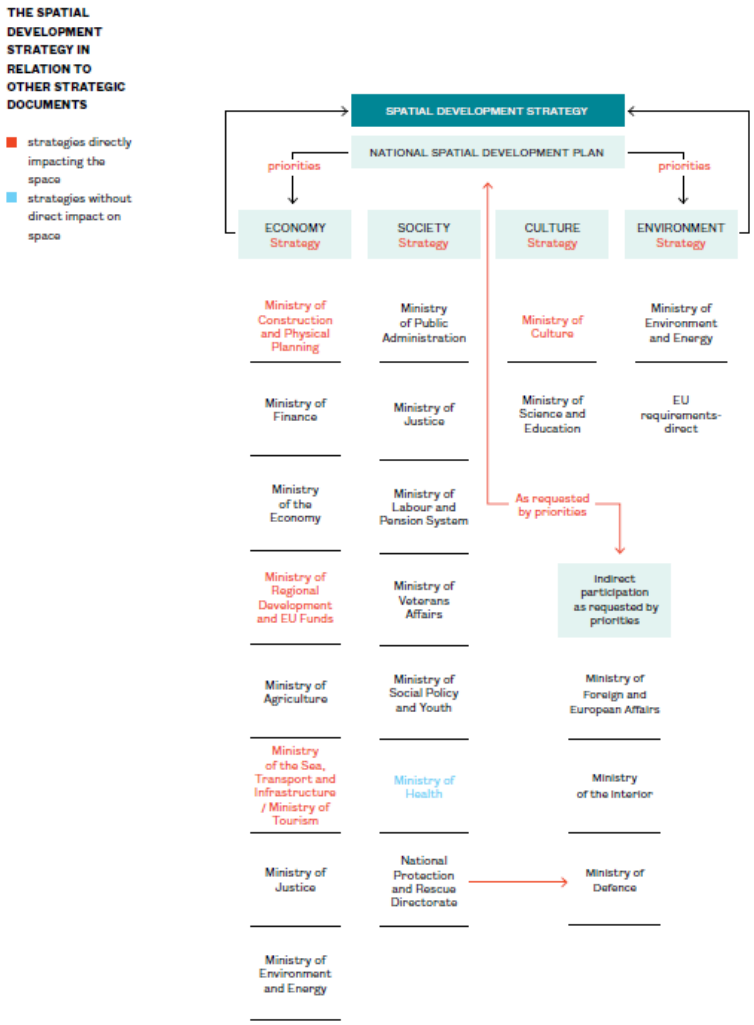

Figure 9 - Diagram showing the Spatial Development Strategy in Relation to other strategic documents and policies – Source

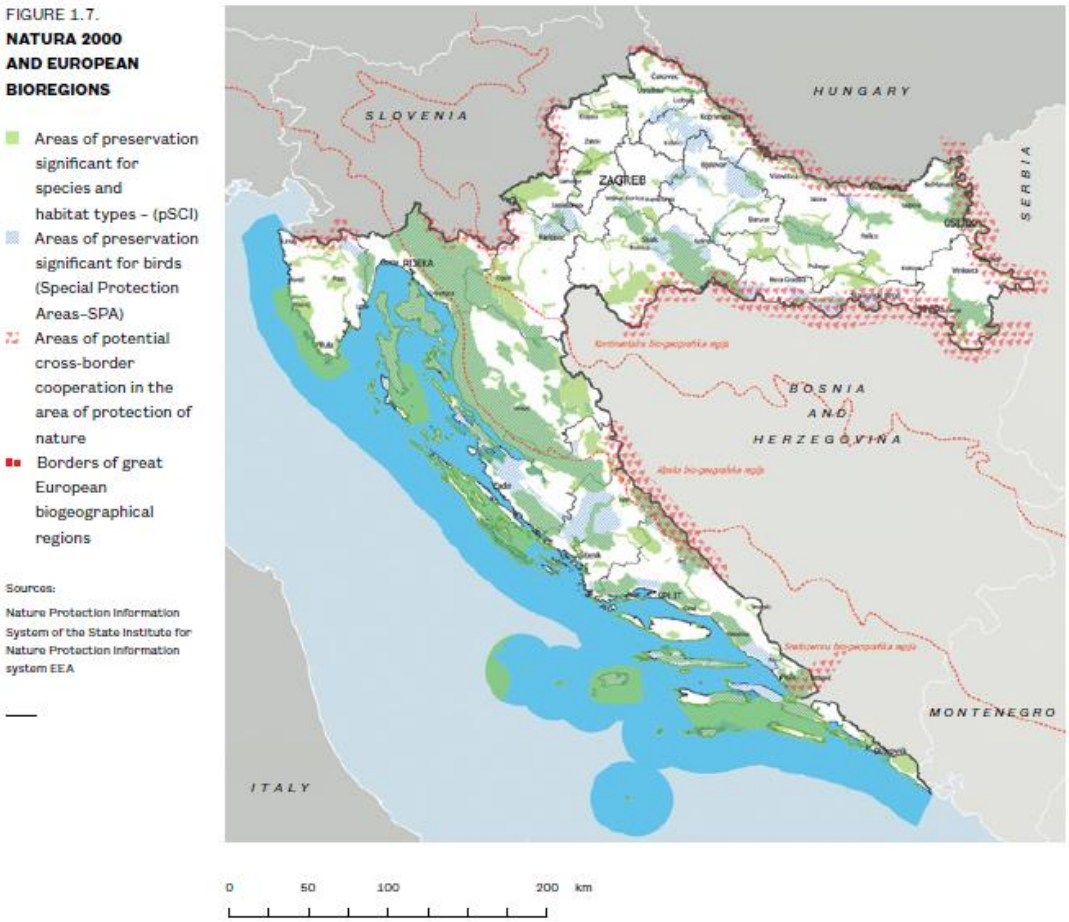

Figure 10 - Protected areas on the Croatian islands and around them as shown in the Spatial Development Strategy of the Republic of Croatia – Source

Spatial planning is a complex process which takes into account existing studies and input data from various aspects, including protection of nature and environment, demographic, sociological, landscape and tourism, agriculture, energy etc. The process of preparation of spatial planning documents asks for opinion from various relevant sectoral bodies. However, if the input data for optimal energy projects on the islands is not available then such aspects are not included.

Islands have limited land area and there are currently no guidelines in spatial plans on priorities between sectors (tourism, agriculture, environment, energy, etc.) for specific regions, taking into account the need for energy transition and mitigation and adaptation to climate change. With significant coverage of islands with protected areas and restrictions on type of areas where clean energy project can be implemented (such as no implementation of PV plants outside of the construction zones), it leaves whole islands without possible location for clean energy projects.

In addition lack of integration of clean energy projects, or areas where the projects can be possible in the spatial plans causes lengthy and complex procedure for planning of energy projects on the islands that involves various levels of government and sector opinions.

When it comes to marine spatial planning, different marine areas are covered by different local plans which include both terrestrial and marine areas. Currently there is no single marine spatial

plan, although the preparation of the State Plan for Spatial Development for the entire terrestrial and marine area (up to the external limit of territorial waters) of Republic of Croatia has started[256]. Different regional governments that include islands have different strategies towards the clean energy development of islands. For example, Zadar county and Sibenik-Knin county see clean energy projects as a priority and allow local municipalities to define specific areas where they could be implemented. In other regions, clean energy project areas are strictly defined on the regional level allowing little flexibility or choice to the local governments and stakeholders. Introduction of changes to the spatial plans require procedure that typically lasts more than two years, which can drastically slow down the project.

Moreover, generalised limitations for renewable energy projects which might be justified on the mainland, create significant barrier for the islands, considering the local context. For example, limiting installation of PV to the rooftops of public buildings, can mean no possible areas for PV installation on the islands where public buildings are under cultural heritage protection. Moreover, refurbishment of cultural heritage buildings is even more expensive due to the specific requirements.

Recommendation 3.1: Re-assess spatial planning guidelines and restrictions for clean energy projects on the islands

Existing protected areas and spatial restrictions result in lack of areas for implementation of clean energy projects. Therefore, we recommend that the national spatial planning guidelines for clean energy projects be re-assessed taking into account specifics of islands development, clean energy technologies and climate crisis. While such re-assessment might be needed for the whole territory of Croatia, climate change disproportionately affects islands which is why these areas should be treated with more attention. Such guidelines provided from the national level can be used to improve regional and local spatial plans and allow for simpler and faster adjustments of the spatial plans in the future, especially in light of go-to areas discussed in recommendation 3.2 below. In addition, other sectors, such as cultural heritage and environmental protection, can provide their updated guidelines for clean energy projects to be included in the spatial planning guidelines.

While different sectors can provide guidelines for integration of clean energy projects that should be included in the spatial planning guidelines, the main responsibility lies with the national, regional and local governments responsible for energy sector to provide priority areas (recommendation 3.2) as well as existing relevant national, regional and local energy plans which can be used as basis for spatial planning. Spatial planning guidelines for integration of energy projects with other sectors should keep in mind a holistic approach to energy transition needed for the islands sustainable development. A holistic approach facilitates the integration of several sectors including water management, waste management, transport (road and marine), electricity and heating/cooling infrastructure and generators, implement energy efficiency, create flexible electricity systems that provide security of supply and increase share of renewable energy projects. A holistic approach to energy planning should results in clear priorities of various sectors on the use of resources on the islands.

Actors involved:

- **Ministry of Physical Planning, Construction and State Assets**
- **Ministry of Economy and Sustainable development, Directorate for Energy**

[256] https://maritime-spatial-planning.ec.europa.eu/countries/croatia

- **Regional coordinators, including regional island coordinators**
- **Regional governments**
- Ministry of Regional Development and EU funds, Directorate for islands
- Ministry of Tourism and Sport
- Ministry of the Sea, Transport and Infrastructure
- EIHP
- Local governments
- Local stakeholders (Academia, Civil sector, Private sector)
- National/regional stakeholders (trade associations)
- TSO, DSO

Recommendation 3.2: Identify go-to areas on the islands

Integration of spatial planning and sectoral strategies and plans[257] is fundamental in identifying and accessing suitable land for renewable energy projects but is not a common practice, as discussed above.

In order to accelerate the energy transition on the islands, implementation procedure of clean energy projects needs to be simplified. We recommend identifying go-to areas specifically for one or more renewable energy sources on each of the islands. Go-to areas are those areas that are particularly suitable to develop any size renewable energy project. Go-to areas can be specific to technology and should be identified taking into account climate change, environmental protection, cultural heritage and other restrictions. Authorisation procedure for projects in go-to areas should be simplified.

The Ministry of Economy and Sustainable development keeps a Registry of renewable energy and high-efficiency cogeneration projects and plants[258]. Currently the Registry is not publicly accessible due to technical problems. As already recognised by the Ministry in the *Analysis with recommendations for removing barriers and simplification of administrative procedures that limit the use of renewable energy sources*[259] published in June 2022, the Registry needs to be updated and technically improved. We recommend that the Registry is expanded to include go-to areas for the RES projects, including the areas on the islands.

Aside from regional energy efficiency plans, there are currently no mandatory regional energy plans. Therefore we recommend the regional and local energy plans, proposed in recommendation 1.3, are aligned with identified go-to areas.

Go-to areas have to be prepared in coordination with DSO (HEP-ODS), and TSO (HOPS) where relevant, who would help identify possible areas where clean energy projects can be integrated and those that could benefit from smart grid solutions, such as flexibility, demand side management, aggregation or storage systems.

[257] Such as regional energy efficiency plans, regional development plans, regional and local implementation programs, proposed mandatory islands energy plans.

[258] https://mingor.gov.hr/o-ministarstvu-1065/djelokrug/uprava-za-energetiku-1999/registar-oiekpp/5332

[259] https://mingor.gov.hr/UserDocsImages/UPRAVA%20ZA%20ENERGETIKU/PROCJENA%20S%20PREPORUKAMA%20ZA%20UKLANJANJE%20PREPREKA%20I%20RASTERE%C4%86ENJE%20ADMINISTRATIVNIH%20POSTUPAKA%20KOJI%20OGRANI%C4%8CAVAJU%20VE%C4%86E%20KORI%C5%A0TENJE%20ENERGIJE%20IZ%20OBNOVLJIVIH%20IZVORA.pdf

The go-to areas should be integrated with the regional and local spatial planning documents. Consequently, projects in these zones should be subjected to fast-track and simplified permitting procedures and lightened environmental impact assessments in line with REPowerEU recommendations.

Collaboration with local stakeholders, through the Taskforce for islands will aid in forming which energy solutions are necessary, and best suited to the local or regional. Since go-to areas might be decided on the regional level, we recommend that engagement of local stakeholders, and significantly local municipalities, get a formal role in decision-making procedures. Stakeholder engagement should be a mandatory part of the legislative procedure, where relevant.

This recommendation goes in line with the **REPowerEU** measure to define '**renewables go-to areas**' which are particularly suitable areas for the installation of production of energy from renewable sources. See Annex A for more details.

Actors involved:

- **Ministry of Economy and Sustainable development, Directorate for Energy**
- **Regional coordinators, including regional island coordinators**
- **HEP (DSO)**
- **Ministry of Physical Planning, Construction and State Assets**
- **Regional governments**
- Ministry of Regional Development and EU funds, Directorate for islands
- Ministry of Tourism and Sport
- Ministry of Culture
- Ministry of the Sea, Transport and Infrastructure
- EIHP
- HOPS (TSO)
- Local governments
- Local stakeholders (Academia, Civil sector, Private sector)
- National/regional stakeholders (trade associations)

4. Lengthy permitting procedures for clean energy projects

Permitting procedure for RES plants in Croatia includes five main steps as indicated in Annex 3 of the Croatia country study[260]. The permitting procedure involves various permitting bodies on local, regional and national level. In addition, different permits are dependent on each other, which additionally complicates the process. For example, spatial planning is a prerequisite for acquiring many permits. Therefore, if the project is not foreseen in the spatial plan, amending the spatial plan can add at least one year for the complete permitting procedure.

In June 2022 Ministry of Economy and Sustainable Development published the *Analysis with recommendations for removing barriers and simplification of administrative procedures that limit the use of renewable energy sources*[261]. This document provides analysis of all permitting steps for

[260] Available online at: https://clean-energy-islands.ec.europa.eu/insights/publications/regulatory-barriers-croatia-findings-and-recommendations

[261] https://mingor.gov.hr/UserDocsImages/UPRAVA%20ZA%20ENERGETIKU/PROCJENA%20S%20PREPORUKAMA%20ZA%20UKLANJANJE%20PREPREKA%20I%20RASTERE%C4%86ENJE%20ADMINISTRATIVNIH%20POSTUPAKA%20KOJI%20OGRANI%C4%8CAVAJU%20VE%C4%86E%20KORI%C5%A0TENJE%20ENERGIJE%20IZ%20OBNOVLJIVIH%20IZVORA.pdf

implementation of RES projects on the territory of Croatia and provides recommendations for their simplification.

The permitting procedure is simplified for PV or solar thermal installed on the rooftops of buildings/houses and if the electricity is used for self-consumption (not connected to the grid). However, this includes only small installed capacities and cannot be the main driver for clean energy transition. Large RES projects are uncommon for the Croatian islands and even when planned can take three years or more to be realised (ex. Vis PV plant).

Specifically for Croatian islands, lack of clarity with regards to land ownership and cadastre[262] complicate the permitting and implementation process.

Such lengthy permitting procedures, pose a significant barrier to implementation, and are seen as risk to financing and investment.

Recommendation 4.1: Introduce simplified procedure and establish single permit
We recommend that the Ministry of Physical Planning, Construction and State Assets addresses the lengthy procedures by amending regulation so that less time is needed to set up clean energy projects. The above-mentioned analysis of administrative barriers and recommendations for RES projects, published by the Ministry of Economy and Sustainable development outlines ten measures which include improving coordination between energy and spatial planning, increasing capacity of all relevant institutions involved in the process and many more.

Priority should be given to easing the permitting requirements or providing fast and simplified procedures for clean energy projects. The Ministry should use existing simplified procedures for connections to the low-voltage network that does not require technical adjustments, and rooftop PV and net metering, as an example.

While Ministry of Physical Planning, Construction and State Assets has digitalised their spatial planning and construction permits[263], there should be a country wide effort for complete permitting process to be digitalised as much as possible.

A possible simplification can be to explore options for a single permit, for instance for any clean energy project on the islands or for a specific size and type of the project which is considered priority in strategic documents. Other additional recommendations for simplification of the procedures are:

- Modify some administrative requirements to allow the modification of projects already in the pipeline (allowing to take advantage of the most recent technological development).
- Simplify and harmonise the criteria across the different institutional levels (municipal, regional and national) and between sectors (energy, construction, environment, culture, tourism, agriculture etc.). This way procedure for specific size or type of plants can be streamlined and made faster and easier to follow through.

Regulatory best practice
Simplified procedure for RES projects

[262] Land on the islands is very often owned by multiple parties, of which some are located in Croatia and other in different countries and can be extremely hard to reach. .
[263] https://ispu.mgipu.hr/#/

Greece - introduced a simplified procedure for ground mounted PV plants with installed capacity lower than 1 MW where some steps in the authorisation process are removed (certification of the RES producer), while other are simplified to the single permit (administrative authorisation and gird connection).
Portugal – stopped requiring environmental impact assessments for new PV projects with a capacity of under 50MW[264].
Spain - has adopted a temporary accelerated procedure[265] for wind farms less than 75 MW and PV plants with installed capacity less than 150 MW. The efforts are aimed at accelerating clean energy transition.

Lengthy procedures indicate lack of human capacity at the key institutions, whose approval or assessment is needed to approve the project. The above-mentioned analysis sees this as one of the main barriers. In that case, the national government, together with regional and local government can design systematic programs to increase awareness and knowledge of existing human resources. In addition to measures recommended by the Ministry's analysis, we stress the need for capacity building regarding clean energy projects on regional and local levels.

This recommendation goes in line with the **REPowerEU** recommendation on permitting, which stipulates that Member States should **ensure sufficient and adequate staffing**, with relevant skills and qualifications, for their **permit-granting bodies** and environmental assessment authorities. See Annex A for more details.

Actors involved:
- **Ministry of Physical Planning, Construction and State Assets**
- **Ministry of Economy and Sustainable development, Directorate for Energy**
- Ministry of Regional Development and EU Funds, Directorate for Islands
- Ministry of the Sea, Transport and Infrastructure
- Ministry of Culture
- Regional governments
- Local governments
- Local stakeholders (Academia, Civil sector, Private sector)
- HOPS (TSO)
- HEP-ODS (DSO)

Recommendation 4.2: Set-up regional one-stop shops

A range of permits must be obtained for renewable energy projects including at the municipal level, regional and national level, distribution and transmission system operators, and the energy regulator. As the permitting procedure consists of many steps and parties involved, the government should organise regional level one-stop shops for clean energy project. The one-stop shop should be managed by a designated body, that is in collaboration with regional islands coordinator who is aware of the local situation. The applicant for a clean energy project provides needed documentation and communicates with only this one authority at the regional level. This authority is ultimately responsible for the distribution of the documentation to the relevant bodies for approval, the follow-up with those bodies to deliver their responses in time and to coordinate between those bodies and the applicant.

[264] https://www.pv-tech.org/portugal-to-waive-environmental-impact-studies-for-solar-plants-under-50mw/
[265] Until 24 December 2021. Accelerated procedure is directed to environmental permit for projects not located in Natura 2000 Network areas and in low to moderate sensitivity areas
https://www.pv-magazine.com/2022/03/31/spain-streamlines-permits-for-utility-scale-solar-supports-another-7gw-under-self-consumption/

This recommendation goes in line with the **REPowerEU** recommendation on permitting which stipulates that Member States should design a **one-stop-shop** for granting permits for renewable energy projects required in Directive (EU) 2018/2001 in such a way as to limit the number of authorities involved to what is necessary and maximise efficiency, taking into account public resources and the benefits of concentrating technological, environmental and legal expertise. See Annex A for more details.

A one-stop shops would make coordination (including with local stakeholders) and monitoring of clean energy projects easier. It would also help identify bottlenecks in implementation, understanding where there is a need for additional training or improved legislation. Moreover, a one-stop shop could function on the regional level, taking into account existence of regional islands coordinator and obligation for regional Island development plans. If energy plans on the level of an island or group of islands were mandatory, as previously recommended, the work of the one-stop shop could be easily guided to meet local need and priorities and national targets.

Actors involved:

- **Regional governments**
- **Ministry of Regional Development and EU Funds, Directorate for Islands**
  - **Regional island coordinators**
- **Ministry of Economy and Sustainable development, Directorate for Energy**
- Ministry of Physical Planning, Construction and State Assets
- Ministry for Culture
- Local governments
- Local stakeholders (Academia, Civil sector, Private sector)
- TSO, DSO

5. Lack of support for energy communities

Croatia has adopted the RES Act[266] that transposes the Renewable Energy directive 2018/2001[267] (RED II) when it comes to renewable energy communities[268], collective-self consumption within the same apartment building, peer-2-peer exchange and active consumer. The Electricity market Act[269] defines citizen energy communities and transposes the Electricity Market Directive 2019/944[270]. The Acts have been adopted by end of 2021. However, there is still need for clarity how the follow up regulation will support energy communities and other collective energy actions.
There have been actions to raise awareness about energy communities and possible involvement of local island stakeholders. However, there is still no clarity on what might be benefit for the local citizens and stakeholders in being part of an energy community. Such uncertainty leads to lack of activities from the local actors.

Recommendation 5.1: Prioritise regulatory framework and provide right incentives
Energy communities can help faster uptake of renewable energy or implementation of energy savings or efficiency measures among households and local stakeholders, who are usually less responsive. The involvement of local stakeholders increases the acceptance of the local community towards the renewable energy projects and helps bring benefits of such projects back to the local community. Therefore, prioritisation of development of the regulatory framework for energy

[266] https://www.zakon.hr/z/827/Zakon-o-obnovljivim-izvorima-energije-i-visokou%C4%8Dinkovitoj-kogeneraciji
[267] https://energy.ec.europa.eu/topics/renewable-energy/renewable-energy-directive-targets-and-rules/renewable-energy-directive_en
[268] https://www.energy-community.org/dam/jcr:3b5ce3f6-e5d8-4800-94b3-b1d691374a55/RECG-HROTE_052022.pdf
[269] https://narodne-novine.nn.hr/clanci/sluzbeni/2021_10_111_1940.html
[270] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32019L0944

communities should be one of the points of attention for clean energy transition on the Croatian islands. We recommend faster adoption of the regulation to provide clarity to the ecosystem in which energy communities should operate.

This recommendation goes in line with the **REPowerEU** measures and recommendations to **increase public acceptance of renewable energy projects**. This recommendation goes in line with the **REPowerEU** measures and recommendations to **facilitate citizen and community participation**. See Annex A for more details.

Energy communities and any community/local stakeholders' involvement in energy projects represents a new approach for both energy sector and local stakeholders. Therefore, to create more interest in energy communities and enable their uptake, the regulatory framework should provide support/benefit for energy communities involved in sustainable energy project. The support can be in the form of incentives for specific projects, tax benefits and technical assistance for starting an energy community.

Regulatory best practice

Simplified procedures for energy communities

Ireland - Energy communities do not need to have a planning permission before their grid application while commercial projects do need to have it, making it less burdensome. On top of that new bill has recently passed simplifying authorisation procedure for community projects[271].

As previously discussed, permitting procedures are lengthy and complex, which creates a barrier for an energy community to organise to have ownership of an energy project. Therefore, another important support mechanism would be simplified procedures for energy communities to realise clean energy projects.

Actors involved:

- **Ministry of Economy and Sustainable Development, Directorate for Energy**
- **National Regulatory Authority, HERA**
- **National electricity market operator, HROTE**
- Ministry of Regional Development and EU Funds, Directorate for Islands
- Local stakeholders (Academia, Civil sector, Private sector)
- TSO, DSO

Recommendation 5.2: Use regulatory sandboxes for community energy initiatives

Regulatory sandboxes[272] allow controlled environments for testing of new tariffs and innovative technologies. While regulatory sandboxes for testing of innovative technology for DSO[273] or TSO[274] are possible, regulatory sandboxes that allow for variation in tariffs cannot be implemented. We recommend developing regulatory framework to allow regulatory sandboxes with electricity tariffs, for special cases allowed by HERA.

[271] Planning and Development (Solar Panels for Public Buildings, Schools, Homes and Other Premises) (Amendment) Bill 2021 (https://www.oireachtas.ie/en/debates/debate/seanad/2021-06-28/18/).

[272] https://www.consilium.europa.eu/en/press/press-releases/2020/11/16/regulatory-sandboxes-and-experimentation-clauses-as-tools-for-better-regulation-council-adopts-conclusions/

[273] Metodologiju za određivanje iznosa tarifnih stavki za distribuciju električne energije https://narodne-novine.nn.hr/clanci/sluzbeni/2022_07_84_1283.html

[274] Metodologiju za određivanje iznosa tarifnih stavki za prijenos električne energije https://narodne-novine.nn.hr/clanci/sluzbeni/2022_07_84_1284.html

Regulatory sandboxes can be used to provide a legal basis for localised experiments within energy communities until the full legislation with relevant regulations is available. Regulatory sandboxes are ways for authorities, tasked with implementation and enforcing of specific legislation, to test innovative approaches and technologies in real-life situations through time limited implementation of except to the existing legislation. This way incentives for clean energy transition on the islands can be tested without a permanent change in legislation. It also gives room to evaluate the success of the experiment. Moreover, testing within regulatory sandboxes can help test different subsidies through tariffs or various ways of integration of community energy initiatives with the electricity grid. Croatian islands allow for a great opportunity for such sandboxes due to geographical constrains.

This recommendation goes in line with the **REPowerEU** measures on **innovation and sandboxing** requiring the Member States to promote the testing of new renewable energy technologies while applying appropriate safeguards. See Annex A for more details.

Regulatory sandboxes have been implemented in Italy[275], Austria, Germany and Netherlands for temporary tests of specific energy tariffs[276].

Actors involved:
- **Ministry of Economy and Sustainable development, Directorate for Energy**
- **National Regulatory Authority, HERA**
- Ministry of Regional Development and EU Funds, Directorate for Islands
- Regional and local governments
- Island coordinators
- Local stakeholders (Academia, Civil sector, Private sector)
- DSO

Recommendation 5.3: Foster local awareness raising and support

Currently, local stakeholders do not see the benefits of energy communities or community energy initiatives, as they are also not aware about many options that energy transition and clear energy technologies can offer. There are not many examples of community involvement in sustainable energy projects.

Therefore, there is a need for collaboration between national government, regional islands coordinators and islands to find a best way to raise awareness of the local stakeholder. We recommend having sustainable energy offices organised by local governments in coordination with the regional island coordinator, per island or group of islands where local stakeholders can receive information about the current regulation, possible support schemes and technical options on how they can get involved in energy transition on the islands. The offices can also work with the civil sector to disseminate best practices and provide more visibility to existing projects and activities on the islands.

Actors involved:
- **Local governments**
- **Regional island coordinators**
- Ministry of Economy and Sustainable development, Directorate for Energy

[275] https://www.iea-isgan.org/wp-content/uploads/2021/10/Regulatory-Sandbox-2.0_For-Publication.pdf
[276] https://fsr.eui.eu/regulatory-sandboxes-in-the-energy-sector-the-what-the-who-and-the-how/

- Ministry of Regional Development and EU Funds, Directorate for Islands
  - Regional Island coordinators
- Regional governments
- Local stakeholders (Academia, Civil sector, Private sector)

6. Lack of security of supply on islands due to seasonality

Following on the National Island Development Plan 2021-2027, Croatian islands are facing grid constraints due to the aging infrastructure that leads to the lack of security of supply during peak hours during the summer season. To cope with this, Croatian National Recovery and Resilience Plan[277] foresees investments in the energy transition on the islands with projects such as projects for transmission network improvements, distribution network improvements, modernisation of the network (which is foreseen for the whole country). For the islands, the improvement of the subsea cables towards Hvar-Korcula and Krk-Losinj-Cres are the main projects.

In Croatia in general, grid capacity for demand related reasons is socialised and centrally planned. It is based on 10-years development plans. Grid capacity upgrades are demand led. This means that the DSO projects how demand will grow and upgrades the grids accordingly. It is not based on potential generation capacity. So any (renewable) energy project, whether on an island or not, has to apply and then the grid could get upgraded if needed. It is acknowledged that a grid upgrade on the mainland would be cheaper, quicker and easier than the grid upgrades on islands. This general policy on grid development for generation thus has a disproportionate impact on (island) grid development.

Aside from improvement of the electricity grid lines, the security of supply on the islands can be improved with the implementation of storage and improving the flexibility of the local grids. The Electricity Market Act[278], adopted at the end of 2021, provides the legal framework for use of energy storage, aggregation and demand side flexibility. When it comes to energy storage, for storage behind-the-meter or if it is not connected to the grid and has less than 500 kW no energy license is needed for its operation. The aggregated and storage capacity above 500 kW can participate in the wholesale market. Current legislation represents a good starting point, where regulation and the clarity on how the implementation of storage systems will be supported is not clear yet.

Recommendation 6.1: Adapt grid development methodology from an ad-hoc approach to a future-oriented approach

If there is no availability on the grid, the developer of a renewable energy project either has to pay for the network to be upgraded or downscale the size of the project[279]. To allow Croatian islands to fully benefit from the renewable energy potential they have, this logic should be turned around and a more forward-looking grid development policy is needed. The DSO should analyse, together with the island stakeholder, at the potential production capacity from renewable energy on the islands and tailor its grid development policy to this anticipated growth. The anticipated growth should be reflected not only in relevant spatial plans (recommendation 3.1), RES registry including go-to areas

[277] https://ec.europa.eu/info/business-economy-euro/recovery-coronavirus/recovery-and-resilience-facility/croatias-recovery-and-resilience-plan_en
[278] https://www.zakon.hr/z/377/Zakon-o-tr%C5%BEi%C5%A1tu-elektri%C4%8Dne-energije
[279] Methodology for calculation of costs for connection to electricity grid (2022) https://narodne-novine.nn.hr/clanci/sluzbeni/2022_07_84_1282.html

(recommendation 3.2) and regional or local energy plans (recommendation 1.2), which should be taken into account for grid planning purposes.

While increasing flexibility of the grid to integrate future RES generation provides more secure and efficient grid, it is important to note that while grid planning should be forward-looking, the risk of planned RES projects not being implemented has to be taken into account.

This recommendation goes in line with the **REPowerEU** measure to ensure that plants for the **production of energy from renewable sources, their connection to the grid, the related grid itself or storage assets** are presumed to be of **overriding public interest** for specific purposes. See Annex A for more details.

Actors involved:

- **DSO (HEP-ODS)**
- **TSO (HOPS)**
- **National Regulatory Authority, HERA**
- **Ministry of Economy and Sustainable Development, Directorate for Energy**
- Regional and local governments
- Local stakeholders (Academia, Civil sector, Private sector)

Recommendation 6.2: Explore framework for renumeration of storage systems

While Croatia has prepared a good legislative basis for the storage systems, there is currently no subsidy or renumeration scheme for the use of storage systems. While most countries do not have specific policies promoting energy storage, development is ongoing as demonstrated in in Annex B – Examples of frameworks for Storage. We recommend the preparation of the regulatory framework for implementation and renumeration of storage systems. It is important to keep in mind the need for such systems on the Croatian islands and for assuring security of supply on the islands.

Islands can be best places where innovative technologies can be tested using regulatory sandboxes as explained before.

Actors involved:

- **Ministry of Economy and Sustainable Development, Directorate for Energy**
- **National Regulatory Authority, HERA**
- DSO, TSO (HEP-ODS)
- Regional and local governments

Conclusions for Croatia

The Clean energy for EU islands secretariat conducted an analysis of the legal and regulatory framework which supports clean energy project in Croatia. The resulting Regulatory inventory[280] is publicly available online. Based on the analysis of the inventory and information gathered via surveys and interviews, the Clean energy for EU islands secretariat has brought together all relevant stakeholders in Focus Groups and a National Stakeholder Meeting to identify barriers to the clean energy transition on Croatian islands, and formulated recommendations to overcome them. This mission has gained in importance since the publication of the #REPowerEU package.

Croatia has adopted new legislation in energy sector to align with EU directives and to provide enabling framework for support of clean energy transition. Croatia has a national Directorate for Islands and regional Island coordinators whose aim is to support islands sustainable development and create a connection among local, regional and national level to create policy with island needs and priorities in mind. Despite important recent measures to facilitate the energy transition, several major challenges for the clean energy transition on the Croatian islands remain. These barriers relate to strategic planning and coordinating islands energy transition among sectoral silos, lack of islands tailored energy planning and financial support, complex and long permitting procedures, lack of support for island stakeholder involvement in energy projects and grid constrains. To overcome these barriers, recommendations build on the existing regulatory framework and activities that are ongoing in Croatia.

Energy needs and priorities of Croatian islands should become more visible to the regional and national government. Better communication and collaboration with local stakeholders and those involved in the implementation of the projects on the islands is needed to create feedback-loop from local to national level. National energy planning should be clear on the role islands play in the overall energy transition.

Energy transition is key for mitigation and adaptation to climate change, which disproportionately affects the islands. Therefore, energy transition planning should be holistic, avoiding silo-like policy and planning on national and regional level. Spatial planning needs to better integrate energy planning, especially through identification of go-to areas for small and large projects, taking into account islands characteristics. Faster and easier authorisation and permitting should be possible for clean energy projects, in particular in these go-to areas.

In light of current energy crisis and climate change, energy transition and especially on the islands needs to be accelerated. To ensure quality clean energy projects are ready for implementation, the national and regional governments should support identification and preparation of such projects. This could be done through directed technical assistance and planned funding calls that can be accessed by island stakeholders.

Integration of clean energy projects in the electricity grid includes planning with both energy security and flexibility in mind. Therefore, support for pilot projects and technologies that increase flexibility and modernise the grid on the islands is needed.

[280] https://clean-energy-islands.ec.europa.eu/regulatory-inventory

Last, but not the least, the energy transition on the islands has to benefit island stakeholders. Involvement of local stakeholders in clean energy projects can be encouraged or mandated with regulation. The regulatory sandboxes can also be used on the islands to test innovative technical, tariff, or regulatory framework.

These recommendations answer to the most pressing barriers and should be implemented in the short-term. In the longer term the involvement of various stakeholders through a more permanent Taskforce for islands with participation from local to national level is needed.

Greece

The first Chapter of this Greece country section provides an overview of the existing policy and legislation for clean energy on Greek islands. The second Chapter contains the identified legal and regulatory barriers, based on the survey and the interviews, and the recommendations, based on the Focus Group Meetings and the National Stakeholder Meetings.

Policy and Legislation for clean energy on Greek Islands

Introduction to the Greek Energy sector – Relevant Actors

Throughout the study several key stakeholders in the Greek Energy sector, relevant for energy transition on the islands, will be referred to. Therefore hereunder a short overview of these actors and their role is given.

In Greece, energy policy is mainly the responsibility of the **Ministry for environment and energy**[281]. When it comes to islands and marine policy, the **Ministry for shipping and island policy**[282] is the main actor. As the energy transition affects other sectors and allows for decentralisation of energy sector, other sector policies and regional and local government bodies and stakeholders, such as academia, civil sector, private sector, are also relevant and important for implementation of measures.

When it comes to the energy policy and regulation, The Ministry of environment and energy is supported by the **Regulatory Authority for Energy** (RAE)[283]. In Greece, the energy sector policy and organisation of the sector is different between, on the one hand, the mainland and islands that are electrically interconnected with the mainland, and, on the other hand, islands that are not electrically interconnected with the mainland, so called non-interconnected islands (NIIs).

When it comes to the electricity market, **Hellenic Energy Exchange S.A**. (HEnEx)[284] has been designated by RAE to act as the electricity market operator and is currently operating the day-ahead market. In addition, The **Administrator of Renewable Energy Sources and Guarantees of Origin** (DAPEEP S.A.)[285] manages the Renewable Energy Sources (RES) and High-Efficiency Cogeneration of Electricity and Heat (CHP) of the National Interconnected System, as well as the Guarantees of Origin of electricity produced by RES and CHP. When it comes to NIIs, the management of operation, market operation and the electricity system is the responsibility of the **Hellenic Electricity Distribution Network Operator** S.A. (HEDNO)[286].

The Greek electricity grid is owned and managed by two companies. The electricity transmission system is owned and operated by the **Independent Electricity Transmission Operator** S.A. (ADMIE)[287]. The Electricity distribution system is owned and **operated by HEDNO, subsidiary or PPC**. The Greek electricity sector includes many power producers and suppliers.

[281] https://ypen.gov.gr/
[282] https://www.ynanp.gr/el/
[283] https://www.rae.gr/?lang=en
[284] https://www.europex.org/members/henex/
[285] https://www.dapeep.gr/etairia/orama-kai-skopos/
[286] https://deddie.gr/en/deddie/i-etaireia/ruthmistiko-plaisio/
[287] https://www.admie.gr/i-etaireia/omilos-admie/admie-ae

Greek islands and their governance

Greece has more than 6 000 islands, of which 227 are inhabited. Some islands are interconnected to the mainland electricity system and some are not, the so-called Non-interconnected islands (NIIs). The latter consist of 28 autonomous systems. Crete is one of the most populous islands in the Mediterranean (8 336 km² - 634 930 inhabitants). It is considered an interconnected island[288] as of 1 November 2021. Besides Crete there are around 25 medium-sized islands (100-1 000km²) and a large number of small islands (below 100 km²). Evia, Crete, Rhodes, Corfu and Lesvos account for almost 80% of the islands' population[289,290]. Greece is currently carrying out interconnection plans, notably for Crete and several islands of the Cyclades. 15% of the total population of Greece lives on the islands. This corresponds to 1 650 000 people.

The country is split into 13 regions, of which four cover only islands, specifically the region of Crete, Ionian islands, North Aegean and South Aegean, while four other regions include some islands and part of mainland such as Attica, Macedonia and Thrace, Thessaly and Central Greece and Peloponnese, Western Greece and Ionian. The regions plan and implement policies. Public authorities on islands are managed in the same way as other administrative entities in Greece.

The Greek islands have been important economic, commercial and cultural centres with a long history. It is worth noting that the Minoan civilisation in Crete as well as the Cycladic civilisation are considered the first civilisations in Europe. Hence Greek islands are an important and crucial part of Greek and European culture and identity.

General policy

The **Integrated National Energy and Climate Plan for Greece** for the period 2021-2030 aims to increase the overall share of renewable energy sources (RES) in its gross final energy consumption to 35% by 2030. In the electricity sector, the share of renewables will rise to at least 60% by 2030. In the heating and cooling sector RES share in gross final energy consumption will rise to 42.5% by 2030 (30.6% in 2020) and RES share in final consumption for transport will rise from 6.6% in 2020 to 19% in 2030. Installed capacity of RES to total generation capacity was over 18 % in the NII region in 2019[291].

Regarding **Strategic Energy Planning**, Greece acknowledged in its Ten-Year Development Plan[292] that islands are crucial for the energy transition and the national economic growth by dedicating separate sections of the plan to the issues that islands are facing[293]. The proposed solutions focus on the interconnection of the islands with the mainland. If such solution is not feasible due to financial or technical limitations, the development of self-sufficient renewable energy systems will be encouraged. Such solution would bring a drastic reduction of the of electricity generation costs, replacement of thermal with renewable energy plants and numerous other environmental benefits.

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[288] Defined as small connected system as defined by Directive EU 2019/944 https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019L0944&from=EN

[289] Katsoulakos, N.M. (2019) An Overview of the Greek Islands' Autonomous Electrical Systems: Proposals for a Sustainable Energy Future. Smart Grid and Renewable Energy, 10, 55-82. https://doi.org/10.4236/sgre.2019.104005

[290] https://www.statistics.gr/2011-census-pop-hous

[291] Katsoulakos, N.M. (2019) An Overview of the Greek Islands' Autonomous Electrical Systems: Proposals for a Sustainable Energy Future. Smart Grid and Renewable Energy, 10, 55-82. https://doi.org/10.4236/sgre.2019.104005

[292] Anexartitos Diacheiristis MetaforasIlektrikis Energeias' (ADMIE) draft Ten-Year Development Plan (TYNDP) 2022–2031, released in January 2021

[293] Tsagkari, Marula & Jusmet, Jordi. (2020). Renewable Energy Projects on Isolated Islands in Europe: A Policy Review. International Journal of Energy Economics and Policy. 10. 21-30. 10.32479/ijeep.9683.

In parallel, the GR-eco islands initiative[294] for the clean energy transition of islands and other independent projects are being implemented to foster energy transition on the islands. The new Climate Act[295] (L.4936/22) has been adopted in May 2022. This act obliges all municipalities, including island municipalities, to have local Plan for Emissions Reduction in line with National Energy and Climate Plan by 31/03/2023. It also forbids the use of oil for power production on the islands (unless there is a risk for the energy supply security for the island) starting from 1/1/2030.

Greece has adopted its Territorial Just Transition Plan for the islands of the North Aegean, South Aegean and Crete[296]. A series of actions are foreseen for these islands including energy transition and climate neutrality, circular economy and efficient use of resources, sustainable urban mobility etc.

Isolated island systems have higher investment and operating costs for energy generation, which normally should have been reflected on the electricity prices the end-consumers pay monthly. However, end-consumers in the whole territory of Greece pay Public Service Obligation (PSO) charges on their electricity bills intended to cover the higher price of electricity production on the Greek islands. This system is known as the system of **unified prices**. The PSO charges represent an amount which is annual estimation that is being collected at the Special Account for PSO managed by The Hellenic Electricity Distribution Network Operator (HEDNO) that has a role of the Operator of the Special Account of PSO.

In an effort to foster the acceptance of the renewable energy projects, in 2018[297] the Greek government proposed a return % share of the renumeration of the RES producers to the local stakeholders located in proximity to the renewable energy projects[298], based on Art 25 of the Law 3468/2006. This has been slightly modified starting with 2023 with Law 4964/2022[299] so that RES and hybrid stations[300] provide either €2/MWh of produced electricity injected into the grid or 3% of the remuneration for the electricity injected into the grid. The collected amount is split so that 40% is returned to the end-consumers living in the area of RES plants via the energy suppliers and 60% is returned to the municipalities that are in proximity of RES plants. The Operator of the Renewable Energy Sources and Guarantees of Origin (DAPEEP) is responsible for managing the RES special account for the interconnected part of Greece. For NIIs HEDNO is responsible for these operations.

In Greece, energy suppliers are obliged to offer uniform pricing to all end-customers across the Greek territory, according to Law 4001/2011 Art. 58B on 'Ensuring uniform pricing of electricity consumers'. Each energy supplier is free to offer its own retail price, but is obliged to offer the same price to both the end-customers of the interconnected system and the non-interconnected islands.

There are no **regulated monopolies.** The electricity supply and electricity generation on the islands are fully deregulated. However, due to prior regulations[301] the Public Power Corporation (PPC) is the main energy generator for the islands and currently owns and operates all of the oil-fired

[294] https://clean-energy-islands.ec.europa.eu/news/gr-eco-islands-turning-greek-islands-models-green-sustainable-development
[295] https://www.taxheaven.gr/law/4936/2022
[296] https://ec.europa.eu/commission/presscorner/detail/en/ip_22_3711
[297] Art 25 of the Law 3468/2006
[298] https://www.researchgate.net/publication/343565822_Renewable_Energy_Projects_on_Isolated_Islands_in_Europe_A_Policy_Review
[299] Articles 87 and 94 of Law 4964/2022 https://www.taxheaven.gr/law/4964/2022
[300] Article 87 part 2 of Law 4964/2022 indicates four type of producers exempt from this fee, including RES in buildings, RES owned by prosumers, PV with installed capacity less than 1 MW and other PV plants, as indicated in the article.
[301] PPC was the single national electricity company before unbundling and opening of electricity market.

thermal power plants on the islands. In addition, PPC, PPC RES (renewable energy generator) and HEDNO are part of the PPC Group.

Renewable energy

Support systems

As mentioned above, one of the most crucial distinctions with regard to RES in Greece is between mainland grid and interconnected islands and non-interconnected islands. This differentiation is crucial as it affects the type and level of support, for which RES plants are eligible. RES projects in Greece on non-interconnected islands can benefit from a Feed-in Tariff, regardless of the capacity (size) of the project, whereas on interconnected islands there is a maximum threshold of 400kW[302]. In addition, RES on interconnected islands that participate in the electricity market may benefit from a Feed-In Premium tariff, while bigger PV (>500kW) and onshore wind plants (> 3MW) can take part in tenders. There is also a subsidy for RES plants on non-interconnected islands employing two or more RES technologies (hybrid plants[303]).

There are also some special incentive and subsidy schemes in place for islands specifically. For instance, there is currently a national subsidy scheme, based on the Ministerial Decision 77472/520[304], running (GO ELECTRIC[305]), to promote the e-mobility uptake at a national level by providing subsidies to citizens, taxis and legal entities for purchase of EVs, electric motorcycles, e-bikes or electric scooters and subsidies for natural persons for installation of private home chargers. GO ELECTRIC 2, as a continuation of the subsidy program, has started in July 2022. Specifically for the islands, the scheme provides additional incentives for a legal entity to purchase up to six vehicles (instead of three vehicles for the rest of the country) and increased tax benefits (greater reduction of taxable income for legal entities that are participating in the scheme and are based on islands). Another special subsidy scheme for the uptake of e-mobility runs also specifically for the island of Astypalea, with even higher subsidies.

Greece supports solar PV, onshore wind power, hydro power and biogas/biomass, with a focus on hybrid plants[306] for non-interconnected islands. In the heating and cooling sector, solar thermal, biomass, aerothermal, geothermal and combined heat and power (CHP) plants are incentivised for use for self-consumption. Different support schemes are given for citizens for their own use or building use and different for the private companies or cooperatives. Incentives are not given for district heating or cooling infrastructure on the islands.

Generally available support schemes, whose details are provided in the Regulatory inventory[307], are:

- Subsidies are offered to small hydro power plants, CHP plants, hybrid plants and other RES only for autonomous production (RES E) as well as for geothermal, aerothermal heat pumps and biomass (pellets), solar thermal technologies, solar water heaters and solar heating (RES H&C).

[302] In case an open energy market is established in a non-interconnected islands, the RES stations >400kW must be automatically remunerated with a feed-in-premium scheme (according to the Law 4414/2016, Art. 8 and Art. 11)
[303] Hybrid plants terminology is reserved only for Non-interconnected islands. While for interconnected system this is referred to as RES plus storage system. As defined in the Law 3468/2006,
[304] Ministerial Decision 77472/520, published in Official Journal B 3323/07.08.2020 based on the Law 4710/2020 on promotion of e-mobility.
[305] https://kinoumeilektrika.gov.gr/
[306] According to the Law 3468/2006. Hybrid power systems (HPS) are plants that use at least one RES technology and a controllable unit with storage. Additionally, the maximum RES production must be at most 120% of the storage installed capacity.
[307] https://clean-energy-islands.ec.europa.eu/index.php/regulatory-inventory

- Tax relief is offered to small hydro power plants, CHP plants, hybrid plants and other RES only for autonomous production.
- Feed-in tariff - RES plants below 400 kW on interconnected islands and all RES on non-interconnected islands are eligible for a Feed-In Tariff.
- Premium tariff (Feed-In Premium) - RES and CHP plants on interconnected islands participate in the electricity market and may be awarded with a sliding feed-in premium.
- "Virtual net-metering" is available for city/regional councils, schools, universities, farmers, farming associations and Energy Communities.
- Subsidy for purchase of EVs (GO ELECTRIC) by different categories (natural persons, enterprises, taxi owners) and subsidy for installation of EV chargers for natural persons.
- The production of biofuels is eligible for subsidy or tax relief. A biofuel quota scheme is in place. However, it is not applicable to islands (both interconnected and non-interconnected).

Regulatory best practice
Greek islanders can benefit from energy efficiency funding. First, an energy audit needs to be carried out. After such an audit islanders can apply for funding which can cover between 30% and 70% of the price.

Grids
RES are prioritised in the electricity network, while there are curtailment[308] provisions for interconnected wind power plants. ADMIE (TSO) and HEDNO (DSO) are primarily the responsible authorities for the grid procedure. There is one distribution system operator (HEDNO)[309]. The country has a smart meter penetration rate of 2.6%. The electricity supplier switching rates for household customers in 2018 was 4.5%.

RES projects authorisation process
Greece uses **tenders and auctions** for large projects and **application/approval process** for smaller projects. There are five main steps in the authorisation procedure of renewable energy projects in Greece. They include site selection process, certification of the RES producer, administration authorisation, grid connection permit and other (including installation licence and operation licence). The simplified procedures have been implemented for the step: licensing and permitting (first legal package) and grid connection permit (Law 4951/2022 adopted in July 2022). Within this process the simplified licensing and permitting procedure exists for RES plants with installed capacity less than 1 MW. In addition, Law 4951/2022 simplifies the grid connection permit, going from a two-step procedure to a single step and digitalizing the DSO application procedure starting from August 2022. The details on the permitting procedures are provided in Annex 2 of the Greece country study[310].

In specific cases, renewable energy projects can benefit from special permits. Some cases include the project on the islands of Astypalaia and Agios Efstratios which run due to the Law 4495/2017, Art 151 (defining Special pilot projects (SPPs)) and Art 152, respectively.

[308] Curtailment is the reduction in electricity generation. It typically occurs because of transmission congestion or lack of transmission access, but it can also occur for reasons such as excess generation during low load periods that could cause baseload generators to reach minimum generation thresholds
[309] In addition to HEDNO, Athens International airport electricity grid is operated by its own DSO, according to Article 131 of Law 4001/2011.
[310] Available online at: https://clean-energy-islands.ec.europa.eu/insights/publications/regulatory-barriers-greece-findings-and-recommendations

Supported energy efficiency measures

Energy efficiency measures are promoted/supported for refurbishment of buildings for citizens, for replacement of public lighting for public authorities and for improvement of energy efficiency in industry.

Supporting policies

Greece established Private Vocational Training Centres, which can offer specific seminars for the accreditation of RES installers. Apart from that, universities offer within their curriculum specific training courses on RES. Public sector authorities are supported by an “Electra Fund” in implementing energy efficiency measures.

Self-consumption and community energy

Greece introduced the concept of energy communities into its legislation in 2018[311]. Energy communities can benefit from special provisions such as participating in the EU projects, owning RES plants and operating virtual net-metering. The legislation has been undergoing revision since 2021.

To this date, the concept of prosumer is not legally defined. However, the concept of autonomous producer bears many similarities with the notion of prosumer. The net-metering scheme can be used by the autonomous producers that use following technologies: PV, small wind turbines, biogas, biomass/bioliquids, CHP, and small hydroelectric stations[312]. Moreover, all RES technologies used by autonomous producers for self-consumption can receive subsidies.

[311] Law N4513/2018
[312] According to ministerial decision GOG B' 759/05.03.2019 (amended by GOG B' 3971/30.08.2021 and GOG B' 6287/29.12.2021)

Identified barriers and recommendations to overcome them

The Clean energy for EU island Secretariat's Think tank has identified legal and regulatory barriers, based on the detailed assessment of the current regulatory framework and consultation with relevant Greek stakeholders through a survey and interviews (see Annex 1 of the Greece country study[313] for a detailed assessment). For each of the regulatory barriers, the Secretariat identified multiple recommendations. Those barriers and recommendations were presented and discussed within the two online Focus Group Meetings and in-person National Stakeholder Meeting (see Annex 3 of the Greece country study[314] for more information).

Regulatory barriers are presented in the order of their priority for energy transition on the Greek islands. Some of the barriers that were identified via the surveys and interviews are barriers that exist both on the islands and on the mainland. In the recommendations below, the focus lies on the concrete issues encountered by islands with these regulatory barriers.

The table below represents the list of barriers (marked in dark blue) ordered based on their priority, and the proposed recommendations (marked in white).

Table 5 - Barriers and Recommendations - Greece

Barrier 1. **Lack of clear strategy for energy transition on the islands, lack of coordination and monitoring of implementation**
Recommendations:
1.1 Set-up an agile national Island Taskforce for clean energy transition on the islands
1.2 Ensure a holistic approach to energy transition on the islands and provide capacity building
Barrier 2. **Lack of island specific energy planning and integration with spatial planning**
Recommendations:
2.1 Reassess spatial planning guidelines for implementation of clean energy projects on the islands
2.2 Adopt national and regional master plans for clean energy projects
2.3 Mandate adoption of island or group of islands energy plans
Barrier 3. **Complex and long permitting procedure for RES projects**
Recommendations:
3.1 Further simplify permitting procedure for RES projects
3.2 Set-up a regional one-stop shop
3.3 Account for island energy and economy conditions when defining procedures for clean energy projects
Barrier 4: **Lack of clarity regarding short and mid-term actions to allow clean energy transition and ensure security of supply on the islands**
Recommendations:
4.1 Develop framework for uptake of energy storage systems and demand-side response

[313] Available online at: https://clean-energy-islands.ec.europa.eu/insights/publications/regulatory-barriers-greece-findings-and-recommendations
[314] Available online at: https://clean-energy-islands.ec.europa.eu/insights/publications/regulatory-barriers-greece-findings-and-recommendations

4.2 Allow installation of RES with flexible assets

4.3 Use regulatory sandboxes for testing of innovative solutions

Barrier 5. **Bureaucracy and administrative burden for the community energy initiatives**

Recommendations:

5.1 Simplify the procedures and requirements for energy communities

5.2 Create a platform for knowledge transfer and support

Barrier 6. **Clean energy project subsidies equalise interconnected islands and mainland**

Recommendation:

6.1 Re-evaluate support schemes for interconnected islands

Barrier 7: **The regulated price for electricity generation in non-interconnected islands hinders clean energy transition**

Recommendation:

7.1 Revise the system of regulated reimbursement of operation costs

1. Lack of clear strategy for energy transition on the islands, lack of coordination and monitoring of implementation

Both the energy sector strategies and the long-term energy planning are highly centralised. The National Energy and Climate Plan (NECP) for Greece does not provide a clear strategy or vision for energy transition on the islands. The NECP identifies the transmission interconnection for the islands and reduction of carbon emissions for thermal generation as the main measures for the islands. On the one hand, the Ministry for environment and energy is in charge of strategic planning of energy transition for the whole territory of Greece, including the islands. On the other hand, one of the main aspects of energy consumption, marine transport, is coordinated by the Ministry for shipping and island policies. There is lack of clear and unified strategy for how the islands will go from the current state to sustainable and decarbonised islands with secure energy supply (i.e. specifically in regard to existing generation, priority clean energy technologies, energy efficiency, road or marine transport, sector coupling project (water/waste and energy)).

There are many ongoing activities related to the islands. They include: significant investments in the transmission interconnections; digitalisation and upgrades of the distribution network; paused realisation of more than 95 GW of approved RES projects[315], accelerated action for implementation of hybrid plants on the non-interconnected islands, funding for clean energy transition on the islands through the GR-eco initiative[316] (e.g. Chalki[317]) and innovative and good practice projects on few islands (such as Tilos[318], Astypalea[319], Crete[320], Sifnos[321], Agios Efstratios[322], Ikaria[323]). Unified national coordination of these activities and funds, coordination of various sectoral policies affecting islands on the national, regional and local level, monitoring of implementation and

[315] https://balkangreenenergynews.com/95-gw-of-renewable-projects-compete-for-completion-in-greece/
[316] https://www.pv-magazine.com/2021/11/05/greece-launches-gr-eco-islands-initiative-with-e100-mlllion-pot/
[317] https://www.dimoschalkis.gr/anakoinoseis/1st-gr-eco-island-chalki/
[318] Kaldellis, J.K. Supporting the Clean Electrification for Remote Islands: The Case of the Greek Tilos Island. *Energies* **2021**, *14*, 1336. https://doi.org/10.3390/en14051336
[319] https://smartastypalea.gov.gr/
[320] https://minoanenergy.com/en/
[321] https://sifnosislandcoop.gr/en/
[322] https://www.aistratis-greenisland.gr/the-project/
[323] http://www.ikaria-pnp.com/naeras.htm

contribution towards the national goals (NECP), scaling up and replication of successful projects, institutional support and capacity building are currently missing. Moreover, there is lack of exchange of lessons learned from completed projects to allow for minimisation of the implementation mistakes in the future and to integrate them in further strategic planning on national level.

Energy transition as a process includes implementation of, often, decentralised clean energy technologies, as well as the need for inclusion of such projects into the local or regional plans (spatial, climate etc.). This requires not just clear guidelines from the national government, but also know-how and capacity that local and regional authorities are often missing.

Recommendation 1.1: Set-up an agile national Islands Taskforce for clean energy transition of the islands

Islands represent specific energy systems for Greece and therefore require a specific strategy and implementation for the energy transition, in comparison to the mainland. Due to the above-mentioned reasons, we recommend improved coordination and monitoring of the energy transition on the Greek islands. We recommend creating an agile Islands Taskforce on the national level. The goal of the Taskforce would be to represent island needs, priorities and characteristics regarding energy transition and help shape national energy and islands policy.

Currently there are existing committees such as the Inter-ministerial committee for NECP and the Committee for implementation of GR-eco initiative, formed based on the Climate Law 4936/2022 adopted in May 2022. While both of these committees address important aspects foreseen under a potential Island Taskforce, such as intersectoral approach to national energy planning and intersectoral approach to implementation of energy transition action under GReco initiative[324], they still cover only part of the needed activities to ensure full coordination and monitoring of energy transition on the Greek islands. To ensure that formation of the Islands Taskforce does not entail organising yet another committee, the government needs to ensure Island Taskforce is coordinated with the existing committees and there is a clear distinction in mandate.

As discussed above, due to many ongoing initiatives aimed at energy transition on the Greek islands, the Islands Taskforce is urgently needed to represent local needs and priorities in these processes and ensure lessons learned from on-the-ground implementation are taken into account. The Taskforce is needed to coordinate between different sector policies on the national level and between national, regional and local level. Moreover, in addition to the representatives of different national, regional and local authorities, the Taskforce would have to include representatives of civil society, private sector, local stakeholders, relevant energy companies and academia. Most importantly the Taskforce should include experts directly involved with implementation of the projects on the ground. The Taskforce would be responsible for defining the short-, mid- and long-term strategy on how national goals identified in NECP can be transferred to the regional and local goals and actions, relevant for the islands.

In addition, the Taskforce should be responsible for:

- Monitoring and evaluating the implementation of clean energy projects in regards to foreseen targets.

[324] Article 21 of the Climate Law 4936/2022 https://www.taxheaven.gr/law/4936/2022

- Coordinating various funding to find the balance between local needs and highest impact.
- Identifying bottlenecks and gaps in implementation of projects on the ground and coordinating with responsible bodies to overcome them.
- Providing support through funding, training/capacity building, technical assistance or advice to local or regional governments, energy communities and local stakeholder in planning and implementation of clean energy projects.
- Provide guideline documents to national, regional and local government for implementation of new procedures[325].
- Provide a platform for exchange of experiences and lessons learned from completed and ongoing projects, among various islands and island stakeholders.

The **RES Simplify** report contains some useful recommendations and examples for **political backing of RES**. See Annex A for more details.

Actors involved:

- **Ministry for environment and energy**
- **Ministry for shipping and islands policy**
- **Ministry for development and investment**
- Ministry for finance
- Ministry for infrastructure and transport
- Regional and local governments
- HEDNO
- TSO
- Local stakeholders
- Academia
- Private sector representatives

Recommendation 1.2: Ensure holistic approach to energy transition on the islands and provide capacity building

There is a need for a holistic approach when dealing with the energy transition, as part of sustainable development of islands. A holistic approach connects the topics of energy, transport (road and marine), water and waste management, making use of the synergies that emerge towards decarbonisation. When it comes to energy, the focus should be on understanding how to deal with existing infrastructure and generators, implement energy efficiency, create flexible electricity systems that provide security of supply and increase share of renewable energy projects. Finally it is important to integrate energy transition planning with the marine spatial planning and other uses of the sea surrounding the islands. In this process identification of actions that allow for sector-coupling (e.g. energy and water, waste, transport, tourism, agriculture or culture) should be encouraged.

With the new Climate Law[326] adopted, the regional and local authorities are tasked with adopting a plan for adaptation to climate change and municipal emission reduction action plans, respectively. In addition to existing sectoral policies and spatial plans, it is important to provide guidelines to regional and local authorities on how topics of energy transition, energy efficiency, climate change,

[325] Based on the experience from implementation of projects on the ground.
[326] https://www.taxheaven.gr/law/4936/2022

spatial planning etc. fit together and can be harmonised to ensure united planning and synchronised implementation. The Taskforce for clean energy on the islands could be tasked to identify and prepare needed guidelines. However, even without the existence of the Taskforce (recommendation 1.1), the Ministry for environment and energy should identify a body tasked to do this. In addition, capacity building is needed for local and regional stakeholders with regards to holistic approach to energy transition planning and implementation, as this represents a change from the separate sectoral (silo) approach currently implemented.

The **RES Simplify report** contains some useful recommendations and examples to **ensure that responsible authorities are fit for purpose**. See Annex A for more details.

Lastly, it should also be assessed if additional staffing in the administrative authorities is required or temporary posts or technical assistance to the local governments is needed.

This recommendation goes in line with the **REPowerEU** recommendation on permitting, which stipulates that Member States should **ensure sufficient and adequate staffing**, with relevant skills and qualifications, for their **permit-granting bodies** and environmental assessment authorities. See Annex A for more details.

Actors involved:

- **Ministry for environment and energy**
- **Ministry for shipping and islands policy**
- Ministry for rural development and food
- Regional and local governments
- HEDNO
- Local stakeholders
- Academia
- Private sector

2. Lack of island specific energy planning and integration with spatial planning

National legislation for spatial planning in Greece has been significantly changed in the last decade with modifications introduced on an almost annual basis[327]. The most recent changes were introduced with the Law 4759/2020 on "Modernization of Spatial and Urban Planning Legislation" [328]. The current system foresees existence of local spatial plans developed on municipality level which regulate land use for a territory of a municipality[329]. Greek islands lack local spatial plans, and some do not have modern cadastral plans. Preparation of local spatial plans is foreseen to be implemented under the approved National Recovery and Resilience Plan (NRRP) pillar on "Energy upgrade of the country's building stock and spatial reform"[330]. However, the plan only foresees this to be done as a priority for touristic areas by 2024.

Moreover the Marine spatial plan for Greece is still in development[331]. It is foreseen to be implemented within the NRRP's Green transition funding. Integration of clean energy planning within the Marine spatial plan is yet unclear.

[327] https://fig.net/resources/proceedings/fig_proceedings/fig2021/papers/ts08.4/TS08.4_perperidou_11177.pdf
[328] https://www.economia.gr/creating-or-a-modern-spatial-planning-legislation-2/
[329] https://www.oecd.org/regional/regional-policy/land-use-Greece.pdf
[330] https://greece20.gov.gr/pylwnes-aksones/
[331] https://maritime-spatial-planning.ec.europa.eu/countries/greece

The spatial planning provides guidelines on renewable energy projects on the national level for the whole territory of Greece through a Special Spatial plan[332]. While these guidelines are clear, when combined with, for example, strict restrictions regarding cultural heritage[333] and building preservation, in implementation they have a disproportionately negative effect on the clean energy transition on the islands.

While the Special Spatial plan provides guidelines, this still leaves unclear how energy sector planning integrates into the spatial, urban and marine planning and which locations are priority for clean energy projects. Moreover, without existing regional or local energy plans it will be difficult to integrate energy transition priorities in preparation of spatial plans. While some municipalities have implemented local energy plans and strategies through voluntary initiatives (i.e. Covenant of Mayors or the Clean energy for EU islands secretariat[334]) there is no existing obligation on the local governments to prepare such plans. The new Climate Law[335], adopted in July 2022, brings the obligation for development of Regional Climate Change Adaptation plans and Municipal Emission Reduction plans which can help bring energy priorities under spotlight.

For example, continuous energy planning from the electricity grid perspective and integration of renewable energy projects happens within NIIs. HEDNO provides capacity availability[336] based on the generation plants that have connected to the grid or have received a grid connection offer. Such an availability overview is used by investors to propose locations for new RES generation plants.

Recommendation 2.1: Reassess spatial planning guidelines for implementation of clean energy projects on the islands

While the local spatial plans and Marine spatial plan are to be realised within NRRP, the clean energy transition on the islands is already ongoing and should not wait for their implementation. Therefore, we recommend that the Ministry for environment and energy reassesses existing spatial planning guidelines with regards to clean energy project on the islands and provides new guidelines/standardised procedures on how clean energy projects should be planned and implemented with regards to the land use priorities on the islands. Such guidelines have to take into account the characteristics of islands. The use of the guidelines would help ensure that the approval process is not additionally complicated or delayed during the process of adoption of local spatial plans.

The guidelines can be included in the existing guidelines for energy projects within the Special Spatial plan. While led by the Ministry for environment and energy, the preparation process should involve representatives of the regional governments aware of existing spatial planning documents, local governments who will be implementing the guidelines and experts and academia involved in realisation of clean energy projects on the islands. This can be through collaboration with the Island Taskforce (recommendation 1.1).

[332] https://fig.net/resources/proceedings/fig_proceedings/fig2021/papers/ts08.4/TS08.4_perperidou_11177.pdf
[333] Digital map of the protected areas and sites publicly available at https://www.arxaiologikoktimatologio.gov.gr/
[334] 12 islands have developed Clean Energy Transition Agendas with assistance of the Clean Energy for EU islands secretariat: Andros, Chalki, Chios, Kasos, Kastellorizo, Kos, Ikaria, Samos, Sifnos, Symi, Trizonia and Zakynthos.
[335] https://www.taxheaven.gr/law/4936/2022
[336] https://deddie.gr/en/themata-tou-diaxeiristi-mi-diasundedemenwn-nisiwn/ape-sta-mdn/sundeseis-stathmwn-ananewsimwn-pigwn-energeias/

Actors involved:

- **Ministry for environment and energy, Directorate for spatial planning**
- **Ministry for environment and energy, Directorate for energy**
- Regional governments
- Local governments
- HEDNO
- TSO

Recommendation 2.2: Adopt national and regional master plans for clean energy projects

The national government should initiate the preparation of national guidelines and regional Clean energy master plans that investigate and approve the areas or sites for clean energy development island by island. Based on the national guidelines identified in the Special Spatial plan and NECP goal, the national government should identify regions that can be further developed within the regional clean energy master plans. The master plans have to be integrated with the spatial planning, maritime spatial planning and coordinated with other sectoral plans on regional or local level (local energy plans, regional or local climate plans, etc).

This recommendation goes in line with the **REPowerEU** measure to define '**renewables go-to areas**' which are particularly suitable areas for the installation of production of energy from renewable sources. See Annex A for more details.

These Master Plans should also identify go-to areas specifically for one or more renewable energy sources and storage projects, in coordination with local needs and priorities, as well as the state of the electricity grid. Consequently, projects in these zones should be subjected to faster and simplified permitting procedures or lightened environmental impact assessments.

Actors involved:

- **Ministry for environment and energy**
- **Ministry for shipping and island policy**
- HEDNO
- ADMIE/IPTO
- Regional and local governments
- Local stakeholders

This recommendation goes in line with the **REPowerEU** measure to provide for **accelerated procedures** for projects in go-to zones. See Annex A for more details.

Recommendation 2.3: Mandate adoption of island or group of islands energy plans

Local energy planning assesses the existing demand, the potential for energy savings and energy efficiency, the state of the electricity grid and the need for improvements and availability of integration of new projects. Most importantly, it defines priorities and needs for improvements in the existing energy system. Energy planning on the level of an island or group of islands should be mandated from the national government. Such plans have currently been prepared for some islands in collaboration with the EU initiatives such as Clean Energy Transition Plans (CETA) from the Clean energy for EU islands Secretariat or within Covenant of Mayors. Preparation of such plans helps to understand the energy balance and needs of the islands and integrate all sectors including

transport (road and marine), electricity and heating/cooling. Planning on the local level helps identify not only viable projects, but also set priorities based on the sector impact on the overall energy, economy and sustainable development of an island.

The Ministry for environment and energy needs to evaluate how energy planning can be coordinated with the other local requirements for spatial planning, Municipal Plans for Emission Reduction (based on the Climate law), marine and port planning and other local requirements, so that it provides the benefit of identifying local energy priorities and projects but does not additionally burden local administration. Moreover, a local energy plan has to be synchronised with the regional master plan for clean energy projects presented in the recommendation 2.2. On the other hand, pre-existence of the local energy plans makes the preparation of the regional master plan easier as it can take into account local priorities.

This recommendation goes in line with the **REPowerEU** measures on **Regions energy management, requiring** regions and cities to launch awareness and information and support schemes, energy audits and energy management plans, pledging savings targets, and ensure citizens' engagement such as through the European Mission on climate-neutral and smart cities or the European Urban Initiative under cohesion policy See Annex A for more details.

If multiple islands are part of the same energy system and want to coordinate their energy planning, they should be able to prepare a joint energy plan.

This recommendation goes in line with the **REPowerEU** measures and recommendations to **increase public acceptance of renewable energy projects**. See Annex A for more details.

Actors involved:

- **Ministry for environment and energy**
- **Ministry for shipping and island policy**
- **HEDNO**
- TSO
- Local governments
- Local stakeholders (civil and private sectors)

3. Complex and long permitting procedure for RES projects

As previously explained, there are five main steps in the authorisation procedure of renewable energy projects in Greece (details in Annex 2 of the Greece country study[337]). Clean energy projects are facing complex and lengthy authorisation and permitting procedures. For example, in the wind energy sector, projects currently require 8 to 10 years to get approved, far more than the 2 years target set by the Renewable Energy Directive (EU) 2018/2001. Currently many applications of hybrid plants to connect to the grid on non-interconnected islands are put on hold[338], awaiting regulation on the pricing system for hybrid plants to obtain a binding offer. Environmental assessments executed at the beginning of the project become irrelevant at a later stage due to long permitting times. Administrative authorisation process, which includes various sector authorisations, public acceptance and limited grid capacity are the main factors slowing down the

[337] Available online at: https://clean-energy-islands.ec.europa.eu/insights/publications/regulatory-barriers-greece-findings-and-recommendations
[338] The projects that have been approved by the regulatory authority for energy are provide on the website https://geo.rae.gr/

process. For example, while there is a digital map of cultural heritage sites[339], the Ministry of Culture with its regional offices has been overwhelmed with applications for RES projects that need to be assessed, in many cases involving a site visit to the planned location. Local acceptance of the projects is missing as they are planned top-down and do not take into account local needs and priorities. Finally, grid capacity limitations are expected to be alleviated with the planned interconnection of the islands.

Further, small islands face challenges with financial viability of their low capacity renewable energy projects, given the small overall energy demand. The limited available capacity would mean that there is very little room for competition. In some small systems, already when just one wind turbine is present with a grid contract to inject power, there is no more room for new projects, as even a small additional power injection would go against the contractual rights of the existing wind turbine. Therefore energy transition on the island can be blocked due to reserved capacity for a project which is paused in authorisation and might not respond to the needs and priorities of the local island stakeholders.

Recommendation 3.1: Further simplify permitting procedure for RES projects

While the procedure for small RES projects, such as PV below 1 MW has been implemented and there are simplifications in the grid connection procedures with the new legislation in 2022, the permitting and authorisation process needs to be further simplified for all clean energy projects. To accelerate the energy transition and in light of the ongoing energy crisis, we recommend the national government to continuously evaluate existing procedures. The energy and climate crisis disproportionately affect the islands and therefore they should be at the focus of need for simplified procedures. The evaluation can identify implementation bottlenecks (e.g. parts of regulation which are still too complex, unnecessary requirements etc.). The identified bottlenecks can be removed by amending regulation to further simplify the procedure, easing the permitting requirements or providing fast and simplified procedure for clean energy projects. Stakeholders that have a role in the implementation and execution of the procedure (e.g. local governments, grid operators) should be involved in the evaluation process and preparation of the further simplified procedure. Their involvement can be implemented through the Islands Taskforce (recommendation 1.1), which would notify the relevant bodies when a bottleneck is identified.

In addition, following the example of the grid connection permit[340], the permitting process should be digitised as much as possible. Implementation of standardised and digitalised authorisation procedures across all the levels of governance (local, regional, national) needs to be encouraged to reduce the administrative weight on permit granting.

A possible simplification can be to explore options for a single permit, for instance for any clean energy project on the islands or for a specific size and type of the project which is considered priority in strategic documents.

The **RES Simplify report** contains some useful recommendations and examples for **eased procedures for RES self-supply and small-scale RES**. See Annex A for more details.

Other additional recommendations for simplification of the procedures are:

[339] https://www.arxaiologikoktimatologio.gov.gr/

[340] Grid connection permit application process is foreseen to be completely digitized starting from August 2022, Law 4951/2022

- Modify some administrative requirements to allow the modification and speeding up of projects already in the pipeline (allowing to take advantage of the most recent technological developments). In addition, remove restrictions on the repowering of existing parks.
- Simplify and harmonise the criteria across the different institutional levels (municipal, island, regional and national).
- Stop requiring environmental impact assessments for new solar projects with a capacity of under 50MW, as recently announced by Portugal[341]. Moreover, recently due to energy crisis and global political situation, Spain has adopted a temporary accelerated procedure[342] for wind farms less than 75 MW and PV plants with installed capacity less than 150 MW. The efforts are aimed at accelerating clean energy transition.

The **RES Simplify report** contains some useful recommendations and examples for the **use of e-communication, including a mechanism for monitoring project progress**. See Annex A for more details.

Actors involved:
- **Ministry for environment and energy**
- Regional governments
- Local governments
- DSO (HEDNO)
- TSO
- Local stakeholders

Recommendation 3.2: Set-up regional one-stop shops

As the permitting procedure consists of many steps and parties involved, the government should organise a one-stop shop at a regional level for clean energy projects. The one-stop shop is managed by a designated body on the regional level. The applicant for a clean energy project provides needed documentation and communicates with only this one authority at the regional level. This authority is ultimately responsible for the distribution of the documentation to the relevant bodies for approval, the follow-up with those bodies to deliver their responses in time and to coordinate between those bodies and the applicant.

This recommendation goes in line with the **REPowerEU** recommendation on permitting which stipulates that Member States should design a **one-stop-shop** for granting permits for renewable energy projects required in Directive (EU) 2018/2001 in such a way as to limit the number of authorities involved to what is necessary and maximise efficiency, taking into account public resources and the benefits of concentrating technological, environmental and legal expertise. See Annex A for more details.

A one-stop shop would make coordination (including with local stakeholders) and monitoring of clean energy projects easier. It would also help identify bottlenecks in implementation, understanding where there is a need for additional training or improved legislation. Moreover, one-stop shop functions even better when regional or local strategic energy document indicates identified priorities for an area, as proposed by the clean energy master plan above.

[341] https://www.pv-tech.org/portugal-to-waive-environmental-impact-studies-for-solar-plants-under-50mw/

[342] Until 24 December 2021. Accelerated procedure is directed to environmental permit for projects not located in Natura 2000 Network areas and in low to moderate sensitivity areas
https://www.pv-magazine.com/2022/03/31/spain-streamlines-permits-for-utility-scale-solar-supports-another-7gw-under-self-consumption/

The need for the single contact point that would, upon the request of the applicant, guide through and facilitate the entire administrative permit application and granting process, is already imposed by the revised Renewable energy directive 2018/2001/EU[343], specifically Article 16.

Actors involved:
- **Ministry for environment and energy**
- **Ministry for rural development and food, Directorate for decentralised units**
- **Ministry for shipping and island policy**
- **Ministry for culture and sports**
- **Regional governments**
- Local governments
- DSO, TSO
- Local stakeholders

Recommendation 3.3: Account for island energy and economy conditions when defining procedures for clean energy projects

Ten-Year Development Plan[344] considers islands crucial for the energy transition. While the energy transition on all islands should be inclusive to local stakeholders and benefit the local economy, islands can face various challenges in this process. For example, due to small energy demand and isolated energy systems, small non-interconnected island systems represent a special case for the clean energy transition as their energy transition and economy can be disproportionately affected by a single project or change to the energy system.

We recommend that strategic energy planning, through a regional clean energy master plan takes into account local energy and economy characteristics of islands when defining implementation conditions and guidelines for go-to areas and their priority technologies. For example, the realisation of projects on islands where one small RES project covers the local needs should include a requirement of socially inclusive investment, highly coordinated with the local municipality and stakeholders and require their involvement, through for example energy communities.

Actors involved:
- **Ministry for environment and energy**
- Ministry for shipping and island policy
- Regional and local governments
- HEDNO
- Local stakeholders

4. Lack of clarity regarding short and mid-term actions to allow clean energy transition and ensure security of supply on the islands

Currently, island electricity grids have insufficient capacity for increased share of RES. While HEDNO has plans to upgrade the grid, financing can be problematic, especially for small islands where it can be economically unfavourable. Implementation of energy efficiency and energy savings measures is not very much prioritised. While innovative technologies can help modernise the grid and better

[343] https://joint-research-centre.ec.europa.eu/welcome-jec-website/reference-regulatory-framework/renewable-energy-recast-2030-red-ii_en
[344] Anexartitos Diacheiristis MetaforasIlektrikis Energeias' (ADMIE The Ten-Year Development Plan 2022-2031 approved according to the GOG B' 4789/12.09.2022.

integrate renewable energy projects, the maintenance of such systems is highly dependent on the private investor and their know-how.

In addition, a very strict regulatory framework has created a situation where temporary supply loss on the islands is seen as significant as the major black-out on the mainland, creating a pressure on network operators and dispatchers to prioritise security of supply over testing required for innovation or implementing efficiency measures. Therefore to ensure security of supply the RES share on non-interconnected islands is limited to 30% of system demand[345].

A study done by Hatziargyriou et al. shows that under the newly introduced generation management framework in combination with storage the share of RES can be increased beyond the 30 % share[346]. However, energy storage can only be implemented if it is combined with an energy resource, within a hybrid system or behind the meter and cannot be developed on its own. Moreover, a renumeration framework has not been applied even for hybrid systems. Therefore, using energy storage to increase RES penetration becomes unattractive. The legal framework for market participation of storage units has been adopted in July 2022 with the Law 4951/2022[347]. The law addresses three categories of storage projects: stand-alone energy storage; combined storage with renewable power systems (hybrid plants); and behind-the-meter storage by electricity consumers. Stand-alone energy storage for NIIs systems is only allowed as fully integrated network element of the DSO.

The accepted long-term solution is the plan to interconnect most islands with the mainland electricity grid and upgrade the grids of the Ionian islands network by 2029[348]. This solution represents a significant infrastructure investment which will definitely improve the security of supply of the islands and allow for increased use of RES, in the long-term. However, for autonomous islands energy systems clean energy transition and security of supply might be achieved in a more economical way by using decentralised small RES generation and storage systems[349].

Recommendation 4.1: Develop framework for uptake of energy storage systems and demand-side response

Considering the Law 4951/2022 that includes the legal framework for storage has been adopted in July 2022, this recommendation comes in line with existing activities. Adoption of the legal framework is necessary for further clean energy transition on the islands. There is a specific need for a remuneration mechanism and operating procedures for storage (stand alone or part of the hybrid plant). It should provide investors with clear visibility on the remuneration parameters of this technology and encourage its penetration. Tilos project[350] represents a good example of inclusion of the battery technology in the island energy system.

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[345] Imposed by NII Grid Code

[346] " Non-Interconnected Island Systems: The Greek Case " by Nikos Hatziargyriou, Ioannis Margaris, Irene Stavropoulou, Stavros Papathanasiou and Aris Dimeas https://ieeexplore.ieee.org/document/7942257/authors#authors

[347] https://www.taxheaven.gr/law/4951/2022

[348] By 2024, 10 Cycladic islands (Andros, Tinos, Mykonos, Syros, Paros, Naxos, Santorini, Folegandros, Milos, Serifos); Crete with Attica and Skiathos (the islands of Skopelos and Alonissos will benefit) with Evia are planned to be interconnected. By 2029, the Dodecanese and the NE Aegean are interconnected, while the Ionian Islands network is upgraded.

[349] Katsoulakos, N.M. (2019) An Overview of the Greek Islands' Autonomous Electrical Systems: Proposals for a Sustainable Energy Future. Smart Grid and Renewable Energy, 10, 55-82. https://doi.org/10.4236/sgre.2019.104005

[350] Kaldellis, J.K. Supporting the Clean Electrification for Remote Islands: The Case of the Greek Tilos Island. *Energies* **2021**, *14*, 1336. https://doi.org/10.3390/en14051336

It is important to distinguish between operation of storage that is involved in the wholesale market and those functioning on NII islands that are not part of the market, keeping in mind that the use of storage is crucial to assuring security of supply with continued energy transition. Currently on the NIIs the storage systems can be implemented within hybrid generation plant[351] or behind-the-meter[352], unless it is necessary for the operation of HEDNO.

This recommendation goes in line with the **REPowerEU** measure to ensure that plants for the **production of energy from renewable sources, their connection to the grid, the related grid itself or storage assets** are presumed to be of **overriding public interest** for specific purposes. See Annex A for more details.

While there are foreseen changes[353] to the energy market and balancing framework to include demand side response and aggregation, the framework needs to take into account the island specifics. In developing new rules for the participation of demand response in the market, the global best practices should be taken into account to fast-track its deployment[354].

A system for remunerating these services and a competitive mechanism should be defined so that it is provided by the most efficient operators and agents. European markets that have successfully enabled participation in the wholesale markets, such as Belgium and France, can also offer useful experiences.

Regulatory Best Practice

Greece – Astypalaia island

The special pilot project of Astypalaia includes the operation of electric vehicles and there is a provision for charging when RES production is available. That scheme could be seen as a scheme of demand-side response given that it was combined with financial incentives for EV charging during high-RES production periods.

Actors involved:

- **Ministry for environment and energy**
- **Regulatory energy agency**
- **Hellenic electricity market operator**
- HEDNO
- ADMIE
- Energy companies
- Local stakeholders

Recommendation 4.2: Allow installation of RES with flexible assets

We recommend that HEDNO and RAE consider changing NII Grid code to allow extra RES capacity to be installed on an island even if its grid is considered saturated and the relative RES installation share is capped, provided that the proposed RES generation is coupled with management of flexible load (e.g. e-mobility, desalination unit etc).

This is also in line with the support for hybrid plants, as those utilise RES generation and storage, while this option would couple RES generation with other flexible devices. Such a measure can

[351] As indicated by HEDNO storage system cannot be added to the existing RES plant on NII in order to be considered hybrid plant. The changes to the Law 4951/2022 are expected to be made to clarify in this direction.

[352] Only under the net-metering scheme (ministerial decision GOG B' 759/05.03.2019) for NIIs.

[353] https://www.rae.gr/wp-content/uploads/2021/07/Greece_market_reform_plan_-V5-July-16_Clean-final.pdf

[354] https://www.raponline.org/wp-content/uploads/2020/07/rap-kolokathis-spain-power-system-transformation-july-2020.pdf

encourage innovation in implementation as well as sector coupling projects which will utilise existing device flexibility and foster further integration of RES.

Actors involved:
- **Regulatory energy agency**
- **HEDNO**
- Ministry for environment and energy
- Energy companies
- Local stakeholders

Recommendation 4.3: Use regulatory sandboxes for testing of innovative solutions
Considering that islands have their own specificities when it comes to energy systems and markets, the implementation of new technologies, innovative operation, tariffing and business models, the islands can be used as a testing site for energy transition.

We recommend using the regulatory sandbox[355] approach to allow specific islands to experiment with, for example different designs of electricity tariffs (hourly tariff, time of use tariff, etc.). Regulatory sandboxes are ways for authorities, tasked with implementation and enforcing of specific legislation, to test innovative approaches and technologies in real-life situations through time limited implementation of exceptions to existing legislation. This way incentives for clean energy transition on the islands can be tested without a permanent change in legislation. It also gives room to evaluate the success of the experiment.

This recommendation goes in line with the **REPowerEU** measures on **innovation and sandboxing** requiring the Member States to promote the testing of new renewable energy technologies while applying appropriate safeguards. See Annex A for more details.

Choice of the islands and grids within which different regulatory sandboxes should be implemented can be decided in collaboration with the Greek Islands Taskforce (recommendation 1.1) which will ensure local inputs. In the planning, it is important to keep in mind the whole lifecycle of such projects and the possibility for their replication. Mainly once implemented these technologies need to be maintained and the operation and maintenance options should ensure access to adequate know-how and human capacity.

Regulatory sandboxes have been implemented in Italy[356], Austria, Germany and Netherlands for temporary tests of specific energy tariffs[357].

Actors involved:
- **Ministry for environment and energy**
- **Regulatory energy agency**
- **HEDNO**
- Local stakeholders (civil and private sector)
- Academia

[355] https://www.consilium.europa.eu/en/press/press-releases/2020/11/16/regulatory-sandboxes-and-experimentation-clauses-as-tools-for-better-regulation-council-adopts-conclusions/
[356] https://www.iea-isgan.org/wp-content/uploads/2021/10/Regulatory-Sandbox-2.0_For-Publication.pdf
[357] https://fsr.eui.eu/regulatory-sandboxes-in-the-energy-sector-the-what-the-who-and-the-how/

5. Bureaucracy and administrative burden for the community energy initiatives

Energy communities are regulated by the Law 4513/2018[358]. The topic was further regulated with the Law 4685/2020 where benefits provided to energy communities were retroactively limited for smaller initiatives and ones not including local government[359]. In October 2021, the Law 4843/2021 was adopted which amends the Law on Energy communities in regards to their management of RES projects[360]. This makes for a complex navigation of the rules that apply to energy communities.

Excessive bureaucracy and administration imposed on small community initiatives leads to unfair competition between the community initiatives and energy companies, which are highly aware of the functioning of the energy system and have available human and other resources needed. For example, since mid-2020, the regulation has required consortia implementing renewable energy projects to provide high financial guarantees. While these guarantees are needed for the RES projects with high installed capacities to ensure that the companies that are going to implement the project have the financial means to do so, such conditions create a significant barrier for energy communities which implement small RES projects.

Further, bureaucracy and complicated regulatory frameworks are discouraging the involvement of the local population and stakeholder in the energy sector, since they lack the know-how to navigate through it. The requirements and procedures are often in conflict with short provided deadlines of funding opportunities, which citizens and local stakeholder cannot meet due to lack of the resources and knowledge. Therefore, requiring the same efficiency in preparation and the same procedure for small community energy projects provides an advantage for projects that are not initiated by energy communities.

Recommendation 5.1: Simplify the procedures and requirements for energy communities
Simplification of the authorisation and permitting procedures for clean energy projects has been already discussed. However, to support realisation of involvement of local stakeholders through energy communities, we recommend further simplification of the procedures and requirements for the energy communities and projects that include 20 % or more share of local stakeholders.

This recommendation goes in line with the **REPowerEU** measures and recommendations to **facilitate citizen and community participation**. See Annex A for more details.

Involvement of local stakeholders through energy communities helps bring the benefits of clean energy transition to the local island economy for further developments in energy or different priority sectors. Moreover it allows for increase of involvement and knowledge of local stakeholders on energy topics which further increases interest and acceptance of clean energy projects.

Such policies provide benefits to the projects that are supported by the local community, matching the local priorities and needs.

Actors involved:

[358] https://clean-energy-islands.ec.europa.eu/index.php/legal/country/4942/category_legal/226
[359] Marula Tsagkari, 'How Greece Undermined the Idea of Renewable Energy Communities: An Overview of the Relevant Legislation', 17/1 Law, Environment and Development Journal (2020), p. 85, available at http://www.lead-journal.org/content/c1701.pdf
[360] https://www.lexology.com/commentary/energy-natural-resources/greece/rokas-law-firm/amendments-regarding-energy-communities

- **Ministry for environment and energy**
- Regional and local governments
- Local stakeholders

Recommendation 5.2: Create a platform for knowledge transfer and support

Energy communities are beneficial from the point of view of involvement of local communities[361], and achieving just transition. Moreover, involvement of energy communities in the energy transition aims to help increase knowledge of energy topics, implementation of energy efficiency measures and uptake of renewable energy.

Greece has few examples of the energy communities on islands including: "Minoa Energy", "Energy Community of Sifnos" and "Energy Community of Thalis". Since starting involvement in the energy community and energy sector requires some initial know-how, exchange of best practices or experiences and guidance from the existing initiatives is needed for the wide scale roll out of energy communities on Greek islands.

National government should help set up a platform, trainings or conferences with island stakeholders to foster the discussion, give light to the best practices or even provide funding for mentorship programmes. This can be coordinated and monitored by the Taskforce for islands mentioned above.

Moreover, there is a need for assistance for energy communities to navigate their way through the energy sector, authorisation and permitting procedures as well as ways to access technical assistance for preparation of quality projects and finding the appropriate partners and funding for implementation of projects. We recommend that the national or regional government can set up help desks to provide assistance to local stakeholders on their path to increased involvement in the energy sector.

Actors involved:
- **Ministry for environment and energy**
- Regional and local governments
- Local stakeholders

Recommendation 5.3: Re-evaluate the concept of energy communities for islands

Island communities are compact. The initiatives in regards to energy, water, waste, transport, tourism and agriculture should be coordinated together. As the human capacity on the islands are limited, the concept of an energy community should have a different definition for the autonomous island systems. Energy communities on autonomous islands should allow involvement not only of local government but also local utilities to help manage different aspects of the development together with all local stakeholders. Moreover energy communities should encourage sector-coupling projects to allow for stacked benefits.

Actors involved:
- **Ministry for environment and energy**
- HEDNO

[361] Assuring energy projects benefit local communities and economy

- Local governments
- Local stakeholders (civil and private sector)

6. Clean energy project subsidies equalise interconnected islands and mainland

The majority of Greek islands are interconnected with the mainland power system, however an important number of them are not interconnected, making up the non-interconnection islands (NII). This distinction is crucial as it affects the type and level of support, for which RES plants are eligible[362]. The interconnected islands cannot seek an equal financial support, compared to the non- interconnected islands, even though they bear higher costs of investment of RES projects than the mainland.

In addition the issues of the limited resources of local stakeholders and limited know-how makes the maintenance of the clean energy projects more expensive regardless of the fact that the island is electrically interconnected.

Recommendation 6.1: Re-evaluate support schemes for interconnected islands
While interconnected islands have more flexibility and capacity for the connection of RES projects to the electricity grid, investment and operation costs of the projects are still higher. Therefore, we recommend existing support schemes for RES projects to be re-evaluated to account for island local characteristics beyond the electrical interconnection.

The non-interconnected islands do have a higher concern for security of supply and should not have the same support as the interconnected islands. However, the clean energy projects on the interconnected islands should not always be treated as the projects on the mainland as this undermines the previously mentioned investment characteristics of the islands.

Actors involved:
- **Ministry for environment and energy**
- Regional and local governments
- Local stakeholders

7. The regulated price for electricity generation in NII hinders clean energy transition

Non-interconnected islands have higher electricity generation costs due to existing oversized thermal generation technology and seasonality of the demand on most of the islands. To ensure security of supply existing thermal power plants either have higher capacity or there is a temporary use of diesel generators. Based on the Regulation for Electrical System Operation Code for Non-Interconnected Islands (NII)[363] the conventional power plants are reimbursed for the operation costs that include among others all operation, assets and fuel costs and complete costs for temporary operation of diesel generators. The current system does not incentivise existing generation plants to become more sustainable, efficient or flexible in their operation as regulated price covers the needed operational costs.

[362] For example, RES projects on non-interconnected islands can benefit from a Feed-in Tariff, regardless of the capacity (size) of the project, whereas on interconnected islands there is a maximum threshold of 400kw. In addition, RES on interconnected islands that participate in the electricity market may benefit from a Feed-In Premium tariff, while bigger PV (>500kW) and onshore wind plants (> 3MW) can take part in tenders. There is also a subsidy for RES plants on non-interconnected islands employing two or more RES technologies.
[363] https://deddie.gr/en/themata-tou-diaxeiristi-mi-diasundedemenwn-nisiwn/ruthmistiko-plaisio-mdn/kwdikas-diaxeirisis-ilektrikwn-sustimatwn-mdn/kwdikas-diaxeirisis-mdn/

Moreover, for smaller energy systems, the lower capacity thermal power plants are used. In high demand times, in such systems, there is a need for more temporary generation using diesel generators. Therefore the current system pays for more inefficient and hence more expensive generation the smaller the island system is[364].

Recommendation 7.1: Revise system of regulated reimbursement of operation costs
In the future when more islands will be interconnected, the islands are expected to decrease the use of existing thermal power plants. While large investments in modernising this thermal generation would not be required, we recommend evaluating and revise the existing systems of regulated reimbursement of their generation costs. The revision should provide incentive to accelerate introduction of alternative fuels and improving efficiency, but also to incentivise the clean energy transition and energy diversification.

The solution could provide a timeline for the thermal power plants to gradually decrease the support for the operations. Part of the financing could be redirected to support innovative projects on the islands working towards the same goal.

During the evaluation of the existing system the national government and Regulator should take into account both just transition and the importance of security of supply on the islands.

Actors involved:
- **Ministry for environment and energy**
- **Regulatory energy agency**
- **Ministry for investment and research**
- PPC
- HEDNO
- Energy companies
- Regional and local government

[364] Katsoulakos, N.M. (2019) An Overview of the Greek Islands' Autonomous Electrical Systems: Proposals for a Sustainable Energy Future. Smart Grid and Renewable Energy, 10, 55-82. https://doi.org/10.4236/sgre.2019.104005

Conclusions for Greece

The Clean energy for EU islands secretariat conducted an analysis of the legal and regulatory framework which supports clean energy projects in Greece. The resulting Regulatory inventory is publicly available online. Based on the analysis of the inventory and information gathered via surveys and interviews, the Clean energy for EU islands secretariat has brought together all relevant stakeholders in Focus Groups and a National Stakeholder Meeting to identify barriers to the clean energy transition on Greek islands, and formulated recommendations to overcome them. This mission has gained in importance since the publication of the REPowerEU package.

Greece has been actively working to improve the enabling framework for energy transition with the adoption of a legislative framework to support electricity market changes, use of innovative technologies such as storage, accelerating e-mobility and simplifying authorisation procedures. With the Recovery and Resilience fund which helps implement interconnection of island systems and the GReco initiative which supports sustainable development of islands, island energy transition is accelerating in pace. However several major challenges for the clean energy transition on the Greek islands remain. These barriers relate to strategic planning and coordination of energy transition on the islands, lack of involvement of local stakeholders and experts involved in implementation of projects, lack of local energy planning and integration with spatial planning. Complex and lengthy authorisation procedures and grid constraints to further integration of renewable energy are also identified as some of the most important remaining barriers. To overcome these barriers, recommendations build on the existing regulatory framework and activities that are ongoing in Greece.

Many different initiatives and projects are active on Greek islands with the aim to accelerate the energy transition. While this is a positive trend, there is a need for better coordination of the activities and clear shared strategy in order to ensure resources are efficiently spent. Moreover, the lessons learned from existing and completed projects should guide the further planning and implementation. A nationally organised agile Island Taskforce is needed as a coordination and advisory body to represent island needs and priorities on the national level.

Taking into account climate change and the current energy crisis there is a need to accelerate decarbonisation actions and energy transition, especially on the islands. Clean energy projects help decarbonisation and decentralisation of the energy sector an. Local and regional energy planning need to reflect local needs and to be aligned with other sectoral constraints. Spatial planning guidelines should simplify authorisation procedures. To further shorten the authorisation procedures digitalisation of process, harmonisation of forms and simplification of required permits is needed. The process of planning and authorisation needs to take into account local characteristics and variations between islands and their economies and allow for flexibility in implementation with involvement of local governments.

Greek islands are either interconnected to the mainland electricity grid or non-interconnected. While Greece is investing significant resources to interconnect island systems in the next 10 years and increase capacity for RES integration, efforts are needed to foster flexibility and modernisation of the existing grid. Use of storage systems and other flexible devices in innovative ways in coordination with new renewable installations should be encouraged through remuneration mechanisms. Such implementation also requires updating existing grid regulations and codes.

Regulatory sandboxes are proposed as a way to test innovative technologies and implementation methods before development of supporting regulation.

Even interconnected islands still face challenges with increased investment costs. Support schemes should reflect this additional costs. Moreover, it needs to be clarified which role existing thermal generation plays in this process and if they can be used to foster the change.

Finally, no transition will happen on the islands without involvement of local stakeholders and civil society. Clean energy projects should aim to satisfy both strategic national goals and local needs and priorities. Local acceptance of renewable energy projects has all too often stopped energy transition on the islands in the past. To ensure that sustainable development benefits local stakeholders, socially responsible investments that involve local stakeholders in ownership or management of the projects through energy communities should be fostered. Simpler procedures, capacity building and legal framework that allows for local involvement in energy projects is a necessary framework for the energy transition on the Greek islands.

The proposed recommendations are in line with existing activities in Greece but require improved coordination, engagement with local stakeholders and experts and multi-level governance.

Italy

The first Chapter of this Italy country section provides an overview of the existing policy and legislation for clean energy on Italian islands. The second Chapter contains the identified legal and regulatory barriers, based on the survey and the interviews, and the recommendations, based on the Focus Group Meetings and the National Stakeholder Meetings.

Policy and Legislation for clean energy on Italian Islands

Introduction to the Italian Energy Market – Relevant Actors

Throughout the Study several key stakeholders in the Italian Energy Market will be referred to. Therefore, hereunder a short overview of these actors and their role is given.
The Italian electricity market was born in 1999. The European Directive on the creation of an internal energy market (Directive 96/92/EC)[365] was transposed thanks to the Legislative Decree of 16 March 1999, n.79,[366] known as the Bersani Decree.

Before 1999 **Enel** was the single operator of the electricity market, which was de facto operating under a State monopoly. After this date the sector was also opened to other private companies, with the possibility for new accredited players to produce electricity and sell it on the market. Until 2021, established by Law N. 481 of 1995,[367] the **Ministry of Economic Development** was the reference authority for the energy and gas market. It has carried out regulatory and control functions relating to tariffs, quality of services, market forms, competition, concessions, accounting and administrative separation, verification and control, complaints and requests, dispute settlement, information, and transparency.

By Law Decree March 1, 2021, n. 22,[368] the Italian Government reorganised the responsibilities of the ministries and established the **Ministry of ecological transition (MiTE).** MiTE replaced the Ministry of the environment and the protection of the territory and the sea, and assumed its responsibilities. MiTE additionally assumed the responsibilities of the Ministry of Economic Development, concerning energy policies.

ARERA[369] is the Italian Regulatory Authority for energy, grids, and environment. It performs regulation and control activities in the fields of electricity, natural gas, water services, waste cycle and district heat. It is also the authority responsible for protecting consumers and promoting competition and efficiency in the electricity and gas sector.

ENEA[370] Italian National Agency for New Technologies, Energy and Sustainable Economic Development. It focuses on applied research, technology transfer and technical and scientific assistance to companies, associations, territories, central and local administrations in the fields of energy, environment, and sustainable economic development.

[365] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A31996L0092
[366] https://www.normattiva.it/uri-res/N2Ls?urn:nir:stato:decreto.legislativo:1999-03-16;79
[367] https://www.normattiva.it/uri-res/N2Ls?urn:nir:stato:legge:1995-11-14;481!vig=
[368] https://www.normattiva.it/uri-res/N2Ls?urn:nir:stato:decreto.legge:2021;22~art4
[369] https://www.arera.it/it/index.htm#
[370] https://www.enea.it/it

The manager of energy services in Italy (GSE)[371] is responsible for promoting the development of renewable energy. It is a joint-stock company founded in 1999 and owned by the Ministry of Economy and Finance. Until 2005 GSE was known as GRTN (National Transmission Network Operator). The management of the national electricity network was transferred to TERNA. The focus of the GRTN shifted to the promotion of renewable energy, energy transition and sustainable development, thereby renaming it the GSE. The GSE directs and coordinates the *Società Acquirente Unico* (AU), the *Gestore dei Mercati Energetici* (GME) and the *Ricerca sul sistema energetico* (RSE).

Terna, National Electric Grid S.p.A.[372] is an Italian company listed on the stock exchange. The main shareholder, the Ministry of Economy and Finance, through the Cassa Depositi e Prestiti owns 29.99% of its capital. The company is the manager and main owner of the national high voltage electricity transmission grid with over 98% of the national electricity infrastructure. It is also responsible for the transmission and dispatching of electricity on the high and very high voltage network throughout the Italian territory and therefore for the management of safety (e.g., it resolves large-scale disruptions) and the balance between the supply and demand of electricity. Furthermore, Terna is in charge of the planning and development of the National Transmission Grid (RTN). It provides for the maintenance and development of the RTN in respect of the environment and combines knowledge and technologies to improve efficiency and create value for shareholders and the communities in which it operates.

Italian islands and their governance

Italy has 450 islands with a high diversity in size, population, and distance to the mainland. 10.9 % of the Italian population (6,500,922 people) lives on the islands.[373] The largest and most populated Italian islands in the Mediterranean, Sicily, and Sardinia, have regional governments, defined by the Italian constitution. Smaller islands are governed by the overarching region. In many cases these smaller islands consist of their own municipality.

General Policy

The **Integrated National Energy and Climate Plan** (NECP) for Italy for the period 2021-2030 sets the target for renewables at 30% in gross final consumption of energy in 2030. In the electricity sector, renewable energy generation is projected to reach almost 55% in 2030 (compared to 34.1% in 2017). For heating and cooling a share of 33.9% is set for renewables. In the transport sector, Italy aims to reach 22% by 2030. In the NECP, Italy indicates Italian small islands as the areas for exploring the technologies and the pathways for the energy transition; islands are put forward as innovative laboratories. The islands could work with the university or national research and development centres that can help accelerate energy transition.

Regarding **Strategic Energy Planning**, the Decree of Ministry of Economic Development of 14 February 2017[374] defined objectives and incentive methods for renewable energy in the small Italian islands non-interconnected with the electricity grid of the mainland. Specifically, it established the minimum development objectives for the production of electricity and thermal energy from renewable sources, and the methods for supporting the investments needed for their realisation. With resolution no. 558/2018/R/EFR ARERA regulates the tariffs and the remuneration

[371] https://www.gse.it/en/
[372] https://www.terna.it/it
[373] Istituto Nazionale di Statistica (Link)
[374] https://www.mise.gov.it/images/stories/normativa/decreto_ministeriale_14_febbraio_2017_energia_isole_minori.pdf

system for electricity and thermal energy from renewables and access modes, transposing the Ministerial Decree dispositions. By the end of 2020, the goals of the use of renewable energy sources set on the non-interconnected islands were supposed to be achieved. Annex 1 of the Decree presents the minimum development objectives of the use of renewable energy sources for each non-interconnected island.

More recently, in December 2021 the Minister of Ecological Transition published a program for financing clean transition plans on the minor islands, called the **Green Islands Program**.[375] The Program has a budget of EUR 200 million which is provided through the resources of the National Recovery and Resilience Plan. The Program aims at strengthening the Municipalities of the 19 minor non-interconnected islands for the implementation of integrated energy and water efficiency projects, sustainable mobility, waste cycle management, circular economy, production of renewable energy and various end use applications. Funds have been already allocated to the islands.[376] Once the municipality selects an area of intervention, it proposes the project to the Ministry, explaining how it meets the technical requirements requested. The Ministry has set up an evaluation committee, which will be in charge of the evaluation of the proposals and the following granting of the public financing. The commission will also monitor the implementation of the plan, being in charge of undoing the grant.

Regulatory best practice

The Decree of the Ministry of Economic Development of 14 February 2017 has been proven very useful for all Italian Islands. On Salina Island for example, a project of 200 kW PV has been developed for the association of hoteliers of Salina. Via the Decree this project receives Feed-in Tariffs, which is now, with high energy prices, particularly relevant. Also, for Pantelleria the Decree was effective: the municipality has presented 5 projects on energy efficiency in municipal buildings that have been all financed via the Decree.

Insular systems, have higher investment and operating costs. These costs should normally be reflected on the electricity prices the consumers pay monthly. The above-mentioned Ministerial Decree (and other more specific related decisions) provide for a system of **unified prices** in the whole Italian territory aiming to minimise the differences in the prices between the islands and the mainland that can lead to discrimination.

Splitting the extra cost of electricity production on islands on all Italian inhabitants – the system of unified prices – is on the one hand good to avoid discriminating local secluded populations, where costs for energy production is significantly higher. On the other hand, the fact that companies operate in a “de facto” monopoly regime, somehow “promotes” the use of fossil fuels, making the competition with renewable sources less effective. On several small non-interconnected islands, Distribution System Operators (DSOs) also produce and sell energy and are thus not unbundled. The Decree of the Ministry of Economic Development of 14 February 2017 contains provisions obliging energy producers to increase the share of renewables in order to achieve their contribution. In that sense, the system of unified prices can be turned into a measure stimulating renewable energy developments.

[375] https://www.mite.gov.it/pagina/pnrr-isole-verdi
[376] https://www.mite.gov.it/sites/default/files/archivio/bandi/ISOLE_VERDI_%20Allegato_1_ParteA.pdf

Energy transition on the small islands could be implemented much faster. It is however important to keep in mind that the small islands have characteristics, which directly or indirectly affect the energy transition:

- Low expert capacity for the energy issues on the island and lack of leading examples;
- Limited constant population and seasonality due to tourist season;
- Land use, tourism, water, and waste issues are of high or higher priority than the energy generation, as discussed in a study by ANCIM (National Association of Municipalities of the Minor Islands) and ENEA (Italian National Agency for New Technologies, Energy and Sustainable Economic Development);[377]
- RES-e limited to PV only (no wind due to visual impact; no biomass due to the absence or discontinuity of fuel production);
- Scarcity / lack of areas for the construction of ground photovoltaic systems;
- Authorisation difficulties also for plants in industrial areas.

Italian national stakeholders in collaboration with the MiTE and GSE are actively involved in analysing the potential and planning for energy transition on small Italian islands. One such study is published in 2021 analysing 27 small islands in Italy.[378] It reiterates that a clear framework of rules and policies with a 2030 perspective must be built in order to give strength to ambitious environmental and climate actions in the Italian Minor Islands. It presents two recommendations: (i) Create at the Ministry of Ecological Transition a steering committee for climate and environmental transition in the smaller islands, which will define the interventions and objectives concerning energy, waste, water, mobility and sustainable tourism, and (ii) Draw up a climate and environmental sustainability plan for each island, with clear targets for 2030, outlining solutions to achieve an energy model centred on renewable sources and addressing the challenges of proper circular management of the water and waste cycle.

Renewable energy

Support systems

Italy supports a wide range of technologies for electricity generation, including onshore and offshore wind, PV on building with asbestos removal, biomass, biogas, geothermal and hydropower. For renewable energy systems, several types of support mechanisms exist, depending on the technology, size, and use of the installation.

For heating and cooling main renewable energy technologies supported include aerothermal, geothermal, solar thermal and biomass.

Italy supports the production of electricity and thermal energy from renewable sources on non-interconnected islands via a specific support system. Electricity production plants with a power of a minimum of 0.5 kW, connected to the island's electricity grid and powered by locally available renewable sources, can receive a feed-in tariff for the share of electricity produced and fed into the grid, and a feed-in premium for the portion of electricity produced and instantly consumed on site. In addition, subsidies are available for the installation of systems with thermal solar panels to cover the consumption of hot water or for solar cooling and the installation of heat pumps dedicated only to the production of domestic hot water.

[377] https://www.enea.it/en/publications/volume-pdf/the-minor-islands-between-sun-sea-and-wind.pdf
[378] https://www.isolesostenibili.it/wp-content/uploads/2021/07/Rapporto-ISOLE2021-ISBN-online.pdf

In the transport sector, Italy supports the use of biofuels and electric vehicles through a subsidy on the purchase of electric vehicles. The MiTE runs island specific programs such as for example a 15 million program for energy efficiency in transport covering electric vehicles, bike sharing, electric/hydrogen busses, etc.

Generally available support schemes, whose details are provided in the Regulatory inventory,[379] are:

- Auction and Registry (FER1 Decree)[380] - The incentives provided in the FER 1 decree are accessible through two types of auctioning systems: auctions for large plants (above 1 MW) and registers for plants (up to 1 MW) for onshore wind, PV, hydropower, and sewage gas.
- Feed-in tariff I (tariffa onnicomprensiva) - All plants except for PV plants with an installed power between 1 kW and 1 MW are entitled to choose this feed-in tariff in alternative to the premium tariff (Art. 7, c. 4 DM 06/07/12). Depending on their size, plants may access this scheme directly or after undergoing listing in a register with capacity limits set per year.[381]
- Feed-in tariff II (Ritiro dedicato):[382] Electricity generated from renewable energy sources and fed into the grid can be sold on the free market or to the GSE on a guaranteed minimum price.
- Net Metering (scambio sul posto):[383] A scheme that allows prosumers to feed their excess (not used) electricity into the grid and get compensated for it. It supports onshore wind, PV, geothermal, biogas, biomass, and hydro technologies.[384]
- Tax regulation mechanisms (Reduction in value-added tax): renewable energy generation is promoted through VAT tax deductions.
- Subsidy (Conto termico):[385] Installing heat pumps, biomass and solar thermal installations for heating purposes is supported through subsidies aimed at the redevelopment of buildings.
- Tax regulation mechanism (Ecobonus[386] & Superbonus[387]): Promotes greater efficiency and the renewable energy sources for heating and cooling, by providing a 110% tax detraction of the expenditure.
- Financing for the Energy Redevelopment of the buildings of the Central Public Administration (PREPAC).[388] The goal is to contribute to the energy requalification and the improvement of the energy efficiency of at least 3% per year of the covered area of the public building stock.
- Support of RES-H infrastructure addresses municipalities, as they must include RES technologies in district heating and cooling networks in their development plans.
- RES-H building obligations: All new buildings and buildings undergoing major refurbishment must integrate installations generating heating or cooling from renewable energy sources.

[379] https://clean-energy-islands.ec.europa.eu/index.php/regulatory-inventory
[380] https://www.gazzettaufficiale.it/eli/id/2019/08/09/19A05099/sg
[381] https://www.gse.it/servizi-per-te/fonti-rinnovabili/gestione-incentivi/tariffa-omnicomprensiva
[382] https://www.gse.it/servizi-per-te/fotovoltaico/ritiro-dedicato
[383] https://www.gse.it/servizi-per-te/fotovoltaico/scambio-sul-posto
[384] The abolition of "scambio sul posto" has been arranged with the legislative decree 199/2021 (transposition of the Red Directive II), in application of the regulatory measures envisaged by the PNIEC.
[385] https://www.gse.it/servizi-per-te/efficienza-energetica/conto-termico
[386] https://www.efficienzaenergetica.enea.it/detrazioni-fiscali/ecobonus.html
[387] https://www.efficienzaenergetica.enea.it/detrazioni-fiscali/superbonus.html
[388] https://www.gse.it/servizi-per-te/efficienza-energetica/prepac

- Subsidy (eco bonus): Vehicle buyers receive incentives if they purchase environmentally friendly vehicles, including electric vehicles.
- Subsidy (Decreto biometano):[389] Producers of advanced biofuels receive a subsidy which can be increased through expansion investments.
- Biofuel quota (obligo di immisione):[390] This scheme defines the share of biofuels that suppliers need to include in their fuel supply to the transport sector.

RES projects authorisation process

Local authorities implement legislation following state guidelines. The type and scope of the authorisation depends on the plant's size and location. Ground-mounted PV and onshore wind projects in Italy mostly undergo the Single Authorisation, the Single Regional Authorisation, or the Single Environmental Permitting procedures. For small-scale rooftop PV systems, a Communication Procedure is mainly applied while the Single National Model for the Construction, Connection and Operation of Small Photovoltaic Systems is applied for the approval of small rooftop PV systems below 200 kW.[391] There are no specific permitting rules for islands.

Grids

The Italian electricity grid provides non-discriminatory access for renewable energy sources and grid operators are obliged to give priority dispatch. There are 128 local DSOs. The country has a smart meter penetration rate of 98.5%. The electricity supplier switching rates for household customers in 2018 was 9.1%.[392]

In Italy, district heating networks are managed at the local level. A national framework legislation provides an obligation for all municipalities above 50,000 inhabitants to establish development plans for district heating networks with the aim of increasing usage of the energy produced also from renewable energy sources.

Supported energy efficiency measures

A National Energy Efficiency Fund incentivises investments to implement energy efficiency measures on production plants, production processes and buildings. ENEA publishes annual national report on energy efficiency savings and renewable energy use in buildings.[393] A tax regulation mechanism promotes greater efficiency and use of renewable energy sources for heating and cooling, by providing a 110% tax detraction of the expenditure, along with additional PV installations and electric vehicle charging stations. The MiTE also runs specific energy efficiency programs for public buildings on small islands.[394]

Supporting policies

Italy offers training and certification programmes for installers of renewable energy installations in the housing and buildings sector, in particular for electricity, heating, and construction.[395] Public authorities fulfil their exemplary role by adhering to the obligation that new buildings and buildings

[389] https://www.gse.it/servizi-per-te/rinnovabili-per-i-trasporti/biometano/incentivi
[390] https://www.gse.it/servizi-per-te/rinnovabili-per-i-trasporti/obbligo-di-immissione-in-consumo
[391] Energy Decree, Law Decree 17/2022
[392] https://www.ceer.eu/documents/104400/-/-/5c492f87-c88f-6c78-5852-43f1f13c89e4
[393] https://www.efficienzaenergetica.enea.it/pubblicazioni/rapporto-annuale-detrazioni-fiscali.html
[394] https://pdc.minambiente.it/it/il-ministero-dellambiente-proroga-i-termini-le-istanze-sugli-interventi-integrati-di
[395] Regarding training it is important to mention Italia in class A, a training and information campaign on energy efficiency https://italiainclassea.enea.it/

under refurbishment must consider integrating RES as well as the obligation that at least 50% of vehicles acquired by public administrations should be electric, hybrid, or hydrogen powered.

Self-consumption and community energy

The Italian law defines renewable energy communities, renewable self-consumers and jointly acting renewable self-consumers, in accordance with the provision of Renewable energy directive (EU) 2018/2001. Similar rules apply to these configurations as the energy production should not constitute as commercial and/or main industrial activity and should aim at satisfying the energy demand of its nearby members.

A prosumer is defined as a self-consumer in Italian legislation. Based on the Decree 199/2021 and Decree 17/2022 the self-consumer of renewable energy is an end-consumer who can produce and store renewable electricity for his own consumption, by having a RES plant at the site or multiple RES production plants located at the building or site that the consumer can access. The RES plant can be directly interconnected to the end-costumer's site with a direct connection of maximum 10 km. The self-consumer of renewable electricity is allowed to offer ancillary and flexibility services and be a part of the collective self-consumption within the same building or group of buildings.

While electricity can be shared, the activities should not constitute main commercial or professional activity for the prosumer.

Spatial planning

Spatial planning in Italy is a concurrent competence shared between the national and regional government, which is further practices at the regional and local (provinces, metropolitan cities, and municipalities) levels. This is briefly explained in the OECD country factsheet for Italy.[396] The Ministry of infrastructure and transport is responsible for spatial planning on the national level. The national government is responsible for the protection of heritage sites and of the natural landscape. According to the Italian Constitution, the national government is tasked with providing a national framework law for spatial planning. Currently the National Law 1150 from 1942, and its subsequent amendments, is referred to for this purpose. There have been multiple unsuccessful attempts in the past decades to approve a new National spatial planning framework law that substitutes the previous one. Mostly due to the fact that the 1150/1942 Law is outdated, it is unclear how spatial planning instruments and practice should interact with sectoral plans and policies - including the NECP. Similarly, it is not clear whether spatial planning should be cogent in relation to sectoral policies or the other way around.

[396] OECD (2017), *Land-use Planning Systems in the OECD: Country Fact Sheets*, OECD Regional Development Studies, OECD Publishing, Paris, https://doi.org/10.1787/9789264268579-en.

Identified barriers and recommendations to overcome them

The Clean energy for EU island Secretariat's Think tank has identified legal and regulatory barriers, based on the detailed assessment of the current regulatory framework and consultation with relevant Italian stakeholders through survey and the interviews (see Annex 2 of the Italian country study[397] for a detailed assessment). For each of the regulatory barriers, the Secretariat identified multiple recommendations. Those barriers and recommendations were presented and discussed within the Focus Group Meetings and the National Stakeholder Meeting (see Annex 2 of the Italian country study[398] for more information).

Regulatory barriers are presented in the order of their priority for energy transition on the Italian islands. Some of the identified barriers that were identified via the surveys and interviews are barriers that exist both on the islands and on the mainland. In the recommendations below, the focus lies on the concrete issues encountered by islands with these regulatory barriers.

The table below represents the list of barriers (marked in dark blue) ordered based on their priority, and the proposed recommendations (marked in white).

Table 6 - Barriers and Recommendations Italy

Barrier 1. **Spatial planning and stringent and generic restrictions**
Recommendations:
1.1 Develop national framework law for spatial planning
1.2 Develop Master plans with indications on the regional and local level
1.3 Make mandatory expert and local involvement in regional landscape plans
Barrier 2. **Lack of attention for the local level within national strategic energy planning**
Recommendations:
2.1 Set up a taskforce dedicated to islands
2.2 Provide assistance with development of energy and climate plans
2.3 Mandatory monitoring and reporting of energy and climate plans
Barrier 3**. Complex and lengthy permitting procedures**
Recommendations:
3.1 Provide permitting guidance and capacity building
3.2 Create process for monitoring and evaluation of the simplified procedures
Barrier 4. **Unified prices and regulated monopolies**
Recommendations:
4.1 Make an assessment of the unified price scheme
4.2 Introduce obligation for suppliers to invest in RES
4.3 Redirect fossil fuel remuneration to RES support
4.4 Provide capacity building towards DSOs to start implementing regulatory sandboxes on islands
Barrier 5. **Grid constraints due to congestion**

[397] Available online at: https://clean-energy-islands.ec.europa.eu/insights/publications/study-regulatory-barriers-italy-findings-and-recommendations
[398] Available online at: https://clean-energy-islands.ec.europa.eu/insights/publications/study-regulatory-barriers-italy-findings-and-recommendations

1. Spatial planning and stringent and generic restrictions

Since the second half of the 1970s, the Italian regions started to approve their own spatial planning laws, thereby contributing to increased complexity of the system. Regions are responsible for producing **Regional territorial plans**. At the same time, they prepared the **Regional Landscape Plans** in coordination with the Ministry of Culture and tourism (MIBAC). Regional landscape plans include the framework that defines regional priorities, objectives, and processes, as well as sectoral policies that local level plans and authorities have to follow. Ambiguity in these plans or policies provide for discrepancies in the implementation. Specifically, restrictions for the installation of clean energy projects are often too stringent, and not adjusted to the local island's characteristics. This includes for example, strict regulations for historical building protection hampering PV on rooftops, carports, and industrial sites. Moreover, islands are very often located in protected areas, in national parks, or there are Special Areas of Conservation (SAC), as well as Special Protection Area (SPA). While local authorities are responsible for Municipal General Regulatory Plans, they cannot go against the regional policies and priorities that have been defined by Regional Landscape Plan. The Municipal General Regulatory Plan is the main plan that defines zones and provides for implementation of projects.

On islands, the protection of historical and cultural sites and protection of natural landscape are a priority. This in consequence delays the energy transition and decarbonisation. As a result, unnecessary emissions and climate effects pose a climate risk to those same sites and environments. There is currently no clarity on how clean energy projects can be developed in conservation or protected areas. Such areas can take up the whole island.[399]

Finally, it is unclear how Maritime spatial planning will integrate energy policy and how this is coordinated with the regional landscape plan or Municipal General Regulatory Plans.

Recommendation 1.1: Develop national framework law for spatial planning
Priority can be given to work on developing a new national framework law for spatial planning. The framework law should provide clarity and guidance on how to integrate sectoral plans and policies within regional, subregional, and local spatial planning instruments and practice. Moreover, it could

[399] http://www.parks.it/mappe/Eap.php

provide guidelines on how to integrate regional energy plans with the existing Regional Landscape Plans[400] so that the clean energy guidelines become binding for the Municipal General Regulatory Plan. While this barrier is as relevant for the Italian mainland as it is for the Italian islands, the lack of this framework disproportionately affects the Italian islands. In many cases the implementation of clean energy projects is hampered.

Guidelines for integration of energy transition on Italian islands in the Regional Landscape Plans are needed with or without new a national framework law. Such guidelines could indicate the characteristics of islands and guidance on how to approach local spatial planning on the islands taking into account limited land availability and possible energy resource use. This can also be done through the national taskforce for islands' decarbonisation and energy transition, discussed under Recommendation 2.1 below.

In this process it is important to provide transparent communication. We recommend that the Ministry for infrastructure and transport includes the relevant ministries (Ministry for economic development, Ministry for culture and tourism and Ministry for ecological transition) as well as relevant regional and local governments and private and civil stakeholders in the preparation of the national framework law and guidelines.

Actors involved:

- **Ministry of Infrastructure and Transport, National Council of Public works**
- Ministry for Ecological transition
- Ministry for culture and tourism
- Ministry for Economic Development
- Regional governments

Recommendation 1.2: Develop master plans with indications on the regional and local level

The creation of a detailed Regional energy master plan that investigates and approves the areas or sites for clean energy development, island by island, is necessary. As islands are part of local government but also covered by the Regional Landscape Plans, they need to be involved in the discussion. The national guidelines mentioned in Recommendation 1.1 as well as the guidelines for "suitable areas" for RES projects[401] should guide the development of the Master plan for the clean energy projects on the regional level which includes the specific of the islands. Legislative Decrees 199/2021, 17/2022 and 50/2022 define initial criteria for "suitable areas" for RES installations (as defined in Annex 3 of the Italian country study[402]). These criteria will be further defined by the guidelines developed by the Ministry for Ecological Transition (MiTE). National decrees and MiTE guidelines will be complemented by suitable regional laws that will identify areas within its regional territory. For the regions that include islands, islands' characteristics and needs should be taken into account. Such areas can be identified within the Regional Energy Master Plan.

This recommendation goes in line with the **REPowerEU** measure to define '**renewables go-to areas**' which are particularly suitable areas for the installation of production of energy from renewable sources. See Annex A for more details.

[400] https://www.arl-international.com/knowledge/country-profiles/italy#spatial_planning

[401] Guidelines for "suitable areas" are being defined by the Ministry for Ecological Transition (MiTE) and further defined by the regional legislation based on the Decree 199/2021, 17/2022 and 50/2022.

[402] Available online at: https://clean-energy-islands.ec.europa.eu/insights/publications/study-regulatory-barriers-italy-findings-and-recommendations

The ambiguity when it comes to energy topics in the Regional Landscape Plan in coordination with the MIBAC should also be addressed. Plans should eventually be updated to the needs of clean energy projects with the focus on the islands as the leaders of clean energy transition. National guidelines should place regional energy master plans at the level of Regional Landscape Plans, requiring their integration. This way Regional Landscape Plans will include clear rules and responsibility for adapting the local spatial plans and defining the zoning needed for energy projects.

Additionally, regional, and local authorities should review and reduce the requirements of municipal spatial planning regulations (for example, in regard to visual impact) which hinder the installation of self-consumption systems.

Actors involved:

- **Ministry for infrastructure and transport**
- **Ministry for ecological transition**
- **Ministry for culture and tourism**
- **Ministry for ecological transition**
- **Regional authorities**
- MIBAC branches Superintendencies
- Local governments
- National experts for clean energy
- ENEA
- Regional and local energy agencies
- Academia

Recommendation 1.3: Make mandatory expert and local involvement in regional landscape plans
Aside from preparation of the Master Plan which guides the spatial and strategic planning regarding clean energy implementation from the national level, regional and local governments should assure involvement of the private sectors, local actors, and energy experts in preparation of the Regional landscape plans and local spatial plans.

We also recommend making stakeholder engagement mandatory where relevant part of the legislative procedure. i.e., via specified committees for approval of legislative proposals. This way organisations and trade associations representing the local actors have a formal say in the procedure.

Actors involved:

- **Ministry for infrastructure and transport**
- **Ministry for ecological transition**
- **Ministry of culture and tourism**
- **MIBAC local branches Superintendencies (Soprintendenza)**
- Ministry for economic development
- Regional governments
- Local governments
- Relevant local stakeholders (private sector, civil sectors, academia, experts)

2. Lack of attention for the local level within national strategic energy planning

Both the energy sector strategies and the long-term energy planning are highly centralised. The islands are included in the **NECP** for the period 2021-2030 as innovation laboratories for the development of experimental projects. The Italian NECP does not specify any additional objectives or technology specifications for the Italian islands. Municipalities and local communities are mostly not involved in the process of strategic energy planning. Nevertheless, they are best suited to analyse the problems and needs of their territory and to help avoid the gap between central decisions and local needs. Land use, tourism, water, and waste issues are considered to be higher priority than the energy generation, as discussed in a study by the (National Association of Municipalities of the Minor Islands (ANCIM) and ENEA.[403]

The islands are considered in the **National Recovery and Resilience Plan** (PNRR) with the allocation of funds and financing dedicated to the energy transition (in the **Green Islands Program**). The plan is currently being translated to the local level.[404] The municipalities have already been distributed the approximate budget based on which the projects will be proposed.[405] It is indicated that the municipality should select an area of intervention in line with PNRR and propose the project to the Ministry, explaining how it meets the requested technical requirements. For the purpose of PNRR, the MiTE has set up an evaluation and monitoring committee,[406] which will be tasked with evaluating the proposals and monitoring the implementation of the projects awarded the grants. The small island municipalities might lack the capacity to prepare project proposals. However, there is a running support to provide the technical assistance to the small municipalities[407] to receive technical assistance for preparation of projects for PNRR support.[408]

While the planning for the use of funds under PNRR seems well planned, such strategy has not been taken for all the clean energy project funding and project implementation. There is a lack of overall monitoring and evaluation of implementation of the clean energy projects on the islands based on the provided loans and subsidies. The lack of such feedback loops leads to significant gaps between national plans and targets and local level implemented projects. In addition, without an evaluation it is impossible to identify bottlenecks and gaps in implementation.

Recommendation 2.1: Set up a taskforce dedicated to islands

The energy sector strategies and the long-term energy planning are highly centralised. To foster the involvement of island stakeholders in national strategic and long-term energy planning and funding distribution, we recommend that MiTE forms an Italian Islands taskforce. The taskforce is a committee of national, regional, and local experts involved with planning and implementation of clean energy projects on Italian islands. It should include representatives of the government, non-governmental sector, academia, private and civil sector.

The clean energy transition on the islands is crucial for sustainable and climate adjusted development of the islands. The taskforce would have a main task of analysing the needs and priorities of the islands, collecting information and feedback from various sectors on the national,

[403] https://www.enea.it/en/publications/volume-pdf/the-minor-islands-between-sun-sea-and-wind.pdf
[404] The municipalities have been asked by mid-April 2022 to send brief technical sheets to the Ministry of the Environment.
[405] https://www.gazzettaufficiale.it/do/atto/serie_generale/caricaPdf?cdimg=22A00987001000101100001&dgu=2022-02-18&art.dataPubblicazioneGazzetta=2022-02-18&art.codiceRedazionale=22A00987&art.num=1&art.tiposerie=SG
[406] https://www.mite.gov.it/notizie/pubblicati-su-inpa-gli-avvisi-del-mite-il-reclutamento-degli-esperti-supporto-dell
[407] Less than 5000 inhabitants
[408] https://www.ministroperilsud.gov.it/it/comunicazione/notizie/fondo-progettazione-decreto/

regional, and local level and providing recommendation and guidance on the improvement of planning, implementation, and monitoring of clean energy transition on the islands. The taskforce can also be used to provide guidelines, not only to the national bodies, but also to the regional and local bodies while taking into account overall sustainable development of the islands. The Islands taskforce should ensure representation of island priorities and needs on the regional and national level, as well as among various sectors (energy, environment, culture, tourism, industry etc.).

The Islands taskforce is proposed to be organised by the Ministry of ecological transition in coordination with other national bodies responsible for spatial planning, environment, culture and history and tourism. In addition, it should include representatives of the relevant regional governments, representatives of academia, civil sector, private sector (including energy companies) who are experts and highly involved in the clean energy transition on Italian islands.
The Islands taskforce should be coordinated with existing monitoring bodies such as the PNRR committee mentioned above. The implementation of the Islands taskforce is needed as a short-term action to improve representation of island priorities on the national level. However, it would be useful in the long term to monitor and evaluate implementation of projects and provide feedback to the national level strategic and funding planning in the future.

Actors involved:

- **Ministry for ecological transition**
- **GSE**
- Ministry for culture and tourism
- Ministry for infrastructure and transport
- Ministry for economic development
- ENEA
- Regional government
- Local government
- Academia
- Civil sector
- Private sector
- TSO, DSOs

Recommendation 2.2: Provide assistance with development of energy and climate plans
It is recommended to mandate regional targets and the adoption of local or regional energy and climate plans that would be aligned with the NECP and the PNRR. Regional targets can provide clear visions for clean energy development, including but not limited to energy efficiency measures, while local plans provide an overview of energy needs and opportunities at a local level, specifically on islands. Local and regional energy agencies, supported by ENEA can be responsible for the preparation of such plans. In cases where local governments lack capacity to develop their own energy and climate plans the plan could be developed for group of municipalities, islands or on a regional level, aligned with regional energy master plan from recommendation 1.2.

This recommendation goes in line with the **REPowerEU** measures on **Regions energy management, requiring** regions and cities to launch awareness and information and support schemes, energy audits and energy management plans, pledging savings targets, and ensure citizens' engagement such as through the European Mission on climate-neutral and smart cities or the European Urban Initiative under cohesion policy See Annex A for more details.

In addition to mandatory rules, the Italian islands taskforce could provide guidelines for the development and implementation of local energy and climate plans. Even more, the taskforce – in coordination with national and regional bodies – could recommend and implement support schemes to provide capacity building and/or technical assistance for the realisation of such plans. These can take the form of, for instance, workshops for municipalities, guidelines for the energy transition and examples of roadmaps from similar municipalities or regions. Where there is not enough capacity on the islands, the taskforce can provide support through technical assistance, via GSE for instance, to engage external support for short-term projects.

Actors involved:
- **Ministry for ecological transition**
- GSE
- ENEA
- Regional governments
- Local governments

Recommendation 2.3: Mandatory monitoring and reporting of energy and climate plans

Strategies and national plans define the targets for the implementation of clean energy projects. However, the implementation of projects at the local level is not monitored, leading to gaps between production and demand. Our recommendation is to introduce mandatory monitoring/reporting of the implementation of the regional/local energy and climate plans. This can be annual or bi-annual and focus on local and regional governments with the guidelines provided by the Italian islands' taskforce.

Actors involved:
- **Ministry for ecological transition**
- GSE
- ENEA
- Regional and local governments

3. Complex and lengthy permitting procedures

Clean energy projects are facing complex and lengthy authorisation and permitting procedures. Within the permitting procedures, the MIBAC must give a formal and authorising opinion on every new plant/installation, through their local branch Superintendencies (*Soprintendenza*). Superintendencies have been interpreting the national and regional laws on a case-by-case basis. Very often they are not present at the decision-making table, even though they are crucial actors, and their approval is necessary for implementation. In addition, representatives of some sectors do not have the knowledge to concretely evaluate the cases and projects presented. In addition, the permissions vary per region.

There are four main steps in the authorisation procedure of renewable energy projects. They include site selection process, environmental assessment, administration authorisation and the grid connection permit. To deal with complex and lengthy permitting procedures, the Italian government has adopted multiple legislations (Decree 199/21, 17/22, 50/22) in the past two years with an effort to accelerate implementation of renewable energy projects and simplify procedures. The simplified procedures address renewable energy projects, with a focus on photovoltaic, wind,

and biogas technology. They differ depending on the installed capacity of the projects. The details on the permitting procedures are provided in Annex 3 of the Italian country study[409]. The adopted new procedures are favourable to RES plants located in "suitable areas", as defined below. Among RES plants, PV, especially rooftop PV is supported. For example, procedure for rooftop PV with installed capacity below 50 kW is simplified. This installation is classified as ordinary building/house maintenance intervention and is not subject to the acquisition of permits, authorisations, or any other acts of approval, including those provided for under the Code of Cultural and Heritage and Landscape (Decree 17/22).

In addition to the shortening and simplification of procedures for RES, new legislation (Decree 199/21 and 17/22) calls for the identification of suitable areas for installation of wind and PV plants, as a means to reach the goals set under the NECP. Suitable areas will be identified by the regional governments based on the identification criteria defined by the Ministry for ecological transition. Identification criteria will give preference to the use of existing buildings, non-agricultural land, brownfield sites, abandoned and decayed areas, areas where plants of the same source are already installed, etc. Until "suitable areas" are identified by the regional government the following areas will be considered suitable for installation of RES plants:

- Areas where PV is already installed, where renovation, upgrading or reconstruction is possible;
- Agricultural areas within 300 metres of area of industrial use or within industrial site or factories;
- Areas within 150 metres of the highway network;
- Areas, facilities, and infrastructure available to the Italian State Railway.

Until "suitable areas" are identified, the projects will keep being implemented as they were prior to the new legislation. Suitable areas for offshore wind farms should be defined as part of Maritime Spatial Planning. GSE is tasked to prepare a single digital platform from which the suitable areas will be searchable.
Finally, the Legislative Decree 199/2021, that came into force in December 2021, introduces accelerated administrative authorisation procedure with Articles 19-24. These simplifications introduce:

- Single digital platform for administrative authorisation
  The digital platform will be used for submission of applications that will cover all three procedures (communication procedure, simplified authorisation procedure and single authorisation procedure). The initial version of the platform will start with Single authorisation procedures only. It is to be setup 180 days after the Decree has entered into force.
- Standardised templates will be developed to be used for administration authorisation.

The listed simplification of the procedures is all relatively new and are yet to be completely implemented. Their goal is to accelerate implementation of RES projects and they represent very strong steps in the right direction.

Recommendation 3.1: Provide permitting guidance and capacity building

[409] Available online at: https://clean-energy-islands.ec.europa.eu/insights/publications/study-regulatory-barriers-italy-findings-and-recommendations

The Ministry of Ecological Transition is expected to develop guidelines with regards to the "suitable areas" which are to be followed by regions to further identify these areas. The guidelines should include the need to take into account the islands' characteristics and include islands' needs and priorities into account when defining the suitable areas on and around the islands.

In addition, as many authorisation procedures have changed, the Ministry should develop guidelines for authorisation and implementation of clean energy projects providing clarity to regional and local stakeholders on how to further implement these regulations. The guidelines can form one official interpretation for all the regions in order to minimise the discrepancy in interpretations of the permitting regulations. In addition to foreseen standardised templates this would help streamline the procedures.

Based on the above-mentioned guidelines, the Ministry, together with ENEA and GSE should organise capacity building through trainings for regional and local stakeholders involved in the permitting procedure. The training should be focused on implementation of the guidelines as well as strategic planning for the clean energy transition, relevant technologies, their characteristics and effect on the environment, historical and cultural sites, agriculture, and tourism.

The **RES Simplify** report contains some useful recommendations and examples for **political backing of RES and public provision of guidelines** and documentation templates on the national level. See Annex A for more details.

Actors involved:

- **Ministry of Ecological Transition**
- **GSE**
- **ENEA**
- Regional governments
- Local governments

Recommendation 3.2: Create process for monitoring and evaluation of the simplified procedures

As the strong efforts to simplify permitting procedures are in progress, their implementation needs to be monitored and evaluated. The above-mentioned changes to the legislation affect both authorisation procedures on the national, regional, and local level and the government should require annual feedback from the regional and local level stakeholders on the issues and gaps in implementation. We therefore advise an evaluation of the existing simplified procedure based on the local and regional feedback. The evaluation can identify implementation bottlenecks (e.g., parts of regulation which are still too complex, unnecessary requirements etc.). Stakeholders that have a role in the implementation and execution of the procedure (e.g., the superintendencies, local governments, grid operators) should be involved in the evaluation process and preparation of the further simplified procedure.

A possible simplification can be to explore options for a single permit. For instance, for any clean energy project on the islands or for a specific size and type of the project which is considered priority in strategic documents.

Actors involved:

- **Ministry of ecological transition, Energy department**
- **ENEA**
- Ministry for economic development
- Regional government
- Grid operators
- Local governments

4. Unified prices and regulated monopolies

The system of unified prices that involved sharing the extra cost of electricity production on islands with all Italian inhabitants has two main aspects related to it. On the one hand, it provides political support to islands by decreasing the cost of energy and living, while on the other hand, it decreases motivation or financial interest of local stakeholders to change from fossil fuel-based energy sources to renewables. Therefore, it is seen as a negative price signal.

There are 19 small non-interconnect islands, out of which 11 have vertically integrated electricity companies. For 8 islands the DSOs and suppliers are independent but part of Enel group. The thermal power plants on the islands are generally oversized to assure security of supply during summer peak consumption. The inefficient and fossil fuel-based generation is remunerated for their operation through system charges collected through electricity bills from all Italians.

Such an ecosystem provides low motivation for a clean energy transition and depends on the single energy actor who sees no competition. Island energy companies and local DSOs showed almost no interest in the construction of RES plants, regardless of incentives introduced in 2017 through the Minor Islands Ministerial Decree. A further push is needed through obligations or gradual decrease of support for the production of energy from fossil fuels.

In addition, local DSOs define the maximum installable intermittent RES power for the islands beyond which the DSOs do not want to connect additional systems. The measure is taken to assure grid stability.

ARERA has been working together with the islands' electricity companies to find a way to include these systems in the electricity market. Different options have been tested and resulted in the document *Integrated text on electricity dispatching (TIDE): Overall guidelines* (Document for consultation 322/2019/R/eel).[410] The document presents guidelines for the simplified regulation of dispatching in special contexts, with particular reference to non-interconnected islands, extending to them what has already been defined in the case of Italian distribution networks interconnected only with foreign networks. This simplified regulation has the objective of avoiding the distortions deriving from the absence of interconnections with the remaining parts of the national network, guaranteeing effectiveness and transparency, as well as implementing simplified solutions that are suitable for the realities of the island. Further decision, based on the proposed Document for consultation 322/2019/R/eel on the integration of non-interconnected systems, is yet to be adopted.

Recommendation 4.1: Make an assessment of the unified price scheme

The system of unified prices is complex and not transparent to regional and local energy actors relevant for the islands. While the structure of system charges has changed in the past years, it is

[410] https://www.arera.it/it/schedetecniche/19/322-19st.htm

still complex to comprehend. We recommend that the system of unified prices is evaluated by ARERA (Regulatory Agency for Energy Networks and Environment) in the light of the support of clean energy transition on the islands. The evaluation should take into account the need for more efficient generation, the implementation of demand side management, increase in share of renewable energy generation, electrification of transport etc.
Moreover, a decision based on the *Integrated text on electricity dispatching (TIDE): Overall guidelines* (Document for consultation 322/2019/E/eel), presented above, should be made by the national government. Finally, the system of unified prices should be clearly explained and brought closer to the other stakeholders through a visualised scheme or explanation.

Actors involved:
- **Regulatory Authority for Energy, Networks and Environment (ARERA)**
- Ministry for ecological transition
- DSOs

Recommendation 4.2: Introduce obligation for suppliers to invest in RES
As islands are characterised by a single energy company that acts as a DSO, generator, and a supplier, they should be obliged to have a specific share of energy from locally produced RES in the supply mix.

Such a measure would incentivise the energy company to either invest themselves in the RES generation or to buy electricity from the future small local RES plants. Since 2017 there is already an existing support scheme for the new RES plants and this obligation would provide additional push for the energy companies.

Actors involved:
- **ARERA**
- **Ministry for ecological transition**
- Local energy suppliers

Recommendation 4.3: Redirect fossil fuel remuneration to support for RES and storage

The system charges that all Italian consumers pay in support of the islands should be reformed. Gradually decreasing the remuneration for the operational costs (OPEX), would allow for these costs to be redirected for the clean energy transition and decarbonisation of the Italian islands.

The resources can be used to support the improvement of the local grids, implementation of different storage technologies and of demand side management. This would increase the flexibility of the system and allow for higher integration of RES. The implementation of this measure should be done in coordination with the Italian island taskforce.

Actors involved:
- **ARERA**
- **Ministry for ecological transition**
- Local island stakeholders

Recommendation 4.4: Provide capacity building towards DSOs to start implementing regulatory sandboxes on islands

Implementation of experimental regulatory sandboxes for the integration of new technologies for smart grids is ongoing by ARERA since 2014.[411]

We recommend using the regulatory sandbox approach to allow specific island DSOs to experiment with different designs of electricity tariffs (hourly tariff, time of use tariff, etc.). [412] The concept of regulatory sandboxes has been made possible in Italy to the DSOs through pilot regulation where DSOs can test various tariffs and local auxiliary services. DSOs are expected to propose regulatory sandbox models to the energy regulator, ARERA and ask for the approval for testing. No regulatory sandboxes have been tested on the islands up to now.

This recommendation goes in line with the **REPowerEU** measures on innovation and **sandboxing** requiring the Member States to promote the testing of new renewable energy technologies while applying appropriate safeguards. See Annex A for more details.

Regulatory sandboxes are ways for authorities, tasked with implementation and enforcing of specific legislation, to test innovative approaches and technologies in real-life situations through time limited implementation of exceptions to the existing legislation. Incentives for clean energy transition on the islands can be tested without a permanent change in legislation. It also gives room to evaluate the success of the experiment. We recommend for ARERA to organise training with island DSOs to inform about the possibility and benefit of using regulatory sandboxes through pilot regulation to test innovative solutions and technologies.

Regulatory sandboxes have already been used in Italy, Austria, Germany, and Netherlands for temporary tests of specific energy tariffs.[413]

Actors involved:

- **DSOs**
- **ARERA**
- Ministry for ecological transition
- Local stakeholders

5. Grid constraints due to congestion

Grid infrastructure constraints limiting the share of RES electricity and stringent requirements for RES on islands are a barrier for renewable energy development on the islands. Even though Italian islands have a low penetration of RES in their grids, the congestion of the islands' electricity networks prevents them from developing any more intermittent renewables.

The grid planning is slow and implementation of general rules that apply to the mainland are unfavourable to island characteristics. Moreover, the current regulation does not take into account possibilities offered by coupling RES with storage capacity, use of RES for self-consumption or demand side management that could ease integration of RES or e-mobility with the electricity grid.

[411] https://www.iea-isgan.org/wp-content/uploads/2021/10/Regulatory-Sandbox-2.0_For-Publication.pdf
[412] https://www.consilium.europa.eu/en/press/press-releases/2020/11/16/regulatory-sandboxes-and-experimentation-clauses-as-tools-for-better-regulation-council-adopts-conclusions/
[413] https://fsr.eui.eu/regulatory-sandboxes-in-the-energy-sector-the-what-the-who-and-the-how/

Legislation for energy storage has been developing with the inclusion of batteries. However, most of the testing has been done by TSO Terna, on islands of Sicily and Sardinia, where Storage lab has been implemented since 2015.[414] In addition, in 2021 Terna launched auction for storage facilities, where 23 storage facilities have been chosen to be used for the frequency reserve for Italy mainland. However, regulation for small storage devices that can be used for integration of RES on the islands have not yet been developed. The Decree of the Ministry of Economic Development of 14 February 2017 for Minor islands includes support for innovative solutions and hints at storage systems as a solution. There is a plan to change the Decree to specifically include support for electricity storage systems.

Recommendation 5.1: Put islands forward as innovative laboratories

In the NECP, Italy indicates Italian small islands as areas for exploring technologies and pathways for the energy transition. Islands are put forward as innovative laboratories. The islands could work with ARERA, DSOs, technology providers and research institutes to test the implementation of storage technology in combination with RES plants, e-mobility, and demand side management to provide flexibility on the existing grids. Such pilot projects would help to test what is possible within the island system constraints and to identify barriers in the existing practices and regulation to accelerate energy transition on the islands.

Funds could be allocated for research and innovation. Tax benefits could for instance be introduced, with special focus on energy storage systems that could help provide security of supply in cases of higher integration of RES.

The coordination of such testing and research activities, development of regulation, strategic plans and available funds can be a responsibility of the Italian islands' taskforce.

Actors involved:

- **ARERA**
- **Ministry for ecological transition**
- Academic institutions
- DSOs
- Local governments

Recommendation 5.2: Promote and support implementation of storage systems

In order to help the integration of RES into the existing networks an enabling framework (regulation, grid codes and support schemes) need to be adopted that supports implementation of storage devices. While most countries do not have specific policies promoting energy storage, development is ongoing as demonstrated in Annex B – Examples of frameworks for Storage.

This recommendation goes in line with the **REPowerEU** measure to ensure that plants for the **production of energy from renewable sources, their connection to the grid, the related grid itself or storage assets** are presumed to be of **overriding public interest** for specific purposes. See Annex A for more details.

[414] https://www.terna.it/en/electric-system/system-innovation/pilot-storage-projects

Based on the results from innovative projects and regulatory sandboxes in Italy[415] and experiences from other EU member states, an enabling framework needs to be defined between ARERA, relevant ministries, and DSOs operating on the islands. Storage systems can also help provide security of supply for the non-interconnected islands and decrease the dependence on the oversized thermal plants and use of fossil fuels.

Actors involved:
- **ARERA**
- **Ministry for ecological transition**
- **DSOs**
- Academic institutions
- Local governments

6. Support measures focus on household level and not on community level

The support scheme for renewable energy and energy efficiency on the islands based on the Ministerial Decree of 2017 is directed towards a household level, but not to energy communities. As a result, not many communities have seen the light so far. When wanting to develop RES projects each household would have to require changes in the spatial restrictions. This procedure is very lengthy and complex today. Therefore, the only initiative group of household might have to join in a community or collective initiative, would be to collectively apply for changes in spatial restrictions. The collective application of households for incentives for clean energy projects is not possible right now.

Recommendation 6.1: Introduce possibility of clustered applications
The Decree should be reviewed to allow for the submission of clustered applications. This way citizens and local stakeholders or communities could organise themselves in clusters to apply for similar support measures. This can be done through an energy community, cooperative or organised by a third party, such as energy service company (ESCO).

The advantages of collective or cluster applications for support are a faster implementation of the clean energy measures and the creation of standardised solutions that can be rolled out on Italian islands. The procedure of applying for incentives could also involve facilitators that provide energy advice and provide funds for technical assistance, to help prepare such clustered applications.

Actors involved:
- **Ministry for ecological transition**
- **GSE**
- **ENEA**
- Local stakeholders

Recommendation 6.2: Raise awareness about existing incentives
In order to raise awareness to islands on the incentives provided by the Decree of 14 February 2017, systematic action of regional and local stakeholders should be organised. Local municipalities

[415] Regulatory sandboxes are possible in Italy as pilot regulation where DSOs can test various tariffs and local auxiliary services. DSOs are expected to propose regulatory sandbox models to the energy regulator, ARERA and ask for the approval for testing. No regulatory sandboxes have been tested on the islands up to now. (Based on the interview with ARERA)

should have clarity on the existing support schemes so that they can provide guidance to the local stakeholders or at least be able to direct them to transparent and easily accessible explanation online.

This recommendation goes in line with the **REPowerEU** measures and recommendations to **facilitate citizen and community participation**. See Annex A for more details.

Actors involved:

- **GSE**
- **Ministry for ecological transition**
- **ENEA**
- **Local governments**
- Regional and local energy agencies

7. The regulation on energy communities is underdeveloped

Energy communities are a rather novel concept not only for Italian islands but for the whole country. Italy adopted measures on Renewable energy communities (RECs) and incorporated them into national law (Law 8/2020),[416] introducing the term collective self-consumers (CSC) and RECs for collective energy actions on a temporary basis, based on directive (EU) 2018/2001. The related implementing measures, mainly referring to pricing, are the ARERA Resolution no. 318 of 2020[417] and the Ministerial Decree of 16 September 2020.[418] The Legislative Decree 8 November 2021, n. 199,[419] that transposes EU 2018/2001 on the promotion of the use of energy from renewable sources, including incentives for RECs, and self-consumption configurations. While the phase from January 2021 onwards was considered as a transitory experimental stage only for REC and CSC, a basic definition for Citizen Energy Communities (CEC) was adopted in November 2021 with Legislative Decree 8 November 2021, n.2010.[420]

GSE launched a web portal[421] through which applications for the allocation of incentives for RECs and CECs are to be submitted. However, there are currently very few active energy communities on the mainland. One example energy community has been formed on the island Ventotene[422] in the Tyrrhenian Sea.

Moreover, traditionally energy companies need to adhere to strict regulations and obtain a permit to act as an energy supplier. Such complex administration and legal barriers do not make it attractive for citizens to start a community.

It is worth noting that the PNRR,[423] in Mission 2: Green Revolution and Ecological Transition (Section M2C2), provides for a total investment of EUR$ 2.20 billion[424] to boost and support energy

[416] https://www.gazzettaufficiale.it/eli/id/2020/02/29/20G00021/sg
[417] https://www.arera.it/it/docs/20/318-20.htm
[418] https://www.gazzettaufficiale.it/atto/serie_generale/caricaDettaglioAtto/originario?atto.dataPubblicazioneGazzetta=2020-11-16&atto.codiceRedazionale=20A06224&elenco30giorni=true
[419] https://www.normattiva.it/uri-res/N2Ls?urn:nir:stato:decreto.legislativo:2021-11-08;199
[420] https://www.normattiva.it/uri-res/N2Ls?urn:nir:stato:decreto.legislativo:2021-11-08;210
[421] https://supportogse.service-now.com/csm?id=invia_segnalazione
[422] https://www.themayor.eu/fr/a/view/ventotene-becomes-the-first-energy-community-island-in-the-mediterranean-9106
[423] https://italiadomani.gov.it/content/dam/sogei-ng/documenti/PNRR%20Aggiornato.pdf, page 129 – 130.
[424] https://italiadomani.gov.it/it/Interventi/investimenti/promozione-rinnovabili-per-le-comunita-energetiche-e-l-auto-consumo.html

communities. The objective is to spread and reinforce the practice of energy self-production in small and remote areas where it is necessary to strengthen the economy situation and social impact. For this purpose, public administrations, households, and micro-enterprises will be identified in municipalities with less than 5000 inhabitants.

Recommendation 7.1: Prioritise regulatory framework and provide right incentives
We recommend prioritising further enabling regulation for energy communities. The regulation should provide a clear advantage to forming an energy community. The support can be in the form of incentives for specific projects, tax benefits, technical assistance for starting an energy community and simplified procedures for clean energy projects. Moreover, the regulation for energy communities on the islands could be coupled with the regulatory sandboxes to allow controlled environments for testing of the new tariffs and innovative technologies.

This recommendation goes in line with the **REPowerEU** measures and recommendations to **facilitate citizen and community participation**. See Annex A for more details.

Actors involved:
- **Ministry for ecological transition**
- ARERA
- GSE

Recommendation 7.2: Provide clear communication on procedures
To enable energy communities, communication is important. The Ministry of ecological transition and GSE, together with regional govenrment should provide clear and transparent communication about advantages and disadvantages of forming an energy community, guidance on how to start a community and available support. This should be easy to access and written clearly in easy language. Designing the level and details of communication can also be a task for the Italian islands' taskforce.

Local and regional offices, municipalities or contact points that could provide more information on clean energy transition, existing legislation and possible procedures might be an option for improving the communication with the local stakeholders who are tasks to take initiative.

Actors involved:
- **Ministry for ecological transition**
- GSE
- Regional and local offices and Municipalities

Conclusions for Italy

The Clean energy for EU islands secretariat conducted an analysis of the legal and regulatory framework which supports clean energy projects in Italy. The resulting Regulatory inventory is publicly available online. Based on the analysis of the inventory and information gathered via surveys and interviews, the Clean energy for EU islands secretariat has brought together relevant stakeholders in Focus Groups and a National Stakeholder Meeting to identify barriers to the clean energy transition on Italian islands, and formulated recommendations to overcome them. This mission has gained in importance since the publication of the REPowerEU package.

Italy has been adopting and implementing regulatory solutions to support energy transition and specifically islands transition. This has been done through the Decree of the Ministry of Economic Development of 14 February 2017 and other legislation in the past two years.

Italian islands still have low (less than 10%) share of RES in their energy systems. While support systems for clean energy projects are available, islands have not been active enough in using this national support. One of the main barriers to this development have been too stringent planning regulation. Spatial planning guidelines from the national level are needed to harmonize the spatial legislation between different regions. In addition, in this study we recommend developing regional master plans which indicate suitable areas where energy projects can be implemented to speed up and simplify procedures for such projects.

Italy's Recovery and Resilience Plan included a focus on islands. Implementation started with the action to identify ready projects and help island municipalities to develop these projects. Moreover, there is a national committee which will monitor implementation of projects that receive funding. This approach is in line to what is needed for the islands. However, it is recommended that such approach is taken for all funding and for implementation of National Energy and Climate Plan. Therefore, we recommend setting up a national Island Taskforce which will have a mandate to represent island priorities and challenges on the national level and help shape policy which will support energy transition on the islands. The taskforce can help identify gaps and create opportunities for local stakeholders to receive assistance in preparation and implementation of local energy and climate plans.

In parallel to support and increased visibility of island stakeholders and their challenges, there is a need to re-assess unified pricing for the islands. The system operators on non-interconnected islands are not incentivised to change the current system. We recommend that the support for fossil fuels be redirected to clean energy. Suppliers should be required to provide a specific share of renewable electricity to their consumers and island DSO should be supported through capacity building to enable them to use regulatory sandboxes and to start making changes to the existing system. The changes require ARERA to intervene and find an optimal pricing scheme to match the energy transition goals.

However, even with all the proposed changes the grid constraints pose a barrier. To increase RES integration capacity of existing grids, they need to be more flexible. Electricity storage systems are currently mainly used in Italy for TSO level management. However, with the right remuneration schemes, storage systems can be deployed on the islands as well.

Engagement of local stakeholders is crucial for successful energy transition. While awareness raising is needed to provide more information on the opportunities and benefits that energy transition can bring to the local stakeholders, they are often stopped by complexity of the procedures. Most support systems are provided for a single household. However, community applications would make administration easier for consumers and would help accelerate the use of the provided funds. Energy communities are one form of community involvement in energy projects. Clear and supportive regulation is needed.

The proposed recommendations are in line with existing activities in Italy but require improved and clear regulation, monitoring of implementation and feedback from local stakeholders to the national government for strategic planning and increased engagement.

Sweden

The first Chapter of this Sweden country section provides an overview of the existing policy and legislation for clean energy on Swedish islands. The second Chapter contains the identified legal and regulatory barriers, based on the survey and the interviews, and the recommendations, based on the Focus Group Meetings and the National Stakeholder Meetings.

Policy and Legislation for clean energy on Swedish Islands

Introduction to the Swedish Energy sector – Relevant Actors

Throughout the report several key stakeholders in the Swedish Energy sector will be referred to. Therefore, hereunder a short overview of these actors and their role is given.
Swedish energy policy is defined by the national government. The main national stakeholder responsible for energy is the **Ministry of Infrastructure**.[425] On the national level, the Ministry is supported by the **Swedish Energy Agency**[426] (Energimyndigheten), responsible for matters of the supply and use of energy in Sweden, and leading Sweden's transition to a sustainable energy system. The **Energy Market Inspectorate**[427] (Energimarknadsinspektionen) is responsible for energy distribution and trade through well-functioning energy markets (electricity, district-heating and natural gas).

The electricity transmission system (220-400 kV) is owned by the Swedish government and managed by the **Svenska Kraftnat** as Transmission System Operator (TSO). In comparison to other electricity systems Sweden's 20-130 kV electricity grid is owned and operated by regional system operators (mainly three companies **Vattenfall Distribution, Ellevio, and E.on Elnät Sverige**) , in addition to the TSO. Vattenfall is the largest owner and operator of regional electricity distribution grids. Finally, local grids (below 20 kV) are owned and operated by 170 companies of which 129 are municipal.[428] Svenska Kraftnat is responsible for the overall balance of the electricity system in Sweden, while regional system operators are responsible for their regions.

Vattenfall is a state-owned electricity company. Vattenfall produces, distributes, and sells electricity, heat, and gas, primarily in the Nordic countries, Germany, and the Netherlands. Sweden is part of the common Nordic electricity market, **Nord Pool**, which was started by TSOs from Sweden, Norway, Denmark, and Finland and currently includes all the Nordic, Baltic, Central Western European and UK markets, and more.

Swedish islands and their governance

Sweden has 267 570 islands,[429] 984 of which are inhabited. Swedish islands cover a total area of 12 112 km² (3% of land area), located in 20 regions. Gotland is the largest island with 2,994 km², Öland comes second with 1,342 km². There are several islands with an area between 50 and 100 km² and a very high number of smaller islands. Of the total population of Sweden, 17% lives on the islands, a

[425] https://www.government.se/government-of-sweden/ministry-of-infrastructure/
[426] https://www.energimyndigheten.se/en/
[427] https://ei.se/
[428] https://www.ri.se/sites/default/files/2021-11/Power%20Distribution%20SE.pdf
[429] https://www.scb.se/hitta-statistik/statistik-efter-amne/miljo/markanvandning/strandnara-markanvandning/pong/statistiknyhet/kust-strander-och-oar-2013/

large part of them on the islands of Södermalm in Stockholm and Hisingen in Gothenburg. This corresponds to 1 602 930 people.

Swedish islands are treated the same as municipalities/administrative units on the mainland. The only exception is the island of Gotland, which is a separate region, while the rest of the islands are considered an integral part of Sweden as mainland. For the purposes of this paper the islands will be referred to as separate entities, regardless of the question if they are interconnected with the mainland.

General policy

According to the **Integrated National Energy and Climate Plan for Sweden**[430] for the period 2021-2030, the Member State does not have a national 2030 target for renewable energy, but it has set a target of reaching 100% renewable electricity production by 2040. For the heating sector, the share of renewable energy (RE) in final energy consumption for heating and cooling will increase slightly from the current level to 69% by 2030. When it comes to the transport sector the 2030 target is set to 47.7% of RE in total final consumption.

There is no national strategy for the islands. Island municipalities, as other municipalities, are expected to align with the national strategy. Most islands are considered as part of the Sweden mainland, except for Gotland. While there is the Swedish Association of Local Authorities and Regions (SALAR), there are no known island associations or national platform for exchange of experience specifically related to islands. Swedish islands and island municipalities are looking to the national government for the guidance or a roadmap towards energy transition. There are regional energy offices (Energikontoren)[431] that have as goal to help respective regions reach their energy and climate goals and to create the right conditions for that.

Gotland island has a regional government which is also a municipality. Gotland has been connected to the mainland since the 1960s. The interconnection is expected to be improved in the coming period due to the ongoing plan of the cement industry (Cementa) to electrify its production. Such improved interconnection would help increase capacity for integration of renewable energy on Gotland island. Gotland has its own energy strategy and related financing. It has been identified by the national government as the region that should provide an example for the energy transition. Gotland has formed its own energy agency for planning and implementing the energy transition on the island.

The electricity sector is regulated through the Electricity Act (1997:857).[432] In addition, for implementation of the electricity projects, aside from the Electricity Act the main legislation includes the Electricity Ordinance[433], and Environmental Code.[434] More details on specific national

[430] https://energy.ec.europa.eu/system/files/2020-03/se_final_necp_main_en_0.pdf
[431] https://www.energikontorensverige.se/om-oss/
[432] http://www.riksdagen.se/sv/dokument-lagar/dokument/svensk-forfattningssamling/ellag-1997857_sfs-1997-857
[433] https://www.riksdagen.se/sv/dokument-lagar/dokument/svensk-forfattningssamling/elforordning-2013208_sfs-2013-208
[434] https://www.government.se/49b73c/contentassets/be5e4d4ebdb4499f8d6365720ae68724/the-swedish-environmental-code-ds-200061

legislation and regulation and their support to clean energy transition can be found within the Regulatory inventory.[435]

Sweden has a fully liberalised energy market. Swedish electricity prices are defined for four separate regions and used to solve the bottlenecks. DSOs can affect the dynamic pricing based on the local situation on the grid. There is an ongoing discussion on how the local energy markets will be implemented. When it comes to local energy markets, Gotland for example would be one local market.

Sweden is working on national, regional, and local flexibility markets. National flexibility markets already exist. But there are no clear rules of operation yet. Part of the discussion is on the need to implement more price areas and the extension to flexibility services.

Renewable energy

Support systems

In Sweden there are no island specific support systems in place at national level. Sweden provides support schemes for PV and onshore wind energy. The support instruments for heating are, in general, technology neutral. In the transport sector Sweden supports use of biofuels and RES-fuelled vehicles (electric, hydrogen etc.) and their needed charging infrastructure.
Support schemes are:

- Quota system: the single largest and most significant RES support mechanism in Sweden. Energy suppliers are obliged to prove that a certain quota of their electricity production was generated by RES.
- Tax regulation mechanisms: ensure different tax privileges to RES.
- Tax reductions for households[436]: The installation of renewable energy devices and the replacement of conventional heating sources with renewable ones may be deducted from tax.
- Energy and carbon dioxide taxes: Energy and carbon dioxide taxes are levied on the supply, import and production of fossil fuels for heating purposes. Renewable energy sources are exempt from these taxes.
- Nitrous oxide tax: The producers of heat are obliged to pay a tax according to their nitrous oxide emissions. Heat producers using renewable energy sources are exempt from this obligation.
- Tax regulation mechanism: Companies supplying, importing, and producing fossil fuels are obliged to pay energy and carbon dioxide taxes. Biofuels are exempt from these taxes.
- Biofuel quota: Fuel suppliers are obliged to increase the share of biofuels in diesel- and petrol fuels in order to reduce the greenhouse gas emissions.
- Climate leap - Includes two support mechanisms:
    - Klimatklivet[437] - the investment support that makes it possible to invest in fossil-free future technology and green transition. It can be applied for by companies, municipalities, regions and organizations throughout Sweden.

[435] https://clean-energy-islands.ec.europa.eu/countries/sweden
[436] https://www.skatteverket.se/privat/fastigheterochbostad/gronteknik.4.676f4884175c97df4192860.html
[437] https://www.naturvardsverket.se/klimatklivet

- Industriklivet[438] - The broad R&D support for local and regional climate measures also enables subsidies for RES-T (renewable transport) projects. Within Industriklivet, grants can be made for preliminary studies, research, pilot and demonstration projects and investments in process industry emissions and greenhouse gases, negative emissions, and strategically important initiatives within industry.

- Electric bus premium: The government subsidies electric and hybrid buses in order to increase their share in public transport.
- Climate premium: The government subsidies electric and hybrid heavy machinery purchases in order to increase their share.
- Bonus system: The bonus-malus system incentivises legal persons (both private persons and companies) to purchase low-emitting vehicles through subsidies and tax discounts, and taxes newly bought high-emitting vehicles more heavily.

RES projects authorisation process

Authorisation procedure is often managed by the regional government, mostly on an application/approval basis.

Electricity and heating grids

Electricity grids

In the electricity networks, grid access is technology-neutral. Hence, RES are not given priority. As discussed above, while there are three main regional distribution system operators, there are 170 local distribution system operators. The majority of local distribution system operators are municipally owned. The country has a smart meter penetration rate of 100%. The electricity supplier switching rate for household customers in 2018 was 11.3%.

Heating grids

The Act on District Heating (2008:263)[439] establishes rules for operation of district heating plants and grids. Companies operating a district heating network are obliged to negotiate terms with the operator of a heating plant. After negotiations, the plant can be connected under negotiated or regulated grid connection.

Supported energy efficiency measures

When it comes to improving energy efficiency, Swedish policies take the form of support for small actors and obligations for larger stakeholders. This support includes advisory services, financial support for R&D, and the survey of energy efficiency requirements for large companies (250 employees and an annual turnover of over EUR 50 million), industries and energy producers.

Supporting policies

Sweden has a relatively developed framework of RES policies and certification systems (including mandatory trainings) in place. Public authorities are obliged to make purchases and other forms of procurement that are in line with the energy efficiency and low-emissions standards set out by national and EU legislation. Sweden also highlights the importance of regional and local competency-building by offering climate and energy advising.

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[438] https://www.energimyndigheten.se/forskning-och-innovation/forskning/industri/industriklivet/

[439] http://www.riksdagen.se/sv/dokument-lagar/dokument/svensk-forfattningssamling/fjarrvarmelag-2008263_sfs-2008-263

Self-consumption and community energy

Sweden has not incorporated any supportive legislation for energy communities in its legislation or political system yet. However, other changes in legislation[440] already make it easier for energy communities to share energy. Energy communities are allowed to own and operate microgrids without having to obtain the grid operators permission.

The Swedish Energy Market inspectorate (EI) has developed a proposal for the transposition of the Clean Energy Package.[441] The terms from the Clean Energy Package are fairly literally translated. Energy sharing is possible to a limited extent, for collective self-consumption within the same building and with one connection to the grid. The aim of the EI was that energy communities should be easy to set up with minimal bureaucracy. Prosumers and micro-producers are exempted from some fees or are subject to lower rates than larger producers.

[440] Ordinance (2007: 215) on exemptions from the requirement for a network concession according to the Electricity Act (1997: 857) available here

[441] https://www.regeringen.se/4afc14/contentassets/8d350a3c57644a9faf9ffe7678743961/eir2020_06_kapacitetsutmaningen-i-elnaten.pdf

Identified barriers and recommendations to overcome them

This second Chapter contains the legal and regulatory barriers, which were given priority by Swedish stakeholders during the detailed assessment of the current regulatory framework. Stakeholders were consulted through a survey and through interviews (see Annex 1 of the Sweden country study[442] for a detailed assessment). For each of the identified regulatory barriers, the Secretariat proposes recommendations. Both barriers and recommendations were further discussed within the Focus Group Meetings (see Annex 2 of the Sweden country study[443] for more information).

Regulatory barriers for the energy transition on the Swedish islands are presented in the order of their priority given by the stakeholders. Some of the identified barriers are barriers for renewable energy development that exist both on the islands and on the mainland. Moreover, a few national stakeholders pointed out that in their opinion there are no special barriers to energy transition on the islands in comparison to other parts of Sweden. This aspect is further discussed under Barrier 2. In the recommendations, the focus lies on the concrete barriers encountered by islands. The table below represents the list of barriers (marked in blue) and the proposed recommendations (marked in white).

Table 7 - Barriers and Recommendations - Sweden

Barrier 1. **Lack of visibility of island challenges and vision for island energy transition**
Recommendations:
1.1 Mandate a committee of the experts on the national level for clean energy transition on the islands
1.2 Develop national island policy and integrate it into NECP
1.3 Guidance and support in the development and implementation of local energy action plans
1.4 Create a framework for local stakeholder engagement in energy projects
Barrier 2. **Lack of security of supply on the islands**
Recommendations:
2.1 Develop long-term grid planning to prepare for island energy transition
2.2 Support the use of demand-response, flexibility services and microgrids on the islands
2.3 Channel funding from the EU towards regional and local (grid) development
Barrier 3. **Lengthy approval procedures for clean energy projects**
Recommendations:
3.1 Seek compromises between sectors and support research & innovation
3.2 Develop national spatial planning guidelines
3.3 Master Plan per island to define go-to areas and simplify procedures
Barrier 4. **Lack of clear regulation for energy communities and energy sharing**

[442] Available online at: https://clean-energy-islands.ec.europa.eu/insights/publications/study-regulatory-barriers-sweden-findings-and-recommendations
[443] Available online at: https://clean-energy-islands.ec.europa.eu/insights/publications/study-regulatory-barriers-sweden-findings-and-recommendations

Recommendations:

4.1 Develop an enabling framework for energy communities on islands

4.2 Introduce a simplified authorisation procedure for energy communities

4.3 Increase local stakeholder awareness

1. Lack of visibility of island challenges and vision for island energy transition

Even though Sweden's energy policy is well-integrated with its climate objectives, Swedish islands suffer from a lack of guidance for the energy transition from the national bodies. Islands face specific challenges. Islands face specific challenges includeas seasonality of economic activity and energy demand, priorities in use of limited natural resources by different sectors (tourism, industry, energy, etc.), access to mainland (transport and needed resources), environmental protection and energy security. These island-specific challenges undoubtedly affect islands' development and energy transition priorities. However, there is no systematic analysis of the specific state of the Swedish islands with regards to their energy systems. In some cases, islands are part of a larger municipality. Their priorities are not always given sufficient attention in the overall municipality or regional needs and priorities,. Due to all these factors, there is currently no visibility of island energy needs and challenges on the national level, which has resulted in a lack of an island specific vision or policy from the national authorities. Moreover, there is lack of understanding among many national and regional stakeholders on why island policy or actions should be a focus in the overall national strategy and policy.

While the Swedish Energy Agency has been active on different actions regarding electricity[444], there is a lack of policies from other governmental agencies to achieve the full decarbonisation of the islands.

Transport on the island and to/from the island is an important aspect of island development and especially of the energy transition. There are already several energy transition actions in the transport sector on some islands (Gotland[445], Skaftö[446], Öckerö[447], Lidingö[448]). Moreover, pioneers in the shipping industry.[449] have been leading the island energy transition with regards to maritime transport The Initiatives for maritime transport are usually taken up by the operator (contracted every 10 years). Different authorities, such as National Traffic Authority or regional or local government have defined procurement requirements for the decarbonisation of transport. Although, the decarbonisation of transport is dictated through national legislation under various national procurement laws.[450], the reality of the transport energy transition is not the same for all

[444] Electric mobility and collaboration with Gotland region/island.

[445] https://electreon.com/projects/gotland ; https://cleantechnica.com/2022/07/25/scania-helps-db-schenker-go-fossil-free-on-swedish-island-of-gotland/ ; https://chariot-electricbus.com/public-operator-nobina-in-sweden-values-e-mobility-and-has-made-an-order-for-122-new-electric-buses/

[446] https://www.ellevio.se/privat/energismart/framtidens-energi/elektrifieringsvag-pa-sjon/

[447] https://www.tidningen.se/ockero-kommun/da-blir-farjorna-till-ockero-kommun-eldrivna/

[448] https://www.mynewsdesk.com/se/fossil-free-marine/pressreleases/fossil-free-marine-lanserar-vaerldens-foersta-dnv-verifierade-marinstation-miljoesaekerhet-paa-en-helt-ny-nivaa-3184349

[449] https://www.itf-oecd.org/sites/default/files/docs/decarbonising-maritime-transport-sweden.pdf

[450] https://www.government.se/government-policy/central-government-adminstration/public-procurement---how-it-works-in-

the islands. For some islands the action is from national, while for others from the local level. Such legislation forces regional bodies and local governments to take climate and sustainability into consideration in their procurement requirements. This has been seen as effective, as local governments usually focus on the economic aspects and the costs of the transport, and not on sustainability.

Another issue that small communities are facing is the lack of technical expertise and resources. Smaller islands, outside of the Stockholm region, have very little knowledge on the energy system. Moreover, there are currently no incentives that could help them to gain the expertise and investigate this issue.

Recommendation 1.1: Mandate a committee of the experts on the national level for clean energy transition on the islands

To provide more visibility to the challenges and needs of Swedish islands energy transition, the energy, (electricity, heating and transport) situation on the Swedish islands needs to be assessed. In the short term, the National government, specifically the Ministry for Infrastructure, should give a mandate to a committee of experts to analyse the current situation of the energy sector and transition on the Swedish islands.

The committee of experts should bring together experts that understand the functioning of electricity, heating, and transport sectors, Swedish multi-level government regulation, and challenges in implementation of energy projects on the Swedish islands. The analysis should review variation of Swedish islands to understand their characteristics and challenges. As a result of the analysis of the current state-of-play the committee should provide an overview and deeper understanding of the current situation and the challenges and priorities of the islands which would help accelerate the energy transition. The report should include guidelines or indications for the relevant national stakeholder on how to best support the energy transition for the islands. The results should at least be increased visibility of island challenges and greater awareness of the need for systemic action.

In the long term the sustainable island development topic should be included in the plans of existing national, regional, and local bodies in order to ensure good collaboration between different sectors. Such systematic approach to island development will provide adequate monitoring and evaluation of island challenges and implementation status of the energy transition with regards to foreseen targets, as discussed in recommendation 1.2 below.

Due to their size and typically compact communities, islands could be used as innovation centers and become best practice examples for the rest of Sweden on how the energy transition can be implemented. Lessons learned could be transferred to municipalities on the mainland.

Actors involved:
- **Ministry of Infrastructure, Department for Energy and Digital Development**
- Association of local governments and regions
- TSO, DNOs, DSOs

sweden/#:~:text=Swedish%20procurement%20legislation%20is%20based,mutual%20recognition%20must%20be%20followed.

- Swedish Energy Agency
- Research institutes and Academia
- Local stakeholders (Civil sector, Private sector)

Recommendation 1.2: Develop national island policy and integrate it into NECP

We recommend that the Ministry of Infrastructure, department for Energy and Digital Development sets up island specific policies to provide clarity on island development, keeping into account regional and local differences of small municipalities, and the different sizes, regional features and energy systems characteristics of the islands. The next NECP[451] should clearly identify the role of islands in the energy transition of Sweden.

Sweden's policies have increased the focus on sustainable and inclusive regions and engagement of stakeholders at the regional level. This includes a formalised forum for dialogue between the national government and politicians as well as civil servants at the regional level.[452] Such regional policy includes attention for rural and urban development but does not include islands as a separate category. This is a pity as regional energy agencies Energikontoren[453] can be a support to implementation and monitoring of defined island policy.

Moreover, even though regional energy and climate plans exist in Sweden, there is a need for a clear vision of the island energy transition in the regional plans. This process should include local island stakeholders in order to address local needs and priorities. As mentioned above, the maritime and transport sector have taken the lead in roadmaps for decarbonisation. Existing roadmaps, such as the roadmap of the Swedish industry association Energi Företagen,[454] and the Swedish Shipbuilders Association[455] can serve as an example. The Energy Institute of Gotland is also currently working on energy roadmaps. Such roadmaps can be adapted to be more tailored to other islands.

Experiences from Gotland can serve as an example for policies for other Swedish islands, taking into account that most islands have less human capacity and resources than Gotland. The Gotland region has been identified by the national government as the region that will be an example region for the energy transition. [456] The Swedish Energy Agency was given the mandate to do this. The Gotland government has taken initiative to collaborate with the Swedish Energy Agency and other stakeholders to plan and implement the energy transition on the island.

Regulatory best practice

Island specific policies

Ireland

Regarding Strategic Planning, specific attention – in a cross-sectoral way – is given to islands in Ireland in the Policy Document 'Our Rural Future': rural development policy for 2021-2025[457]. In Chapter 10 'Supporting the Sustainability of our Islands and Coastal Communities' 12 Policy Measures are mentioned

[451] https://energy.ec.europa.eu/system/files/2020-03/se_final_necp_main_en_0.pdf
[452] https://www.oecd.org/cfe/_Sweden.pdf
[453] https://www.energikontorensverige.se/om-oss/
[454] https://www.energiforetagen.se/fardplan-energi/
[455] https://www.sweship.se/wp-content/uploads/2015/08/Klimatf%C3%A4rdplan_Svensk-sjofart_Klimat_web.pdf
[456] https://www.gotland.se/
[457] https://www.gov.ie/en/publication/4c236-our-rural-future-vision-and-policy-context/

for the Islands and Coastal communities, the main one being the 10 Year policy for Islands Development to 2030. It promises an extensive consultation process with island communities and will address issues such as housing, health, energy, utilities, waste management, climate change, education, digital connectivity, employment, infrastructure, and transport. Specifically for islands, the Irish Government is developing a new national policy for the development of the islands around Ireland, called the 'new National Policy for the Future Development and Sustainability of Communities on the Offshore Islands of Ireland[458]. This new 10-year Policy for Islands Development to 2030[459] will focus on developing new opportunities for islanders and building sustainable futures for island communities. "*The Programme for Government commits to the production of a long-term plan outlining how Ireland will take advantage of the significant potential of offshore energy on the Atlantic Coast and achieve 5GW capacity in offshore wind by 2030 off Ireland's Eastern and Southern coasts. This plan will position Ireland to become a major contributor to a pan-European renewable energy generation and transmission system.*" The focus with the Irish islands when it comes to energy transition is on using the islands as testing sites for the innovative technologies and behavioural change.

Italy

In Italy, the Decree of Ministry of Economic Development of 14 February 2017 defined objectives and incentive methods for renewable energy in the small Italian islands non-interconnected with the electricity grid of the continent. Specifically, it established the minimum development objectives for the production of electricity and thermal energy from renewable sources, and the methods for supporting the investments needed for their realisation. According to several stakeholders, this Decree has been proven very useful for all Italian Islands. On Salina Island for example, a project of 200kW PV has been developed for the association of hoteliers of Salina. Via the Decree this project receives Feed-in Tariffs, which is now, with high energy prices, particularly relevant. Also, for Pantelleria the Decree was effective: the municipality has presented 5 projects on energy efficiency in municipal buildings that have been all financed via the Decree.

Actors involved:

- **Ministry of Infrastructure, Department for Energy and Digital Development**
- Ministry of the Environment
- Ministry of Defence
- Ministry of Finance
- Swedish Mapping, Cadastral, and Land Registration Authority
- Swedish Energy Agency: Energimyndigheten
- Association of local governments and regions
- Local stakeholders (Academia, Civil sector, Private sector)
- National/regional stakeholders (trade and industry associations)

Recommendation 1.3: Guidance and support for the local level in the development and implementation of local energy action plans

In addition to policies and roadmaps, islands need specific guidance and resources from the national and regional government on how they could accelerate the energy transition. Local energy and climate action plans, aligned with regional roadmaps, are needed to specify local energy needs and priorities. The clean energy transition agenda[460] or Sustainable energy and climate action plans[461] can be used as a template.

[458] https://www.gov.ie/en/publication/02a4d-island-policy-consultation-paper/

[459] https://www.gov.ie/pdf/?file=https://assets.gov.ie/132413/433aebac-f12a-4640-8cac-9faf52e5ea1f.pdf#page=91

[460] https://clean-energy-islands.ec.europa.eu/assistance/clean-energy-transition-agenda

[461] https://publications.jrc.ec.europa.eu/repository/bitstream/JRC112986/jrc112986_kj-na-29412-en-n.pdf

Most Swedish islands are part of the municipality located on the mainland. As mentioned above, there is a lack of technically skilled personnel on the local level for preparation of the energy plans and projects. The national government should define and implement support schemes to provide advisory services, such as capacity building and/or technical assistance to local and regional governments for the realisation of local energy plans. A starting point can be to discuss the current needs and priorities with the Association of local governments and regions and local stakeholders . Existing education programmes of the Swedish Energy Agency[462] or academic institutions can be consulted to find which support is already being offered.

The Swedish Energy Agency currently provides funding and loans for companies investing in clean energy. The agency offers one to two calls per year for grants.[463] Such funding is made to companies, without focus on regional, local or island stakeholders. We suggest the organization of specific support and awareness raising campaigns that will help local stakeholders and local governments to organise, plan and prepare viable projects for funding. Moreover, the calls should be relatively consistent in the required documentation allowing streamlining of the project preparation. The national or regional governments should collaborate with the Swedish Energy Agency, to include islands energy priorities in the planned national calls or organise a separate call for island projects. In that sense islands can be excellent candidates for multisectoral[464] projects (including energy and water, waste, tourism or social innovation) and for innovation project implementation.

The **RES Simplify** report contains some useful recommendations and examples for **guidance**. See Annex A for more details.

Support can take the form of workshops for municipalities, guidelines for energy transition and examples of roadmaps from similar municipalities or regions. Where there is not enough capacity on the islands, the taskforce can provide support through technical assistance to engage external support for projects. More technical knowledge of the DSOs and TSOs can also be mobilised to help sustainable development of island regions.

Actors involved:

- **Swedish Energy Agency: Energimyndigheten**
- **Association of local governments and regions**
- **Energikontoren (Energy regional offices)**
- Ministry of Infrastructure, Minister for Energy and Digital Development
- Ministry for Enterprise and Innovation
- Academia
- Local stakeholders (Civil sector, Private sector)
- National/regional stakeholders (trade and industry associations)

Recommendation 1.4: Create framework for local stakeholder engagement in energy projects

Enabling local citizen and stakeholder ownership of energy production is crucial for local acceptance of the energy transition. However, in Sweden there seems to be a lack of awareness

[462] https://www.energimyndigheten.se/om-oss/stod-och-bidrag-att-soka-pa-energiomradet/
[463] https://www.iea.org/articles/swedish-energy-agency
[464] Stockholm Environment Institute works with islands to develop multifunctional projects and test innovation in Sweden and abroad. One example is Gridless solutions project https://www.sei.org/projects-and-tools/projects/sei-initiative-on-gridless-solutions/

among relevant stakeholders, including national policy makers, of the need for decentralisation of the energy system. Therefore, there is a need for awareness raising regarding decentralisation of the energy sector among all levels of the government. Based on the analysis from recommendation 1.1., a dedicated committee of experts can identify the main stakeholders and the strategy for awareness raising campaign.

In order to foster the energy transition on the local level, the national policy should require participation of local stakeholders in energy projects on the islands. The requirement could be implemented through a share of local ownership, or additional financial support for projects that include local stakeholder involvement. Engagement of the local stakeholders including both civil sector, local government and local SMEs can help foster sustainable development as local stakeholders can see their economic benefit in the energy transition and can guide the transition to include their local needs and priorities.

The **RES Simplify** report contains some useful recommendations and examples for **early engagement in local information, dissemination, and discussion**. See Annex A for more details.

Regulatory best practice

Participation of local stakeholders in energy projects

Scotland – Local Energy Scotland developed a 'Community and Renewable Energy Scheme (CARES) Toolkit,' a step-by-step guide for the process of developing a renewable energy project. A specific module of this toolkit deals with 'Shared Ownership', explaining some of the legal structures that exist such as, Owner operator, Commercial developer led, Joint ventures, Shared revenue, Split ownership, etc.

Spain, Balearic Islands – The Balearic Climate change and Energy Transition Law[465], approved in February 2019, requires the public administrations of the Balearic Islands to support participation of citizens, civil society organisations and local renewable energy communities in the deployment and management of renewable energy systems. More precisely, Article 49 of the Law defines that the local participation of at least 20% should be encouraged or obliged for RES projects with less than 5.0 MWp or more than 5 MWp, respectively.

The national government, together with the group of regional energy offices Energikontoren and the Association of local governments and regions should create a platform where local stakeholders from different islands can connect, share ideas, and identify common projects. Such platform can be used for awareness raising, capacity building, exchange of best practices and forms, and providing information on available regional, national and EU level support mechanisms.

Actors involved:

- **Ministry of Infrastructure, Department for Energy and Digital Development**
- **Energikontoren (Energy regional offices)**
- Ministry of the Environment
- Ministry of Defence
- Ministry of Finance
- Association of local governments and regions
- Local stakeholders (Academia, Civil sector, Private sector)
- National/regional stakeholders (trade and industry associations)

[465] http://www.caib.es/sites/canviclimatic2/es/llei_de_ccite/

The **RES Simplify** report contains some useful recommendations and examples **for financial participation of affected municipalities**. See Annex A for more details.

2. Lack of security of supply on the islands

Quality of supply and stability of the electricity grid is high in Sweden[466]. However, security of supply from the point of view of continuity of supply is comparable or worse than in most European countries (based on System Average Interruption Duration Index and System Average Interruption Frequency Index)[467]. The Swedish national energy system is structured around centralised large-scale power productions.[468] Historically Sweden, Norway and Finland have always had a strong transmission system operator (TSO) where the electricity must be transmitted from the North, where most of the large capacity generation is located, to the South, where most of the demand is. When the consumption increases, the electricity grid simply cannot sustain the supply of power, due to the long distance over which it has to be transported.[469]

Furthermore, a rather limited grid capacity on the Swedish islands not only causes electricity shortages, but also represents a significant constraint to the implementation of new large scale renewable energy projects. The DSOs and TSOs do not have special guidelines for operation on the islands. From the perspective of grid connection, there are two types of islands: those that are connected with through direct current (DC),and those that are connected through alternating current (AC).Gotland is one of the islands connected with a DC cable. It is important to note that power outages on islands with this type of connection are more common and lengthy. For the islands with DC connection to the mainland, there are no clear responsibilities regarding which party should function as a TSO and is responsible for balancing. Additionally, on Gotland, the customers cannot participate in the Swedish balancing markets.

In addition, Sweden, Norway, and Finland have a specific planning of the grid and energy market. The grid is seldom a buyer of flexibility. There is a planning for a "10-year-winter" for the electricity markets and demand flexibility. This means that the demand is planned so that the country can be ready for a 10-year-winter[470] that would require a lot of capacity. Therefore, the rules are made such that back-up capacity is overdesigned: grid capacity use is more constrained to keep available for expected high 10-year-winter demand. Hence, the colder the winter the more there is a need for flexibility of the local grid, if renewable energy is to be used in decentralised manner. This concept and difference in the flexibility market is specific to Sweden. When harmonising with EU legislation, one has to be creative in defining the possible flexibility services that would make sense for the Swedish energy system. In 2015 the Swedish government tasked the Swedish Energy Market Inspectorate to define measures for increasing use of demand side flexibility to improve, among others, efficiency of energy use. The inspectorate defined the measures in the report published in 2016, where main measures included increasing awareness, providing hourly data, and creating a regulatory framework for aggregators[471]. In addition, the recently completed CoordiNet project[472]

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[466] https://www.ri.se/sites/default/files/2021-11/Power%20Distribution%20SE.pdf

[467] https://cdn.eurelectric.org/media/5089/dso-facts-and-figures-11122020-compressed-2020-030-0721-01-e-h-6BF237D8.pdf

[468] Libertson, F. Competing socio-technical narratives in times of grid capacity challenges: the representative case of Sweden. Energ Sustain Soc 11, 4 (2021). https://doi.org/10.1186/s13705-021-00279-4

469 Ibidem.

[470] Exceptionally cold and long winter

[471] https://ei.se/download/18.5b0e2a2a176843ef8f582/1608542148119/Measures-to-increase-demand-side-flexibility-in-the-Swedish-electricity-system-Ei-R2017-10.pdf

[472] https://coordinet-project.eu/projects/coordinet

tested various options for flexibility market and services in the five regions of Sweden, including Gotland. As a result of the project, a new flexibility regulation is currently being prepared.
Even though islands security of supply is usually discussed from the point of view of the interconnections and the need for enforcement of the grid, there are many other options to be considered, including for example island systems, microgrids, storage, demand side management, flexibility services. Moreover, for some islands, either because of their topology or low population growth, it is very costly to upgrade the grid and it would be more suitable to apply local solutions. DSOs are currently not incentivised to use any other solution but to implement more connections, as their revenue is mainly based on the expansion of the grid.

Responsibilities of Distribution System Operators (DSOs) on the islands

Distribution system operator (DSO) is defined in the Electricity Directive as a "natural or legal person who is responsible for operating, ensuring the maintenance of and, if necessary, developing the distribution system in a given area and, where applicable, its interconnections with other systems, and for ensuring the long-term ability of the system to meet reasonable demands for the distribution of electricity". DSOs are fully regulated, allowed revenue is determined by national authorities, and unbundled companies, supply and generation, should be legally separated from the distribution. However, in cases where the DSO has less than 100 000 customers or the system is isolated[473], the no full legal unbundling is obligatory[474]. This can be the case for many DSOs on the islands.

Traditionally DSOs have roles of: system operators, to secure a reliable flow of electricity through their network to their customers; information providers, to assure efficient access for its users; and neutral market facilitators, providing non-discriminatory access to their network for other system users (electricity generators, service providers etc.).[475]

Based on the recast of the Electricity Directive (2019/944/EC) within the Clean Energy Package, the scope of activities that **can be handled** by DSOs has been extended to: managing smart metering and data; unlocking flexibility, and procuring flexibility services on a market-based approach. In addition, **under certain conditions** national authorities may allow DSOs to have the following responsibilities: plan and connect EV charging infrastructure[476], which includes the recharging points for EVs and integrate local storage facilities[477], own, develop, manage, and operate storage facilities.

Here we provide what are the responsibilities of DSOs operating on the islands in a few Member State examples.

Portugal

The Portuguese islands archipelago Azores is considered an isolated system. Therefore, the electricity grid is operated by the vertically integrated company, Electricidade dos Açores (EDA). EDA is responsible for generation, transmission, distribution, and the electricity market on Azores islands.

Spain

Energy systems on the Spanish islands, Canary islands and Balearic islands, are the responsibility of Red Electrica de España, a partly state-owned and public limited Spanish corporation which owns and operates the national electricity transmission grid in Spain. In addition, Red Eléctirca is the system operator in Non-Peninsular Territories. Although the market is liberalised (with Law 54/1997), Endesa is the only company responsible for thermal generation and distribution of electricity on the islands. Endesa is also one of the main suppliers of electricity in Spain as well as on the islands. It used to be state owned company, today it is a private company with majority ownership by the Italian Enel.

Ireland

[473] Art. 35 of the Electricity Directive 2019/944/EC https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019L0944

[474] https://cdn.eurelectric.org/media/5089/dso-facts-and-figures-11122020-compressed-2020-030-0721-01-e-h-6BF237D8.pdf

[475] https://cdn.eurelectric.org/media/5089/dso-facts-and-figures-11122020-compressed-2020-030-0721-01-e-h-6BF237D8.pdf

[476] Art. 33 of the Electricity Directive 2019/944/EC https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019L0944

[477] Art. 36 of the Electricity Directive 2019/944/EC https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019L0944

ESB Networks is the distribution system operator in Ireland. ESB Networks is state owned. ESB Networks is also responsible for the Irish islands. Irish islands are part of the wholesale, Single Electricity Market (SEM) that is run by Single Electricity Market Operator (SEMO). SEMO is a joint venture between the transmission system operators in both jurisdictions – EirGrid and System Operator Northern Ireland (Soni). ESB is responsible for the electricity network from 110 kV and lower. For Ireland it is specific that the network length per capita is four times the European average and overhead lines outnumber underground cables with the ratio 6 : 1.[478]

Italy

Electricity network infrastructure including transmission and distribution is 94 % owned by Terna. Terna is a 29.9 % state owned company. The rest of the distribution system (6 %) is public and owned by the local distribution system operators.[479] Italy had 128 distribution network operators who are responsible for specific areas based on the concession rights. Italian islands defer based on their size, with 30 considered small islands, and between interconnected (9) and non-interconnected (21) small islands. For small islands with less than 100 000 consumers, the local electricity company is not fully legally unbundled but is required to be functionally unbundled for different activities (generation, distribution, supply), in line with the EU directive and National Law no 124 from 4 August 2017. In regard to 21 non-interconnected island systems, they are not integrated in the wholesale market. The Italian regulatory energy agency (ARERA) has suggested a hybrid system for these islands to assure there is no regulated price, but also that these small systems are not part of the wholesale market creating distortions[480].

Croatia

Croatia, similar to Ireland, Croatia has no specific policy for the islands in comparison to the mainland when it comes to the electricity grid. Croatia has one DSO, named HEP-Operator Distributcijskog Sistema (ODS) whose roles and responsibilities extend to the Croatian islands. HEP-ODS is publicly owned company unbundled from the previously vertically integrated electricity company HEP. HEP-ODS is a state owned company.

Greece

Greek islands are characterised by 29 non-interconnected electricity systems. Greece has one DSO, Hellenic Electricity Distribution Network Operator (HEDNO), responsible for operation, maintenance, and development of the electricity distribution network. HEDNO has two responsibilities[481]: distribution network operator for the whole territory of Greece, and system and market operator for the non-interconnected islands (NII).[482] Therefore, on Greek non-interconnected islands HEDNO is responsible for the management of the production, market operation and the management of systems of these islands. HEDNO is a 51% state owned company.

Recommendation 2.1: Develop long-term grid planning to prepare for island energy transition

A particular feature of the Swedish market is the centralised nature of the grid and the resulting grid constraints. As a result, small municipalities and islands are the ones faced with the congestion problems. There is a need for a more decentralised system.[483] To tackle outages, overhead lines in local grids are, for example, being replaced by underground cables so that the grid will be able to better withstand an increasing number of storms.[484] The challenges of the electricity grids on the islands need to be further analysed by the committee described in the recommendation 1.1.

As part of the long-term planning, the focus on grid planning should shift from the perspective of the electricity demand driven, to a broader approach planning for smart and flexible island systems. A clear, overarching political vision for grid regulation is required if the electrical grid is to be a facilitator for development of the whole system.[485] There is a role for the national government as

[478] https://www.esbnetworks.ie/who-we-are/our-networks

[479] https://cms.law/en/int/expert-guides/cms-expert-guide-to-electricity/italy

[480] https://www.arera.it/it/docs/19/322-19.htm

[481] https://deddie.gr/en/deddie/i-etaireia/ruthmistiko-plaisio/

[482] Non-interconnected islands are considered those whose electricity distribution network is not connected to the mainland transmission or distribution network.

[483] Libertson, F. Competing socio-technical narratives in times of grid capacity challenges: the representative case of Sweden. Energ Sustain Soc 11, 4 (2021). https://doi.org/10.1186/s13705-021-00279-4.

[484] https://www.iva.se/globalassets/info-trycksaker/vagval-el/vagvalel-swedens-future-electrical-grid.pdf

[485] https://www.iva.se/globalassets/info-trycksaker/vagval-el/vagvalel-swedens-future-electrical-grid.pdf

well as the national regulator to develop a tariff methodology that effectively incentivises network operators to take a forward-looking approach. New tariffs can make it more interesting for DSOs to invest in alternative grid solutions as opposed to simply grid expansion.
That way the focus can also be placed on smaller local municipalities, and islands that may not have many inhabitants but need access to storage and flexibility services. New methodologies should consider long-term planning and be predictable, since a change of direction every four years makes it difficult for network operators to invest in long-term projects.

Moreover, energy communities in Sweden are allowed to own and operate microgrids without having to obtain the grid operators permission. This makes it much easier for energy communities to share energy. A move towards communities can help remove some of the grid constraints and risks of congestion (see also the recommendations under barrier 4).

This recommendation goes in line with the **REPowerEU** measure to ensure that plants for the **production of energy from renewable sources, their connection to the grid, the related grid itself or storage assets** are presumed to be of **overriding public interest** for specific purposes. See Annex A for more details.

Actors involved:
- **Ministry of Infrastructure, Department for Energy and Digital Development**
- **Swedish Energy Agency: Energimyndigheten**
- **TSO**
- **DSOs/DNOs**
- Swedish Energy Markets Inspectorate (Ei)
- Regional system operators
- Svenska Kraftnat, TSO

Recommendation 2.2: Support the use of demand-response, flexibility services and microgrids on the islands

Next to long-term planning, regulation should support stakeholders investing in grid-supporting storage, flexibility and smart grids in municipalities and islands. As mentioned in the recommendation above, new tariff methodologies should be designed to stimulate flexibility solutions that benefit both the prosumer and the network owner. Sweden was part of the EU project CoordiNET[486] which finalized in 2022. As a part of the project, Swedish pilots established flexibility markets aimed at reducing grid constraints and improving and innovating on the coordination between TSO and DSOs.[487] The CoordiNET pilot in Gotland has used a SWITCH platform for peer-to-peer trading between producers and consumers in cases of grid maintenance causing limitations and curtailment by renewable power production. As a result of this project, the Swedish government is preparing a regulatory framework for flexibility market and services.
Successful pilot programs by the Swedish Energy Agency can also be a benefit to islands. Aside from Gotland, a pilot microgrid has been operating on the Arholma[488] island. Using these examples, tailored pilots can be implemented on islands in line with the local or regional energy and climate plans. Results from pilots can serve as an example for further investments in the Swedish mainland. Through the pilots, coordination among TSO, DNOs and DSOs can be improved, which can help islands to become more self-sufficient if needed. Moreover, the pilots can be used to increase the

[486] https://nordicelforum.org/wordpress/wp-content/uploads/2019/12/3C-D-NordEnergi-flexprojekt-NEMF-slut.pdf
[487] https://coordinet-project.eu/pilots/sweden
[488] https://www.vattenfalleldistribution.se/var-verksamhet/innovation/arholma/

know-how of local DSOs. Knowledge exchange and lessons learned from different pilots should be supported.

Concerning storage, electricity grid companies may own energy storage, but this right is limited to the use for the purpose of covering grid losses or temporarily replace lost electricity connection in case of power cuts.[489] Legislative changes to the Swedish Energy Storage Act are proposed in order to make storage more attractive for grid companies.[490] To cope with the insufficient grid capacity, battery storage is of critical importance. The national government should therefore prioritise legislation on energy storage and communicate clearly what the rules are, so that grid operators and market participants are pushed to move towards storage solutions.
While this is needed for the whole country, an (island specific) support system for storage would help overcome the barrier of insufficient grid capacity on the islands and provide an alternative solution. Batteries as a form of short-term storage have advantages over pumped storage in terms of modularity, land use, efficiency, and cost. However, pumped hydro can serve as a better seasonal storage. National policies can have a strong positive influence on the attractiveness of electricity storage.

Additionally, regulatory sandboxes are ways for authorities and regulators, tasked with implementation and enforcing of specific legislation, to test innovative approaches and technologies in real-life situations through time limited implementation of an exception to the existing legislation and regulation.[491] Sweden is already developing regulatory sandbox programmes.[492] We recommend to include the possibility for DSOs to experiment with different designs of electricity tariffs (hourly tariff, time of use tariff, etc.). More specifically, we recommend that the local island municipalities serve as demarcated pilots. This way incentives for clean energy transition on the islands can be tested without a permanent change in the enabling framework. It also gives room to evaluate the success of the experiment. Successful experiments can facilitate a change in legislation to help islands and small local municipalities to become more self-sufficient.

This recommendation goes in line with the **REPowerEU** measures on **innovation and sandboxing** requiring the Member States to promote the testing of new renewable energy technologies while applying appropriate safeguards. See Annex A for more details.

While most countries do not have specific policies promoting energy storage, development is ongoing as demonstrated in Annex B – Examples of frameworks for Storage.

Actors involved:

- **Ministry of Infrastructure, Department for Energy and Digital Development**
- **Swedish Energy Agency: Energimyndigheten**
- Swedish Energy Markets Inspectorate (Ei)
- DSOs,
- Regional system operators (DNOs)
- TSO

[489] https://www.iva.se/globalassets/info-trycksaker/vagval-el/vagvalel-swedens-future-electrical-grid.pdf
[490] https://www.iva.se/globalassets/info-trycksaker/vagval-el/vagval-el-lagring.pdf
[491] https://www.consilium.europa.eu/en/press/press-releases/2020/11/16/regulatory-sandboxes-and-experimentation-clauses-as-tools-for-better-regulation-council-adopts-conclusions/
[492] https://www.iea-isgan.org/wp-content/uploads/2019/05/ISGAN_Casebook-on-Regulatory-Sandbox-A2-1.pdf

Recommendation 2.3: Channel funding from the EU towards regional and local (grid) development

Funding from the EU should be used to stimulate DSOs towards grid expansion to invest in research and investment in a more decentralised system. The national government should pay particular attention to the island regions when developing plans allocating EU funding.

The Just Transition Fund prioritises the least developed regions, outermost territories, and islands of the EU. For example, the Greek government provides financial support to six Greek islands through the Just Transition Fund in order to tackle issues expected following the planned withdrawals of local petrol-fuelled power stations[493]. Sweden could envisage in its implementation of the Just Transition to channel funding towards local grid development and decentralisation (support to regional energy agencies), in particular islands with a DC connection that suffer most from long power outages.

For example, the Trans-European Networks for Energy (TEN-E)[494] include large scale projects, though attention should be given to how they benefit islands in the energy transition process. Every 2 years, the European Commission draws up a new list of projects of common interest (PCIs). More information on the benefits of PCI can be found here. PCIs have the right to apply for funding from the Connecting Europe Facility (CEF), which has for the period 2021-2027 a budget of 25 billion with 5.8 billion for energy.

We recommend that the national government, through the committee of experts from recommendation 1.1, collects feedback on the local needs and priorities and re-evaluates the funding planning to include the islands' sustainable transition. The stakeholder engagements under recommendation 1.4, can serve as useful input for such an re-evaluation. The committee can produce a report on the different needs, depending on regional and local priorities.

Regulatory best practice

Island specific policies

Spain

Spain has a dedicated budget for clean energy development on islands under the Recovery and Resilience Facility. The Spanish NECP already provided for the need for progress in the energy transition on the islands. Within this axis of ecological transition, the Spanish Recovery and Resilience plan, in its Component 7 "Deployment and integration of renewable energies", includes in line with the provisions of the NECP, a vision of island specificity in the energy transition and the promotion of renewable energies in the islands, the improvement of the functioning of their energy systems through storage and the implementation of "Smart Islands" projects, as well as citizen participation through renewable energy communities. There is even a chapter called 'Sustainable energy on the islands through the promotion of an Agenda for Energy Transition in the Islands, support for projects for the penetration and integration of renewable energies in island and non-mainland systems". The allocated budget amounts to 700 million Euro with one third of the funds going to the Balearic Islands and two thirds to the Canary Islands, given their larger population and the fact that they do not have systems connected to the mainland.

Actors involved:

- **Ministry of Infrastructure, Department for Energy and Digital Development**
- **Ministry of Finance**
- Swedish Energy Agency: Energimyndigheten
- Local and regional governments
- Local stakeholders, private and civil sector

[493] https://energypress.eu/jtf-support-for-6-islands-closing-high-cost-polluting-local-power-units/

[494] https://energy.ec.europa.eu/topics/infrastructure/trans-european-networks-energy_en

- Academia

3. Lengthy approval procedures for clean energy projects

Clean energy projects are facing complex and lengthy authorisation and permitting procedures, especially the wind energy projects, as detailed in Annex 3 of the Sweden country study[495]. The projects' applications have to go through several consultative bodies and be accepted by the municipality before project realisation. Consequently, the total permitting procedure for wind farms may exceed 10 years. As a result, even though many islanders, including Gotlanders, are willing to increase wind power production, few wind farms are being constructed.

Furthermore, the permitting process is particularly long in case of new grid infrastructure projects. The length of these procedures (which are also lengthy for regular expansion of the grid) is one of the reasons many investors prefer mainland locations above the islands in Sweden.
Moreover, island territories and their surrounding areas are often covered by the environmental restrictions through spatial plans. In these regions it is some cases not allowed to install RES plants, even on rooftops on the whole island.

Another factor contributing to the lengthy procedures are the conflicts of interest in permitting procedures between wind power developers, the Swedish Armed Forces, municipalities, and environmental protection groups. National interests are focused on environmental protection of certain lands and water areas.[496] Plans for clean energy transition must therefore be assessed taking into account this national interest, and effects and impact of climate change.

Recommendation 3.1: Seek compromises between sectors and support research and innovation
In order to address the lengthy procedures and the conflicts of interest we recommend that the different institutions involved in spatial planning, such as the Swedish Armed Forces, the Ministry of Infrastructure, Department for Energy and Digital Development, the Ministry of the Environment and the Ministry for Enterprise and Innovation, and their underlying agencies, propose new legislation for permitting and authorisations procedures. The Swedish building code and the Swedish environmental codes should be updated to include energy transition and climate change considerations in the procedures. Such legislative change requires negotiations between the different ministries and cooperation between the respective agencies.

Regulatory best practice
UK
Experience from the United Kingdom – with the Offshore Wind Sector Deal in March 2019 and the cooperation between the wind sector and the military that followed - has shown that it is possible to adapt military training areas in order to find an adequate balance between energy, climate, and air protection issues. In addition, the wind energy sector has developed a technical solution for dynamic beaconing of wind turbines in military training areas in order to reduce the night-time visual impact on local residents.

Concerning the municipalities and the environmental protection interests, negotiations between different sector bodies could focus on support given to research and innovation for clean energy adapted to smaller municipalities and islands. EU funding such as presented in recommendation 2.3, can be redirected to research & innovation on clean energy transition on islands. This also falls in line

[495] Available online at: https://clean-energy-islands.ec.europa.eu/insights/publications/study-regulatory-barriers-sweden-findings-and-recommendations
[496] https://www.naturvardsverket.se/amnesomraden/skyddad-natur/olika-former-av-naturskydd/omraden-av-riksintresse/

with the focus of environmentally driven business development in energy issues, as stipulated in the National Strategy for Sustainable Regional Growth and Attractiveness 2015-2020.[497]

Engaging municipalities who have the power to approve and reject wind projects is key. For this reason, the engagement of local stakeholders (cfr. recommendation 1.3) could also help to influence municipalities to see the different interests in prioritising clean energy. The platform could also be used to explore priorities and potential other solutions that match needs and priorities on Swedish islands, including smaller, multi-functional and community co-owned projects. Finally, ministries can use these negotiations to reassess the national interests. With increasing attention and need for prioritising clean energy, energy and climate should become a factor of national interests (Riksintresse).

Actors involved:

- **Ministry of Defence, Swedish Armed Forces**
- **Ministry of Infrastructure, Department for Energy and Digital Development**
- **Ministry of Environment**
- Ministry for Enterprise and Innovation
- Swedish Energy Agency: Energimyndigheten
- Swedish Environmental Protection Agency
- Swedish Agency for Marine and Water Management
- Local stakeholders (Academia, Civil sector, Private sector)
- National/regional stakeholders (trade and industry associations)

Recommendation 3.2: Develop national spatial planning guidelines

As mentioned above the clean energy transition on the islands should be supported instead of obstructed by spatial planning constraints. In Sweden, there are initiatives to draw up spatial planning supported by a variety of stakeholders. At the national level, the Ministry for Enterprise and Innovation is responsible for the Swedish Building and Planning Act and collaborates with the National Board of Housing, Building and Planning.[498] Stockholm is the only county however, to have regional land-use plans.[499] The Swedish national strategy for sustainable regional growth and attractiveness 2015-2020 addresses the need for local municipalities to work together with regional and national actors.[500] Municipalities are responsible for their own spatial planning, within the framework set out at the national level.[501] Since islands are typically part of mainland municipalities, it is important that the islands energy situation and priorities are taken into account within municipal spatial plans.

Therefore, there is a need for guidelines from the national level, for the integration of clean energy projects in the spatial planning at the municipal level, that take into account islands. The goal of the guidelines is to facilitate municipalities to develop their spatial plans. The Ministry for Enterprise and

[497] https://www.government.se/contentassets/ad5c71e83be543f59348b54652a0aa4e/swedens-national-strategy-for-sustainable-regional-growth-and-attractiveness-20152020---short-version.pdf
[498] https://archive.nordregio.se/Metameny/About-Nordregio/Nordic-working-groups/nwgcityregions/The-spatial-planning-systems-in-the-Nordic-region/index.html
[499] https://www.oecd.org/regional/regional-policy/land-use-Sweden.pdf
[500] https://www.government.se/contentassets/ad5c71e83be543f59348b54652a0aa4e/swedens-national-strategy-for-sustainable-regional-growth-and-attractiveness-20152020---short-version.pdf
[501] https://www.boverket.se/en/start/building-in-sweden/developer/planning-process/

Innovation in collaboration with the committee of experts (recommendation 1.1) could be mandated to propose these guidelines.

The guidelines should detail how to plan clean energy projects with regard to land use priorities, and the national environmental protection interests. Such guidelines have to take into account the characteristics of islands and small municipalities, and seek compromises between nature conservation, military activities, preservation of historical sites, tourism, industry, and sustainable and clean energy. The existing regional plans for the Stockholm county, including the archipelago, can serve as an example. The use of the guidelines would help assure that the approval process is not additionally complicated or delayed during the process of adoption of local plans.

Actors involved:
- **Ministry for Enterprise and Innovation**
- Swedish Mapping, Cadastral, and Land Registration Authority
- Swedish Energy Agency: Energimyndigheten
- Swedish Environmental Protection Agency
- Swedish Agency for Marine and Water Management
- Local stakeholders (Academia, Civil sector, Private sector)
- National/regional stakeholders (trade and industry associations)

Recommendation 3.3: Adopt Master plan to define go-to areas and simplify procedures

As mentioned above, the lengthy permitting process is one of the reasons why investors prefer mainland locations to the islands in Sweden. Integration of spatial planning and sectoral strategies is fundamental in identifying and accessing suitable land for renewable energy projects but is not a common practice. In light of the land-use conflicts mentioned above, we recommend developing an integrated approach via the creation of a detailed regional Master Plan (including islands) that leads to approval of the preferred areas or sites for clean energy development. This Master Plan should define go-to areas specifically for one or more renewable energy sources. Consequently, projects in these zones should be subjected to fast-track and simplified permitting procedures and lightened environmental impact assessments, not undermining the need for nature conservation. The regional Master Plan should be taken into account when preparing/updating the Municipal Master Plans.[502] A similar approach is already seen with the National wind energy strategy[503]. However, the go-to areas are yet to be defined.

Designating go-to areas and simplifying procedures will help to remove the obstacle. The aim is to make it attractive for investors to exploit locations on islands and serve as push for DSOs to expand grid. In 2013, the Swedish Government directed a committee to investigate and write a report on regional spatial planning, including coordination at the regional and local level.[504] This report can serve as a basis for designing simplified permitting procedures and go-to areas.
The expert committee (recommendation 1.1) in collaboration with the Ministry of Defence, the Ministry of Infrastructure, Department for Energy and Digital Development, and the Ministry for Enterprise and Innovation or their respective agencies, should take the lead in setting up a

[502] https://www.boverket.se/sv/samhallsplanering/sa-planeras-sverige/kommunal-planering/ and https://www.boverket.se/sv/samhallsplanering/sa-planeras-sverige/planeringsfragor/vindkraft/
[503] https://www.energimyndigheten.se/nyhetsarkiv/2021/nationell-strategi-for-en-hallbar-vindkraftsutbyggnad/
[504] https://archive.nordregio.se/Metameny/About-Nordregio/Nordic-working-groups/nwgcityregions/The-spatial-planning-systems-in-the-Nordic-region/index.html

masterplan which suits the national needs. Local and national stakeholders can consult the plans for the relevant islands and regions. Authorities such as the Swedish Mapping, Cadastral, and Land Registration Authority, the Swedish Energy Agency, and the Swedish Environmental Protection Agency should assess the plans in accordance with their expertise.

This recommendation goes in line with the **REPowerEU** measure to define '**renewables go-to areas**' which are particularly suitable areas for the installation of production of energy from renewable sources. See Annex A for more details.

A possible simplification can be to explore options for a single permit, for instance for any clean energy project on the islands or for a specific size and type of the project which is considered priority in strategic documents.

This recommendation goes in line with the **REPowerEU** measure to provide for **accelerated procedures** for projects in go-to zones. See Annex A for more details.

In line with REPower EU national government should ensure that local and regional bodies involved in authorisation process have adequate capacities to respond to the needs for an accelerated energy transition. As part of this reinforcement, regional energy agencies should also be supported.

This recommendation goes in line with the **REPowerEU** recommendation on permitting, which stipulates that Member States should **ensure sufficient and adequate staffing**, with relevant skills and qualifications, for their **permit-granting bodies** and environmental assessment authorities. See Annex A for more details.

Actors involved:

- **Ministry of defence, Swedish Armed Forces**
- **Ministry of Infrastructure, Department for Energy and Digital Development**
- **Ministry for Enterprise and Innovation**
- Swedish Energy Agency: Energimyndigheten
- Swedish Mapping, Cadastral, and Land Registration Authority
- Swedish Environmental Protection Agency
- Swedish Agency for Marine and Water Management
- Local stakeholders (Academia, Civil sector, Private sector)
- National/regional stakeholders (trade and industry associations)

4. Lack of clear regulation for energy communities and energy sharing

In Sweden hydro and nuclear power are the main sources for energy. These technologies are often owned by a few national or multinational companies. Development of energy communities has therefore been relatively slow. Even though the lack of a legal framework is not facilitating the development of energy communities in the Member State, there is a lot of interest in this concept on the islands. For example, inhabitants of Gotland, expressed their interest in organising energy communities and getting involved in energy sharing. The Gotland energy centre[505] provides further clarification and aims to engage people in the energy transition through energy communities.
In response to the EU legislation on energy communities and energy sharing, the Swedish Energy market inspectorate (Energimarknadinspektionen) was mandated to analyse the necessary measures to transpose the European rules for energy communities and energy sharing.[506] Energy

[505] https://energicentrum.gotland.se/
[506] https://www.ei.se/om-oss/publikationer/publikationer/rapporter-och-pm/2020/ren-energi-inom-eu---ett-genomforande-av-fem-rattsakter---ei-r202002

communities are allowed to own and operate microgrids without having to obtain the permission from the grid operators. This is however limited to own consumption. Third party ownership and sharing is not permitted.[507] The Swedish government was also called by the members of Parliament to take measures to strengthen energy communities.[508] The legislation for renewable and citizen energy communities has been prepared by the EI but not yet adopted[509]. It is not yet clear how the implementation will look like. As a result, there currently is no clear benefit to local stakeholders to engage in anenergy community[510].

In addition, there is no economic incentive to do local energy sharing or Peer2Peer trading. This concept was experimented on Gotland through CoordiNet project, but energy taxation does not encourage citizens or investors to favour clean energy sources. Based on the energy price on the island, islanders do not feel the difference between locally and nationally produced energy, except for the solar installation on their roofs.

Energy sharing between consumers in apartment buildings has recently been made possible in Sweden.[511] It is possible to a limited extent, i.e., for collective self-consumption within the same building and with one connection to the grid. Prosumers are exempted from some fees or are subject to lower rates than larger producers.

Recommendation 4.1: Develop enabling framework for energy communities on the islands
Energy communities aim to be beneficial to islands by improving the local economy through involvement of local communities and businesses in the energy transition process and achieving a just transition. The involvement of energy communities in the energy transition aims to help increase knowledge of energy topics, implementation of energy efficiency measures and uptake of renewable energy. Lack of transmission capacity to the mainland in the event of overproduction means that there are restrictions on the amount of renewable energy which may be installed.
A move towards well-designed communities could help to remove some of the obstacles of grid expansion and risks of congestion.

Therefore, prioritisation of guidelines for implementation of the regulatory framework for energy communities should be one of the main points of attention for the clean energy transition on the Swedish islands. The proposed translation of the European concepts into Swedish legislation results in terms that are not commonly used in Sweden. Such guidelines for implementation may help bridge the gap between the European framework and the Swedish context.

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[507] *https://www.riksdagen.se/sv/dokument-lagar/dokument/svensk-forfattningssamling/forordning-2007215-om-undantag-fran-kravet-pa_sfs-2007-215*
[508] https://www.riksdagen.se/sv/dokument-lagar/dokument/svar-pa-skriftlig-fraga/atgarder-for-att-starka-energigemenskaper_H912285
[509] https://www.iiiee.lu.se/article/policy-brief-energy-communities-sweden
[510] https://mdpi-res.com/d_attachment/energies/energies-14-04982/article_deploy/energies-14-04982-v3.pdf?version=1635493186
[511] https://www.energimyndigheten.se/nyhetsarkiv/2022/63-miljoner-till-30-projekt-for-resurs--och-energieffektiv-bebyggelse/?_t_id=3AX-vxQQrH9MhC6RqlpAHQ%3d%3d&_t_uuid=g9TLwy%2fnSAiJb572YzoXmg&_t_q=energigemenskaper&_t_tags=language%3asv%2candquerymatch&_t_hit.id=Energimyndigheten_Content_Pages_NewsPage/_b9c6d13f-eaf2-409f-87cb-215ab9a4b8a5_sv&_t_hit.pos=2

This recommendation goes in line with the **REPowerEU** measures and recommendations to **increase public acceptance of renewable energy projects**. See Annex A for more details.

Facilitating participation and increasing stakeholder awareness are important to stimulate energy communities. Energy communities and any community/local stakeholders' involvement in energy projects represent a new approach for both energy sector and local stakeholders. We recommend faster adoption of the regulation to provide clarity to the ecosystem in which energy communities should operate. In order to enable uptake of energy communities, the regulatory framework should provide support/benefits for energy communities involved in sustainable energy projects. The support can be in the form of incentives for specific projects, tax benefits and technical assistance for starting an energy community. The Swedish Energy Agency is currently exploring pilots for energy communities.[512] This could provide relevant input for creating a facilitating framework and relevant services.

This recommendation goes in line with the **REPowerEU** measures and recommendations to **facilitate citizen and community participation**. See Annex A for more details.

Actors involved:

- **Ministry of Infrastructure, Department of Energy and Digital Development**
- **Swedish Energy Markets Inspectorate (Ei)**
- **Swedish Energy Agency**
- Ministry for Enterprise and Innovation
- Local stakeholders (Academia, Civil sector, Private sector)
- National/regional stakeholders (trade and industry associations)

Recommendation 4.2: Introduce a simplified authorisation procedure for energy communities

As previously discussed, permitting procedures are lengthy and complex, which creates further barriers for an energy community to get started. Therefore, another important support mechanism would be to introduce simplified procedures for energy communities to realise clean energy projects. This can be a task for the Islands taskforce, in collaboration with the EI. The simplified procedure will also help to address congestion and obstacles concerning grid expansion.

Local and regional stakeholders also need to be made more aware of the possibilities with energy communities. Increased knowledge-sharing and capacity building of citizens, local actors, and municipalities, in addition to the abovementioned framework will aid in stimulating communities. While there is some political willingness to deal with the topic of renewable energy, we recommend to instore a local contact point charged with (renewable) energy topics at municipal level, and specifically advising island inhabitants on the frameworks for energy communities and energy sharing. To keep knowledge and tasks streamlined, this local contact point would be advised to collaborate with the Islands taskforce.

This recommendation goes in line with the **REPowerEU** recommendation on permitting, which stipulates that Member States should **ensure sufficient and adequate staffing**, with relevant skills and qualifications, for their **permit-granting bodies** and environmental assessment authorities. See Annex A for more details.

[512] https://www.energimyndigheten.se/nyhetsarkiv/2021/lokala-satsningar-pa-energigemenskaper-kan-ge-nya-insikter-for-framtidens-energiomstallning/?_t_id=3AX-vxQQrH9MhC6RqlpAHQ%3d%3d&_t_uuid=g9TLwy%2fnSAiJb572YzoXmg&_t_q=energigemenskaper&_t_tags=language%3asv%2candquerymatch&_t_hit.id=Energimyndigheten_Content_Pages_NewsPage/_2bcbb908-a677-42b8-be01-784beb96a008_sv&_t_hit.pos=1

Another option is to create a one-stop shop at national level to address some of the specific challenges. This recommendation addresses the point of getting the right information since it is a complex matter. The focus should lie on training and education. The national government could help setup a platform, trainings, or conferences with island stakeholders to foster the discussion, give light to the best practices, or even provide funding for mentorship programs. This can be coordinated and monitored by the Islands taskforce.

REPowerEU – One-stop-shop
The recommendation on permitting stipulates that Member States should design a one-stop-shop for granting permits for renewable energy projects required in Directive (EU) 2018/2001 in such a way as to limit the number of authorities involved to what is necessary and maximise efficiency, taking into account public resources and the benefits of concentrating technological, environmental, and legal expertise.

Some best practices are given in the best practice box below.

Regulatory best practice
Scotland – Local Energy Scotland developed a 'Community and Renewable Energy Scheme (CARES) Toolkit,' a step-by-step guide for the process of developing a renewable energy project. A specific module of this toolkit deals with 'Shared Ownership', explaining some of the legal structures that exist such as, Owner operator, Commercial developer led, Joint ventures, Shared revenue, Split ownership, etc.
Spain, Balearic Islands - The Balearic Climate change and Energy Transition Law[513], approved in February 2019, requires the public administrations of the Balearic Islands to support participation of citizens, civil society organisations and local renewable energy communities in the deployment and management of renewable energy systems. More precisely, Article 49 of the Law defines that the local participation of at least 20% should be encouraged or obliged for RES projects with less than 5.0 MWp or more than 5 MWp, respectively.

Actors involved:
- **Swedish Energy Market Inspectorate (Ei)**
- Ministry of Infrastructure Ministry of Infrastructure
- Ministry of the Environment
- Local governments

Recommendation 4.3: Increase local stakeholder awareness
As possibilities are limited, lack of awareness of the possibilities and advantages of the clean energy transition is also an issue. Platforms to motivate consumer dialogue for energy communities, such as https://energigemenskaper.se/info/, exist. But the challenge remains how to reach different groups and types of citizens.

To overcome this problem of misinformation about RES or lack of information we recommend developing a central platform for information on RES (special focus on wind energy) and collect information on the individual projects. The national body which is responsible for one-stop shop, discussed in recommendation 4.2, can also be responsible for the central RES platform.

For each clean energy project, it is recommended to ensure a dialogue between the various stakeholders at each stage of the project via existing local structures, focus should thus also lie on training municipal staff in providing information on renewable energy projects to citizens. (see also recommendation on local stakeholder engagement and recommendation 2 of this barrier).

[513] http://www.caib.es/sites/canviclimatic2/es/llei_de_ccite/

This recommendation goes in line with the **REPowerEU** measures and recommendations to **increase public acceptance of renewable energy projects**. See Annex A for more details.

Actors involved:

- **Ministry of Infrastructure, Department for Energy and Digital Development**
- **Swedish Energy Agency**
- Ministry of Finance
- Ministry of the Environment
- Local stakeholders (Academia, Civil sector, Private sector)
- National/regional stakeholders (trade and industry associations)

Conclusions for Sweden

The Clean energy for EU islands secretariat conducted an analysis of the legal and regulatory framework which supports clean energy projects in Sweden. The resulting Regulatory inventory is publicly available online. Based on the analysis of the inventory and information gathered via surveys and interviews, the Clean energy for EU islands secretariat has brought together relevant stakeholders in Focus Groups and a National Stakeholder Meeting to identify barriers to the clean energy transition on Swedish islands, and formulated recommendations to overcome them. This mission has gained in importance since the publication of the REPowerEU package.

Sweden has taken steps to decarbonise the overall economy and the energy sector. While there are best practice projects on a few islands (See Annex 1 of the Sweden country study[514]), the island of Gotland has taken the most proactive approach in planning and implementation of its energy transition. The Gotland region has involved national, regional and local stakeholders to ensure optimal approach to planned activities. In addition, the Swedish Transport Administration has been active in helping decarbonise marine and road transport on the islands. This is best practice that should be followed by other countries, especially related to small islands. Energy sector stakeholders, such as DSO Vattenfall, have been active in implementing pilot projects on Swedish islands to test future proof approaches such as microgrids, local flexibility services, and energy sharing.

The energy transition requires decarbonisation and decentralisation. In this respect Sweden has involved regional governments to prepare energy and climate plans to identify actions that need to be done on the regional level. While this is a good approach, a systemic overview of the state of energy systems on Swedish islands is missing. As most islands are part of the mainland municipalities, their energy challenges are often overlooked. Therefore, based on the discussion with Swedish stakeholders involved in the projects on Swedish islands and aware of island challenges, we recommend, as a first step, the systemic analysis of islands and their energy challenges and needs. Such analysis can be used to define informed policy and support mechanisms to accelerate the energy transition on Swedish islands.

[514] Available online at: https://clean-energy-islands.ec.europa.eu/insights/publications/study-regulatory-barriers-sweden-findings-and-recommendations

The Swedish electricity network is organised around large scale generation plants and requires significant grid capacity to transfer electricity from generation points to all consumers. Islands are often at the ends of such system. Their systems are characterised by grid constraints. The 10-year-winter planning represent an additional constraint to the whole system because of the high back-up capacity required to be available during winter months,
. In a decentralised energy system, islands can provide a source of electricity, use it locally and help not just balance its own system but possibly also support the rest of the connected system. For this to happen, actions are needed for long-term grid planning, to prepare smart and flexible grids for higher RES integration, to support the use of demand side management, microgrids and local flexibility markets, and to channel both EU and national funding to support first pilot projects and then full implementation.

Climate change and the energy crisis require agile planning and accelerated implementation. Today, authorisation procedures across Sweden take long time. For islands investment takes even longer, as projects usually require reinforced grids. This, together with spatial constraints on where RES projects can be implemented, leaves many islands without viable options for the energy transition. The existing process for spatial planning needs to be re-assessed in light of climate change and with the view to island characteristics and local needs. Specific areas can be pre-identified where implementation of clean energy projects is possible and authorisation can be accelerated.

Finally, the clean energy transition on the islands can not happen without involvement of local stakeholders. Their acceptance of the projects is key. Involvement of local stakeholders in the energy transition through ownership and direct benefits can ensure that local economy benefits, and that the energy transition answers the needs of the local community through multi-functional projects. Faster development and implementation of supportive regulation for energy communities, removal of barriers for energy sharing and Peer2Peer exchange, and awareness raising on all levels is needed for decentralised implementation of energy transition.

The proposed recommendations are in line with existing activities in Sweden but require leadership from the national government, improved coordination and engagement with local and regional stakeholders involved in energy projects on the islands, and setting up an overall energy system that is aimed at decarbonisation and decentralisation.

List of Abbreviations

- ADMIE - Independent Electricity Transmission Operator
- ANCIM - National Association of Municipalities of the Italian Minor Islands
- ARERA - Italian Regulatory Authority
- CAF - Climate Action Fund
- CARES - Community and Renewable Energy Scheme
- CARO - Climate Action Regional Office
- CETA - Clean Energy Transition Agenda
- CHP - High-Efficiency Cogeneration of Electricity and Heat
- CNMC - National Commission of Market and Competition
- CRM - Capacity Remuneration Mechanism
- CRU - Commission for Regulation of Utilities
- DAPEEP - Administrator of Renewable Energy Sources and Guarantees of Origin
- DECC - Department of the Environment, Climate and Communications
- DM - Demand Management
- DSO - Distribution System Operator
- ECP - Enduring Connection Policy
- EI - Swedish Energy Market inspectorate
- EIA - Environmental Impact Assessment
- EIHP - Energy Institute Hrvoje Požar
- ENEA - Italian National Agency
- EPEEF – Croatian Energy Efficiency and Environmental Protection Fund
- EV – Electric Vehicle
- GSE - manager of energy services in Italy
- HEDNO - Hellenic Electricity Distribution Network Operator
- HERA - Croatian Energy Regulatory Agency
- HOPS - Croatian transmission system operator
- HROTE - Croatian Energy Market Operator
- IDAE - Institute for Energy Diversification and Savings
- ITC - Instituto Tecnológico de Canarias
- LAG - Local Action Groups
- MIBEL - Iberian Electricity Market
- MITE - Ministry of ecological transition
- MITECO - Ministry for the Ecological Transition and the Demographic Challenge
- NECP - National Energy And climate Plan
- NEMO - Nominated Electricity Market Operator
- NIIs – Non-Interconnected Islands
- NW RESS - North West Renewable Electricity Support Scheme
- nZEB - nearly zero energy building
- PAREER - Programa de ayudas para actuaciones de rehabilitación energética de edificios existentes
- PV – Photovoltaic
- RAE - Regulatory Authority for Energy

- RD&D - Research Development and Demonstration
- RED II - Renewable Energy directive 2018/2001
- REE - Red Eléctrica de España
- RES - Renewable Energy Sources
- RESS - Renewable Electricity Support Scheme
- RSES - Regional Spatial and Economic Strategy
- SALAR - Swedish Association of Local Authorities and Regions
- SEAI - Sustainable Energy Authority of Ireland
- SECAP - Sustainable Energy and Climate Plans
- SEM - All-Ireland Single Electricity Market
- SEMO - Single Electricity Market Operator
- STOR - Short Term Operating Reserve
- TERNA – Italian Transmission Network Operator
- TREA - Tartu Regional Energy Agency
- TSO - Transmission System Operator
- ZOIEVUK – Croatian Renewable energies Act
- ZOTEE - Croatian Electricity Market Act

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Annex A – REPowerEU

On 18 May 2022 the European Commission has presented the REPowerEU Plan, its response to the hardships and global energy market disruption caused by Russia's invasion of Ukraine. There is a double urgency to transform Europe's energy system: ending the EU's dependence on Russian fossil fuels, which are used as an economic and political weapon and cost European taxpayers nearly €100 billion per year and tackling the climate crisis. There are three main axis:

- Saving energy
- Diversifying supplies and supporting our international partners
- Accelerating the rollout of renewables

A massive scaling-up and speeding-up of renewable energy in power generation, industry, buildings and transport will accelerate our independence, give a boost to the green transition, and reduce prices over time. The Commission proposes to increase the headline 2030 target for renewables from 40% to 45% under the Fit for 55 package. Setting this overall increased ambition will create the framework for other initiatives, including among others:

- A dedicated EU Solar Strategy to double solar photovoltaic capacity by 2025 and install 600 GW by 2030.
- A Solar Rooftop Initiative with a phased-in legal obligation to install solar panels on new public and commercial buildings and new residential buildings.
- A Commission Recommendation to tackle slow and complex permitting for major renewable projects, and a targeted amendment to the Renewable Energy Directive to recognise renewable energy as an overriding public interest. Dedicated 'go-to' areas for renewables should be put in place by Member States with shortened and simplified permitting processes in areas with lower environmental risks. To help quickly identify such 'go-to' areas, the Commission is making available datasets on environmentally sensitive areas as part of its digital mapping tool for geographic data related to energy, industry and infrastructure.

These two last tools are particularly relevant for islands as renewable energy development is often hampered by spatial planning constraints and complicated permitting procedures.

On the same day the European Commission (DG ENER) published the report "Technical support for RES policy development and implementation – Simplification of permission and administrative procedures for RES installations (RES Simplify)". The aim of the report is to provide insights on the most important obstacles impeding the diffusion of renewable energy technologies in the permitting and grid connection procedures. It also discusses best practice examples deployed by the EU Member States and general best-practice recommendations which can be promoted with regard to permitting new and repowered renewable energy installations and connecting them to the grid.

Throughout the country sections above reference was made to the REPowerEU package and how our recommendations fit several of the proposed measures. The key measures form the REPowerEU package are retained below

REPowerEU – Grid planning and connection

Member States should implement long-term grid planning and investment consistent with the planned expansion of renewable energy production capacities, taking into account future demand and the objective of climate neutrality.

Member States should establish simplified procedures for repowering existing renewable energy plants, including streamlined procedures for environmental assessments, and adopt a simple-notification procedure for their grid connections where no significant negative environmental or social impact is expected.

Member States should ensure that system operators (i) apply a transparent and digital procedure for grid connection applications; (ii) provide information on grid capacities; and (iii) optimise the use of grid capacity by allowing its use by power plants combining multiple complementary technologies

REPowerEU – RE, grids and storage regarded as 'overriding public interest'

Article 1(10) of the proposed amendment to RED II inserts a new Article 16d to ensure that plants for the production of energy from renewable sources, their connection to the grid, the related grid itself or storage assets are presumed to be of overriding public interest for specific purposes.

Renewable energy sources are crucial to fight climate change, reduce energy prices, decrease the Union's dependence on fossil fuels and ensure the Union's security of supply. For the purposes of the relevant Union environmental legislation, in the necessary case-by-case assessments to ascertain whether a plant for the production of energy from renewable sources, its connection to the grid, the related grid itself or storage assets is of overriding public interest in a particular case, Member States should presume these plants and their related infrastructure as being of overriding public interest and serving public health and safety, except where there is clear evidence that these projects have major adverse effects on the environment which cannot be mitigated or compensated. Considering such plants as being of overriding public interest and serving public health and safety would allow such projects to benefit from a simplified assessment.

REPowerEU – Innovation and sandboxing

Article 1(3) of the proposed amendments to RED II inserts a new paragraph 2a in Article 15 requiring the Member States to promote the testing of new renewable energy technologies while applying appropriate safeguards:

> '*Member States shall promote the testing of new renewable energy technologies in pilot projects in a real-world environment, for a limited period of time, in accordance with the applicable EU legislation and accompanied by appropriate safeguards to ensure the secure operation of the electricity system and avoid disproportionate impacts on the functioning of the internal market, under the supervision of a competent authority.*'

Consideration 18 of the Recommendation highlights that barriers resulting from permit procedures might also affect the future deployment of innovative decarbonisation technologies needed for climate neutrality. Setting up regulatory sandboxes, that is to say the testing, in a real-life environment, of innovative technologies, products, services or approaches, which are not fully compliant with the existing legal and regulatory framework, could support innovation and facilitate the subsequent adaptation of the regulatory environment to accommodate them.

Member States are encouraged to put in place regulatory sandboxes to grant targeted exemptions from the national, regional or local legislative or regulatory framework for innovative technologies, products, services or approaches, to facilitate permit granting in support of the deployment and system integration of renewable energy, storage, and other decarbonisation technologies, in line with Union legislation.

REPowerEU – One-stop-shops

The recommendation on permitting stipulates that Member States should design a one-stop-shop for granting permits for renewable energy projects required in Directive (EU) 2018/2001 in such a way as to limit the number of authorities involved to what is necessary and maximise efficiency, taking into account public resources and the benefits of concentrating technological, environmental and legal expertise.

REPowerEU – Sufficient and adequate staffing

The recommendation on permitting stipulates that Member States should ensure sufficient and adequate staffing, with relevant skills and qualifications, for their permit-granting bodies and environmental assessment authorities. Member States should use the Union and national funding opportunities available for upskilling and reskilling, in particular at regional and local level, and consider setting up an Alliance for sectoral cooperation on skills to bridge the skills gap of staff working on permit-granting procedures and on environmental assessments.

REPowerEU – Renewable go-to areas

Article 1(1) adds a new definition to Article 2 of Directive (EU) 2018/2001, to define 'renewables go-to area'. Which means *a specific location, whether on land or sea, which has been designated by a Member State as particularly suitable for the installation of plants for the production of energy from renewable sources, other than biomass combustion plants*. Article 1(4) inserts a new Article 15b on the obligation for Member States to identify the land and sea areas necessary for the installation of plants for the production of energy from renewable sources in order to meet their national contributions towards the 2030 renewable energy target. Article 1(5) inserts a new Article 15c on the obligation for Member States to adopt a plan or plans designating 'renewables go-to areas', which are particularly suitable areas for the installation of production of energy from renewable sources.

> A faster roll-out of renewable energy projects could be supported by strategic planning carried out by Member States. Member States should identify the land and sea areas necessary for the installation of plants for the production of energy from renewable sources in order to meet their national contributions towards the revised 2030 renewable energy target set out in Article 3(1) of Directive (EU) 2018/2001. The identification of the required land and sea areas should take into consideration the availability of the renewable energy resources and the potential offered by the different land and sea areas for renewable energy production of the different technologies, the projected energy demand overall and in the different regions of the Member State, and the availability of relevant grid infrastructure, storage and other flexibility tools bearing in mind the capacity needed to cater for the increasing amount of renewable energy.
>
> Member States should designate as renewables go-to areas those areas that are particularly suitable to develop renewable energy projects, differentiating between technologies, and where the deployment of the specific type of renewable energy sources is not expected to have a significant environmental impact. In the designation of renewables go-to areas, Member States should avoid protected areas to the extent possible and consider restoration plans. Member States may designate renewable go-to areas specific for one or more types of renewable energy plants and should indicate the type or types of renewable energy that are suitable to be produced in each renewable go-to area.

REPowerEU – Accelerated procedures

The proposed amendment to the renewable energy directive foresees in the identification of go-to zones.

In the designated renewables go-to areas, renewable energy projects that comply with the rules and measures identified in the plan or plans prepared by Member States, should benefit from a presumption of not having significant effects on the environment. Therefore, there should be an exemption from the need to carry out a specific environmental impact assessment at project level in the sense of Directive 2011/92/EU of the European Parliament and of the Council[515].

The designation of renewables go-to areas should allow renewable energy plants, their grid connection as well as co-located energy storage facilities located in these areas to benefit from predictability and streamlined administrative procedures. In particular, projects located in renewable go-to areas should benefit from accelerated administrative procedures, including a tacit agreement in case of a lack of response by the competent authority on an administrative step by the established deadline, unless the specific project is subject to an environmental impact assessment. These projects should also benefit from clearly delimited deadlines and legal certainty as regards the expected outcome of the procedure. Following the application for projects in a renewables go-to area, Member States should carry out a fast screening of such applications with the aim to identify if any of such projects is highly likely to give rise to significant unforeseen adverse effects in view of the environmental sensitivity of the geographic area where they are located that were not identified during the environmental assessment of the plan or plans designating renewables go-to areas carried out in accordance with Directive 2001/42/EC. All projects located in renewables go-to areas should be deemed approved at the end of such screening process.

Article 1(6) of the proposed amendment replaces Articles 16 of Directive (EU) 2018/2001, extending the scope of the permit-granting process, clarifying the start of the permit-granting process and asking for the most expeditious administrative and judicial procedures available for appeals in the context of an application for a renewable energy projects. Article 1(7) inserts a new Article16a, which regulates the permit-granting process in renewables go-to areas. Member States shall ensure that the permit-granting process referred to in Article 16(1) shall not exceed one year for projects in renewables go-to areas. The permit-granting process for the repowering of plants and for new installations with an electrical capacity of less than 150 kW, co-located energy storage facilities as well as their grid connection, located in renewables go-to areas shall not exceed six months. Article 1(8) inserts a new Article 16b, which regulates the permit-granting process outside renewables go-to areas. Member States shall ensure that the permit-granting process referred to in Article 16(1) shall not exceed two years, for projects outside renewables go-to areas. Article 1(9) inserts a new Article 16c, which regulates the permit-granting process for the installation of solar energy equipment in artificial structures.

Member States should establish timeframes and lay down specific procedural rules with a view to ensuring the efficiency of the legal proceedings related to access to justice for renewable energy projects.

Member States should create a single unified application process for the entire administrative permit application and granting process. Simultaneous applications should be prioritised over sequential applications if different authorisations are required, including for related grid projects.

Member States should introduce fully digital permit-granting procedures and e-communication to substitute the use of paper. Relevant information should be made available to project developers centrally as part of an online manual of procedures, including templates for applications, environmental studies and data, as well as information on options for public participation and administrative charges.

REPowerEU - Facilitating citizen and community participation

To facilitate citizen and community participation, Member States should stimulate the participation of citizens, including from low and middle-income households, and energy communities in renewable energy projects, as well as take measures to encourage passing the benefits of the energy transition on to local

[515] Directive 2011/92/EU of the European parliament and of the Council of 13 December 2011 on the assessment of the effects of certain public and private projects on the environment

communities thus enhancing public acceptance and engagement. Member States should implement simplified permit-granting procedures for renewable energy communities, including for the connection of community-owned plants to the grid and reduce to a minimum production licensing procedures and requirements, including for renewables self-consumers.

The EU Solar Strategy highlights that better information is key to enhance clarity and predictability on the benefits of selfconsumption for potential investors, citizens and SMEs. Investment costs, financial support, increase of property value, network tariffs, generation and consumption profiles and return on investment are all relevant factors impacting investments. One-stop-shops in Member States should share such information and give citizens advice on both energy efficiency measures and solar energy projects in an integrated manner, from the technical requirements to administrative steps and support measures.

Community energy projects still face significant barriers, including difficulties in securing financing, navigating licencing and permitting procedures or developing sustainable business models. In addition, as they are often initiated by a group of volunteers, they suffer from limited time and lack of access to technical expertise. Member States should establish appropriate incentives and adapt administrative requirements to the characteristics of energy communities. An integrated 3-step "learn-plan-do" programme could help energy communities build technical expertise and secure access to financing. The assessment and removal of existing barriers would level the playing field with more professionalised and established market participants.

REPowerEU - Public acceptance of renewable energy projects

Consideration 18 of the Recommendation highlights that the lack of public acceptance of renewable energy projects is another significant barrier to their implementation in many Member States. To address this, the needs and perspectives of citizens and societal stakeholders should be taken into account at all stages of renewable projects development – from policy development to spatial planning and project development – and good practices for ensuring just distribution of the various impacts of installations among the local population should be encouraged.

REPowerEU – Regions energy management

Regions and cities are playing a leading role in developing energy saving measures tailored to their local context. They should launch awareness and information and support schemes, energy audits and energy management plans, pledging savings targets, and ensure citizens' engagement such as through the European Mission on climate-neutral and smart cities or the European Urban Initiative under cohesion policy.

RES Simplify - Eased procedures for RES self-supply and small-scale RES

The RES Simplify report contains some useful recommendations and examples for eased procedures for RES self-supply and small-scale RES

Easing and simplifying procedures for projects is a simple approach to speed up permitting. It helps planners and authorities alike and increases the speed at which projects are realised. By simply reducing the number of necessary permits for projects, developers need to prepare less documents. Authorities on the other hand receive less applications and can therefore use their resources to permit large and important projects. Eased procedures for RES self-supply and small-scale RES streamline the necessary checks and balances between project planners and authorities. This can be implemented due to the limited impact these installations are to have on the environment and energy systems.

> **Austria**: In Upper Austria there is an exemption from the electricity generation licence for small hydropower plants with a capacity of up to 400 kW. This is seen as a simplification of the procedure.

Portugal: A new legislation aims at simplifying the licensing rules and regulatory procedures applied to production units for self-consumption (unidade de produção para autoconsumo – UPAC). For certain facilities (depending on the installed capacity), a mere notification to the Directorate-General of Energy and Geology is required in order to start operating the unit (for others not even that is required), which is a positive reinforcement for small and medium-sized photovoltaic producers as well as owners of small/mini wind turbines. Small power plants with a capacity of up to 1 MW can apply for a fast application via a web page to gain the grid connection permit.

Portugal: For certain small-medium sized power plants, it is only necessary to notify the (Portuguese) Directorate-General of Energy and Geology (DGEG) of their intention to connect the unit to the grid – and, for specific cases, not even a notification is required. Such instrument provides agility to photovoltaic projects that fit in the criteria, reducing costs and optimising time efficiency of projects.

Spain: The Autonomous Community of Andalucía does not request a building permit for self-consumption units with power up to 10 kW.

RES Simplify - Examples for one Stop Shop / consolidation into one single application process

The RES Simplify report contains some useful recommendations and examples for one Stop Shop / consolidation into one single application process.

Applicants can contact a One Stop Shop (OSS) to obtain all permissions for their project. That OSS can either provide permissions or act as a contact point to facilitate the entire process, as defined in art. 16 (1) RED II. Depending on technology and size, the OSS can be either technology specific and/or have limited regional competences. In any case, it should be clear for a project developer to know which OSS it must approach. OSS should be introduced as an option for applicants, allowing them alternatively to directly contact individual authorities. This way applicants can benefit from their own experience and personal contacts.

Denmark: The Danish Energy Agency (DEA) serving as an OSS for offshore procedures is very efficient, according to relevant stakeholders. All the permitting decisions are coordinated by DEA with other authorities, which are responsible for different offshore interests. The resulting licenses are thus “comprehensive” in the sense that they are granted on behalf of several authorities and include conditions stipulated by all these. The mentioned licences do not completely preclude the need to obtain permits from other authorities as seen above. The system however eases the process for the developer greatly, and also provides more certainty that the project can be established, as all relevant authorities have cleared the project on the stated conditions.

RES Simplify - Examples for political backing of RES

The RES Simplify report contains some useful recommendations and examples for political backing of RES: Integrated planning system from national to local.

A general planning strategy can enhance local and regional involvement. Such a strategy includes breaking down national targets to the regional and local levels. Measures should be implemented to legally ensure the availability of sufficient land area for a target-compliant RES development (e.g. x% of national area is allocated to wind power). This could feature regional targets, but would leave decisions about specific locations in the hands of local actors.

Germany: The German Renewable Energy Act requires the federal states to report to the federal government on the status of renewables. This particularly includes permitted RES installations, the progress of repowering, and the area of land which is available for further wind energy deployment according to regional and urban land-use plans. If the available area is not sufficient, reasons and proposals for improvement have to be provided. Monitoring reports are assessed by a cooperation committee of the Federal Ministry of Economy and Energy and the federal states. Based on the

committee's assessment, the Federal Government report on the progress of RES deployment with a view to reaching the RES targets and provides recommendations for further measures (Tagesspiegel Background 2021).

RES Simplify - Use of e-communication

The RES Simplify report contains some useful recommendations and examples for the use of e-communication, including a mechanism for monitoring project progress

Digitalisation eases procedures for applicants and authorities alike. Officials can sort, store and review digital documents easily, and share them between the parties involved. This would allow applicants to see in what stage their application currently is. This accelerates the permitting process and provides transparency.

> **Germany**: In 2010, the State of Lower Saxony introduced an electronic authorisation application form for immission protection applications (ELektronische immissionsschutzrechtliche Antragstellung - ELiA), which today is used by eight German federal states and offers an encrypted submission of application documents.

RES Simplify - Guidance

The RES Simplify report contains some useful recommendations and examples on guidance

Guidelines for authorities and stakeholders act as a helping hand when it comes to the realisation of renewable projects. They inform and describe the RES-E permitting process and thus increase expertise and knowledge amongst all parties involved. Stakeholders can follow a clear cook-book recipe and have direct access to the standard ingredients (templates for all application documents etc.) they have to use during project permitting.

- **Spain**: Some Autonomous Communities, such as Andalucía and Extremadura, published a guiding document explaining step by step how to install a renewable energy system for self-consumption.
- **Italy**: Good practice by the competent authority to provide project developers with guidance on the application process at the beginning of the authorisation procedures, as for example the 'MUTA portal' of the Lombardy region.
- **UK**: The Scottish Government has published "Good Practice Principles for Community Benefits from Onshore Renewable Energy Developments" which provides guidance on good practice principles for communities, businesses, local authorities and others (Scottish Government 2019).

RES Simplify - Examples for early engagement in local information, dissemination, and discussion

The RES Simplify report contains some useful recommendations and examples for early engagement in local information, dissemination, and discussion.

Citizens and other stakeholders' acceptance of projects play a vital role in renewable expansion. The acceptability of projects can be increased with the right participatory approach. On a general level, such activities should inform the public on the relevance of renewable energy in fighting climate change and related threats. With respect to specific projects, participation has to begin with the launch of a project and allow stakeholders to influence its concept rather than just confronting them with final plans and decisions.

- **France**: Even if there is no obligation to consider the opinions of local communities upstream of an onshore wind project, a wind energy company has set up an ethical charter. This charter stipulates for a greater consideration of the local community in order to encourage a transparent and broad communication so that the population can better understand the general framework of the development of a given project. Thanks to this informal impulse, parliamentary discussions should take place to provide for a legal basis to a public consultation in the pre-planning stage.
- **Ireland**: Despite the fact that community engagement is not mandatory for onshore wind projects, the Wind Energy Ireland (WEA), former Irish Wind Energy Association (IWEA), recommends its member to engage in local information and dissemination activities at a very early stage of project development. Project developers organise venues and inform local residents door-to-door on the prospective realisation of an onshore wind energy project. In this way, issues can be resolved at a very early stage and the possibility of an appeal later in the planning permission process can be avoided. It should also be noted that this approach is slowly followed in the deployment of offshore wind projects. Although the legislative framework is not yet in place, project developers have initiated information campaigns for local marine communities. Main aim is to inform the local residents on the offshore wind project and answer questions on the possible effects on marine flora and fauna.
- **Netherlands**: Site selection for offshore wind energy in the Netherlands takes place through an extensive participative process. This participative process is a process which takes years in total to finish and takes into account the opinions of all stakeholders. The industry organisation HollandSolar, together with the relevant stakeholders, has drawn up, a Code of Conduct for ground-mounted PV installations. The PV sector is bound by the agreements contained in this Code.
- **Portugal**: In Portugal it is possible for every stakeholder to participate via a website: PARTICIPA. This portal acts as a digital forum in which NGOs, civil society, associations and virtually anyone can participate and issue opinions about projects placed for public consultation in the country.

RES Simplify - Examples for financial participation of affected municipalities

The RES Simplify report contains some useful recommendations and examples for financial participation of affected municipalities.

Support and acceptance by the local population and administration can be enhanced by ensuring that they benefit economically from new RES plants. This can be achieved by allowing municipalities to financially benefit from projects, e.g. in the form of a payment per kWh from the RES producer. Income should be bound to specific public policy measures that benefits citizens as well, like social services (e.g. kindergarten, health services) or infrastructure (e.g. streets or public transportation).

- **Denmark**: Four schemes are currently in place to enhance project acceptance: The so-called “RE-bonus scheme”, which obligates the developer to pay neighbours an annual bonus corresponding to a specified part of the capacity of the plant; the “loss of value scheme”, which requires the developer to compensate any loss of value to residential property equal to or higher than 1% of the property value; the “option-to-sell scheme”, which allows some neighbours within a distance of six times the height of a wind turbine or 200 m from a ground-mounted solar PV plant to sell their property to the project developer; and finally

the “green fund scheme”, which obligates the developer to pay €11,827 (DKK 88,000) per MW onshore wind equivalents to the relevant municipality, which can use the funds to support e.g. local green initiatives.

- **Germany**: In order to increase the public acceptance for wind parks, an amendment to the Renewable Energy Act (EEG, 2020) was taken in 2020, allowing plant operators to pay municipalities up to €25,000 annually for each wind turbine in their community. With a further revision of the EEG 2021, the option to agree payments with the affected municipality has been extended also for large PV.
- **Netherlands**: The Regional Energy Strategies prescribe a participation grade of 50% with the locals for renewable energy projects. The project developer, together with the environment and the competent authority, draws up a participation plan for each wind project. For ground-mounted PV, similar participation plans are drawn up.
- **Ireland**: The draft Wind Energy Development Guidelines foresee certain project acceptance measures. These provisions have been included in the Irish Renewable Electricity Support Scheme. Firstly, project developers are obliged to engage in consultations with the local community, before applying for planning permission. Secondly, a community report should be prepared and should set out how the project development will affect the local community and how local community participation will be assured throughout the whole lifetime of the project. Thirdly, a “Community Benefit Fund” is established. The Fund will be supported from renewable electricity produced by installations under the national support scheme (auctions) (€2/MWh). Fourthly, Community Ownership is promoted. This is achieved by creating a separate group of projects (the so-called “community-led” projects) that participate in the auctions on the national support scheme. It should be noted that these are fairly new and ambitious measures and it remains to be seen if they are effective.

Annex B - Examples of frameworks on Energy Storage

Few countries currently provide a comprehensive regulatory framework for energy storage, with the majority of jurisdictions currently allowing storage to be defined as "generation" for the purposes of licensing and other regulatory requirements. However, some countries like the UK and Belgium have provided a more elaborate framework, mainly regarding revenue streams to help different storage technologies to develop, for example capacity markets, ancillary services and other grid services.

Belgium has changed its Electricity law to have a specific definition of storage[516]: 'Energy Storage' means, in the electricity system, the postponement of the final use of electricity until a time later than that at which the electricity was generated, or the conversion of electrical energy into a form of energy that can be stored, the storage of such energy, and the subsequent conversion of such energy into electrical energy or another energy. While 'electricity' storage' means energy storage where electricity is taken from the grid via the same installation in order to be fully injected back into the grid later on, taking into account efficiency losses. Noteworthy is that the Electricity Law does not assimilate electricity storage to electricity generation, and consequently a generation licence is not required. Regarding revenue streams a Capacity Remuneration Mechanism (CRM) was recently introduced in Belgium by the country's Transmission System Operator. Beginning in October 2021, the first CRM auction was organised to select capacity offers for delivery period 2025-2026: a (priced) demand curve was set by Royal Decree, and prequalified capacity holders were able to submit bids to the market (for existing or new capacity). Some Battery Energy Storage Systems participated in the auction. Also, a market for ancillary services to maintain frequency and voltage at appropriate levels exist in Belgium and Battery Energy Storage Systems can participate in it.

In the United Kingdom, there are at least six markets that batteries can operate in, covering wholesale, balancing, ancillary services, time-of-use, stabilisation and infrastructure. National Grid issues contracts for short term generating capacity to cover sudden failures at power stations and other significant network calamities. These typically cover events lasting a few seconds or minutes in duration. As a result of these characteristics, the services are typically available to different classes of generators (or demand reduction technologies), each having different technical and regulatory requirements. Some of these include: Short Term Operating Reserve (STOR), Demand Management (DM), Fast Reserve and Frequency Response. Energy storage is particularly suitable for both Fast Reserve and Frequency Response since both of these services require the rapid (second-by second) provision of reliable power which energy storage technologies are ideally placed to deliver.
The UK Government provides for funding to install new renewable energy storage technologies in the country under the Longer Duration Energy Storage Demonstration (LODES) competition[517]. As part of this initiative, the government has awarded £6.7m ($9m) to 24 projects across the country under the LODES competition, which is worth £68m ($91m) of capital funding in total.

[516] Article 2.62 and 2.6 of the Electricity Act
[517] https://www.gov.uk/government/collections/longer-duration-energy-storage-demonstration-lodes-competition

Until recently, few countries had specific support systems for storage. Some countries, like the exemplary list below, provide support for (residential/small-scale) storage either as 'stand-alone' or combined with PV.

- Since 2019 Flanders (Belgium) grants rebates (premium) for the purchase of domestic batteries to encourage solar power self-consumption[518]. The Flemish government has extended the premium until 2024 and released additional budgets. The rates are as follows: 0-4kWh: €225/kWh, 4-6kWh: €187.5/kWh, 6-9kWh: €150/kWh, above 9kWh: no additional premium. Maximum premium per battery: €1725, max 40% of invoice incl. VAT.
- In Germany, the KfW funding for renewable energies (Program 270) has been very successful. It is a low-interest promotional loan for (among others) the construction, expansion and acquisition of systems for the use of renewable energies, such as battery storage and photovoltaic systems. With the KfW 270 development loan, you finance up to 100% of the investment costs for an electricity storage system or the acquisition costs of a photovoltaic system in general.
- In Malta, a subsidy is given for an installation of new PV system with battery storage system[519]. It covers 80% of eligible costs of the Battery Storage up to a maximum of €3 600 per system and €600/kWh.
- In the Azores region of Portugal a specific subsidy for projects on production and storage of electricity from renewable resources covers 25% percent of the eligible costs, up to a maximum of €4 000 per system[520].
- In Ireland, the Solar PV scheme provides subsidies for the purchase and installation for roof-mounted PV (up to 2kWp and with battery storage up to 4 kWp). The 2kWp of PV systems are subsidised (€900 per kWp). If the roof-mounted PV is combined with battery storage then an additional grant for a further 2kWp is offered (€300 per kWp). Consequently, the maximum level of support reaches €2,400 (ch. 2 Solar PV Scheme).
- Austria has launched a rebate program for solar-plus-storage installations offering homeowners 250€/kW of solar rooftop generation capacity and €200/kWh of storage.
- In Italy rebates exist for two different kinds of projects – installations of PV systems linked to storage systems, and the deployment of standalone storage systems linked to existing solar arrays. For this second category of projects rebates cover 100% of project costs.

[518] Decision of the Flemish Government of 28 June 2019

[519] Promotion of Renewable Energy Sources in the Domestic Sector – Grant Scheme 2021/RES; https://www.rews.org.mt/#/en/sdgr/463-2021-renewable-energy-sources-scheme

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