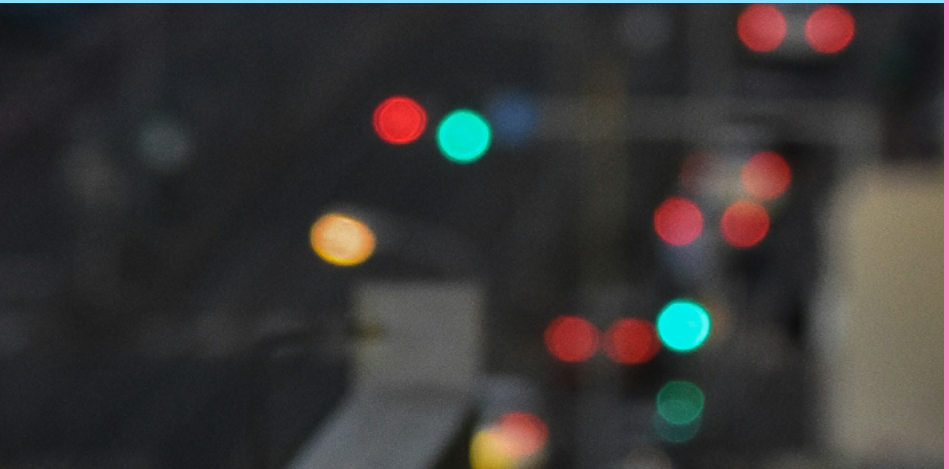
BEYOND FOSSIL FUELS

From Gatekeepers to Enablers:

Reimagining **Distribution System Operators** for a renewable future



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Introduction and key recommendations

In every region, in every community, the shift to renewable energy entails new ways of creating, consuming and controlling our electricity. Europe's aging electricity distribution grid is in urgent need of modernisation. With 40% of the EU's distribution network over 40 years old, just ten years off its typical lifespan,[1] upgrades are inevitable– energy transition or not. This presents a pivotal opportunity to build a clean and efficient energy system that lowers costs for the people, families and businesses at the heart of our society.

Electricity distribution networks – operated by distribution system operators (DSOs) – are the golden thread connecting households and businesses to the benefits of renewables and clean flexibility solutions. More than 70% of all renewables will be connected to the distribution grid by 2030.[2] They connect a wide range of projects: from heat pumps and EV charging stations to rooftop solar, industrial sites, utility-scale solar, and onshore wind. Thus, DSOs play a crucial technical role in optimising and stabilising the power system, as well as achieving decarbonisation objectives.

Yet, at present, distribution grids often delay, rather than enable, a fair and fast energy transition. Long queues of renewables and storage projects are waiting to connect to the grid. Developers, businesses, regional and local governments and households face unwieldy permitting processes, and households and businesses are missing out on opportunities for flexible energy consumption that would reduce their energy bills.

Distribution grids need to transition from a network where households and businesses passively consume electricity generated principally from centralised thermal power plants – to a system where electricity is generated and consumed in a much more decentralised, flexible manner. This transformation redefines the role of DSOs. Their new role as the key enablers, innovators and investors for the energy transition necessarily implies that current governance and operational structures need overhauling.

Energy is a public good, as essential to the functioning of our society as water, public health and education. As a public good, grids should be governed in the public interest. Electricity is

essential not only to meet basic needs, but also to sustain economic well-being. How DSOs operate and invest in the grid impacts whether households and businesses can produce their own energy, break free from the tyranny of fossil fuel price spikes, and use energy in a smart and flexible way.

DSOs, as highly regulated entities, are bound to follow a set of rules which policymakers have not yet adapted to the new energy horizon. Current grid rules fall short of making it fit for the opportunities the transition can provide. Policymakers, regulators and DSOs alike in the majority of European countries have yet to take important steps towards better governance, planning and connection processes.

A new approach to DSO governance and operations, which understands distribution grids as a public good, is needed across Europe.[3] Beyond Fossil Fuels and our members call on governments, regulators and DSOs to take action to support a fair and fast energy transition.

KEY RECOMMENDATIONS:

- **Enforce stronger governance standards:** Energy regulators should be empowered with a climate mandate to ensure that DSOs plan and operate transparently in line with the interests of the public, including achievement of climate goals. Governments should enforce rules to reduce the risk of conflicts of interest and ensure that DSOs do not act in a way which promotes private, rather than public interests.
- **Improve grid planning and investment:** Local grid planning is often poorly aligned with the needs of a fair and fast transition, with opaque and undemocratic processes. Governments need to provide a mandate to require DSOs to plan and invest in line with a fossil-free, renewables-based electricity system by 2035, underpinned by independent, nationwide energy spatial planning.
- **Make grid connection processes smooth and inclusive:** Changes are needed to ensure clean energy assets can easily connect to the grid – with priority given to projects that provide the greatest societal and climate benefits.[4] DSOs and governments must address permitting issues and streamline unnecessarily cumbersome practices, and maximise connection opportunities in the existing grid.
- **Unlock clean flexibility to enable bill savings for all:** DSOs should work with regulators and demand aggregators to enable and promote digitalised, smart and flexible electricity use through demand-side response and batteries – delivering the flexibility that a renewables-based system needs, and ensuring the benefits of lower energy bills flow through to everyone.

Local grid operators are central to a fair and fast energy transition

Electricity DSOs are the companies that run medium and low voltage energy networks. These are the networks that connect households, public buildings and most businesses to the power grid. A wide range of projects and technologies rely on their connection to the distribution grid, from heat pumps, EV chargers, to rooftop solar, and batteries, to some utility-scale solar and onshore wind projects. DSOs are therefore essential to unlocking the benefits of cheap, clean, homegrown renewable energy. They also play a crucial role in enabling the clean flexibility solutions[5] that store energy for when it is needed or shift its use to when it is plentiful – helping lower bills.

In the fossil-fuelled energy system of the past, DSOs' role consisted of ensuring electricity was reliably distributed to customers. Moving to a renewables-based system, with rapidly rising electrification, their role has become more complex, requiring active grid management. At the same time, DSOs must rapidly build out and upgrade infrastructure to accommodate the exponential growth of renewables and electrification: with approximately two thirds of new grid investments needed at the distribution level.[6] Get it right, and multiple benefits will ripple out to households, communities and businesses.

A renewables-based energy system built for the people: *Defining 'fair and fast'*

This briefing focuses on scaling connections for renewables, electrification and clean flexibility projects that benefit communities, households and businesses alike, and enable distribution grid users such as industry and renewable developers to quickly and easily deploy these solutions. This spans a wide range of projects – from community energy schemes, social housing retrofits, community-owned batteries, to utility-scale renewables that meet benefit-sharing criteria.

The Fast and Fair Renewables and Grids Agreement brings together developers, local governments, civil society and industry to establish a shared framework rooted in the first European consensus on what "fairness" means in the context of rapidly building renewables and grid projects with community support; in turn helping address some causes of public opposition to new renewables and grids at the local level.

The most relevant principle from the agreement calls on DSOs to "*facilitate a level-playing field for community-led initiatives when providing access to the grid including in applicable connection queue regulation. This can include reservation of available grid capacity, reserving space in tender procedures for opening new grid capacity and/or providing flexible grid connections".*

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Europe is home to around 2,500 electricity DSOs; compared to 44 transmission system operators (TSOs). More than half of these DSOs are in Czechia, Germany and Spain, and there are six additional countries with more than 100 DSOs each.[7] In five countries, a single DSO operates the entire distribution system. In some countries where there is a larger number of DSOs, it is worth noting that there may be one grid operator that has a monopoly – for example, in France, Enedis (owned by EDF) covers 95% of the distribution grid, and in Italy, e-distribuzione (owned by Enel) covers around 85% of the grid. In certain countries, some DSOs also operate gas distribution networks.

There are different ownership structures of DSOs, including public ownership (including by municipalities), private ownership, and hybrid private-public ownership. Research from Beyond Fossil Fuels finds that of the 40 largest DSOs in Europe, 35 are owned by utilities.[8] Distribution grids operated by DSOs can range from country-wide (as in Ireland), to very localised networks (as in Germany). There can be other geographic factors that influence operations, such as DSOs covering isolated islands.

DSO size creates different challenges. Where there is extreme fragmentation of DSOs, they may not have resources to individually undertake the detailed planning, digitalisation and system changes needed.[9] Conversely, when just a few DSOs dominate, they often hold monopolies, and prosumers and industry have fewer options or means to hold them to account.[10]

The challenges of making distribution grids future-ready vary widely across countries and regions. With thousands of DSOs across Europe differing in sizes and capabilities, clearly there is no "one-size-fits-all" solution, and nuance will be needed. High-level, cross-cutting challenges have been identified, including poor long-term network planning; insufficient investment in the upgrades required; lengthy permitting procedures; as well as a lack of resources both within the DSOs and local permitting authorities.[11]

In some cases, DSOs are willing to support renewables and flexibility projects but lack the resources or legislative backing to act.[12] In others, DSOs need to be encouraged into action – with the government setting the direction of travel and providing financial incentives; and the energy regulator monitoring and engaging with DSOs to ensure compliance. Although EU legislation defines the role of DSOs,[13] implementation and resourcing at the national level remains weak.[14]

As highly regulated entities, DSOs require an enabling legislative framework to support a fair

and fast energy transition. With much of the current regulatory framework designed for the fossil age, Beyond Fossil Fuels proposes a regulatory shake-up. A fresh outlook and blueprint is needed to manage and build out the grid; one which is centred on ensuring that DSOs act in the public interest.

This regulatory approach should prioritise the grid build-out and innovation needed to support a fair and fast transition.[15] It would entail that DSOs are obliged to act in a way which promotes climate-aligned, public – rather than private – interests, without excessive profit-making at the expense of consumer bills.[16]

Rather than outlining every possible recommendation that could bolster DSOs' role in the energy transition[17], this briefing focuses on four priority areas for reimagining the policy framework that governs DSOs – ensuring it better serves the public good and supports climate goals.

RECOMMENDATION 1:

Strengthening grid governance to serve the public good

As the energy transition reshapes the role of DSOs, governance frameworks must evolve in parallel to reflect their new responsibilities as enablers, innovators and investors. Given the significant financial stakes, and their impact on consumer bills, it is essential that this new governance regime is centred on advancing both public and climate interests.

Depending on the country, DSOs range from a single publicly owned company managing the entire grid, to hundreds of mostly privately owned operators.[18] Regardless of ownership, DSOs operate under regulatory frameworks that shape how they plan, invest, and manage the grid.

While significant capital investment in physical grid expansion is clearly needed, regulation must ensure that these investments are cost-effective and incorporate innovative and efficient solutions. Analysis suggests current regulatory models often favour capital asset investments over innovative, operational solutions.[19] As a result, crucial operational spending – particularly

for digitalisation and smart grid development – can be crowded out.

Existing regulatory approaches can incentivise outcomes that are misaligned with both public and climate interests. As profit-driven organisations, this can sometimes result in excessive profit-making. In the UK, Citizens Advice found that a regulatory misjudgment allowed energy networks to profit from high inflation, pocketing nearly £4 billion in excess profits over four years.[20]

Photo: *Adobe Stock*

Concerns are heightened where DSOs operate as profit-seeking private entities, raising questions about their alignment with the public interest. In the 2000s, after recognising that it was too easy for a power company to use its ownership of the grid to its advantage, EU governments split transmission system operators (TSOs) from both generation and supply businesses, known as 'unbundling'.[21] In contrast, DSOs underwent a very limited form of unbundling, which still allows for parent companies to own DSOs. As a result, many of Europe's largest DSOs remain owned by major utilities – creating potential conflicts of interest.

Current governance structures can discourage DSOs from developing solutions that clearly serve the public interest. DSOs need to actively engage with households, local or regional governments and businesses to solve connection bottlenecks and enable flexible energy use[22]– yet regulatory constraints can limit their ability to innovate or collaborate effectively with stakeholders. Australia shows how regulatory innovation can empower DSOs to take a more proactive role in the energy transition to help overcome barriers to access, and enable new energy resources deployment that benefit consumers.[23]

Given DSOs' monopoly status within their region, it falls to regulators to set strong financial incentives that drive urgency and action. Governments can reclaim the power for local communities and businesses, ensuring fair access to the grid, at a fair price.

KEY ASKS ON GRID GOVERNANCE

National legislators:

- Provide a climate-aligned mandate to the energy regulator to strengthen their oversight of the national grid operators, and require them to take a long-term outlook in each decision.
- Establish a public body to act as an independent energy system planner and operator, as seen in the UK and Australia, to undertake grid planning and operations and to provide rigorous assessments into the needs of the energy transition at both the transmission and distribution level.
- Mandate full ownership unbundling of DSOs, to minimise conflicts of interests.
- Introduce legislation requiring DSOs to reinvest profits into grid upgrades and prevent excess profit-making.

Energy regulators:

- Enable DSOs to support clean flexibility and the roll-out of distributed energy assets by removing barriers to innovation and community-led solutions.
- Reform incentive structures to favour the procurement of flexibility services from the market rather than defaulting to new infrastructure builds.
- Review price control frameworks to ensure they reflect DSOs' evolving role and fairly distribute costs over time.
- Better align DSOs' incentives with the public interest, linking rewards to customer value, connection performance, and innovation.

Case study: Governance issues result in unfair connections treatment in Poland

In Poland, ownership unbundling remains incomplete, with DSOs still operating within vertically integrated capital groups – raising concerns about their independence. According to an audit carried out by the Supreme Audit Office (NIK) in 2024, some parent companies of DSOs limited grid development by reducing actual investment expenditures, thereby undermining the EU principle of DSO independence.[24]

NIK emphasised that the economic activities of capital groups must not compromise the independence of DSOs, particularly in decisions regarding grid modernisation. The lack of full ownership separation also raises concerns about whether all grid applicants are treated equally. For example, when an investor belonging to a vertically integrated group applies for connection to the distribution grid, the request may be assessed by a DSO from the same group. This situation creates a structural risk that the operator could favour group interests over neutrality, potentially resulting in discriminatory refusals towards other applicants.

The Polish Competitiveness Authority (UOKiK) has opened a case against one DSO, ENEA.[25] UOKiK received intelligence that ENEA might have applied preferential procedures for requests to connect projects to the power grid which originated from its parent company group (Enea SA), resulting in unfair refusals to other renewable projects.

Photo: *Adobe Stock*

Case study: Regulatory innovation to lower bills in Australia

The Australia Energy Regulator (AER) has recognised the need for a fundamental shift in how DSOs operate: from the current market-driven, demand-led approach; to a policy driven one, focused on overcoming barriers to access to the benefits of the energy transition. AER is looking to reduce friction between innovation and the regulatory framework by identifying where flexibility in the rules exists, or where they need to be changed. As part of this, AER requested DSOs propose network-led solutions through a "regulatory sandbox" process. AER invited proposals aimed at improving access to the benefits of solar and storage, while reducing consumer costs.[26]

As a result, the DSO Ausgrid has proposed a pilot to harness the unused rooftop solar potential currently sitting in the existing network - particularly on commercial buildings - and ensure the resulting benefits go into the local community. The project is forecast to generate $22.9 million in energy savings over five years – equating to about $150-$200 per customer per annum for a typical household.[27]

Photo: *Arthur Tseng*

Case study: Reclaiming power in the Czech Republic

A small Czech town near the border with Germany, Horní Jiřetín, was threatened with destruction from the expansion of a nearby open pit coal mine.[28] As part of their fight against the coal mine company, the town embraced the energy transition in 2018 by installing heat pumps and solar panels in a bid to end their dependence on coal.

However, the DSO that controlled the local grid was not supportive, repeatedly refusing and delaying requests by the town for renewables to be connected to the grid. After many years of dispute with the DSO, the town eventually took the bold step of building their own sub-station, which they paid for themselves. This meant that the town could run their own local grid, and the DSO couldn't stop them from connecting their renewables projects. The DSO in question, ČEZ Distribuce, is a subsidiary of the ČEZ Group, the largest utility in Central and Eastern Europe, raising concerns about conflicts of interest in the DSO's handling of renewable connections.

Photo: *Adobe Stock*

RECOMMENDATION 2:

Improve grid planning and investment

The majority of grid investment needed to unlock the clean energy transition is set to take place at the distribution level.[29] This is due to the scale of the transformation needed: the distribution network represents the largest share of electricity infrastructure, and over 40% of the EU's distribution grids are over 40 years old. DSOs are on the frontline of electrification and will be critical for achieving the EU's goals of reaching 130 million electric vehicles by 2035 and 10 million heat pumps by 2027. By 2030, it is estimated that an investment of €375-425 billion will be needed to upgrade distribution grids – which while significant, represents only half of the usual spending on fossil fuels.[30]

It is therefore vital DSOs align their network development plans with the needs of a renewables-based, electrified society and economy. However, at present, this is not happening. As noted in the previous section, DSOs – as regulated entities – depend on supportive regulatory frameworks that apply a more forward-looking investment approach.[31]

EU requirements for DSOs to prepare five-to-ten year investment plans are a first step,[32] but stronger standards need to be set to ensure that these are aligned with the long-term needs of the energy transition. Agora Energiewende found that a key cause of network scarcity was insufficient holistic long-term planning.[33]

A recent report from EU Agency for the Cooperation of Energy Regulators (ACER) and Council of European Energy Regulators (CEER) also highlights that DSOs face struggle to translate long-term assumptions into concrete capacity needs,[34] posing challenges for effective network planning.

An integrated and independent approach to energy system planning — where future energy demands for heat, power, transport and other sectors are considered together – is needed to ensure the most efficient grid build-out. Given that a number of DSO parent companies also operate gas grids, the need for an independent and joint-up approach is particularly strong.

The requirement of cooperation between hydrogen, electricity, district heating operators – and the potential for joint planning – help ensure that decommissioning is integrated into broader energy transition strategies.

KEY ASKS ON GRID PLANNING

DSOs:

- Ensure that network development plans incorporate the necessary foresight and anticipatory investment to build out and upgrade the grid in line with high levels of electrification and renewables – as a minimum, aligned with national climate, renewable and electrification targets.
- Prioritise non-wire solutions wherever possible, including demand flexibility, storage, and technologies that maximise the use of existing cables. This will support a more cost-effective grid build-out, and make better use of existing connection capacity.
- Consult extensively with stakeholders and be transparent about the assumptions underpinning network plans.

National legislators and TSOs:

- Provide energy regulators with more robust tools to intervene in investment plans that are inconsistent with the needs of a renewables-based, electrified economy.
- All DSOs, including those with fewer than 100,000 customers should be obliged to draft long-term network development plans.[35] This could be achieved through the aggregation of modelling across several DSOs: ideally via an independent energy system operator and planner.

Energy regulators:

- Monitor and scrutinise the plans and investments of DSOs to ensure they are aligned with the needs of a renewables-based, electrified economy; and provide support with preparing high-quality long-term plans.

Case study: Regulation blocking anticipatory investments in Spain

In Spain, an annual investment cap limits how much grid companies can invest, based on a set percentage of the previous year's GDP.[36] Investment plans exceeding this threshold are automatically rejected. If a DSO invests beyond the cap, it is penalised with a reduced investment limit the following year. This discourages the forward-looking investments needed to modernise the grid.

The lack of clear rules for how the regulator inspects investment plans adds further complexity. Decisions can appear arbitrary, with limited recourse – appeals can only be made through the courts.

This regulatory environment has a direct impact on grid users. When new applicants seek a connection in areas with insufficient capacity, they are typically offered two choices: pay for the grid upgrades themselves, or connect to a different location with available capacity at no additional cost. As relocation is rarely a preferred option, many users end up financing reinforcements, which often takes years to complete.

Photo: *Luke Thonrton*

RECOMMENDATION 3:

Making grid connection processes smooth and inclusive

A major issue holding back clean energy projects across Europe is the slow and cumbersome grid connection process. This is often due to a combination of a lack of grid capacity, complex permitting requirements, and inefficient use of the existing grid.[37] In some countries, restrictive connection rules prevent certain projects to connect – for example, in Poland, energy communities can effectively only be established outside of cities.[38] In other cases, rigid rules and a lack of innovation prevent creative solutions that could enable faster, smoother connections.[39]

Those connecting to distribution networks frequently report delays, unclear timelines and costs, and a general lack of transparency and communication. In many cases, there is no standardised process for new grid connections.[40] For example, in the UK, connecting new demand, low-carbon technologies, or generation requires completing different forms and paying different fees for the same outcome. Comparable connections in the same region may face different timescales and often cannot be submitted in bulk under a single application.[41]

Across Europe, long queues of projects are already waiting to connect to the distribution network. DSOs typically operate on a 'first come, first served' basis, which can allow projects that are commercially unviable, strategically weak or misaligned with the public interest to block capacity – creating 'zombie' projects that cause gridlock. As neutral market facilitators, DSOs cannot introduce prioritisation criteria themselves; this must come from national governments and competent authorities.[42] Clear hierarchies should be introduced to prioritise ready-to-go projects that offer the greatest benefit to communities and climate.

KEY ASKS ON GRID CONNECTIONS

National legislators:

- Mandate DSOs to prioritise grid connections for projects that offer the greatest societal and climate benefits.
- Require the energy regulator to transparently design a methodology for assessing those benefits and establishing a clearer connections hierarchy.

National legislators and regulators:

- Apply measures to unlock grid capacity and speed up connections, including allowing co-location, flexible connection agreements, releasing unused grid capacity (known as "zombie projects"), and implementing a 'use it or lose it' rule for reserved grid capacity.[43]

Energy regulators:

- Through price control frameworks, incentivise DSOs to adopt a more innovative, problem-solving approach to grid connections.
- Ensure that regulation does not block creative solutions that would enable more projects to connect efficiently.
- Through price control frameworks, incentivise DSOs to adopt a more innovative, problem-solving approach to grid connections. Ensure that regulation does not block creative solutions that would enable more projects to connect efficiently.

DSOs:

- Facilitate a level playing field for community-led initiatives by reserving grid capacity for renewables and storage projects that deliver community benefits.
- Introduce a dedicated 'bike lane' process for energy community projects to apply for grid connection in a way that reflects their different characteristics. [44]
- Streamline connection procedures to reduce bureaucracy for energy communities, social housing, SMEs and other small-scale or community-centered projects.
- Publish grid hosting capacity maps to help applicants plan more effectively.

Case study: UK social housing upgrades obstructed by cumbersome connections

Together Housing Group, one of the largest social housing providers in northern England, has committed to removing fossil fuels from all their properties by 2035. With 31,000 homes currently using gas central heating, this is an ambitious challenge – but one which can unlock serious energy bill savings for residents. A combination of solar panels, batteries, and heat pumps will help households minimise energy costs and escape the fossil fuel rollercoaster of electricity bill spikes.

However, the group has encountered major challenges associated with the local Distribution Network Operator (DNO) – Electricity North West and Northern Powergrid [45] – due to an unwieldy connection process. Before installing heat pumps or EV chargers, the DNO must carry out a series of time-consuming steps, such as in-person surveys, meter checks, and installing 60 amp fuses. While important, this piecemeal and uncoordinated process makes large-scale retrofit projects extremely difficult to deliver.

For individual households, the process is slow but manageable. But for retrofitting at scale, the current system is simply too fragmented. Despite repeated attempts by the social housing association to collaborate with DNOs, a viable solution has yet to be found.

Photo: *Adobe Stock*

Case study: Connection challenges hold back community-owned renewables in Bulgaria

In Bulgaria, a web of issues is preventing energy communities from connecting to the distribution grid. Excessive bureaucracy, complex connection procedures, and data-sharing challenges are major barriers to timely speedy connections.

Current rules prohibit renewable energy communities from operating outside cities, which makes it impossible for farmers to create and benefit from them.[46] It also automatically excludes certain urbanised areas to be used for the development of community-led energy, even though they are in the vicinity of where the energy will be consumed. This is the case for municipal-led community energy in Gabrovo, where an installation has been constructed on the rooftop of a building that is part of the landfill, right outside the city borders.

There are also technical challenges due to a lack of energy data-sharing agreements and low penetration of smart meters. The level of the smart meter roll-out lies around a paltry 1% in Bulgaria.[47] Without these, the benefits of locally-owned renewable energy communities cannot be passed on to households. There is also no legislation to enable energy sharing, which deters communities from setting up their own renewables projects. Compounding this problem is a lack of trust between different energy actors, including DSOs and the TSO, hindering communication and problem-solving.

Photos: *Municipality of Gabrovo*

Case study: More rights for energy communities embedded in the rules in Austria

In Austria, energy communities benefit from clearly defined legal rights and simplified licensing procedures for installations below a certain capacity threshold. Network users have a legal right to participate in an energy community,[48] and DSOs have several key responsibilities, including:

- Responding to grid access requests within two weeks;
- Installing a smart meter upon request within two months;
- Signing a contract with the energy community;
- Measuring consumption of members in an energy community, as well as feed-in and purchase from their production installations;
- Providing quarter-hourly data to suppliers and the energy community by the following day;
- Making all data available, free of charge and on-line;
- Allocating energy generation shares (dynamic or static) among members.

Photo: *Adobe Stock*

RECOMMENDATION 4:

Unlocking clean flexibility to enable bill savings for all

At present, it is not always easy nor especially attractive for domestic and business energy users to shift their electricity usage to times of high renewable generation – despite the significant cost savings this can offer. Clean flexibility can also benefit DSOs by reducing peak demand costs and limiting the need for expensive grid build-out through greater efficiency. In the UK alone, it is estimated that flexibility can reduce distribution network investment needs by around 15%, ultimately lowering electricity bills for consumers.[49]

Positioned at the intersection of households, businesses and energy companies, DSOs are well placed to set up the market infrastructure needed, including through local flexibility markets. These are platforms where DSOs can purchase flexibility services from distributed energy resources to manage grid constraints and boost efficiency.[50] Yet, only one-third of EU DSOs currently procure such services, leaving much of the residential flexibility potentially untapped.[51]

DSOs should also play a key role in promoting the technologies needed to unlock clean flexibility, such as smart meters and heat pumps. Despite numerous smart metering initiatives, deployment rates vary significantly across DSOs. In four countries, Belgium, Czech Republic, Germany and Slovakia, national regulators issued a red light to widespread smart meter roll-outs.[52]

KEY ASKS FOR CLEAN FLEXIBILITY

National legislators:

- Prioritise clean flexibility as a secure, affordable energy resource that supports lower bills and strengthens energy security. Ensure that clean flexibility legislation delivers inclusive benefits across society.
- Reform ancillary balancing markets to enable wider participation by households and businesses.
- Accelerate the smart meter roll-out, supported by public information campaigns.

Energy regulators:

- Accelerate the roll-out of standardised local flexibility markets.
- Ensure that the expansion of heat pumps, EVs and industrial electrification of industry facilitates demand side response – requiring technologies are smart-enabled, and smart meters installed.

National legislators, DSOs and consumer organisations:

- Promote incentives and benefits for households to encourage engagement in flexibility markets.
- Raise awareness of flexible energy use opportunities – including collaboration with EV and heat pump providers, households, businesses and public building owners.

DSOs:

- Support the establishment and operation of local flexibility markets.
- Work to support the introduction and adoption of time-of-use network tariffs to encourage flexible energy use.
- Support the smart meter roll-out, with neighbourhood-level engagement and installations, working with energy suppliers and coordination with suppliers and municipalities.

Case study: New tariffs promoting flexible energy use in Belgium

In Belgium, the region of Flanders is experiencing a strong growth in electrification of heating and transport. In order to ensure their smooth integration, and reduce the potential impacts of high peaks in energy demand, the government is working with the DSOs to promote and incentivise more flexible energy use among consumers.[53] One key measure was the introduction of a 'capacity tariff' – a charge based on the level of grid capacity a consumer reserves. The tariff was developed through broad stakeholder engagement, with careful consideration of social inclusion, transparency and non-discrimination.

The first positive trends are already visible, especially among users of new flexible appliances, such as EVs or heat pumps. These users are adapting their behaviour in response to the new tariff, avoiding simultaneous peak usage. This benefits the grid by reducing the need for costly upgrades, while also lowering costs for consumers.

Photo: *Adobe Stock*

References

1 https://ecfr.eu/article/gridlock-why-europes-electricity-infrastructure-is-holding-back-the-green-transition/

2 https://www.eurelectric.org/publications/connecting-the-dots/

3 The BFF coalition covers both EU and non-EU countries, such as the UK and Türkiye. Note that in the UK, companies operating the distribution network are known as Distribution Network Operators.

4 Benefiting local communities could include anything from an energy community project to a utility-scale project that has undertaken proper community engagement and benefit sharing processes. Criteria and KPIs from the Fast and Fair Renewables and Grids could be used to assess priority qualifications.

5 Clean flexibility solutions refer to "a set of tools used to keep the supply and demand for clean power balanced, every minute of every day...Clean flexibility can store renewable electricity for later, shift demand to times of surplus, share electricity across regions, and ensure supply stays responsive. These tasks are handled by a growing portfolio of technologies—from batteries and smart charging to long-distance cables and flexible renewable power supplies." Ember 2025

6 https://www.bruegel.org/policy-brief/upgrading-europes-electricity-grid-about-more-just-money

7 271 DSOs in Czech Republic, 866 DSOs in Germany, 326 DSOs in Spain; above 100 DSOs in Austria, France, Italy, Poland, Slovakia and Sweden; 1 DSO in Croatia, Cyprus, Greece, Malta and Slovenia. List from https://www.acer.europa.eu/sites/default/files/documents/Publications/ACER-CEER-electricity-distribution-network-planning-guidance-2025.pdf

8 Based on analysis of data compiled by ACER, available here: https://www.acer.europa.eu/Official_documents/Public_consultations/PC_2020_E_13/Copy%20of%20EU%20DSO%20Entity%20-%20List%20of%20potential%20Members.xlsx

9 https://www.sciencedirect.com/science/article/pii/S0301421522003846

10 https://www.raponline.org/wp-content/uploads/2023/09/rap-baker-dso-challenges-june-2020-final.pdf

11 For example see https://publications.jrc.ec.europa.eu/repository/handle/JRC132379; https://www.geode-eu.org/wp-content/uploads/2023/05/GEODE-Paper-Distribution-Grids.pdf; https://eudsoentity.eu/publications/download/51 and others

12 https://eurelectric.org/wp-content/uploads/2024/06/ey-report-future-of-dsos.pdf

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17 Other sources included in the references for this briefing contain a full list of recommendations.

18 https://www.bruegel.org/policy-brief/upgrading-europes-electricity-grid-about-more-just-money#:~:text=Furthermore%2C%20electricity%20networks%20are%20natural,bias%20(Brunekreeft%2C%202023)

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30 https://oeil.secure.europarl.europa.eu/oeil/en/procedure-file?reference=2025/2006(INI)

31 https://eudsoentity.eu/wp-content/uploads/2024/09/DSO_SolarReport_2023-v11.pdf

32 Although it is worth noting not all DSOs are even fulfilling this basic requirement https://publications.jrc.ec.europa.eu/repository/bitstream/JRC132379/JRC132379_01.pdf

33 https://www.agora-energiewende.org/fileadmin/Projekte/2023/2023-23_EU_boosting_flexibility/24-0184_Rev.2_DNV_Report_Agora_Energiewende_-_Boosting_flexibility_in_distribution_grids.pdf

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45 This information has been provided via email and correspondence to Beyond Fossil Fuels.

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BEYOND FOSSIL FUELS

Beyond Fossil Fuels is a civil society network committed to ensuring a just and rapid transition to a fossil-free, renewables-based future. Building upon the Europe Beyond Coal campaign, its goal is for Europe to be coal-free by 2030 and phase out fossil gas from the power sector by 2035.

A clean and flexible energy system will deliver lasting benefits for people, the climate and the broader economy. Beyond Fossil Fuels is a non-profit organisation with an office in Berlin, with staff spread across Europe.

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