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Key recommendations on the decarbonisation of European Islands

Eurelectric recommendations

September 2019

Eurelectric represents the interests of the electricity industry in Europe. Our work covers all major issues affecting our sector. Our members represent the electricity industry in over 30 European countries.

We cover the entire industry from electricity generation and markets to distribution networks and customer issues. We also have affiliates active on several other continents and business associates from a wide variety of sectors with a direct interest in the electricity industry.

We stand for

The vision of the European power sector is to enable and sustain:
- A vibrant competitive European economy, reliably powered by clean, carbon-neutral energy
- A smart, energy efficient and truly sustainable society for all citizens of Europe

We are committed to lead a cost-effective energy transition by:

investing in clean power generation and transition-enabling solutions, to reduce emissions and actively pursue efforts to become carbon-neutral well before mid-century, taking into account different starting points and commercial availability of key transition technologies;

transforming the energy system to make it more responsive, resilient and efficient. This includes increased use of renewable energy, digitalisation, demand side response and reinforcement of grids so they can function as platforms and enablers for customers, cities and communities;

accelerating the energy transition in other economic sectors by offering competitive electricity as a transformation tool for transport, heating and industry;

embedding sustainability in all parts of our value chain and take measures to support the transformation of existing assets towards a zero carbon society;

innovating to discover the cutting-edge business models and develop the breakthrough technologies that are indispensable to allow our industry to lead this transition.

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KEY MESSAGES

Two years after the publication of the Political Declaration on Clean Energy for EU Islands[1] as well as of the Eurelectric report "Towards the Energy Transition on Europe's Islands" – including an in-depth analysis of the key challenges and case studies, further steps will now be needed to accelerate the clean energy transition on Europe's islands. In this paper, we would like to highlight the specific role of European islands and their decarbonisation needs, and call on policymakers under the new institutional mandate to consider **a comprehensive approach for the energy transition on European islands that would**:

- **Define decarbonisation pathways tailored to islands' needs**. Every single island is unique and has different starting points: characterised by a specific generation mix and available resources; with no or limited interconnection; small and fragile ecosystems; lack of economies of scale; different macroeconomic circumstances as well as local economic activities (tourism, agriculture, fishery, SMEs, local industry) impacting the energy system management.

- **Set up cost-effective solutions to address security of supply, firm capacity and operational challenges**. On many islands, fossil thermal generation provides most of today's firmness and flexibility. To reach decarbonisation, all cost-effective solutions should be considered: including a cleaner generation, storage and flexibility enablers, e-mobility together with demand-side management and, where suitable, new interconnections between islands or between islands and the mainland.

- **Take advantage of islands' particularities to embrace the new energy model**: characterised by a more decentralised system with a growing penetration of distributed renewable generation and energy storage; more active and price responsive consumers; increasing digitalisation enabling energy to be generated, distributed, and consumed more intelligently and efficiently.

[1] Signed in Valletta on 18 May 2017.

Key Recommendations for the Decarbonisation of European Islands

Delivering on the Paris Agreement commitments requires an increase of the EU's contribution to the fight against climate change. With the finalisation of the Clean Energy for All Europeans Package (CEP) and the European Commission's 2050 Long-term Strategy for a prosperous, modern, competitive and climate-neutral economy, new frameworks have been created, and they are also fully applicable to islands.

The European electricity sector believes that cost-effective decarbonisation is crucial if Europe is to remain competitive in the global marketplace, and the power sector is committed to leading this transition. In parallel, this would give the opportunity to the European manufacturing industry to acquire strong expertise in the field and lead on the market. In the Vision published in 2018, we made a pledge to become carbon neutral well before mid-century, taking into account different starting points and commercial availability of key transition technologies, and to see electrification as a way to accelerate decarbonisation in other sectors of the economy in a cost-effective way. To put it shortly, electrification is the means to achieve decarbonisation, not only on the mainland but also on islands. Against this background and two years after the publications of the Eurelectric report "Towards the Energy Transition on Europe's Islands" as well as of the Political Declaration on Clean Energy for EU Islands[2], further steps will now be needed to accelerate the clean energy transition on Europe's islands. In this context, we would like to highlight the specific role of European islands and their decarbonisation needs[3]:

1. **Islands can achieve decarbonisation by means of electrification**
   Electrification, combined with a decarbonisation of the power sector, is key to achieving a carbon neutral EU economy as set out by the European Commission's Long Term Energy and Climate Strategy. This will require a significant increase of investments in clean generation and storage (towards EUR 100 billion per year over the period[4]), as well as additional grid and infrastructure investments, coupled with raising public awareness. Electrification will be driven by economic factors, technological advances and further support from enabling regulation. Other technologies combined with increased energy efficiency throughout the whole value chain will develop in parallel and contribute to reaching decarbonisation targets. Also the energy systems of European islands will follow this decarbonisation pathway.
   There is a high potential for a strong electricity uptake on islands across all sectors. Across the European Union, we expect a strong electricity uptake in all sectors, with the strongest increase in transport, where up to 63% of total final energy consumption will be electric (Eurelectric's most ambitious scenario). On many islands, the transport sector is still fully based on fossil fuels. Electric mobility, the deployment of charging stations and incentives to purchase electric vehicles (EVs) are crucial for decarbonising European islands. Clean transport is crucial for islands in terms of emissions, air quality, and sustainable tourism. Given the relatively short distances on an island and the significant improvements in EV batteries range, the electrification of transport can deliver the desired results without compromising social welfare and public needs. In buildings, energy efficiency is a key driver of emission reductions; 45% to 63% of buildings energy

[2] Signed in Valletta on 18 May 2017

[3] All data and key messages are mainly based on:
Eurelectric 2018, Decarbonisation Pathways
Eurelectric 2019, E-invest report to be published at the end of September 2019

[4] Eurelectric 2018, Decarbonisation Pathways

consumption could be electric in 2050 driven by adoption of electric heat pumps facilitating heating in winter and cooling in summer.

However, the fragile security of supply and power quality in off-grid systems necessitates that this pathway is well-designed and that it follows a realistic transition period from the existing conventional energy generation to a clean energy supply. Overall, it has to be pointed out that different targets, approaches as well as level of efforts across islands are required in comparison to those on the mainland. This is mainly due to various starting points in terms of generation mix, a variety of available resources, diverse local opinions on sustainable development, market design specificities, the macroeconomic situation and local economic activities (tourism, agriculture, fishery, SMEs, local industry). The latter relates to the volatility of certain sectors vital for the economic welfare of islands, such as farming and tourism. Due to these different starting points and pathways, a technology neutral approach aiming at decarbonisation is necessary for islands.

2. Islands require tailor-made solutions taking the unique features into account

Islands - being at the front of the clean energy transition - can be favourable testbeds for the deployment of innovative technology solutions, and some already serve as best practice examples for the mainland. Even though islands share some common aspects with the mainland energy systems, they have unique features that require tailor-made solutions. To put it differently, particular needs as well as specific local situations and conditions (environmental, financial/economic, social and geopolitical ones, as well as the existence of endogenous resources) will determine the technology and energy mix. Moreover, cost-benefit analysis, the choice of ecologically effective as well as cost-effective and efficient measures are crucial to address the specific challenges of islands.

The decarbonisation of islands is more than a mere choice of technologies. Decarbonisation pathways for islands include multiple elements, such as making use of local renewable energy sources, energy efficiency measures in power supply and demand, energy storage and smart systems. When planning or realising tailor-made solutions on islands, the following factors have proven to be key elements:

- Interconnectability:
  - Planning of grid interconnection to the mainland
  - Planning of grid interconnection between neighbouring islands

- Technical constraints and requirements
  - System stability and security of supply

    Even though islands need to tackle fossil fuel emissions through clean energy technologies, many of them have limited or no interconnection possibilities and have not yet diversified their energy supply, still relying on (fossil) fuel imports. On many islands, fossil thermal generation is currently providing most of the firmness and flexibility. In the future, island energy systems with a large share of variable renewables will require an increase in sustainable firm and flexible capacity e.g. generation, storage and demand-side response. This is a key issue to be solved, both technically and in terms of market design.

  - Operational framework and constraints
  - Preparedness of the system to integrate a high share of variable RES
  - System observability and predictability of variable generation
  - Demand growth/seasonal character

- Availability of technologies
- Level of deployment of energy efficiency

- Socio-economic challenges and solutions
  - Consumption specificities (such as tourism and prosumers)

    Seasonality in tourism has a major implication for most islands' energy systems: a relatively large generation capacity needs to be installed in order to meet the energy needs during high season, whereas this capacity then remains largely idle during low season. Of course, the chosen generation option should not affect the tourist's experience negatively (for instance via environmental and visual impact).

  - Affordability of technologies and sensitivity of electricity prices

    Some of the EU's islands have a per capita GDP well below the European average, which is also reflected in a much lower energy consumption. Ensuring a fair, democratic and cohesive transition, strengthening the role of the citizens as active actors in decarbonisation and energy transition, creating defined and dimensioned measures to combat energy poverty as well as instruments for the protection of vulnerable citizens and promoting the active involvement of citizens and territorial valorisation is crucial in this regard.

    Considering the high costs of energy generation on many EU islands, energy efficiency and demand response levers play a key role. Firstly, energy efficiency measures (higher efficiency of electric solutions compared to conventional solutions for most applications) yield energy savings. These can be complemented by demand response measures that usually aim to reduce peak power demand at critical times, but can also produce energy savings. In particular, making tools like smart grid technologies widespread, as well as energy price and use information more accessible, will facilitate demand response and enable customers to become more energy efficient.

  - Level of customer engagement

    With the evolution of the energy system towards a growing share of decentralised generation and growing demand for electricity due to electrification, an increasing number of households, enterprises, public authorities, cities and municipalities are ready to participate as active players in the energy transition. This trend is facilitated by growing awareness of customers (about energy prices, ecological footprint, etc.) and technological developments in the area of renewable energy generation technologies, batteries, demand response technologies, electric vehicles, smart meters/grids, etc. Consumers ("prosumers") will carry out significant investments to reduce their consumption and switch to electricity. This development has to be facilitated on islands as well through smart tariffs and an adequate allocation of taxes and levies.

  - Local population's sustainability priorities

- Regulatory and economic framework and constraints

  On some islands, the electricity market is still regulated, mainly due to the small economy and hence market size. However, new frameworks should embrace the heterogeneity of island systems offering new market opportunities and leading to a cost-effective energy transition within a realistic timeframe.

- Ecological and environmental challenges
  - Environmental impacts of technologies
  - Small and fragile ecosystems, conservation sites
  - Local population's sustainability priorities

3. Islands need long-term investment signals to achieve a cost-effective energy transition

Renewable energy sources are the backbone of the future electricity system: by 2030, renewables will account for up to 60% of electricity generation in the EU, and above 80% by 2045. To reach these levels, Europe needs to significantly accelerate the pace of renewables development, coupled with sufficient flexibility capacity, EVs, storage as well as demand side management. Currently, the majority of financing rests on the private initiatives of electricity companies in partnership with private lending facilities.

Generally, an efficient energy transition requires a consistent combination of market design, regulatory framework and policies, all set within a realistic transition timeframe. Policies have to reflect the particularities of islands, while emerging legal and regulatory frameworks must ensure that the European and national plans' objectives match and do not create impossible criteria for islands. The CEP is a major step forward and must be effectively implemented.

However, while the CEP will improve the functioning of short-term markets, it fails to provide a definitive solution to the problem of ensuring long-term investment signals to achieve the energy transition cost-effectively both on the mainland and on islands. Furthermore, in order to facilitate a smooth clean energy transition, efficient and fair implementing provisions should be put in place, with rules that do not disrupt the market and where just remuneration applies to all generators for the services they deliver. In this context, the Governance framework is key to ensure that the Member States are on track to reach the 2030 climate and energy objectives and beyond. Even though, this has not been requested and foreseen by the Governance Regulation, the Member States can use the National Energy and Climate Plans (NECPs) to take the specific situation of islands into account and include specific decarbonisation pathways for islands.

However, additional EU financing instruments are needed to address multiple challenges islands face, which are dominated by the absence of economies of scale. The programmes such as the Connecting Europe Facility, structural funds, social funds, Horizon Europe or similar funding initiatives should integrate the islands needs for innovative energy solutions, micro-grids, smart grids, electrification of the transport and other new technologies. Fostering programmes dedicated to train skilled young people to work in the energy sector will further contribute to the growth of local economies. Any EU funding until 2030 should help achieve a cost-effective energy transition. In particular, it should facilitate a just transition on the EU islands, taking into account different starting points, local availability of key transition technologies and energy efficiency. At the same time, appropriate financial instruments should be made available to the EU islands to accelerate the energy transition ahead of 2050.

4. **A just transition aims to keep a skilled local workforce on islands**
   On islands, a capable local workforce should be kept that is well trained in the new energy technologies, able to install, maintain, and operate innovative energy technologies, such as storage, micro-grids, smart grids or new digital services.
   Usually, utilities employ skilled workers on islands to at the same time prevent further brain drain.
   However, as stakeholders' engagement will be a key element towards decarbonisation, a closer focus has to be shifted towards bottom-up approaches. In this context, different island stakeholders will take over distinct roles:
   - The main role of policymakers and local entities is to assist in tailoring solutions to the needs of islands.
   - Island energy managers will be supported in raising awareness among their local island population. They will point out the challenges faced by the operators of island electricity systems and contribute to find tailor-made solutions.
   - Utilities provide the technical and operational perspective needed to ensure the timely rollout of actions aiming at fulfilling political objectives.

5. **A European permanent structure should be established to tackle the islands' issues**
   Eurelectric highly welcomes the current initiatives of the European Commission. However, we believe that a permanent body or structure is needed to guarantee that the expertise on policy decisions and technical solutions will be further shared and assistance will also be provided to islands in future. Having the Political Declaration on Clean Energy for EU Islands in mind, we call on the European Commission to expand the current initiatives to involve all stakeholders (the traditional players such as generators, suppliers, grids, distributers, aggregators, local energy communities, covering the current island management systems as well as other sectors, such as transport, tourism, agriculture, fishery, SMEs, and local industries, such as building and construction) and, finally, to focus on financial aspects of energy transition on island: to draft studies, o establish a funding mechanism for projects on islands or create an island financing facility.

Eurelectric pursues in all its activities the application of the following sustainable development values:

Economic Development

- Growth, added-value, efficiency

Environmental Leadership

- Commitment, innovation, pro-activeness

Social Responsibility

- Transparency, ethics, accountability

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