



**HARNESSING
MICROGRID
TECHNOLOGY
OPPORTUNITIES**
TO LEAD THE ENERGY
TRANSITION IN EUROPE

HARNESSING MICROGRID TECHNOLOGY OPPORTUNITIES TO LEAD THE ENERGY TRANSITION IN EUROPE

The European Union places consumers at the centre of the Energy Union: all consumers in the EU will be entitled to generate electricity to consume it, to store it, to share it, to sell it and to switch supplier. This is good news for anyone who wishes to become a prosumer and be more in control of their energy production and consumption.

How can we make sure that prosumers can take their place at the centre of the Energy Union? One of the answers: Through the development of microgrids prosumers - individual citizens, but also buildings, industrial sites or communities - will be able to benefit from the new electricity system.

A microgrid is an actively integrated controllable energy system consisting of interconnected energy producers (e.g. wind turbines, solar panels, cogeneration), storage facilities, and consumers (households, industry,

data centers, electrical vehicles charging points) in a geographical area (e.g. a village, town, business park, neighbourhood). A microgrid can operate as part of the main electricity grid, but is also able to operate autonomously (for example remote areas or islands).

Beyond the prosumer empowerment and its energy competitiveness, benefits include energy efficiency for the society, energy sector coupling and the preparation for more electrical demand linked to the electrification raise in the society



1. Microgrids will give consumers and communities the power to **maximize the value of electricity they produce** possibly by selling it to the market through an aggregator or by storing it into a battery when the market price is low and reduce the need to buy electricity. This gives them the opportunity to earn money as prosumers.

2. Microgrids help to **better integrate the increasing production from renewable energy sources** by managing the necessary flexibility at the local level.

3. Microgrids help to **improve the energy efficiency of the network**. Energy efficiency goes beyond the optimization of the electrical part and includes also other energy flows, such as heat (which cannot be optimized at grid level).

4. Microgrids can also help to **increase the resilience of the electricity network** against cyber-attacks and the spread of the impact of a black out.

THERE ARE FOUR REASONS WHY THE CREATION OF MICROGRIDS IN THE EU IS A GOOD IDEA

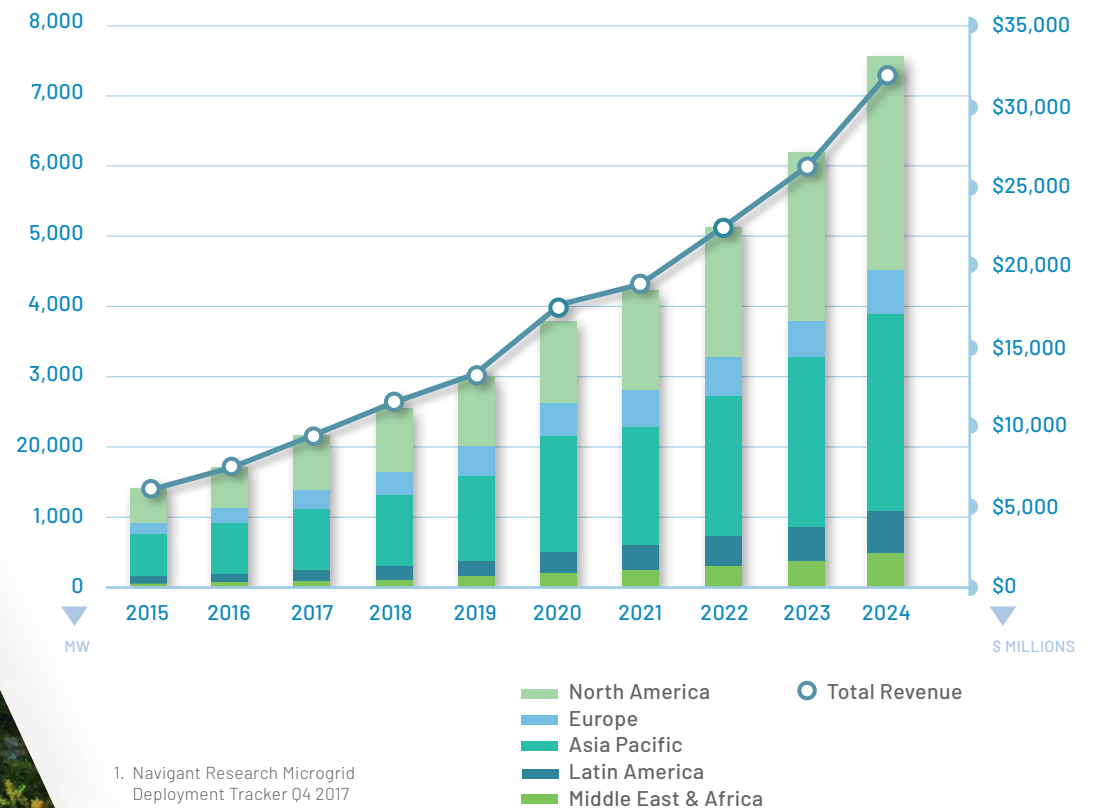
MICROGRIDS OFFER A TECHNOLOGICALLY MATURE SOLUTION TO THE DECARBONIZATION OF LOCAL ENERGY SYSTEMS WHILE ENSURING A POSITIVE IMPACT ON THE EXISTING ENERGY INFRASTRUCTURE AND THE LOCAL ECONOMY

UNFORTUNATELY, THE EU IS CURRENTLY LAGGING BEHIND

EUROPE ACCOUNTS
FOR JUST 9% OF THE
GLOBAL MICROGRID
CAPACITY

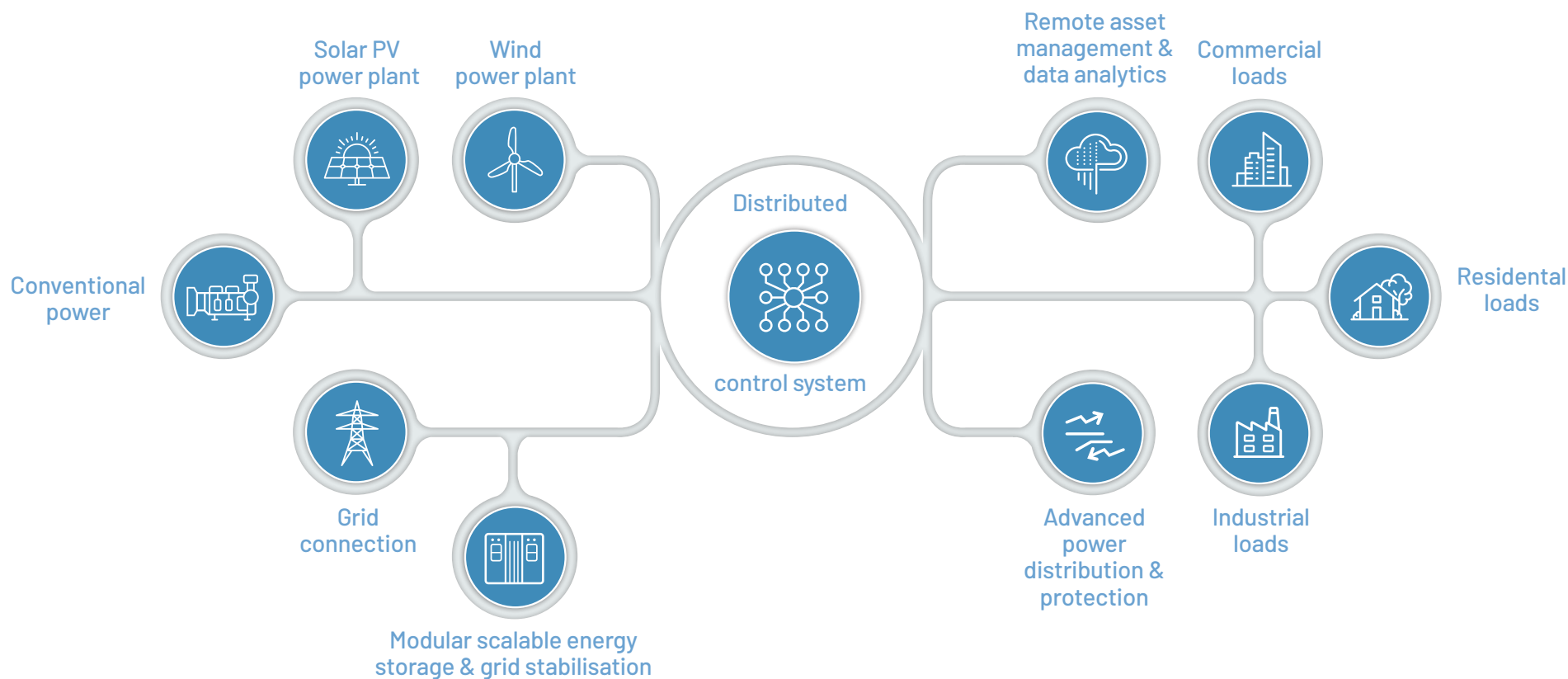
In 2017 there were 1,869 active projects in place across 123 countries and six regions, including Antarctica. Together, these represent 20,766.2 MW of operating, under development, and proposed microgrid capacity. However, Europe accounts for just 9% of the global microgrid capacity¹.

Annual Total Microgrid Market Capacity and Implementation Revenue by Region, World Markets: 2015-2024



When it comes to microgrid development the EU can learn valuable and inspiring lessons from other parts of the world. In Australia, for example, a microgrid was built up within 4 months as part of the development of a new residential area with up to 7,500 residential lots surrounding a town center and social infrastructure.

The authorities wanted to achieve environmentally sustainable urban development, promote housing diversity, maximize opportunities for local employment and business and identify an independent energy partner to install and operate an autonomous microgrid.



The creation of the microgrid resulted in one of the most sustainable communities with a much more reliable electricity network. In the European context, this could be particularly relevant for critical infrastructures. All this with a smart, economical usage

of resources and components. The microgrid enabled decision makers to balance economic expectations, resilience and technical requirements in building a smart and sustainable community.

IF THE EU REALLY WISHES TO PLACE CONSUMERS AND COMMUNITIES AT THE CENTER OF THE ENERGY UNION IT NEEDS TO RECOGNIZE THE ROLE OF MICROGRIDS

In the EU, consumers and communities have already started the development of microgrids. But more needs to be done to develop sustainable business models that provide a competitive return on investments.

If the EU really wishes to place consumers and communities at the center of the Energy Union it needs to recognize the role of microgrids and put in place a regulatory framework that enables the members of a microgrid to be compensated for their contributions, such as electricity, flexibility, and grid services. In concrete terms this means that:

- ▀ There should no longer be any restrictions for citizens, companies, communities, to self-consume. Currently there is a limit to 30kW peak limit defined in the renewable energy directive.
- ▀ The EU needs to further develop fully functional and operational flexibility markets, so that the tariffs for providing electricity to the network reward the self-production of clean electricity.
- ▀ In the legal framework the definition of community needs to be refined as requested by the regulator for instance to enable the developments of business models for microgrids
- ▀ The EU should support the on-going development of international technical standards², making sure that they consider the specificities of the EU, including EU grid codes and cyber-security legislation.
- ▀ The EU can help Europe's grid technology industry maintain its leadership by assisting microgrids as a sector of strategic importance in the face of global competition.

2. For instance in June 2018, the scope of the IEC TC 57 WG 17 has been extended to support the communication and data model for microgrid. This comes in addition to work done in the IEC TC8, etc.

Now is the time to act. The EU is implementing the new EU electricity market design. Furthermore, the Clean Energy for EU Islands Initiative provides an excellent opportunity to translate the political commitment of EU Energy Ministers into tangible steps towards a clean energy future.

Microgrids have great potential to contribute to the EU climate and energy objectives. The EU can make a real difference by supporting and facilitating the deployment of microgrid technology on each of the European islands. The EU has a great opportunity to realise its ambition of democratizing the energy market by empowering consumers and communities to play their role in the transition to a clean energy future.





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