

17-21 JUNE 2019
EU SUSTAINABLE ENERGY WEEK
SHAPING EUROPE'S ENERGY FUTURE



#EUSEW19

Delivering Clean energy on EU Islands

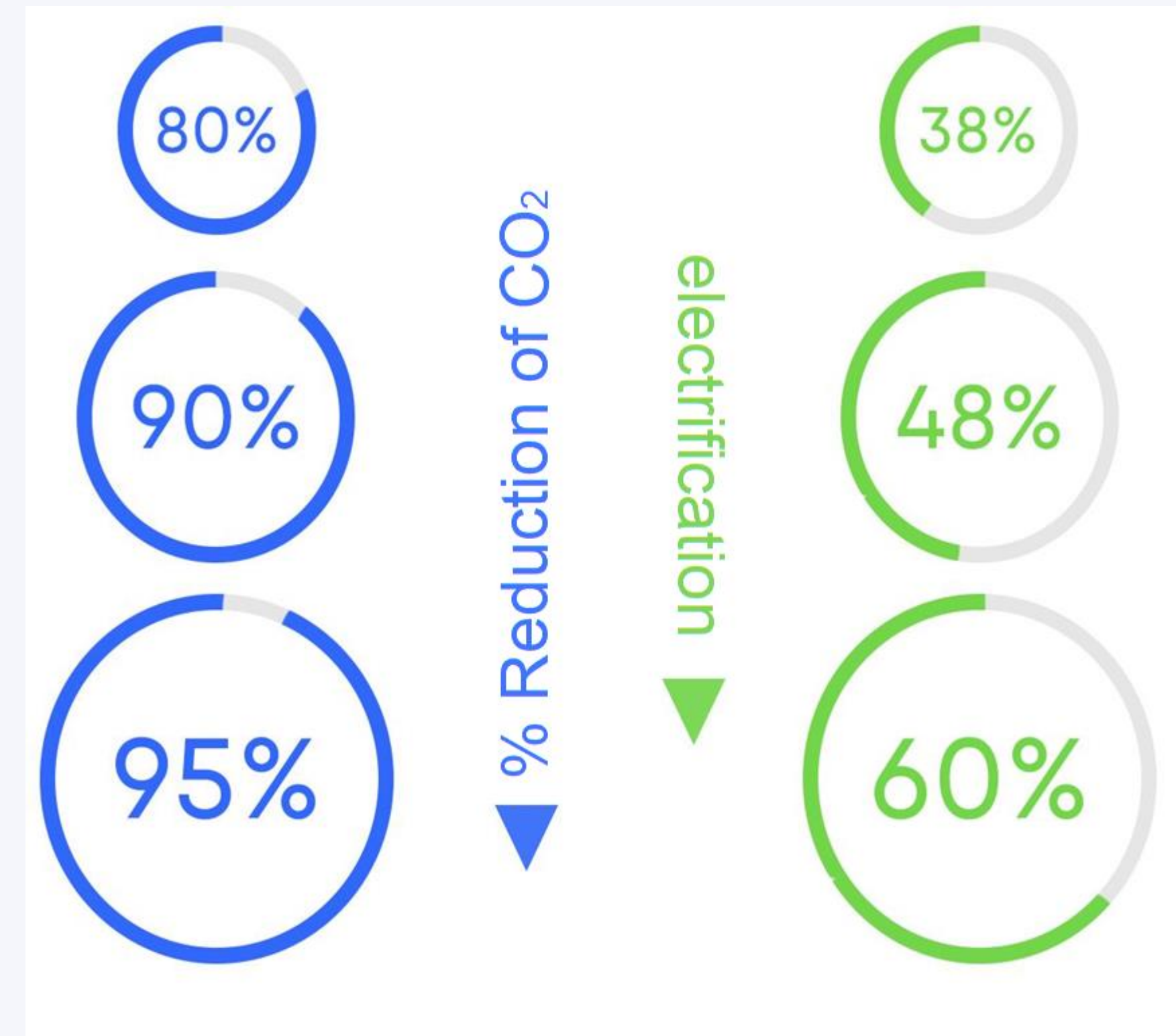
Setting the scene: Challenges of Decarbonisation

Teresa Luis Ruiz, Chair of Eurelectric Network Experts Islands Systems

17-21 JUNE 2019
SHAPING EUROPE'S ENERGY FUTURE
#EUSEW19

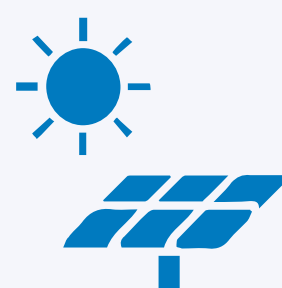
Islands are committed to the energy transition

Our vision *"to become carbon neutral well before mid-century"*

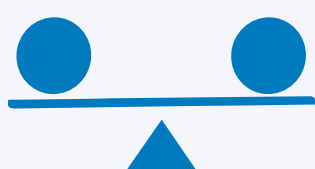


Key trends of the energy transition: mainland & islands

Changing the energy sector paradigm



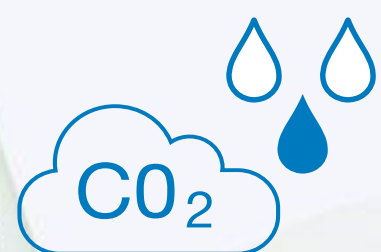
High penetration of renewables and network deployments will be the main driving forces of the European energy transition. Renewables will represent >80% of electricity supply driven by large untapped potential and rapidly declining cost



System reliability and flexibility needs, will be provided by multiple sources in the power sector and from other industrial sectors. These include hydro, nuclear power and gas, and emerging sources deployed at scale such as demand side response, battery storage, hydrogen electrolysis and power-to-gas



Changing role of fossil generation. Fossil electricity supply will be gradually phased out and will represent only 5% of total supply by 2045. Gas will represent 15% of total installed capacity to contribute to system reliability, especially in regions that don't have access to hydro or nuclear



Decreasing costs of carbon neutral technologies and innovation to abate the last tons of CO2 emissions (e.g. CCS, negative emissions) coming from the marginal use of the remaining thermal capacity such as negative emissions and CCS technologies

Key Recommendations for islands' Decarbonisation

Member States should take advantage of NECPs to include islands' needs



A comprehensive approach: Energy transition on islands



To define decarbonisation path-ways tailored to islands' needs. Every single island is unique and with different starting points: generation mix and available resources; with no or limited interconnection; small and fragile ecosystem with diverse local opinions on sustainable development; lack of economy of scale; macro-economic circumstances as well as seasonal local economic activities (tourism, local industry) impacting energy system management.



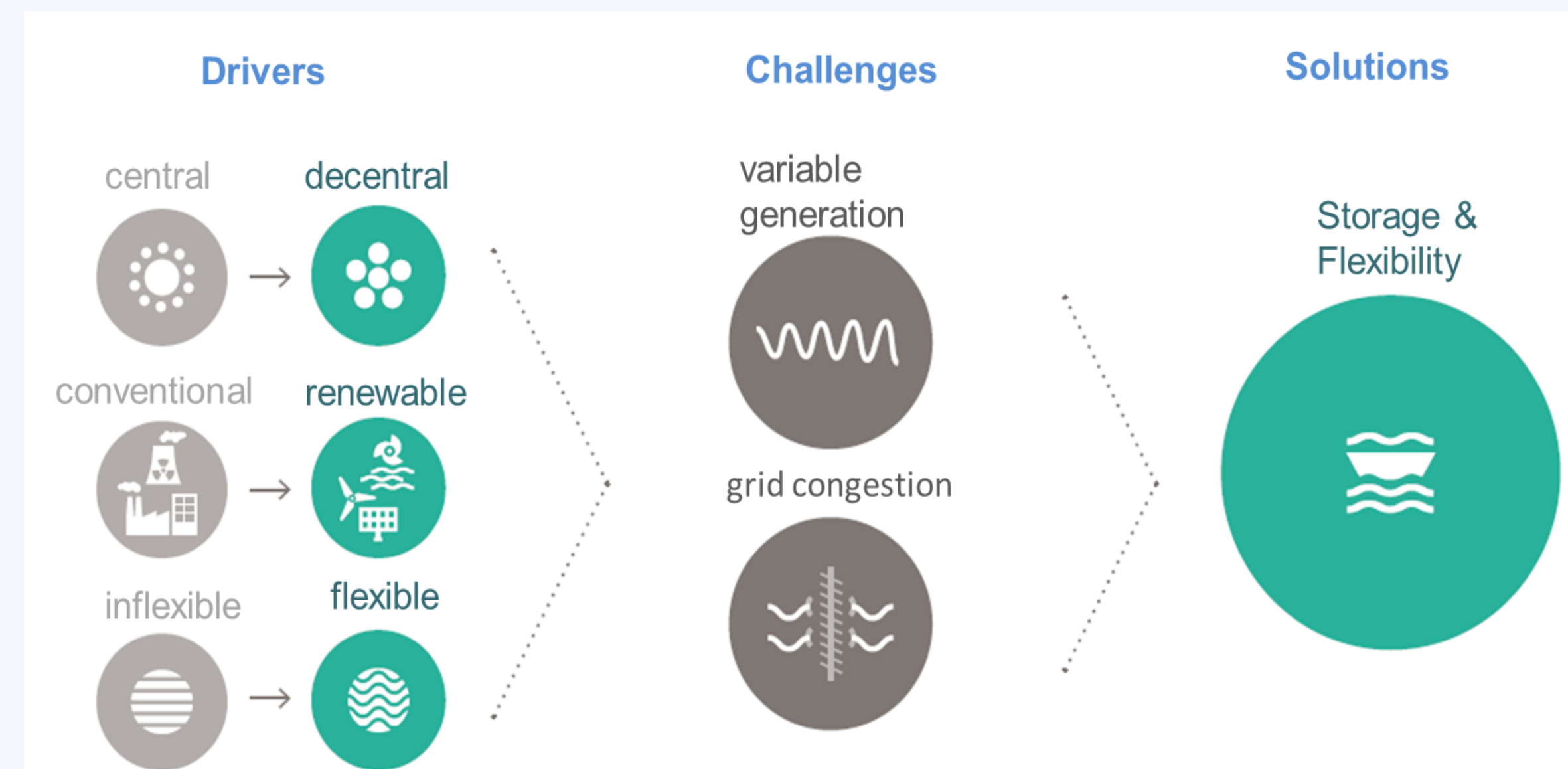
To set up cost-effective solutions to address security of supply, firm capacity, operational challenges. In many islands, fossil thermal generation provides most of the firmness and flexibility capacity. To reach decarbonisation all cost-effective solutions should be considered from: cleaner generation -in some cases gas could be the transitional solution-, passing by storage, together with demand-side response and, where suitable, by new interconnections between island or between islands and mainland.



To take advantage of islands particularities to embrace the new energy model: characterized by a more decentralized system together, with growing penetration of distributed-generation and energy storage; more active and price-responsive energy consumers; increasing digitalization enabling energy to be produced, transmitted, and consumed more intelligently and efficiently.

Storage: an enabler technology

- Storage is a “**paramount enabling technology**” in energy system dominated by renewables.
- Energy storage technologies can take **different forms** (batteries, pumped hydro storage, thermal storage, flywheels, power to gas etc.) and provide **variety of services**, both in front of and behind the meter.
- Storage technologies **delivers flexibility** at different time-scales – seconds/ minutes, hours, weeks and even months – which is essential to achieve a high share of renewables.
- Storage **must be able to compete on a level playing field** with generation and demand response and with a **technology neutral approach**



Islands frontrunners in decarbonisation goals: storage's role



Storage enables islands to be prepared to manage energy flows, supporting the main grid and allowing for a greater implementation of renewable energies

In Islands' energy systems, dominated by a high penetration of renewables, development of energy storage is essential and contribute to:

- **Ensure security of energy supply and stability of the system:** as flexibility provider and addressing adequacy issues. In isolated energy systems, where variable RES penetration can reach very high levels and where demand patterns shift dramatically, storage will be particularly important.
- **Reduce the need for additional interconnection and decrease import dependency linked to conventional fuels for power generation.**
- **Allow the development of new business models and consumer participation.** Energy storage can respond to changes in supply and demand, while having a cost effective role to play in managing periods of very high electricity demand.