



FUTURE OF LOCAL FLEXIBILITY

Report on stakeholder engagement to sample views on challenges and opportunities for local flexibility flowing through the electricity distribution network

MARCH 2025



Scottish & Southern
Electricity Networks

In collaboration with

ELEXON



EXECUTIVE SUMMARY

SSEN, in collaboration with Elexon, have engaged industry stakeholders to explore challenges and opportunities for the future of local flexibility - behind the meter flexibility provided by the residential and commercial customers at the grid-edge. This report outlines the views gathered from a sample of stakeholders on the current state of local flexibility the challenges it faces and the opportunities for scaling up flexibility.

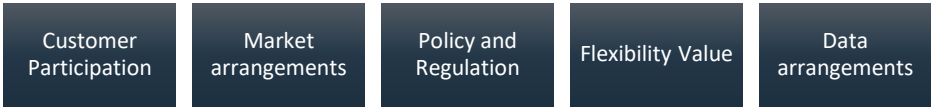
The UK government’s Clean Power 2030 action plan sets ambitious decarbonisation targets, requiring a fundamental shift in how flexibility is approached across the energy sector. Flexibility is increasingly recognised as critical to achieving these goals, requiring coordinated action across industry players, policymakers, and regulatory bodies. Whilst new policies and industry structures have emerged, a key challenge remains: scaling flexibility capacity and use to meet the anticipated fivefold increase by 2030.

SSEN has made significant progress in unlocking flexibility on our network during RIIO ED2, deferring reinforcements and optimising network investment. As the industry moves into RIIO ED3, there is a cross-industry acknowledgement that flexibility is expected to play a bigger role in delivering wider whole-system benefits, for example, maximising the use of available generation and that DSOs should prioritise increasing flexibility on their networks alongside increasing network capacity in an efficient manner. Achieving this, however, requires multiple parties to hold a coherent vision and will require clearer definitions of roles and responsibilities and enhanced collaboration across the energy landscape.

This report discusses the state of flexibility today and collates the views from a sample of key industry stakeholders on the barriers to local flexibility and opportunities to accelerate the growth of local flexibility at the distribution level to meet the needs of the future clean and independent energy system.

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We have engaged with representatives of the key stakeholders, including NESO, Kaluza, Ohme, Piclo, Electron, Octopus and Elexon, to gather views on local flexibility across five themes.



Consolidating their views, we have identified consistent challenges and opportunities raised by the stakeholders:

- The role of retail suppliers and aggregators in developing simple and attractive customer propositions is central to driving local flexibility.
- The full value of flexibility is not fully harnessed, not easily understood by all market participants, and often does not reach the end customer, reducing the incentives to participate.
- Participation in explicit flexibility markets must be simplified through interoperability to reduce transaction costs for flexibility providers.
- Clarity of policy vision for consumer participation in local flexibility could help reduce market fragmentation and inefficiencies.

Consolidating the views from the stakeholders, there are distinctive themes which we want to focus our further discussions on the future of local flexibility and inform policy development:





VALUE OF LOCAL FLEXIBILITY ACROSS THE SYSTEM

Energy system needs are evolving, but flexibility will continue to play a key role. The main purpose, and hence the value, of local flexibility is evolving from primarily managing distribution network constraints, to also ensuring delivery of whole system benefits in wider markets.

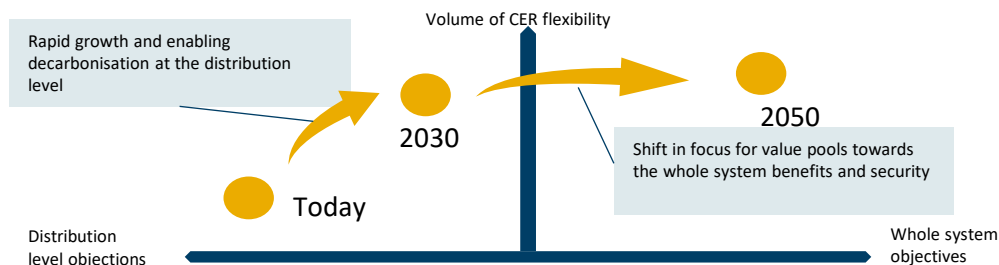
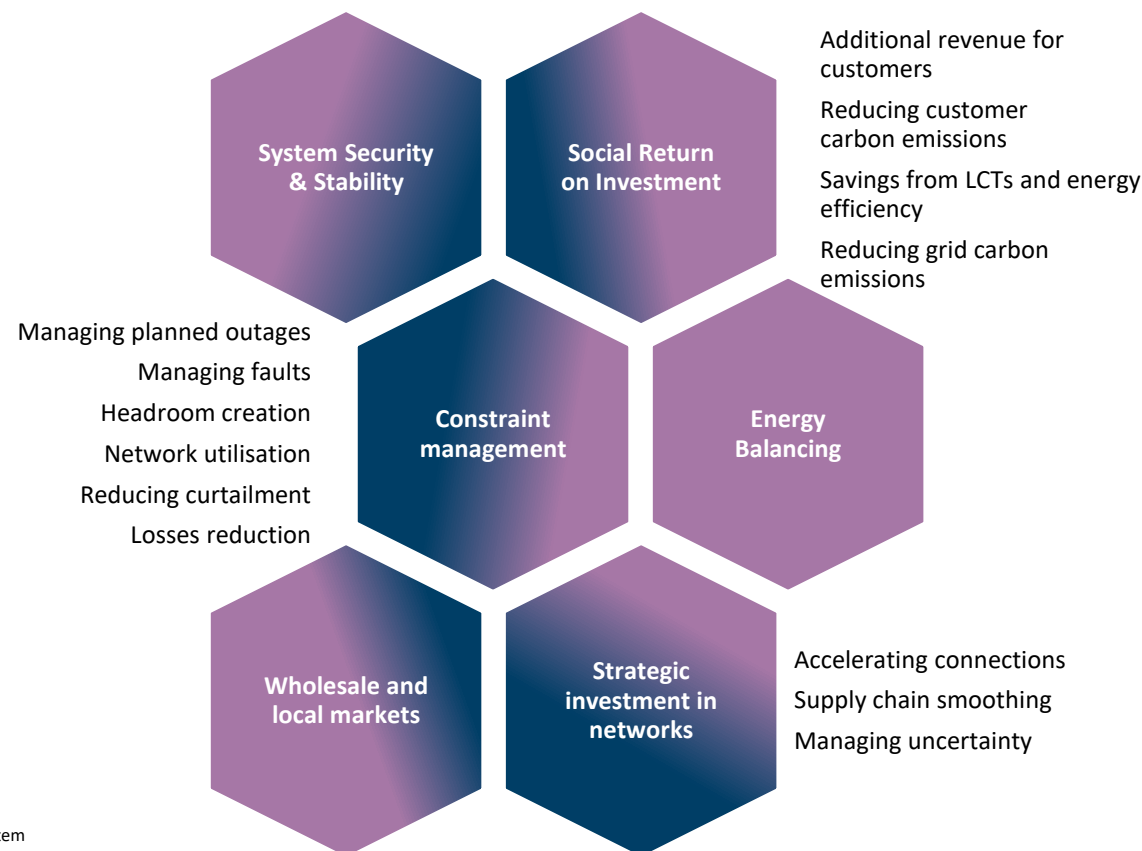
SEN's work on improving access to flexibility and expanding the scope of services is expected to deliver benefits for our customers and unlock whole system benefits, for example:

- We estimate that, through the RII0 ED2, we will achieve £44m of savings from avoided reinforcement and strategic network investment.
- Specifically, [in Year 1 of RII0 ED2](#), we have delivered £28.3M of social value through dispatch and coordination of Flexibility Services and Access Products that reduce connection delays.
- The adoption of our innovation project HomeFlex will unlock £8.8m for domestic and microbusiness customers over the next five years.

In the short term, we see the value drivers for flexibility enabled through managing strategic investment at the distribution level and ensuring the customers are not delayed in adopting LCTs and participating in flexibility.

In the long term, the DSO will continue to use local flexibility to manage peak loading on the network and reduce the risk from faults, whilst the value drivers for flexibility will shift more towards the whole system's objectives and value. In 2021, [flexibility was estimated](#) to deliver £20-70bn of system savings in the 2020-2050 period, and local flexibility is an essential part of it. DSOs' long-term role would be to enable access to flexibility and coordinate with the whole-system actors, NESO, transmission operators, retail suppliers, and Flexibility Service Providers (FSPs), to maximise the value of flexibility for the whole system.

Potential value pools and examples of value drivers* for consumer-led flexibility and how it could be shared across...
the **distribution systems** and the **whole system** in 2030.





ELEXON AS THE MARKET FACILITATOR

In Elexon's role as market facilitator, there will be a focus on alignment, standardisation and rapidly enabling the implementation of key changes to the flexibility market to drive benefits

Strategic Leadership

Flexibility markets have developed in silos, with each market and product focusing on their specific requirements. This has led to a fractured user experience and a lack of strategic direction. Elexon will drive system alignment across the DSOs and NESO ensuring holistic and homogeneous adoption of commercial and technical frameworks.

Elexon will scan the horizons, lead the debate, and proactively engage with stakeholders, on the future direction of flexibility markets publishing thought pieces to accelerate benefits from flexibility markets.

Market Coordination

Elexon will drive the implementation of Flexibility Market Rules, to improve alignment and coordination. Initially underpinned by the outputs from Open Networks, Elexon will drive their refinement and implementation via transparent changes.

A Market Coordination vision will identify key barriers across primacy, stacking and boarder coordination issues so solutions can be developed to improve clarity of the markets. Practical and pragmatic ways forward to ensure benefits will be prioritised.

Implementation Monitoring

The value of changes to Flexibility Market Rules is driven through implementation. As such the progress against implementation plans will be checked and key deliverables tracked to ensure that pace is maintained and that the desired benefits flows through to stakeholders. Broader outcomes will be assessed from collected data to help shape future work while incorporating ongoing stakeholder engagement input.

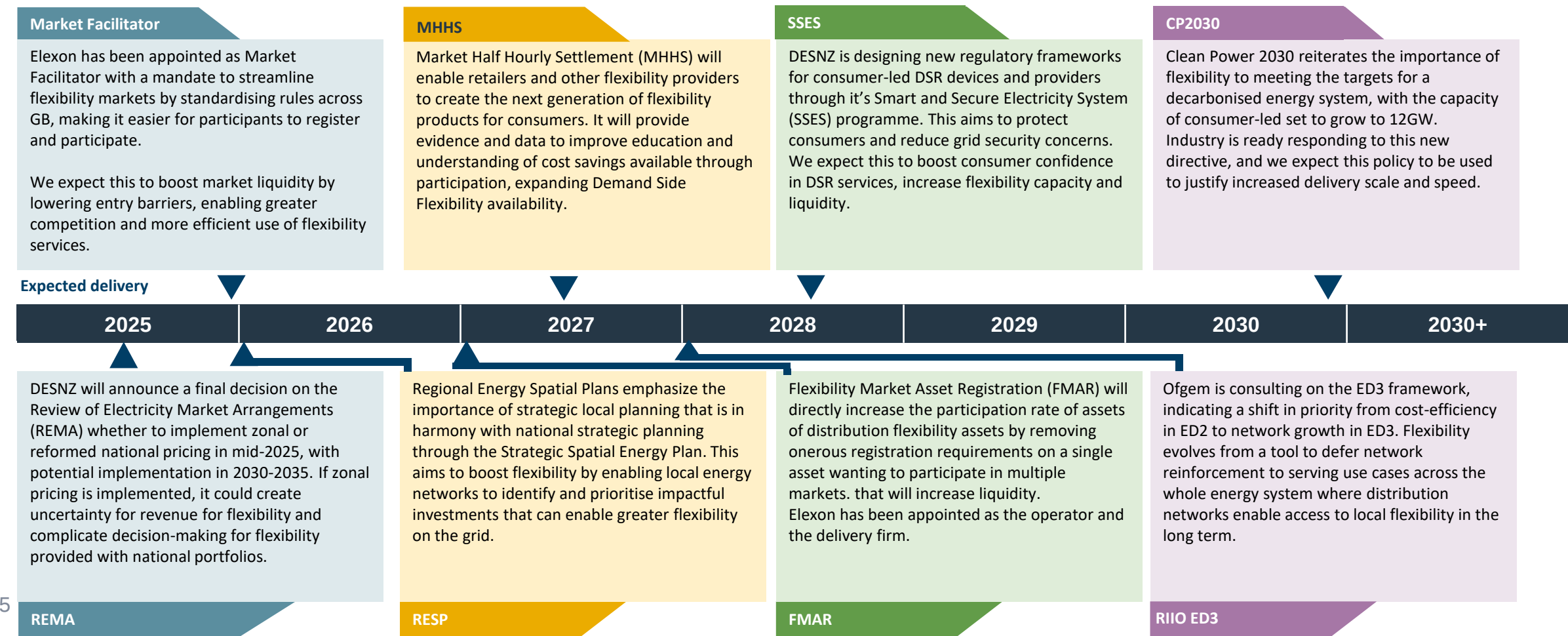
Flexibility Market Asset Register (FMAR)

FMAR is a key enabler and critical part of digital infrastructure for flexibility markets. There are significant number of distributed assets capable of engaging in flexibility markets but limited transparency on them. Having alignment in the registration process to ensure that key data about these assets are available in an interoperable and consistent format is extremally important to significant portions of the flexibility ecosystem and support broader market facilitation. Elexon will ensure this data is surfaced and accessible.



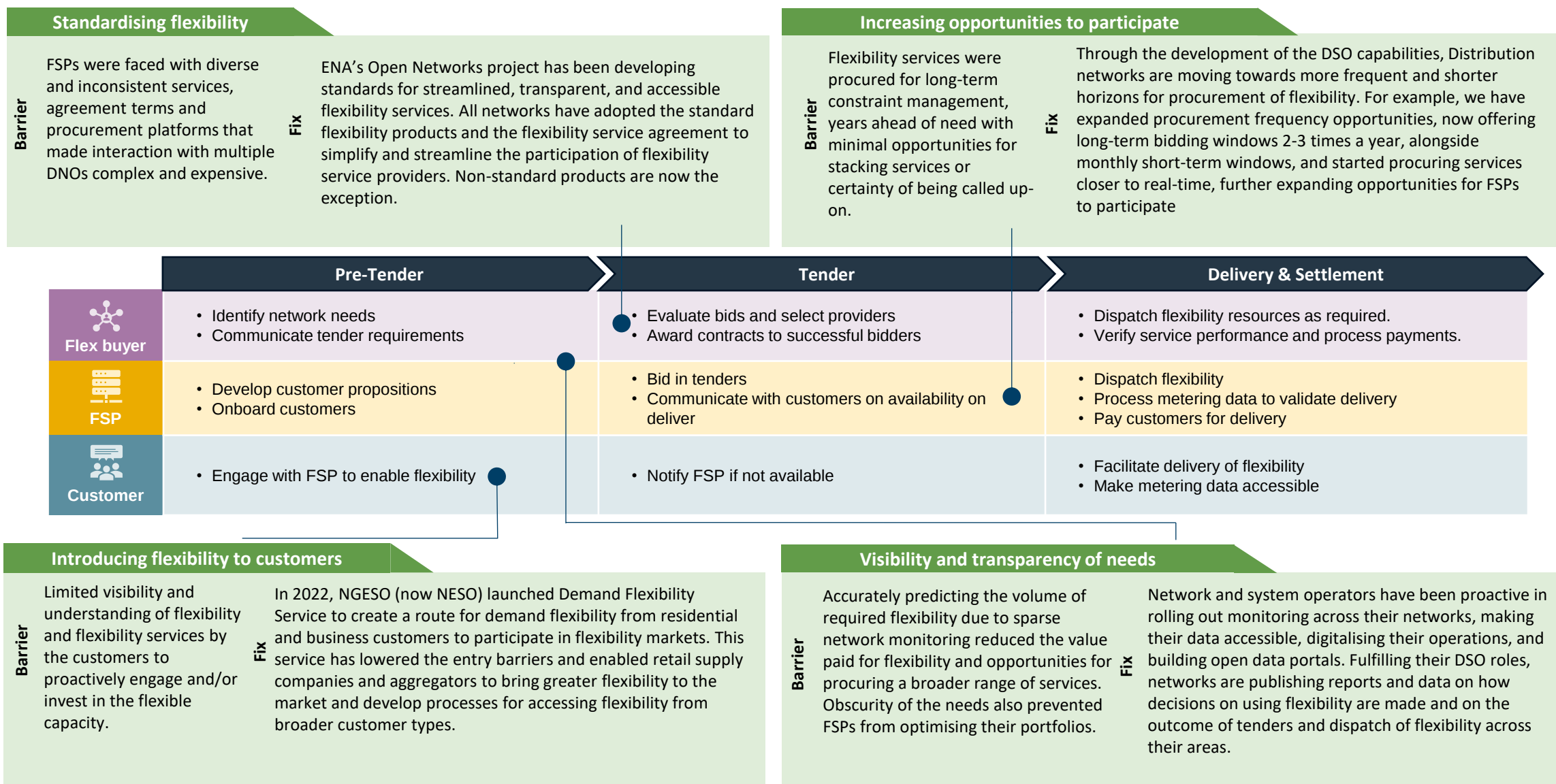
THE JOURNEY TO FLEXIBILITY AT SCALE IS UNDERWAY

There is wide acknowledgement that flexibility plays a pivotal role in delivering a safe and secure net zero electricity system. As such the UK electricity system is undergoing multiple reforms to ensure it can support a net zero future with a diverse generation mix. However, the reform agenda lacks a single, cohesive strategy to boost consumer-led (CER) and wider DER flexibility. There is also no certainty, aligned consideration, or clear solution for locational incentives for flexibility in the form of price signals or other mechanisms while the DUoS reforms are in progress.



PROGRESS SO FAR IN UNLOCKING FLEXIBILITY

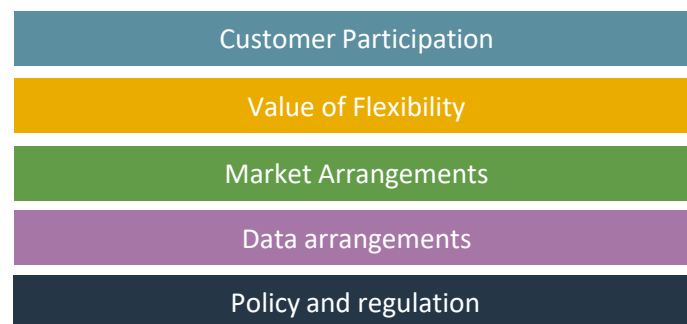
Flexibility is an effective tool for networks to manage network reinforcement, which requires growth in the volume of flexibility participating in the market. To increase it, flexibility buyers such as DSOs and NESO have been working to remove the barriers along the end-to-end process.



VIEWS FROM OUR STAKEHOLDERS ON TODAY'S CHALLENGES

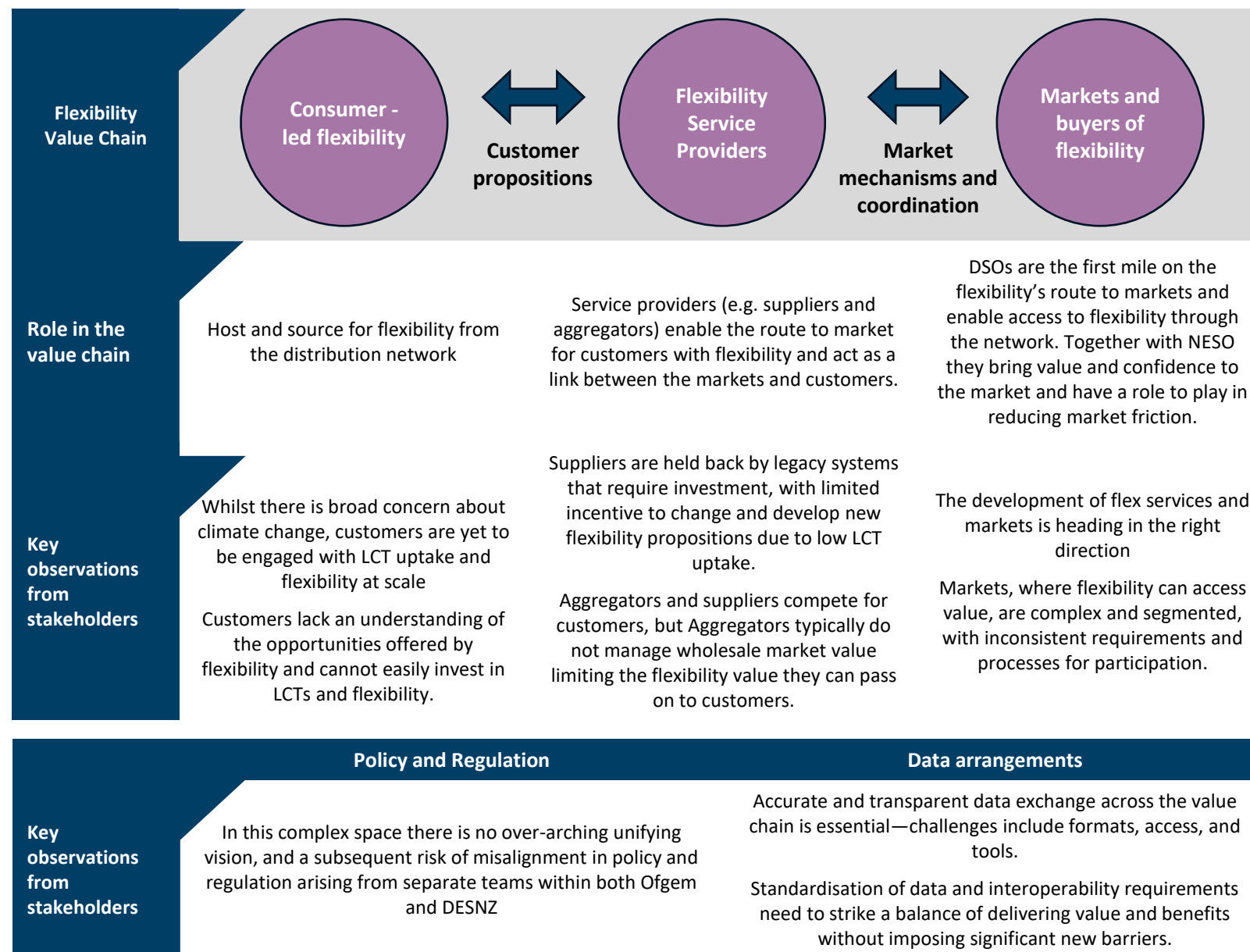
We have engaged with stakeholders representing many of the key roles across the flexibility value chain. Each provided examples of the challenges and opportunities for unlocking flexibility at scale today and over the longer term.

The discussions with the stakeholders were centred on five themes to cover the fundamental aspects of flexibility:



These were collated into opportunities and challenges across the key elements of the flexibility value chain as presented in the table alongside the main observations from the stakeholders.

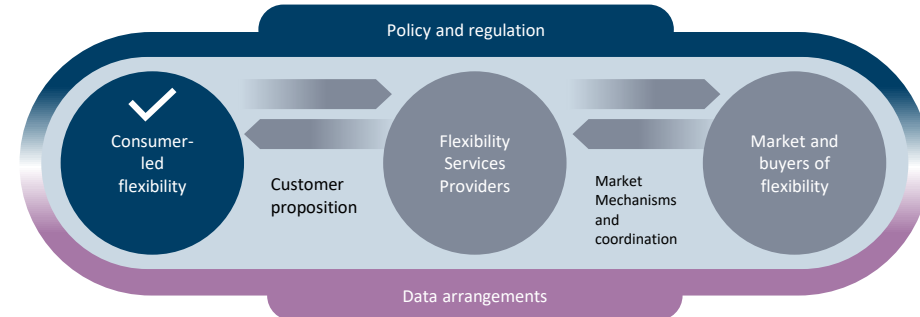
Individuals from the following key organisations supported our study:



CONSUMER-LED FLEXIBILITY

What we've heard from our stakeholders about the challenges and opportunities related to customers

- 1 Closing the information gap.** Customers have a limited understanding of flexibility, how to engage with it, the routes to market, and the value it can deliver for them. Developing the right products for customers to engage with flexibility can improve understanding and simplify the route to market.
- 2 Fixing trust issues.** Residential customers lack trust with the energy suppliers and the supply chain for LCTs.
- 3 Price volatility.** Stronger price signals can be effective in incentivising implicit flexibility but can have distributional impacts – i.e. introduce a risk that some customer segments are unable to respond to short-term high prices.
- 4 Freedom to switch.** Market fragmentation and complex flexibility propositions may lock customers into commercial agreements that prevent them from changing providers and hinder their willingness to commit to long-term LCT or flexibility products.
- 5 Technical complexity at the LV level.** Physical limits to import and export at the individual connection help to minimise complex power flows at the low voltage level, which prevents the rapid growth of residential flexibility that can export. Innovation and collaboration with FSPs could inform better network planning and explore technology solutions for relaxing these limits



Customer-centric ambition. Suppliers and aggregators could use their proximity to customers and prioritise the development of flexibility propositions to motivate the growth of consumer-led flexibility. The associated customer journeys must be as simple as possible, including automation and straightforward, fair reward mechanisms.

Build customer confidence. Introduce minimum standards on customer propositions involving flexibility and raise their visibility to ensure customers have confidence in what is going on when it comes to the use of flexibility and the impact on them. The commercial interest of I&C customers could help with developing propositions and evidence of benefits to build confidence with residential customers.

"There is no flexibility without an engaged and consenting consumer."

"Mass adoption of LCTs and flexibility cannot be achieved by proactive adoption - only a small proportion of the customers are proactive."

"Consumers generally prefer automated solutions that do not disrupt their daily lives."

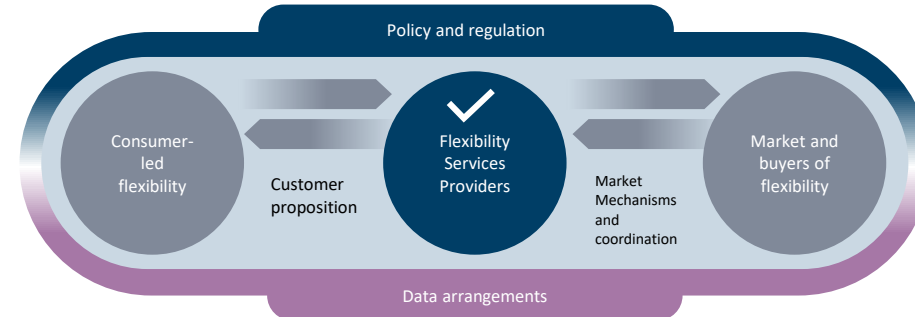
FLEXIBILITY SERVICE PROVIDERS

What we've heard from our stakeholders about challenges and opportunities related to aggregators and suppliers

1 Releasing supplier inertia. Due to the low uptake of LCTs and limited exposure to half-hourly price risk in settlement retail suppliers have no strong incentives to change their models and adopt new technologies. Adopting the models and technologies is essential for developing new flexibility-based customer propositions and clearly communicating the opportunity for flexibility.

2 Harnessing fuller value. Since they are not balance responsible parties, aggregators have limited opportunities to optimise against the wholesale market. In addition, navigating the complexity of the full set of markets is challenging for all but a few providers. Therefore, the full potential value of flexibility is often not accessed and passed through to customers.

3 Policy and regulatory burden. The intensity of reforms and the volume of consultations potentially exclude smaller market actors with limited resources to respond to all and effectively present their views. Meanwhile, some major market actors have an opportunity to proactively invest in developing solutions for local flexibility to drive change across the industry and accelerate policy implementation.



Customer propositions. Retail suppliers are in a good position to encourage growth in LCTs and flexibility through customer propositions due to their existing relationships with customers, established communication channels, billing systems for rewarding flexibility, understanding of customers' behaviours and access to wider value sources for flexibility.

Incentivising change. Stronger incentives for LCT uptake could trigger retail suppliers to evolve their operating models and customer propositions to leverage customers' flexibility potential and avoid the risks of falling behind.

Clarity of roles. DESNZ/Ofgem need to clarify the vision for how they see consumers participating in the system in the future, define the roles and responsibilities of organisations facilitating consumer participation, and align on the direction of policy development focused on the growth of local flexibility.

"FSPs are gaining interest in wholesale markets, but majority are not quite there yet."

"The full potential value of flexibility is not fully captured in current market operations and what could be harnessed is not fully passed through to customers".

MARKET AND SYSTEM OPERATORS

What we’ve heard from our stakeholders about challenges and opportunities related to the market mechanisms

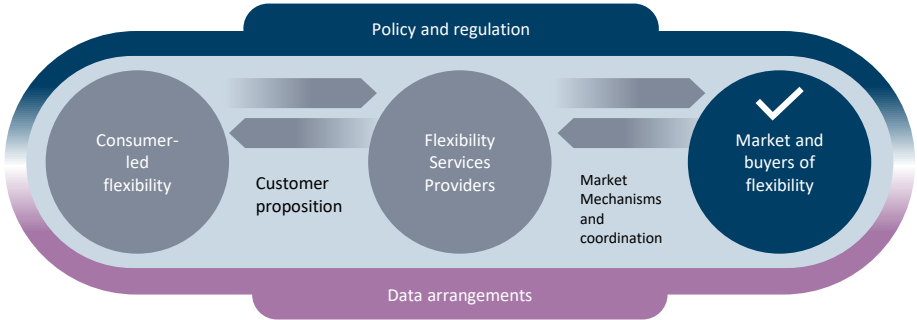
- 1

Resolving the complexity of markets. There are multiple opportunities for creating value for flexibility across the DSOs, NESO and other markets.

Streamlining these interactions between markets and simplifying the participation requirements can help flexibility providers with portfolios of small assets to optimally stack services and harness the full value of their flexibility.
- 2

Inconsistency of routes to market. There is no single market access platform and the processes (e.g. registration) and participation requirements for the markets are inconsistent, which increases the transaction cost and hinders participation from flexibility providers with portfolios of small assets.
- 3

Technology neutrality. Technology neutrality in flexibility markets may hinder the growth and participation of demand response from end customers, both residential and commercial. A technology-agnostic approach tends to default to purpose-built DER solutions with established reliability and performance and could unintentionally miss an opportunity to deliver a broader range and greater volume of benefits from CER flexibility.



Interoperability of markets. Enhancing market interoperability, and standardising data formats and exchange interfaces, would streamline access and lower transaction costs for flexibility service providers. Using existing integrations developed by market actors and examples from other sectors, like Open Banking, can also accelerate the removal of barriers to market interoperability.

Visibility of value. Understanding the potential of the untapped local flexibility and its value to the system, including the edge rare scenarios, such as faults or low system margins, can help drive investment into flexibility, reducing the cost of delivering flexibility, growing the uptake of flexibility and passing more value to customers.

Preferring DSR. Future Policy & Regs need a mindset shift to move away from bias towards larger DERs and generators and to relax a risk-averse approach to CER participation, developing CER growth and building systems’ trust in CER.

“Current regulations focus too much on risk mitigation, which limits market growth and innovation.”

“Demand turn-up and demand turn-down flexibility at the low voltage level will render concepts like ADMD no longer fit for purpose.”

“In respect of 2030 timescales, new policy and regulation will have minimal impact on the success of flexibility”

●●●● CHALLENGES FOR UNLOCKING FLEXIBILITY

Consolidating the views across the stakeholders we've identified key challenges that are perceived to be the present blockers to unlocking flexibility at scale.

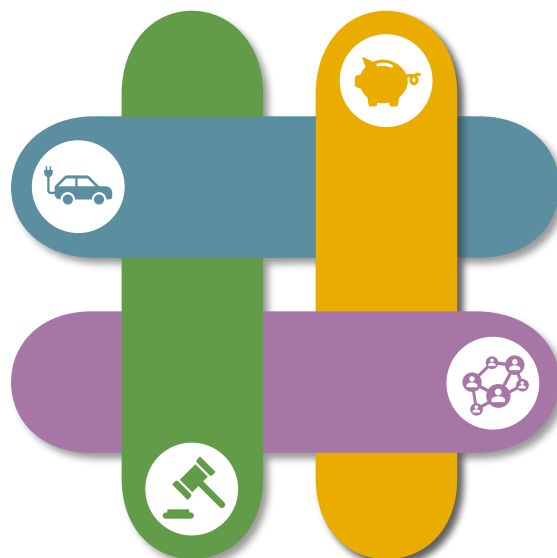
Common challenges raised by multiple stakeholders

LCT uptake and flexibility participation

Most customers are passive in LCT uptake and engagement with flexibility. They also have no clear path to accessing the value of flexibility, are exposed to inconsistent information about LCTs, and have lower trust in their energy suppliers to take them on the flexibility journey. Some legacy energy retailers lag behind in adopting the technology to offer attractive LCT/flexibility bundles to customers despite being in direct contact with them.

Central coordination and accountability

The development of policy and regulation is perceived to be siloed. DESNZ tend to focus on technology to deliver specific targets rather than a holistic capability focus for developing flexibility. There appears to be some misalignment of objectives within and between regulatory bodies and their internal teams, which can lead to misaligned objectives (e.g. overlapping consultation questions across different publications).



Flexibility Value

The full potential of value from flexibility across the whole value chain is not fully understood, is not transparent to the market participants, and often doesn't flow to the end customer. Even for existing markets, the value of flexibility cannot be forecasted due to the complexity of markets, the uncertainty of buyers' long-term needs and the value they prepare to pay.

Market Structure

Participating in explicit flexibility markets involves multiple steps, from registration and bidding to dispatch and settlement, each with specific requirements. These requirements and processes increase the cost to serve and add administrative burden, which raises barriers to some FSPs, especially when different markets have different requirements, include manual processes and prohibit access to all available value pools.

Other challenges raised by multiple stakeholders

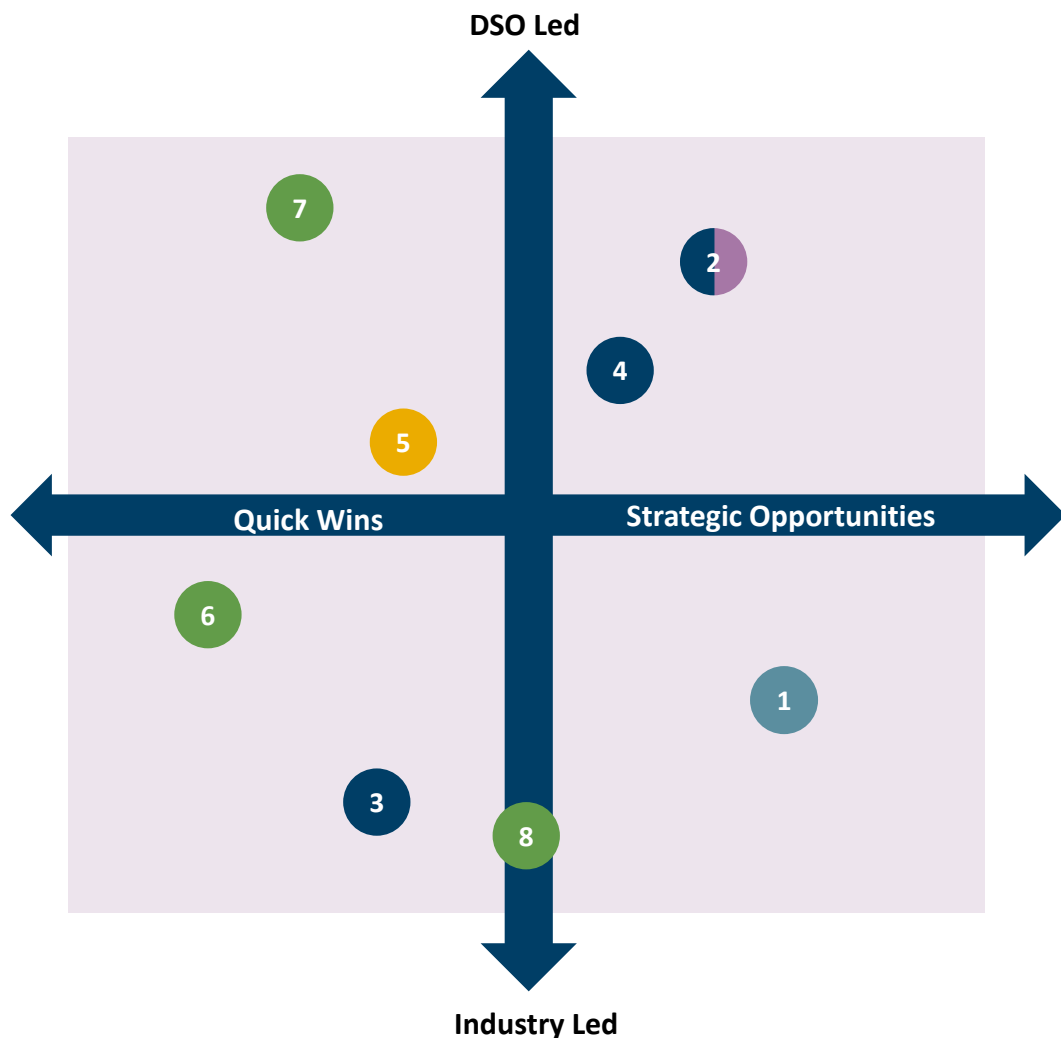
There is a bias towards risk-aversion and the status quo across the industry, which inhibits innovation outside of the regulated regimes and operationally gives large DERs a default advantage compared to "unproved" demand-side responses from CERs. This is further exacerbated by a technology-agnostic approach to the selection of flexibility providers.

Maintaining interoperability across multiple infrastructures involved in the delivery of explicit flexible services is costly and cumbersome to keep up to date.

Aggregators are treated differently to energy suppliers. They are not a balance responsible party or exposed to network charges. Meanwhile their business models contain ambiguity on what enduring role they will play in the energy landscape which inhibits the level of investment they can receive to grow.

●●●● OPPORTUNITIES FOR UNLOCKING FLEXIBILITY

Mapping potential opportunities across potential owners and time horizons



Opportunities	
1	Regulators need to define the role of aggregators vs suppliers, to help overcome the investment impasse and grow customer propositions to access the full value of flexibility
2	DSOs could provide stronger locational price signals and incentives to simplify the route to market for CER flexibility
3	Set up an accountable entity to coordinate and/or monitor change across multiple policy portfolios to ensure consistent and coordinated effort to unlock flexibility
4	Create transparency on how DSOs, energy retailers and aggregators deliver on the procurement, growth and use of local flexibility in line with the RESP/SSEP projections
5	Industry to establish a mechanism for visibility of untapped flexibility volume at all network levels to deliver value across the energy system and encourage growth
6	Use existing best practice examples of cost-effective processes, integrations, coordination and data format between markets to develop standards for faster implementation.
7	DSOs continue to increase visibility of current and future network using external data sources to inform network status.
8	DESNZ/Ofgem improve transparency on decision-making in setting standards for data and interoperability to reduce the implementation delay
Key: Customer Participation Policy & Regulation Market Arrangements Flexibility Value Data Arrangements	

●●●● WEBINAR INSIGHTS

SSEN and Elexon have tested the findings on the future of local flexibility with a broader range of stakeholders through a webinar hosted in March 2025. On average, the audience members recognised the challenges and opportunities we've collated in this report. Here are the key priorities and insights from the webinar:

Consumer-led flexibility

Key Priorities

1. Closing the information gap
2. Building consumer confidence
3. Consumer-centric ambition
4. Technical complexity at LV level

Additional areas:

- Need customer-focused solutions to be more intuitive and deliver simpler messaging
- Improve value passed to consumers
- There is a risk of increased complexity without central coordination and clearly defined responsibilities

Flexibility Service Providers

Key Priorities

1. Clarify of vision and roles
2. Incentivising change
3. Harnessing fuller value
4. Policy and regulatory burden

Additional areas

- Clearly defined roles and responsibilities
- Clear central strategy
- Increase competition amongst flexibility providers
- Setting up consistent processes and systems for participation

Markets and System Operators

Key Priorities

1. Accelerating interoperability of markets
2. Inconsistency of routes to market
3. Visibility of value
4. Complexity of markets

Additional areas

- Markets need to focus on the uptake of LCTs at the domestic and I&C levels and enabling DSR opportunities from heat pumps and EVs
- Expanding operational coordinating between markets and data exchange

Role of the Market Facilitator

Focus areas for the first delivery cycle

- Be Market Flexibility Leader – take the lead to:
 - Define own objectives and responsibilities,
 - Clarify the roles and responsibilities of other market actors
 - Coordinate the alignment and integration of market actors
- Help with the alignment of policies and reforms out to 2030 to encourage investment in flexibility
- Coordinate between markets and physical networks
- Reduce the number and complexity of DSO flexibility products and create new opportunities for revenue stacking

Other areas to consider

- Difference in liquidity and scale between local and national markets
- Enabling a central and transparent platform for aggregating market data and information
- Coordinate the definition of objectives on flexibility across the industry

●●●● CONSIDERATIONS FOR NEXT 3 YEARS

Six themes emerged from the stakeholders' views, which can serve as areas of focus for further discussion. Aligned with the themes, several perceived opportunities were identified with the potential to deliver impact over the next three years.

Releasing supplier inertia

Many suppliers are held back by the legacy technology systems for managing customers and have no strong incentives to adopt new technologies to develop flexibility-based customer propositions, despite being well placed with direct relationships with the customer. Two policy and regulation-driven options to explore:

- 1) Use further incentives to saturate the growth in LCT uptake to create the market forces that will stimulate retail suppliers to get involved with flexibility
- 2) A top-down approach to set incentives and/or requirements for the roles and responsibilities for suppliers and aggregators in delivering flexibility propositions

Implicit incentives

Explore and implement implicit flexibility incentives to reflect both the wider system needs and the needs of the distribution networks. Stronger price signals could offer a simpler mechanism for end-customers to engage with if designed with customer needs and capabilities.

What can DSOs do to support?

- Coordinate with the industry (including aggregators, retail suppliers and other system operators) to model and discover the potential for flexibility and the value it could deliver.
- Collaborate with retail suppliers to accelerate the adoption of learning from innovation projects, such as Demand Diversification Service (SSEN) and Shift2.0 (UKPN), into BaU and scale up implicit incentive offers for customers.

Emerging themes for local flexibility

Customer centric

Untapped Flexibility

Networks as an enabler

Visibility of opportunity and value

Coordination and partnership

A shift towards CER

Market coordination and integration

Reduce market friction through standardisation of market arrangements, transparency of data everywhere, through coordination and integration. This will also maximise the value of flexibility delivered to the customers and cultivate easier routes to markets.

Policy centralisation and coordination

Flexibility policy and regulation require a single accountable entity in DESNZ to coordinate change across multiple portfolios to ensure a consistent and coordinated effort to unlock flexibility. This should focus on growing flexibility from end users, calculating the true wider economic benefit compared to large-scale flexibility from DERs and ensuring consumers are adequately compensated. It should further enable transparency on how industry actors progress with the implementation of relevant policy-driven roadmaps and use of local flexibility.

Accelerating the interoperability of markets

Take a balanced approach to roll out data standardisation to maximise the value of new requirements and avoid standardisation becoming the new barrier for integration and interoperability for the industry actors. This could be accelerated by building on the success of relevant existing integrations (e.g. flex markets) and learning from cross-sector experience (e.g. Open banking).

What can DSOs do to support?

- Continue increasing transparency on the progress of developing DSO capabilities and aligning with the industry roadmaps.
- Scale up collaboration between DSOs and NESO on sharing best practices in data interoperability; coordinate on specifying requirements for procurement of IT systems and data platforms.



NEXT STEPS

●●●● ACTIONS IN 2025-26 TO ENABLE THE FUTURE OF LOCAL FLEXIBILITY

Practical steps SSEN are taking this year to support local flexibility flowing through the electricity distribution network, and Elexon actions in its role as Market Facilitator for local flexibility markets.

SSEN Distribution System Operator actions

1) Measure and report on the amount of local flexibility enabled by our distribution network today. Share data and insights to show the opportunity for local flexibility flowing through our distribution network

2) Continue to build local flexibility markets, particularly in the smallest scales. Working with providers and potential providers to develop proportionate and appropriate markets to maximise participation. With a particular focus on increasing the number of successfully procured local flex markets in 25/26.

3) Share our involvement in local energy, evaluating the direct impact we can make and how we enable and support the ambitions of our communities. Explore the opportunity for partnerships and collaboration

4) Progress information and data exchanges necessary to maintain safe and coordinated network operation as local flexibility grows

Elexon Market Facilitator actions

1) Improved visibility and transparency of markets via the market catalogue and the end-to-end process activities. This will help with visibility for existing operational issues and target alignment for market.

2) Developing more interoperable data across the market. An initial focus on assets via FMAR, while exploring other key data requirements. With the aim to reduce the burden of data sharing across the market.

3) Improved market coordination via work on stacking and primacy. Understand the key blockers with plans to resolve issues.

4) Rapidly building out robust but adaptable governance to ensure we can deliver at pace next year and ensure it is fit for purpose in an evolving landscape.

●●●● OVER TO YOU

It is a fast-paced environment with frequent new consultations and reform programmes, so the views represented in this report will soon be outdated. We would like this report to serve as a starting point for a joint effort to unlock flexibility and drive change across the industry.

- ▶ As part of the Spring Series, we held a webinar to present the findings from this paper and test the findings. The audience has recognised the identified challenges and opportunities and supported the initiative.
- ▶ We will consolidate your feedback and views on priorities to inform our approach to the future of local flexibility and develop a roadmap defining what DSOs can do to support local flexibility growth.
- ▶ We will continue the engagement with our stakeholders to explore the topics of priority for local flexibility further.
- ▶ We will continue monitoring policy and regulation developments and decision-making to maximise the opportunity to inform policy with insights from our stakeholder engagement.

Please engage in the conversation and help us to unlock access to local flexibility at scale.

Questions for stakeholders:

- Do you agree with the challenges and opportunities raised by the stakeholders in this report?
- Is there anything missing?
- What is the most immediate action that DSOs can, and should, support on?
- How do you think the industry should respond to the views and recommendations presented in this report?
- Do you agree with the emerging themes for local flexibility discussion? If not, what should be the focus themes?
- Who should be responsible for driving the progress across these emerging themes and the use of flexibility in general?



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