

POLICY BRIEF

Study on connection policies and management of energy systems under conditions of asynchronous generation in non-interconnected islands

FOCUS

- Technology developments on the supply and demand side.
- Electricity system operational practices.
- Fitting of grid connection policy and codes.

TARGET GROUPS

- Distribution System Operators (DSOs) and Transmission System Operators (TSOs).
- Regulatory Authorities.
- Governments.

CONTEXT

European islands are moving forward in their path towards a cleaner and more secure energy supply. Previous reviews of legislation and on-the-ground experience identified **grid constraints as a key barrier to achieving a high share of variable renewable energy sources (RES)** in isolated electricity grids. To better understand grid constraints on the islands, the Clean energy for EU Islands Secretariat analysed **operational practices, planning and regulation of electricity grids of 10 non-interconnected islands** and archipelagos in six Member States. While the study focuses on non-interconnected islands resulting **recommendations and guidelines can be applied to all European islands and remote areas on the mainland.**

METHODOLOGY AND CASE STUDIES

French Polynesia (France)	Réunion (France)	Rhodes (Greece)
Kos-Kalymnos (Greece)	Aeolian Islands (Italy)	Aruba (Netherlands)
Bonaire (Netherlands)	Azores (Portugal)	Madeira (Portugal)
	Canary Islands (Spain)	

--> 40 interviews

- Professionals working on the islands.
- Regulators and policymakers.

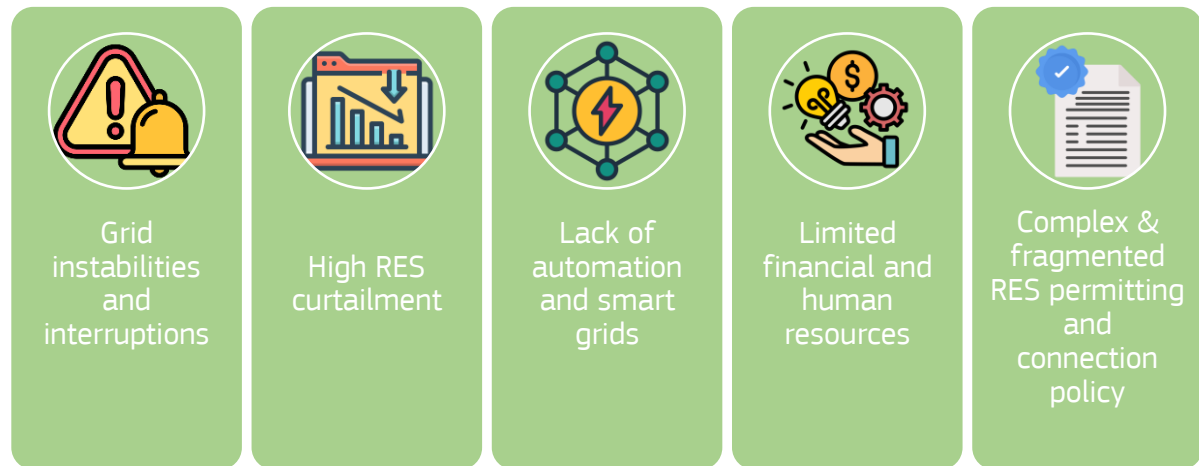
--> 6 online technical workshops

- Professionals and regulators (90 representatives).

--> 5 national on-site workshops

- Professionals, regulators, administration, ministries (over 150 participants).

KEY CHALLENGES TO REACH 100% RES ISLANDS BY 2030



KEY RECOMMENDATIONS

Hybridise renewable energy generation and promote the use of storage through regulatory frameworks and updated operational processes based on EU guidelines.

Require sector coupling solutions in grid investment planning through cross-sectoral collaboration.

Prioritise and support smart grids and demand side management through regulation and tariff design.

Clarify remuneration for curtailment of RES including identified financial responsibilities .

Upgrade and island-proof grid codes to develop more resilient decarbonised island electricity systems in the face of insularity, seasonality and variability of demand, increased costs, and vulnerability to climate change.

Enable Virtual Power Plants through regulatory frameworks and capacity building of system operators.

Integrate long duration energy storage and centralised storage through grid investment planning with priority on non-interconnected island systems.

Improve renewables forecasting models and enable remote monitoring and control through regulatory frameworks based on EU guidelines.

Loosen rules on unbundling and storage facilities ownership for small non-interconnected islands through derogations for specific systems.