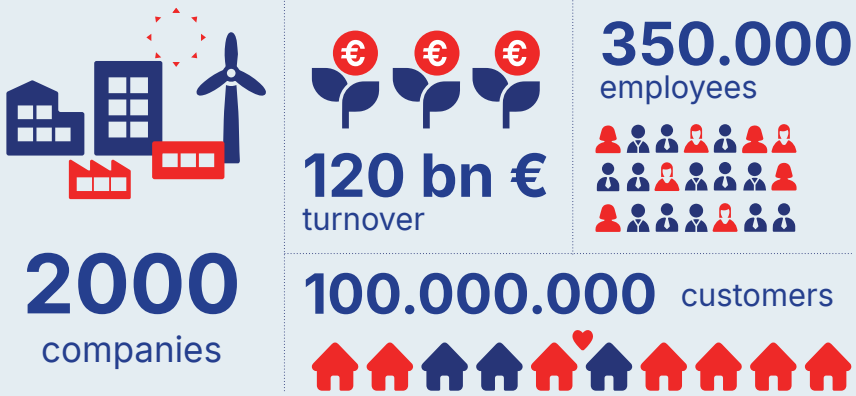
CEDEC

Enhancing energy system resilience: the local integrated perspective

CEDEC is the European Federation of local and regional energy companies, representing the interests of 2000 local and regional energy and broadband companies across Europe, close to citizens and businesses, serving 100 million electricity, gas and district heating customers and broadband connections.

These predominantly small and medium-sized local and regional energy companies have developed activities in every part of the energy value chain. The wide range of services provided by these local utility companies is reliable, sustainable and close to the customer. Through their investments and local jobs, they make a significant contribution to local and regional economic development.



Executive summary

The resilience landscape for local energy companies

With rising instability of both the EU's natural and geo-political climate, local energy companies are increasingly subject to a variety of man-made or natural threats to the energy system.

Climate change is rapidly increasing both the frequency and intensity of extreme weather events, with significant effects throughout the whole energy system. These extreme weather events can cause significant disruptions to supply, particularly from renewable sources, as well as damage to infrastructure and spikes in demand for heating or cooling.

The increasing digitisation and interconnectedness of the energy sector, along with the multiplication of distributed energy resources, also increase the exposure of local energy companies to cyber-attacks. Physical attacks on energy infrastructure, highlighted by the conflict in Ukraine, also pose a serious threat to energy security.

The contributions of local integrated energy systems to resilience

The unique characteristics of integrated local energy companies offer opportunities for increasing resilience of the energy system to these various threats.

Decentralisation

Local energy companies are driving the move to a more decentralised system, with increasing amounts of renewable energy (both electricity and molecules) being produced locally. Decentralised systems are inherently more resilient: if one part is affected, the rest of the system can continue operating. Decentralised systems can adapt more easily to fluctuations in demand and are less exposed to single points of failure.

Diversification

Local energy companies are well positioned to make optimal use of a variety of locally available energy sources, reducing the impact of disruptions to any single source. They are more agile and open to innovation, allowing for quick adaptation to new technologies, thus strengthening system resilience.

Integrated energy system approach

Integrated local energy companies can enhance resilience by interlinking and combining different energy systems such as electricity, gases and district heating, as well as other sectors (transport, buildings, waste and wastewater). This enables different energy vectors to support each other, improves integration of renewable energy, and optimises the use of infrastructures. Additionally, integrated operations enhance cybersecurity by enabling coordinated and comprehensive protection measures, leveraging shared resources for efficient threat detection and response.

Providing an enabling framework for local integrated energy system resilience

Local energy companies require additional support through appropriate regulatory, financial and security frameworks to be fully prepared to face the significant challenges they face and further increase their resilience.

Although European legislation already addresses specific aspects of energy system resilience, these requirements often focus solely on the power system and, if they address other sectors, do so in isolation. Providing the right conditions for local energy companies to enhance resilience will require a more comprehensive approach taking into account the interrelated effects of climate change on generation assets, energy networks and consumption patterns, requiring in turn the increasing integration of energy systems.

Resilience considerations must be integrated in bottom-up approaches for energy infrastructure planning. Appropriate investment and financing frameworks must be in place to help local energy companies face the significant costs required. The resilience benefits of a highly decentralised and integrated system must further be ensured by accompanying cyber-security measures.

Policy Recommendations

Integrating resilience in local and regional energy planning

- Encourage the integration of aspects of resilience (climate, security, cybersecurity) in local and regional energy planning processes at an early stage.
- Create systematic links between local and regional energy planning and resilience assessments under the CER Directive.
- Structurally integrate assessment of flexibility potential in local and regional energy planning.

Incentivising investments in resilience

- Encourage NRAs to establish incentive frameworks for resilience-related investments, including through EC recommendations or ACER guidelines.
- Encompass resilience considerations when the concept of 'anticipatory investments' is specified in legislation or regulation.
- Review the restrictions in the Electricity Directive regarding ownership, development, management and operation of energy storage facilities, to enable DSOs to participate more actively in flexibility.

Financing a more resilient energy system

- Earmark dedicated funding in EU, EIB and national instruments for resilience investments throughout the value chain.
- Facilitate access to EU and EIB funding for small and medium-sized DSOs by streamlining and simplifying procedures.

Ensuring cyber-security in decentralised systems

- Provide guidance on NIS 2 implementation concerning operators of renewable energies, including classification of risk categories according to the type and number of assets.
- Promote the establishment of risk-based and scalable approach for implementation of risk management and incident reporting for entities under NIS 2.
- Set requirements for technology providers to carry out risk analysis on cybersecurity maturity of legacy systems.

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CEDEC

info@cedec.com
Galerie Ravenstein, 4 B2
1000 Brussels
www.cedec.com

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