



Clean energy
for EU islands
**Regulatory barriers in
Sweden: findings and
recommendations**

Completed in: January 2023

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

Written by: Lucija Rakocevic, Andries De Brouwer, Malgorzata (Gosia) Matowska, Elise van Dijk

Reviewers: Jan Cornillie, Canesia Amarysti

Special thanks to our Clean energy for EU islands Community
for their input and support.

Graphic design: Agata Smok for Clean energy for EU islands secretariat
European Commission DG ENER

Typeface: EC Square Sans Pro

Disclaimer: © European Union, 2022
The Commission's reuse policy is implemented by Commission Decision 2011/833/
EU of 12 December 2011 on the reuse of Commission documents (OJ L 330,
14.12.2011, p. 39).
Unless otherwise noted, the reuse of this document is authorised under the Creative
Commons Attribution 4.0 International (CC BY 4.0) licence. This means that reuse is
allowed, provided appropriate credit is given and any changes are indicated.
For any use or reproduction of elements that are not owned by the EU, permission
may need to be sought directly from the respective right holders.
This document has been prepared for the European Commission however it reflects
the views only of the authors, and the Commission cannot be held responsible for
any use which may be made of the information contained therein.

FROM CLEAN ENERGY VISION TO CLEAN ENERGY ACTION

clean-energy-islands.ec.europa.eu



Executive Summary

Innovative pilot projects on the Swedish islands are showing how the energy transition can be implemented, with the transport sector, in particular, leading the way to decarbonisation. Legislation has been broadly supportive of the decarbonisation of islands. However, challenges to the implementation of the energy transition still remain.

Drawing upon the regulatory **inventory** of the current legislation, the Clean energy for EU islands secretariat carried out surveys and interviews with Swedish stakeholders to identify the barriers to clean energy deployment on the islands and the solutions to overcome those. These findings were discussed with all relevant stakeholders in two focus group meetings and a national stakeholder meeting (NSM). The result of that process is described in this booklet.

The barriers identified in Sweden relate to the need for increased visibility of island energy challenges, grid constraints, lengthy authorisation processes and the need for local stakeholder involvement in the process. These barriers can be overcome through the leadership of relevant national stakeholders, systemic analysis of island conditions, improved grid planning, the collaboration between sectors during planning, and implementation of innovative pilot projects and local involvement in the regulatory process. The recommendations in this booklet serve as guidance to accelerate the energy transition on the Swedish islands.

Sammanfattning

Den svenska lagstiftningen utvecklas med syfte att stödja utsläppsminskning och ökad delaktighet av regional samordning för åtgärds genomförande. Innovativa pilotprojekt på öarna visar hur energiomställningen skulle kunna genomföras. Vägtransporter och sjöfart har varit under fokus, men utmaningar kvarstår.

Med den **regulatoriska kartläggningen** av nuvarande lagstiftning som utgångspunkt genomförde Sekretariatet för hållbar energi för EU öar enkätundersökningar och intervjuer med svenska intressenter för att identifiera barriärer för utbyggnad av hållbar energi på öarna och motsvarande lösningar. Resultaten diskuterades med alla relevanta intressenter i två fokusgruppsmöten och ett nationellt intressentmöte (NSM). Processernas resultat beskrivs i denna rapport.

Barriärerna som identifierats i Sverige kopplas till minskad synlighet av öarnas specifika energikutmaningar, elnätsbegränsningar, långa tillståndprocesser och behov att involvera lokala intressenter. Dessa barriärer kan elimineras genom bevisat ledarskap av relevanta nationella intressenter, djupare analyser av öarnas specifika sammanhang inom energiomställningen, förbättrad nätplaneringsprocesser, samarbete mellan sektorer inom planering, genomförande av flera innovativa pilotprojekt och tydliga regler och stöd för lokalt engagemang. Rekommendationerna i denna rapport är en vägledning för att påskynda svenska öarnas energiomställning.

TABLE OF CONTENTS

Main Barriers to the Clean Energy Transition	8
Barrier 1: Lack of visibility of the islands’ challenges and vision for the islands’ energy transition	10
Recommendations	
1.1 Mandate a committee of 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. Provide 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 energy supply on the islands	12
Recommendations	
2.1 Develop long-term grid planning to prepare for the 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	14
Recommendations	
3.1 Seek compromises between sectors and support research and innovation	
3.2. Develop national spatial planning guidelines	
3.3. Adopt a master plan to define go-to areas and simplify procedures	
Barrier 4: Lack of clear regulation for energy communities and energy sharing	16
Recommendations	
4.1 Develop enabling framework for energy communities on the islands	
4.2. Introduce a simplified authorisation procedure for energy communities	
4.3. Increase local stakeholder awareness	
Comparison to other countries (map)	
Further Reading	20
Regulatory barriers in Sweden: findings and recommendations	
Best practice islands	
Regulatory Framework in Sweden	

Introduction

There are more than 2,200 inhabited islands in the EU. Despite having access to an abundant amount of renewable energy, such as wind, sun, and waves, many of them depend on petrol imports for their energy supply. Through the deployment of clean energy assets, EU island communities can have access to reliable, clean, and competitive sources of energy. Given their insular nature, they can even become leaders in the clean energy transition.

While it has often become technically and financially possible to develop renewable energy projects on islands, the current legal frameworks are not always fit-for-purpose. The Clean energy for EU island secretariat embarked on the mission to identify the legal, regulatory and policy barriers to clean energy deployment and provide recommendations to overcome them. This booklet contains the highlights of the more in-depth country study. It processes the insights gathered from literature review, surveys sent to 32 stakeholders, eight interviews, two focus groups and one national stakeholder meeting (NSM). The NSM was held at the Stockholm Environment Institute in Stockholm and online. The meeting was attended by representatives of Stockholm Environment Institute, Vattenfall, Municipality of Landskrona, IVL Swedish Environmental Research Institute and National Association of the Archipelago (Hvens Byalag, Skärgårdarnas Riksförbund). The barriers and recommendations represent the view of the Clean energy for EU island secretariat and do not bind the stakeholders who contributed to it.

Sweden and its islands

Sweden counts 267,570 islands, 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, and 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 large part of them on the islands of Södermalm in Stockholm and Hisingen in Gothenburg. This corresponds to 1,602,930 people.

Best practice

The island of Gotland is a region and a municipality. Gotland region has the **Gotland Energy Agency**, which is part of the group of 16 regional energy offices under **Energikontoren Sverige**. Gotland Energy Agency has adopted a development strategy: Together towards 2030.

The Agency is guided in the optimal use of its resources by the Steering committee which includes members from: GEAB – energy company; GUBIS – umbrella organization for Gotland’s development corporations (citizen-based initiatives); LRF – national farmer’s organisation with local representation; Länsstyrelsen – the county administrative board; Medborgarstol – member seat for Gotland citizens for a one-year mandate; Region Gotland – regional development responsibilities and municipal services; Tillväxt Gotland – a business organisation that hosts 800 companies on Gotland; Uppsala Universitet Campus Gotland – the university; and Energimyndigheten – Swedish Energy Agency.

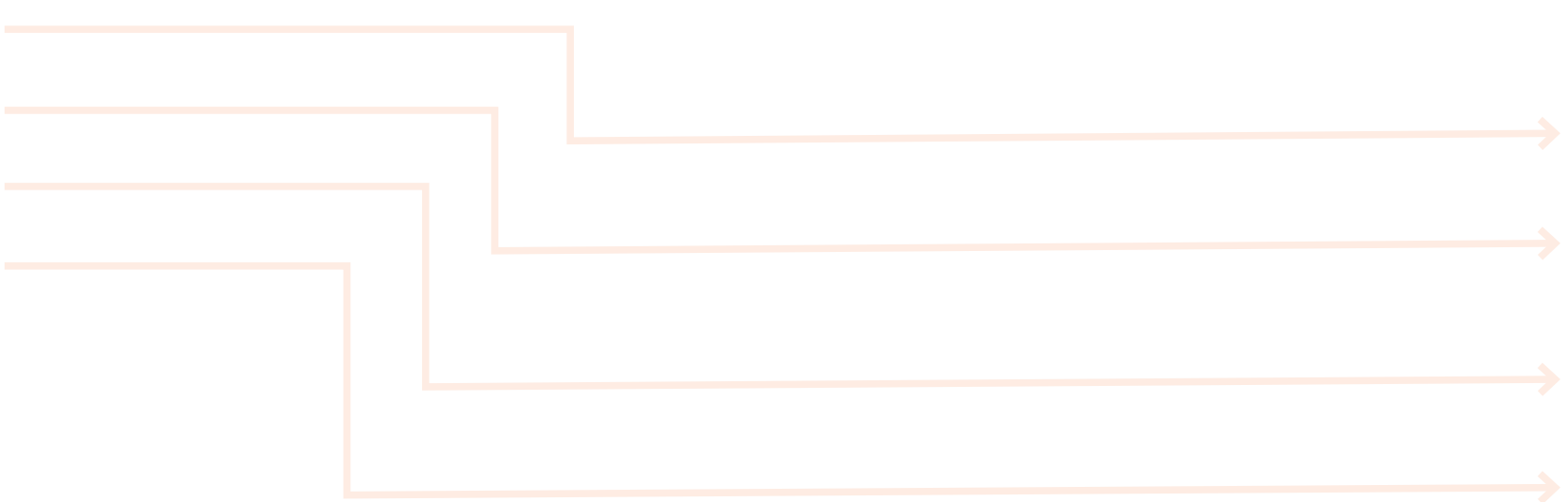
In addition, the agency organizes the Municipal Energy and Climate Advisory, and free advisory services to citizens.

Main Barriers to the Clean Energy Transition

Based on the detailed assessment of the current regulatory framework and consultation with relevant Swedish stakeholders (via surveys, interviews, and joint meetings), the most important regulatory barriers to a clean energy transition on Swedish islands were identified.¹ The barriers are ranked by order of priority according to the stakeholders consulted:

- ↳ Lack of visibility of the islands’ challenges and vision for the islands’ energy transition
- ↳ Lack of energy supply security on the islands
- ↳ Lengthy approval procedures for clean energy projects
- ↳ Lack of clear regulation for energy communities and energy sharing

Each of these barriers is presented below, including recommendations for overcoming them, examples of best practices and connections to the REpowerEU policy. For the presented recommendations, the actors who should be responsible to initiate implementation are highlighted.



¹ The content of this booklet is based on the "Regulatory barriers in Sweden: findings and recommendations" report to be found [here](#) | Clean energy for EU islands (europa.eu).



DID YOU KNOW?



ACTION FROM



USEFUL INFORMATION

Barrier 1: Lack of visibility of the islands' challenges and vision for the islands' 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 including seasonality of economic activity and energy demand, priorities in the use of limited natural resources by different sectors (tourism, industry, energy, etc.), access to the mainland (transport and needed resources), environmental protection and energy security. Currently, there is no visibility of island energy needs and challenges on the national level. This has resulted in a lack of policies from governmental agencies to achieve the full decarbonisation of the islands. Most islands lack the technical expertise and resources themselves to tackle the energy transition challenges on their own.

RECOMMENDATIONS

To overcome this barrier national government needs to analyse island needs, develop a national island policy and provide support for its implementation. Moreover, there is a necessity for awareness raising and an enabling framework for local involvement in the energy transition.

1.1 Mandate a committee of experts on the national level for clean energy transition on the islands

- ↳ We recommend that the national government mandate a committee of experts that will act as consultants to analyse the present-day situation of the energy sector and transition on Swedish islands. The results should clearly identify the challenges the islands face and provide recommendations for national support to the islands. Islands can be used as innovation centers and even become best practice examples for the rest of Sweden.

1.2. Develop national island policy and integrate it into NECP

- ↳ Based on the analysis from recommendation 1.1, the national government should develop a national island policy. This policy should be integrated into the National Energy and Climate Plan (NECP). The regional energy agency, Energikontoren, can help support its implementation and integrate it into regional energy and climate plans. Gotland and its collaboration with the Swedish Energy Agency and other stakeholders on energy transition can be used as a good example.

1.3. Provide guidance and support in the development and implementation of local energy action plans

- ↳ To identify local needs and priorities we recommend developing local energy plans. In addition, as many island stakeholders and local government lack the capacity for energy planning, project identification and implementation, we recommend developing support mechanisms and capacity building to help local energy transition.

1.4. Create a framework for local stakeholder engagement in energy projects

- ↳ Decentralisation of energy is a crucial part of the energy transition. We recommend the national government develop a regulatory framework to allow and foster local stakeholder participation in energy projects. Moreover, a national platform should be developed where island stakeholders can get support, find information and exchange experiences, as this is currently missing.



Did you know?

REPowerEU – 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 benefit citizens as well, like social services (e.g. kindergarten, health services) or infrastructure (e.g. streets or public transportation).



Further action is expected from:

- ✓ Ministry of Infrastructure, Department for Energy and Digital Development
- ✓ Energimyndigheten – Swedish Energy Agency
- ✓ Energikontoren – Regional energy offices
- ✓ Association of local governments and regions



Useful information

- ✍ **Integrated National Energy and Climate Plan (NECP) for the Republic of Sweden**
- ✍ **Regional development policy in Sweden**, OECD
- ✍ Swedish Energy Agency – **Grants and support to apply for in the field of energy**
- ✍ **Smart road project Gotland**
- ✍ Electric ferries in Sweden (**Skaftö** and **Ockero**)

↑ © Photo by Jason Goodman on Unsplash.

Barrier 2: Lack of security of energy supply on the islands

↳ The Swedish electricity system is structured around supply from large-scale electricity generators typically located in the north of the country and demand in the south part of the country. Due to their geography, islands are interconnected with rather limited grid capacity: suffering from electricity shortages or constraints to the implementation of large-scale renewable energy projects. Distribution system operators (DSOs) and transmission system operators (TSOs) do not have specific guidelines for operation on the islands. Moreover, in order to ensure backup capacity for very cold winters, the operator poses additional constraints on grid use. The islands' security of supply is only discussed from the point of view of interconnections and enforcement of the grid, while other options such as microgrids, demand-side management, etc. are overlooked.

RECOMMENDATIONS

To cope with this barrier, we recommend improving long-term grid planning, providing support for innovative technologies and directing EU funds toward island energy transition. These are briefly explained below.

2.1 Develop long-term grid planning to prepare for the island energy transition

↳ The long-term grid planning should shift from demand-driven to a forward-looking approach, taking into account the need for smart and flexible grids to integrate decentralized renewable energy on the islands. Tariff methodologies should also encourage DSOs to invest in alternative grid solutions, as opposed to simply grid expansion.

2.2. Support the use of demand-response, flexibility services and microgrids on the islands

↳ Regulation should support stakeholders investing in storage, flexibility and microgrids in municipalities and islands. The Swedish Energy Agency should support and propose pilot projects tailored to island needs. Examples of such pilots are Gotland (local flexibility markets within CoordiNet) and Arholma (microgrid operation). The pilots can be used to test new technologies, increase the know-how of the local DSOs and improve collaboration among DSOs, distribution network operators (DNOs) and TSOs to help islands become more self-sufficient.

2.3. Channel funding from the EU towards regional and local (grid) development

↳ Based on the analysis in recommendation 1.1, the Swedish government should re-evaluate funding planning. Funding such as the Just Transition Fund or the Trans-European Networks for Energy can be used to support energy decentralisation. Funding should be directed to include regional and local grid development, increasing capacity of regional energy agencies and advancing island energy transition.



↑ © Photo by Nils Stahl on Unsplash.



Did you know?

REPowerEU – Setting up regulatory sandboxes, which is to say the testing, in a real-life environment, of innovative technologies, products, services or approaches, which are not yet fully compliant with the existing legal and regulatory framework, could support innovation and facilitate the subsequent adaptation of the regulatory environment to accommodate them.



Further action is expected from:

- ✓ Ministry of Infrastructure, Department for Energy and Digital Development
- ✓ Ministry of Finance
- ✓ Energimyndigheten – Swedish Energy Agency
- ✓ TSO, DNOs, DSOs



Useful information

- ✎ **Measures to increase demand side flexibility in the Swedish electricity system, EI, 2017**
- ✎ **Electric power distribution in Sweden, Rickard Liikamaa**
- ✎ **Distribution grids in Europe** – Facts and Figures 2020, Eurelectric
- ✎ **Competing socio-technical narratives in times of grid capacity challenges**: the representative case of Sweden, Frans Libertson
- ✎ **Sweden's Future Electrical Grid**, IVA
- ✎ **Innovative regulatory approaches with focus on experimental sandboxes** – Casebook, IEA ISGAN
- ✎ **Energy storage – Technology for storing electricity**, IVA
- ✎ **CoordiNet project**, Gotland pilot
- ✎ **Pilot project on flexibility** – Nordenergi
- ✎ **Microgrid project on Arholma**

Barrier 3: Lengthy approval procedures for clean energy projects

↳ Clean energy projects' applications have to go through several consultative bodies and be accepted by the municipality before project realisation. The permitting process is particularly long in the case where new grid infrastructure is needed. Such procedures are also lengthy for regular expansion of the grid projects. Consequently, the total permitting procedure for wind farms may exceed 10 years. Another factor contributing to the lengthy procedures is the conflicts of interest in permitting procedures between wind power developers, the Swedish Armed Forces, municipalities, and environmental protection groups. Island territories and their surrounding areas are often covered by environmental restrictions through spatial plans. In these regions, it is not allowed to install renewable energy source (RES) plants, even on rooftops. Municipalities, the Swedish Armed Forces and environmental protection interests are seen as conflicting with the development of clean energy on islands. Plans for clean energy transition must therefore be assessed, taking into account national interest for environmental protection of certain lands and water areas, and the effects and impact of climate change.

RECOMMENDATIONS

To shorten and simplify lengthy permitting procedures, compromises between sectors and guidelines to local government are needed. A master plan should identify go-to areas. More details are provided below.

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 collaboration of the different institutions (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) in proposing new legislation for permitting and authorisations procedures. For example, Swedish building codes and Swedish environmental codes should be updated to include climate change considerations. Various bodies should also define procedures to support research and innovation for clean energy for smaller municipalities and islands.

3.2. Develop national spatial planning guidelines

↳ Clean energy transition on the islands should be supported and not obstructed by spatial planning constraints. We recommend that the national government defines guidelines for the inclusion of clean energy projects in spatial planning of the islands. This is extremely relevant for local spatial plans of mainland municipalities with islands.

3.3. Adopt a master plan to define go-to areas and simplify procedures

↳ We recommend developing an integrated approach via the creation of a detailed regional master plan. This master plan should define go-to areas where projects in these zones should be subjected to fast-track and simplified permitting procedures (single permit) and lightened environmental impact assessments, not undermining the need for nature conservation. The master plan should be taken into account when preparing/updating municipal master plans.



↑ © Photo by Campaign Creators on Unsplash.



Did you know?

REPowerEU – 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 the regional and local levels, and consider setting up an alliance for sectoral cooperation on skills to bridge the skills gap of staff working on permit-granting procedures and environmental assessments.



Further action is expected from:

- ✓ Ministry of Infrastructure, Department for Energy and Digital Development
- ✓ Ministry of Defence, Swedish Armed Forces
- ✓ Ministry of Environment
- ✓ Ministry for Enterprise and Innovation



Useful information

- ✂ **National strategy for a sustainable wind power expansion**, 2021
- ✂ **Areas of national interest**
- ✂ **The spatial planning system in the Nordic region**, Nordregio
- ✂ **The governance of land use** – Sweden, OECD
- ✂ **Swedish planning process**, Boverket
- ✂ **Municipal physical planning**, Boverket 2020
- ✂ **Planning and testing of wind power**, Boverket 2022

Barrier 4: Lack of clear regulation for energy communities and energy sharing

↳ The legislation for renewable and citizen energy communities has been proposed by the government. It is not yet clear how the implementation will take place and what are benefits to the local stakeholders. Collective self-consumption is enabled for consumers within the same building with one connection to the grid. Energy sharing is not economically attractive due to energy taxation, as has been shown with the pilot project on Gotland within the CoordiNet project. While some local stakeholders are interested to organize community initiatives, there is still a need for awareness raising and a clear and supportive regulatory framework. End consumers currently only benefit from having rooftop photovoltaics (PV) for their own self-consumption.

RECOMMENDATIONS

To tackle the grid constraints, four measures are further elaborated below, including: an enabling framework for energy storage systems and demand-side response, regulatory sandboxes and guidelines for the integration of RES.

4.1 Develop enabling framework for energy communities on the islands

↳ We recommend faster adoption of the regulatory framework for energy communities to provide clarity on the ecosystem in which energy communities should operate. In order to enable the adoption of energy communities, the regulatory framework should provide support or benefits for energy communities involved in sustainable energy projects.

4.2. Introduce a simplified authorisation procedure for energy communities

↳ In order to support the foundation of energy communities, we recommend simplifying the authorisation procedure for clean energy projects for energy communities. One local contact point and a one-stop shop at national level should be available to advise island citizens on energy communities.

4.3. Increase local stakeholder awareness

↳ To increase local stakeholder awareness, we recommend developing a central platform for information on RES in general (with a special focus on wind energy) and collecting information on individual projects. 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. The focus should also lie in training municipal staff in providing information on renewable energy projects to citizens.



↑ © Photo by Paul Hanaoka on Unsplash.



Did you know?

REPowerEU – To address the public acceptance of renewable energy projects, 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 should be encouraged for ensuring just distribution of the various impacts of installations among the local population.



Further action is expected from:

- ✓ Ministry of Infrastructure
- ✓ Swedish Energy Market Inspectorate (Ei)
- ✓ Energimyndigheten – Swedish Energy Agency





Useful information

- ✍ Clean energy in the EU – **Implementation of five legal acts** – Ei R2020:02
- ✍ Ordinance (2007:215) on **exemptions from the requirement for network concessions according to the Electricity Act** (1997:857)
- ✍ **Policy brief on energy communities in Sweden**
- ✍ **The Transposition of Energy Communities into Swedish Regulations: Overview and Critique of Emerging Regulations**, Jenny Palm, 2021
- ✍ **Funding for resource efficient buildings**
- ✍ **Benefits of local investment in energy communities**
- ✍ **Energy centre Gotland**

Comparison to other countries (map)

Some of the identified legal and regulatory barriers in Sweden are also present in several of the other countries which were part of the study.

- 

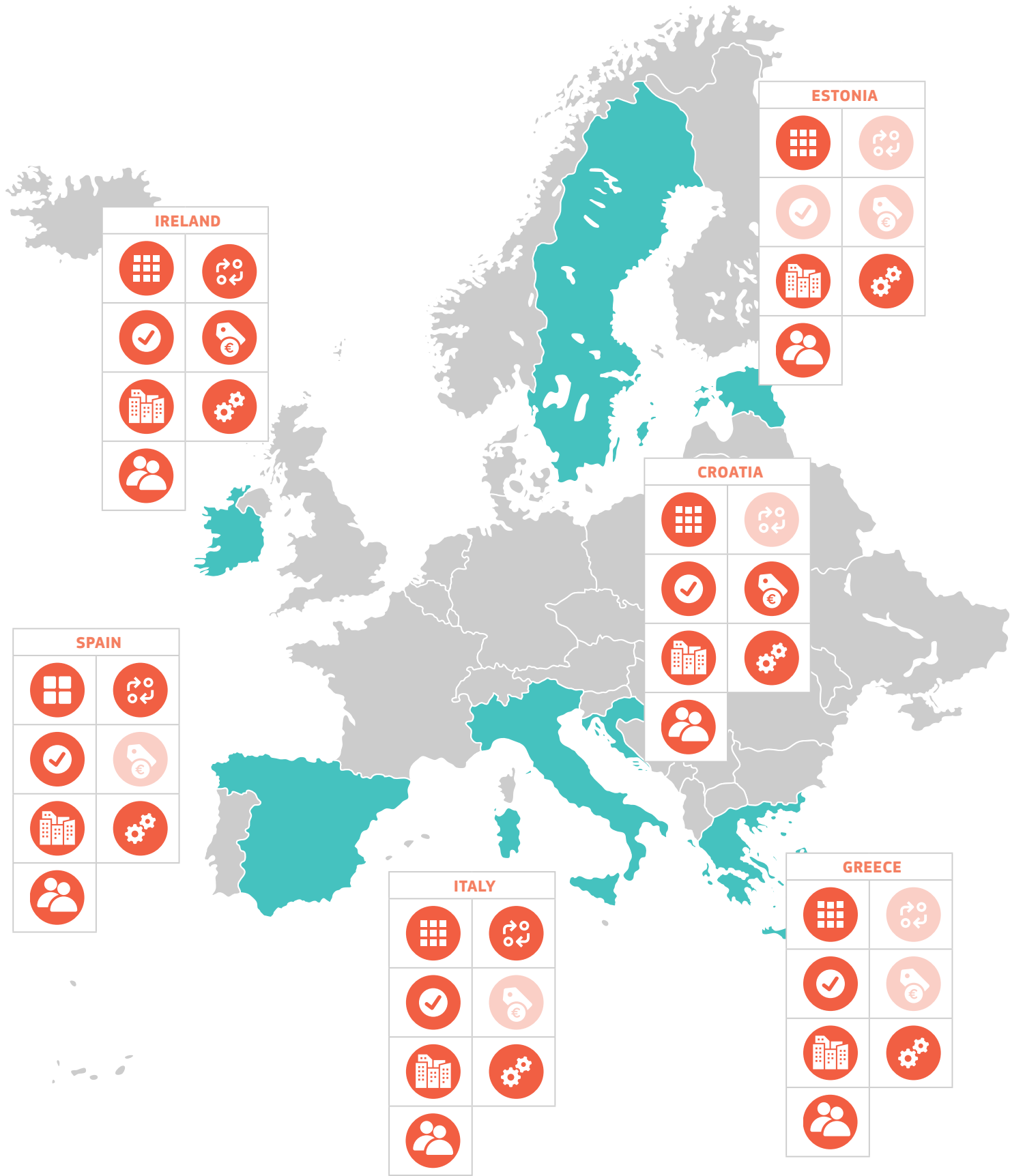
If the type of barrier present in Sweden is also present in an other country, the corresponding icon is bright.
- 

If the type of barrier is not present, the corresponding icon is faded.

Type of barrier

Swedish barriers summary

	GRID	Lack of security of supply on the islands
	SYSTEM INTEGRATION	
	PERMITTING	Lengthy approval procedures for clean energy projects
	SUPPORT SYSTEMS	
	SPATIAL PLANNING	Lengthy approval procedures for clean energy projects
	COORDINATION & STRATEGY	Lack of long-term vision on how the islands energy transition should be implemented
	ENERGY COMMUNITIES	Lack of clear regulation for energy communities and energy sharing



Further Reading

Regulatory barriers in Sweden: findings and recommendations

📄 Read the full study [here](#) | Clean energy for EU islands (europa.eu)

Best practice islands

- 📄 [Gotland](#)
- 📄 [Arholma](#)
- 📄 [Lidö](#)
- 📄 [Skaftö](#)
- 📄 [Öckerö](#)

Regulatory Framework in Sweden

- 📄 [Swedish regulatory inventory](#)
- 📄 [Swedish National Energy and Climate Plan](#) (NECP)

→ Gotland, Sweden © Photo by Michael Odelberth on Unsplash.



GET INVOLVED – STAY IN TOUCH

Sign up for the latest news of the Clean energy for EU islands secretariat via [europa.eu newsroom](#)

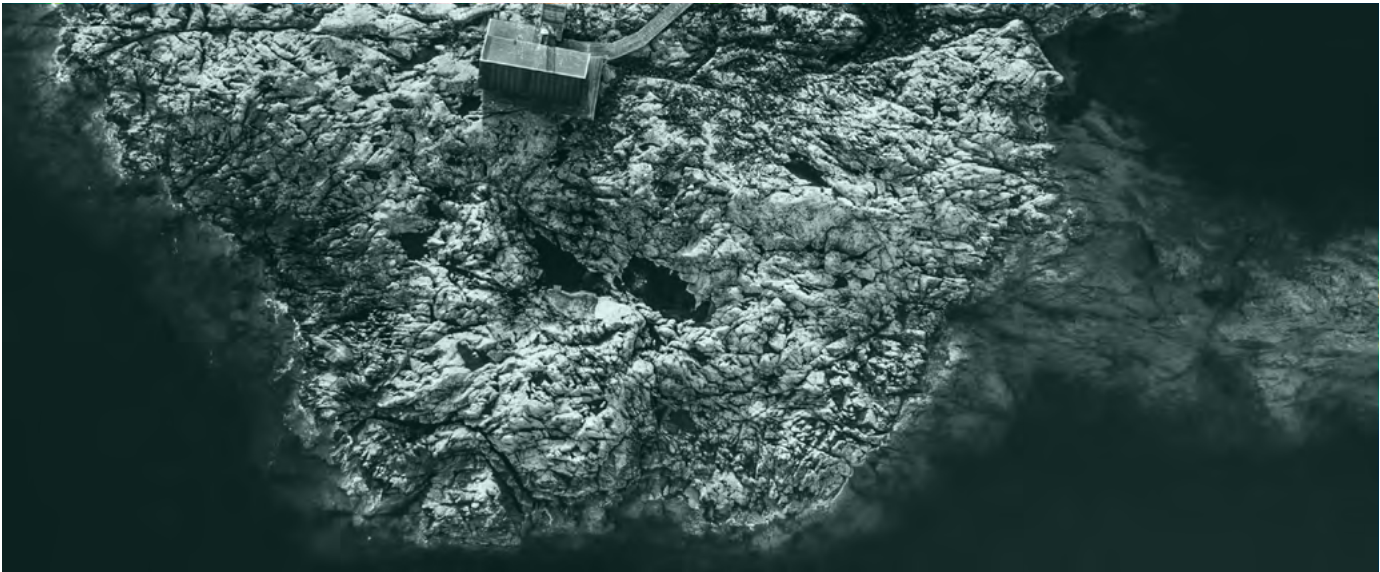
Get in contact with Clean energy for EU islands secretariat via [✉ info@euislands.eu](mailto:info@euislands.eu)

Follow the activities of Clean energy for EU islands secretariat via the following channels:

🖱 clean-energy-islands.ec.europa.eu

🖱 facebook.com/CE4EUIslands

🖱 linkedin.com/company/CE4EUIslands



↑ Utö, Sweden. Utö is a small island in the East of Stockholm archipelago, known for its nature.
© Photo by Geran de Klerk



↑ Picture taken in Öckerö, Västra Götaland County in western Sweden.
© Photo by Philip Myrtoorp Unsplash



↑ Picture taken in Grinda, an island located in the Stockholm archipelago, Sweden. It is located south of Ljusterö, east of Vaxholm and west of Svartsö and Möja. © Photo by Inès d'Anselme on Unsplash

The Clean energy for EU islands secretariat is managed by the European Commission
Directorate-General for Energy

