

# EU MARKET MONITOR

FOR DEMAND SIDE FLEXIBILITY

2020



# SYNOPSIS

This report provides a holistic and independent view of the progress of demand side flexibility across 21 European markets in 2020. This will enable industry to benchmark disparate markets against each other and track their progress on demand side flexibility. The results from our primary research in each market provides a high level summary of the current market activity.

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# About Delta-EE and smartEn

Leading providers of intelligence and advocacy for the energy transition

## DELTA-EE

**Delta-EE** is a specialist European Energy Research and Consulting Service provider. We help organisations to develop the best strategies, business models and customer propositions for the energy transition.

This research is part of our **Flexibility Research Service** which provides insight into key markets, competitors, business models and issues shaping the sector, with a specific focus on demand side flexibility.

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**smartEn** is the European business association integrating the consumer-driven solutions of the clean energy transition.

We aim to create opportunities for every company, building and car to support an increasingly renewable energy system.

For further information, please visit the website.

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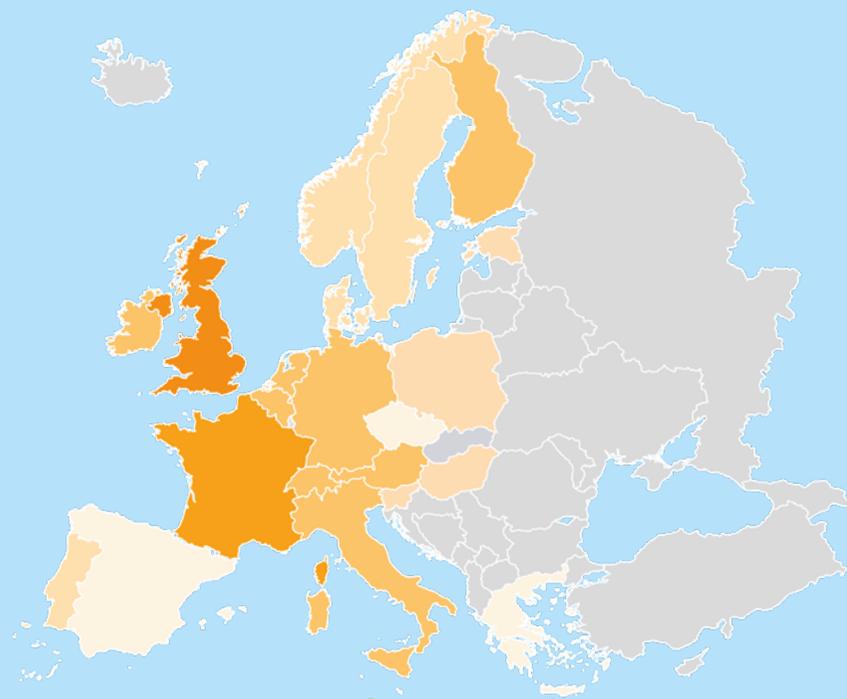
# EXECUTIVE SUMMARY

- The 2020 EU Market Monitor Map for Demand Side Flexibility (DSF)
- Summary Score Guide

# The 2020 EU Market Monitor Map for Demand Side Flexibility

Many dynamic and rapid evolving markets across Europe for DSF

France and Great Britain are the highest-ranking countries for market activity, followed by Ireland, Germany and the Netherlands.



*There are many nuances to each individual market. This map provides a system to track the DSF activity in each market.*

- In all 21 analysed markets we find **activity in demand side flexibility** (DSF) to varying degrees, across different value streams, customer segments, asset types and market stakeholders.
- The purpose of this report is to provide a high level summary of the **current market activity**, based on our primary research across each market. The score **does not indicate the potential opportunity or success** in a market.
- Across all markets we find:
  - Compared to 2019, more ancillary services have opened to DSF, with DSO-specific products emerging.
  - Industrial loads and distributed generators remain the most commonly used assets for DSF.
  - Industrial customers are the most engaged with DSF with residential and electric vehicles becoming increasingly active in DSF in the past year.
  - Aggregators are typically the market creators and dominate the landscape.

## SCOPE OF MARKET MONITOR

- Availability and accessibility of DSF to value streams
- Monetisation of DSF in value streams
- Breadth of asset types used for DSF
- Breadth of customer segments engaged with DSF
- Number of stakeholders active with DSF

# Summary Score Guide

At a glance our research shows relative activity levels for DSF

*In all 21 analysed markets we find activity in demand side flexibility.*

What it means for countries with a high, medium and low score in our DSF Market Monitor is summarised below:

## EMERGING MARKETS

‘Low’ scoring countries typically are markets which are not established or are yet to open fully to DSF and have limited activity due to this.

### Typical features of these markets include:

- There is evidence of some activity in DSF.
- Sometimes trials rather than commercial activity.
- Limited needs for DSF, mainly due to excess generation capacity.
- Limited or, in some cases, no value streams established, available and/or accessible to behind-the-meter loads.
- Limited engagement in DSF by end users.

## ACTIVE MARKETS

Countries scoring ‘medium’ are generally active markets undergoing development to open more fully to DSF.

### Typical features of these markets include:

- Varying degrees of accessibility and openness to value streams for DSF.
- High barriers for DSF and independent stakeholders, compared with ‘traditional’ methods of flexibility (i.e. generation assets) and incumbent players.
- Low incentives for businesses and/or customers to engage in DSF.
- Limited engagement, or pockets of engagement where it makes sense, of industry and end users.
- Barriers to entry exist.

## MATURE MARKETS

Countries scoring ‘high’ can be considered as more developed markets for DSF. This does not necessarily mean that there are no barriers present.

### Typical features of these markets include:

- Unbundled and competitive markets.
- Multiple value streams exist and accept behind-the-meter and aggregated assets.
- High needs for flexibility.
- High innovation from industry.
- Higher value for DSF and therefore higher incentive for DSF across a range of customers, assets and competitors.
- Barriers and market uncertainties exist.

# INTRODUCTION

- Purpose, scope and definitions
- Our methodology
- Our scoring system



# Introduction to the EU Market Monitor for Demand Side Flexibility

## DSF Market Monitor Purpose, Scope and Definitions

This report provides a holistic and independent view of the progress of DSF across 21 European markets.

### WHAT THE MARKET MONITOR IS, AND HOW TO USE IT:

- The purpose of this report is to provide a high-level summary of 21 EU markets and their current DSF market activity.
- The score given to each country does not indicate the potential opportunity or success in a market. The score is an accrued 'evidence of DSF activity' rating, based on our qualitative primary research.
- This will enable industry to benchmark disparate markets against each other to track their progress on demand side flexibility.
- The findings are based on our primary research across each market. Assumptions and estimations, based on conversations with industry experts, have been made throughout.
- Our approach and research findings have been challenged by internal and external experts to corroborate our view.

- This market is changing rapidly and this map provides a view on progress to 2020 only.
- This Market Monitor has not been built as a strategic opportunity tool for individual companies to base decisions on.

### SCOPE OF MARKET MONITOR

- Availability and accessibility of DSF to value streams.
- Monetisation of DSF in value streams.
- Breadth of asset types used for DSF.
- Breadth of customer segments engaged with DSF.
- Number of stakeholders active with DSF.

### OUR DEFINITION OF DEMAND SIDE FLEXIBILITY

*Decentralised behind-the-meter sources of flexibility are collectively termed Demand Side Flexibility (DSF). DSF is technology agnostic and refers to the turning on / off, up / down, or shifting of, decentralised loads, batteries and generation across any value stream or customer segment. Assets can be aggregated or utilised individually.*

# Introduction to the EU Market Monitor for Demand Side Flexibility

## Our Methodology

This report is based on high-level qualitative primary research across 21 countries and more detailed research into seven of those countries.

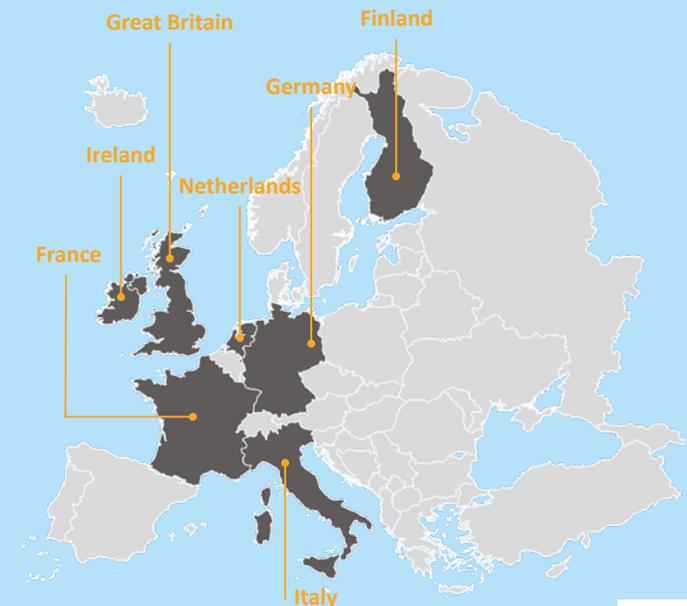
### DEMAND SIDE FLEXIBILITY MARKET MONITOR

We used the same research process this year as for the previous DSF Market Monitor, including the same categories and boundaries. We modified the scoring system slightly to avoid penalising countries where only a subset of possible value streams actually exist. Our approach was as follows:

- 1 **Interviewed >60 industry contacts** local to each market, with knowledge on demand side flexibility. This included TSOs, DSOs, Energy Suppliers, Aggregators, independent specialists, technology companies and associations.
- 2 **Undertook secondary research** where required.
- 3 **Collated research findings** into the InfoBase.
- 4 **Scored** each data point based on the methodology on slides 11 and 12.
- 5 **Aggregated all scores** to one final score per country.
- 6 **Proofed and ensured consistency** across the scores.
- 7 **Internal and external challenge** on the results.

### DETAILED COUNTRY REPORTING

Alongside the Market Monitor Infobase, Delta-EE also carried out more detailed research in order to produce detailed country sections. We focused on seven countries to give a range of examples of active markets that have taken different approaches to developing demand side flexibility. We provide detailed information on the following countries:



# Introduction to the EU Market Monitor for Demand Side Flexibility

## An Overview of Our Scoring System

It is important to understand our methodology to enable you to take the correct message from our findings.

- The scoring system for our Market Monitor was designed to track progress and benchmark disparate markets. However, it is important to appreciate that all countries are different and have their own nuances. Despite ongoing work to harmonise some parts of some of these markets across Europe there are still many differences today that are not highlighted in this report.
- We scored countries according to individual features, and averaged across broader categories (details on page 12):
- The category score is ranked from 1 to either 3, 4 or 5 depending on the features that it contains.
  - For 'DSF accessibility' and 'DSF monetisation' the category score is **weighted** towards core flexibility value streams present in all markets (although there may currently be mandatory provision of these). Thus, countries are only penalised for lack of DSF activity in value streams that actually exist. Value streams that are often absent are RR, Interruptible loads, Capacity Market, DSO and 'other'.
  - For the remaining groups the total score is the non-weighted average of the underlying categories.
- The 5 categories do not correlate directly. Given the scoring system, it is possible for e.g. a 'high' score for *breadth of asset types utilised* even if *value stream accessibility* has a 'low' score.

### NETHERLANDS EXAMPLE - ACCESSIBILITY OF DSF

There is no Replacement Reserve or Capacity Market in the Netherlands, as the current market situation precludes a need for this capacity. Therefore, the final score is the average of the scores for the 8 present value streams.

#### NETHERLANDS EXAMPLE

Value stream	Score*	%**
FCR	4/5	80
aFFR	2/5	40
mFFR	4/5	80
RR	NA	NA
Interruptible loads	1/3	33
Capacity Market	NA	NA
Network charges	2/3	67
Day ahead and intraday	2/3	67
DSO specific	1/5	20
Other	2/5	40
<b>TOTAL SCORE</b>		<b>53</b>

\*FCR, aFFR, mFFR, RR, Capacity Mechanism, DSO and Other are scored out of 5. Interruptible loads, network charges, intra/day ahead are scored out of 3.

\*\*Converted to a percentage to enable comparison between 1-3, 1-4 and 1-5 ranking.

# Introduction to the EU Market Monitor for Demand Side Flexibility

## Our Scoring System

### CATEGORY

Value stream accessible for DSF

DSF monetisation across value streams

Breadth of assets used for DSF

Breadth of customer segments engaged with DSF

Stakeholders engaged with DSF

### FEATURE

- Ancillary services (FCR, aFRR, mFRR, RR)
- Interruptible loads
- Capacity Mechanism
- TSO / DSO network charges
- Day ahead and intraday markets
- DSO specific products
- Other

As above.

- Generators / CHP
- Battery
- Industrial processes
- HVAC
- EV / EV charger
- District heating

- Very large Industrial (Loads are >1MW)
- Medium C&I (loads are 1MW or less)
- Residential

- Number of stakeholders active in DSF (including non-BRPs, BRPs, technology companies etc).

### SCORING SYSTEM<sup>1</sup>

**0-5 based on availability, openness, and barriers. The scoring system for ancillary services was as follows:**

- 0** = Do not exist or not a competitive market.
- 1** = Exist, not open to DSF.
- 2** = Exist, open to DSF, not open to all players, barriers exist.
- 3** = Exist, open to DSF, not open to all players, no significant barriers.
- 4** = Exist, open to DSF, open to all players, barriers exist.
- 5** = Exist, open to DSF, open to all players, no significant barriers.

**0-3 based on a high-level estimation of evidence of DSF being monetised:**

- 0** = No DSF is being monetised.
- 1** = DSF being monetised in a few examples.
- 2** = DSF is being monetised somewhat.
- 3** = DSF is being monetised significantly.

**0-3 based on a high-level estimate of evidence found of asset type being used:**

- 0** = Not being used for DSF.
- 1** = Engaged in DSF, but limited activity found or trials.
- 2** = Engaged in DSF somewhat, but not widespread activity.
- 3** = Engaged in DSF and significant activity.

**0-3 based on a high-level estimate of evidence found of customer segment engagement:**

- 0** = Not engaged in DSF.
- 1** = Engaged in DSF, but limited activity found or trial activity.
- 2** = Engaged in DSF somewhat, but not widespread activity.
- 3** = Engaged in DSF and significant activity.

**0 – 4 based on the number of known players:**

- 0** = No known players.
- 1** = <10
- 2** = 11- 30
- 3** = 31- 50
- 4** = 51+

### RANKING SYSTEM

The category ranking is based on the average score, weighted towards core flexibility value streams (FCR, aFRR, mFRR, ID/DA, network charges). This method ensures that countries are not penalised for the absence of less common value streams (RR, Capacity mechanism, Interruptible loads, DSO specific and 'other').

As above.

Scores for each asset type were summed and ranked 1-3.

Scores for each customer type were summed and ranked 1-3.

Ranking is based on the total number of players as indicated.

<sup>1</sup> Orange dots on country sections of the report refer to the score above, with the exception of ancillary services which is an average score of FCR, aFRR, mFRR and RR (if open to DSF).



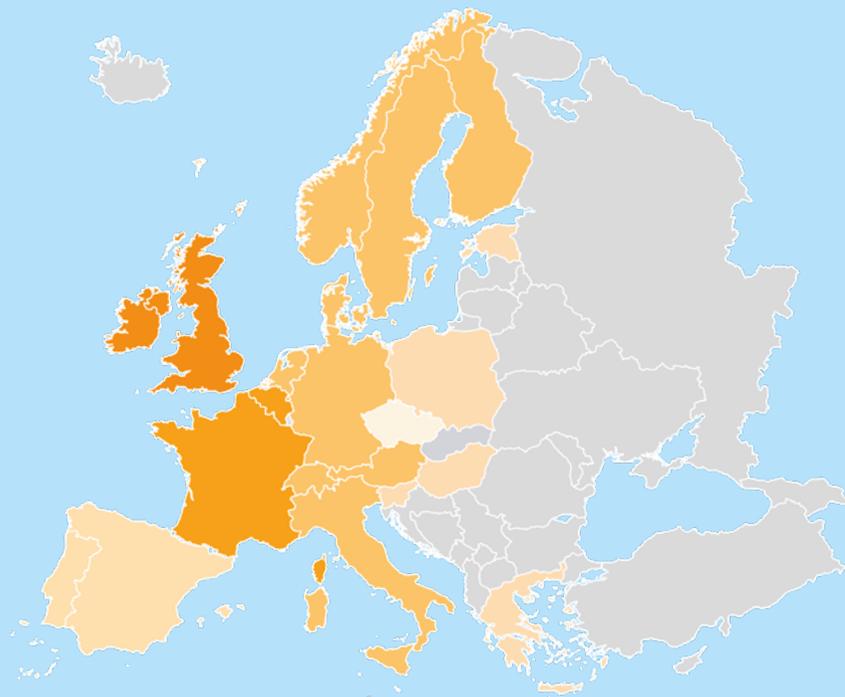
## THE 2020 EU MARKET MONITOR FOR DEMAND SIDE FLEXIBILITY

- Value stream availability and accessibility for DSF
- DSF monetisation across value streams
- The breadth of asset diversity for DSF
- The breadth of customer engagement in DSF
- DSF competitive landscape

# Value stream availability and accessibility for DSF

Ancillary services are the most open value streams for DSF

France, GB, Ireland and Belgium have the most open and accessible value streams.



## INTERPRETING THE RESULTS

Markets scoring highly indicate that DSF is open in the value streams that exist in that country. If the score is low then DSF has high barriers to entry to available value streams. For the 2020 results, we have only included value streams that are operational, for example if there is no Capacity Market the country does not get marked down for it not being open to DSF.

## SNAPSHOT – SWITZERLAND

Most value streams in Switzerland are accessible to DSF. Switzerland is part of the EU FCR cooperation, of which around 25% of its procurement comes from DSF. DSF can also access the Swiss aFRR and mFRR markets (total procurement volume approximately 400 MW). Switzerland will go-live on the TERRE platform in Q3 2020, and on PICASSO and MARI in 2022.

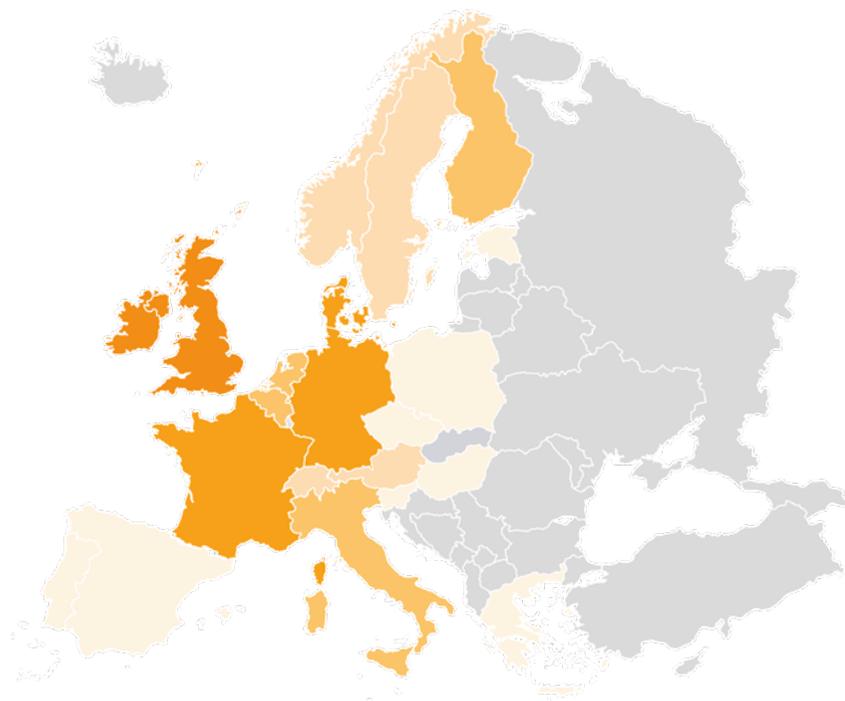
## WE LOOKED AT

- Ancillary Services
- Interruptible loads
- Capacity Mechanism
- TSO / DSO network charges
- Day-ahead and intraday markets
- DSO Specific Products

# Monetisation of DSF in value streams

DSF is primarily monetised in TSO ancillary services

GB, France and Germany show DSF participation across many value streams with the most activity in ancillary services and Capacity Mechanisms.



## INTERPRETING THE RESULTS

In highly scoring markets, there is evidence of DSF being monetised in the majority of available value streams. Typically, within the open value streams there are a few value streams that are most active. Lower scoring markets indicate that DSF is not widespread across available value streams.

## SNAPSHOT – FRANCE

The French market has grown ~0.6 GW in 2020. This growth is a result of DSF (*Appel d'offres Effacement*) tender prices increase from €30,000/MW/year to €60,000/MW/year resulting in a procurement increase of 96%. This increase is encouraging as France has an ambitious DSF target of 6.5GW by 2028.

## WE LOOKED AT

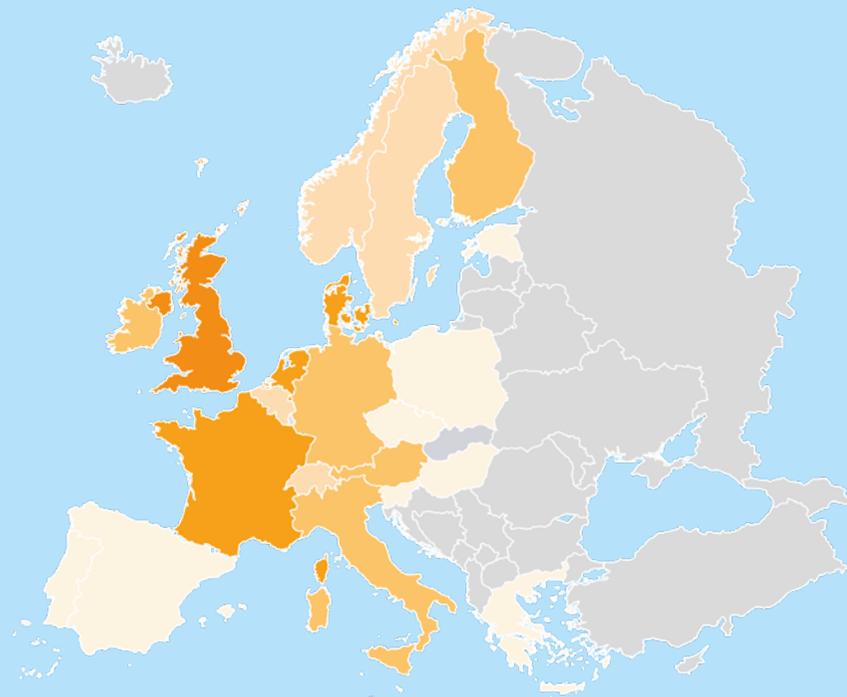
- Ancillary Services
- Interruptible loads
- Capacity Mechanism
- TSO / DSO network charges
- Day-ahead and intraday markets
- DSO Specific Products

*European TSOs procure balancing services based solely on economic merit order. DSF activity in open TSO value streams would increase if TSOs also considered emissions factors in their procurement.*

# The breadth of asset diversity used for DSF

Industrial loads & distributed generators are the most popular assets

There is DSF activity across the majority of asset types in France, Great Britain and the Netherlands.



## INTERPRETING THE RESULTS

In highly scoring markets there is evidence of activity across all asset types, with some hotspots usually around industrial loads and behind-the-meter generation. In lower scoring markets, there tends to be limited activity across asset types, or significant activity in only very few asset types.

## SNAPSHOT – DENMARK

CHPs and electric boilers are the most widespread technologies, with the latter having more than 1.0 GW installed and increasing in popularity. Distribution-connected batteries will ramp-up to support increasing renewable penetration. For electromobility, DSO charges and double-charging have been removed and participating in ancillary services has a minimum requirement of 100 kW, with EVs already present commercially in FCR.

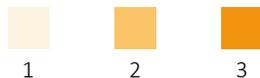
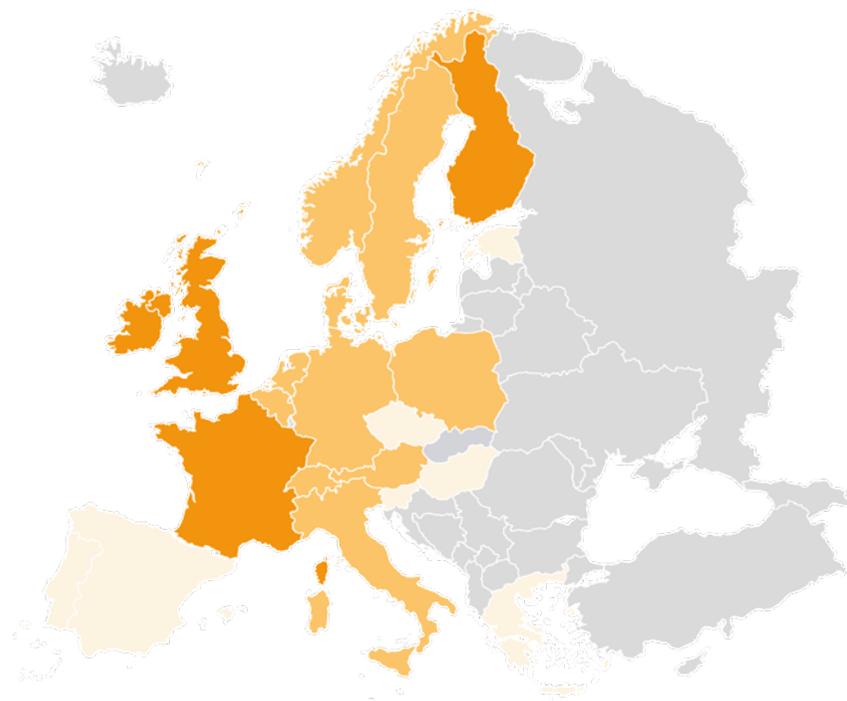
## ASSETS

- Back-up generators
- CHP / generators
- Battery
- Industrial processes
- HVAC
- EV / EV charger
- District heating

# The breadth of customer segments engaged with DSF

## Industrial customers are the most engaged with DSF

Most countries have evidence of DSF activity across all customer segments.  
Large industrial customers are most common, with frequent residential trials.



### INTERPRETING THE RESULTS

In countries scoring highly we have found significant evidence of activity in all three customer segments. Lower scoring countries may still have strong engagement but this will be limited to one segment, or limited engagement across multiple customer segments.

### SNAPSHOT – FINLAND

Large industrial loads (more than 1 MW) make up for the highest percentage of DSF participation in Finland, with a total 300 MW available. A significant development noticeable in commercial and industrial customers with loads below 1 MW is the installation of batteries in shopping centres and the growing popularity of greenhouses. Moreover, building automation technologies and domestic electrical water heaters are emerging trends, with aggregation of residential assets already possible.

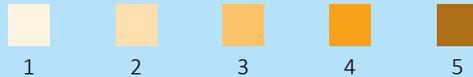
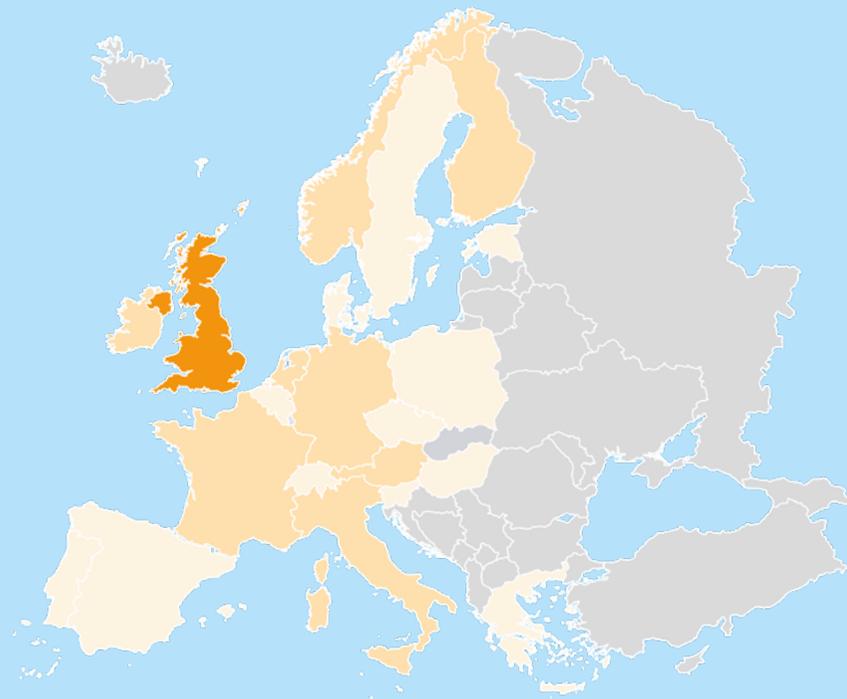
### WE LOOKED AT

- Industrial
- Commercial
- Residential

# The competitive landscape for DSF

Aggregators are market creators and dominate the landscape

There are a significant number of stakeholders active across Europe, with aggregators and energy suppliers dominating the space.



## INTERPRETING THE RESULTS

The score here is based on the number of stakeholders active in DSF provision. We tend to see more innovative business models in the highly scoring markets (i.e. including those with a score of 2 or 3). Currently no country has more than 50 players.

## SNAPSHOT – GREAT BRITAIN

The GB market is still the most

competitive in Europe with ~45-50 players. The relatively high value stream accessibility means that we see an increasing number of players accessing multiple value streams. We also see players occupying niches in the landscape, for example participating in DSO services with residential assets or market trading models with larger portfolios.

## WE LOOKED AT

- Number of DSF stakeholders
- Competitive energy retail (domestic)



## EUROPEAN POLICY AND LEGISLATION

### Electricity Market Design implementation

- Has the market-based procurement of DER by System Operators been developed with the implementation of the Electricity Directive?
- Can DERs participate to all markets and mechanisms in a non-discriminatory way?
- Has the Electricity Directive fostered the creation of innovative services?
- Do consumers have access to close to real time price signals?

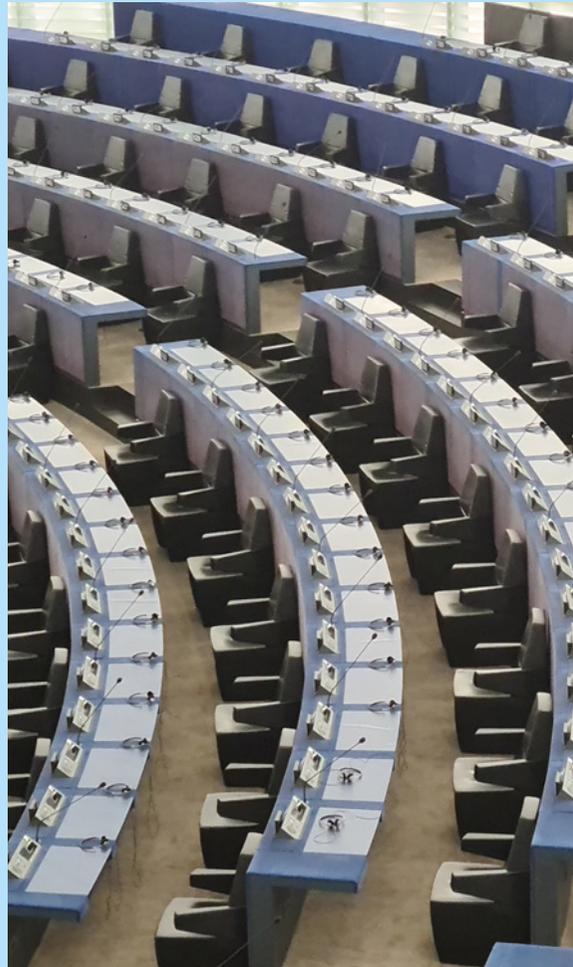
# Introduction

The Electricity Market Design (EMD) was approved in 2019 and is composed of the EU Electricity Regulation and Directive. This legislative package introduced a series of provisions with the aim to adapt the European legislation to a new landscape, in which new renewable energy technologies, a new set of actors like independent aggregators, and active consumers coexist with the traditional energy actors and energy resources.

Based on the provisions in the EMD, the European Commission has built the European Green Deal and Green Recovery to lead Europe to a decarbonised future.

In the Market Monitor for DSF 2019, we laid out the five key principles that will improve the integration of DSF in Europe. This report aims at understanding if the EMD has succeeded so far and where there is room for improvement.

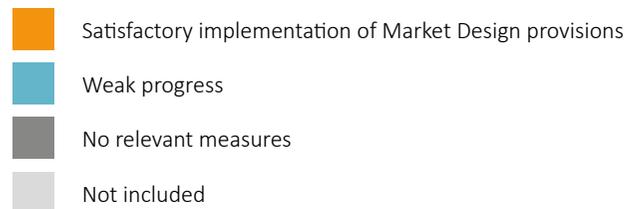
While most of the provisions of the Regulation were immediately applicable with its publication on the Official Journal of the European Union in June 2019, several provisions set in the Electricity Directive were expected to be transposed into national legislation by December 2020. The implementation is still a work in progress.



## Status Report

- *Value stream availability and accessibility for DSF*
- *DSF monetisation across value streams*
- *The breadth of asset diversity for DSF*
- *The breadth of customer engagement in DSF*
- *DSF competitive landscape*

## Key questions that inform the state of EMD implementation



We have identified four key questions that inform the current state of the Electricity Market Design Implementation across a selection of ten European states:

- 1** Has the market-based procurement of all DSF by System Operators been developed with the implementation of the Electricity Directive?
- 2** Can DSF participate to all markets and mechanisms in a non-discriminatory way?
- 3** Has the Electricity Directive fostered the creation of innovative services?
- 4** Do consumers have access to close to real time price signals?

We consider: France, Finland, Germany, Greece, Ireland, Italy, Romania, Slovenia, Spain and the UK.

## EMD impacts on market based procurement

# Has the EMD implementation facilitated market-based procurement of DSF by System Operators?

The EMD encourages System Operators (both TSOs and DSOs) to procure flexibility from decentralised energy resources to avoid an expensive over-investment in physical grid reinforcement. Several provisions provide a framework to encourage System Operators to move from a CAPEX approach (based on capital expenditures) to a TOTEX approach (capital and operational expenditures)<sup>2</sup>. These are the highlights of the implementation or transposition of these provisions across Europe:

- TSO frameworks for procurement of flexibility and their markets are much more developed, with an adequate remuneration of flexibility and standardised product design. However technical barriers still exist and could limit the participation of flexible assets.
- No country has fully transposed provisions to incentivise DSO procurement of flexibility. Some countries (France, Finland, Italy and the UK) have taken timid steps in the shape of pilot projects.
- No state has taken steps to adequately remunerate the use of flexibility by DSOs, and no standardised market products for flexibility exist in Europe.
- Market-based procurement and ownership of assets is still very reduced. In many countries, DSOs are still in charge of developing the EV charging network, and very few are making changes in their legislation towards market-owned storage assets. Notable exceptions are France, Finland, Germany, Greece and the UK, which are currently working on legislation compliant with EU rules.

<sup>2</sup> Articles 32-34, 36, 40, 51 and 54 of the Electricity Directive

## Non-discriminatory DSF participation

# Can DERs participate to all markets and mechanisms in a non-discriminatory way?

While in most countries DERs can participate in some way to electricity markets, significant limitations still exist, and the implementation of the EMD has not fully lifted them. In most cases due to a partial implementation or the use of exemptions. Countries that stand out are France and Finland with most of Europe having a weak progress in the transposition of key EMD provisions<sup>3</sup>.

- Balancing markets across Europe still have significant limitations. Some countries have no proper markets (UK), others limit the participation of independent demand side aggregators (Spain)
- In Day-ahead and Intraday markets across the EU, minimum bid sizes are still 1 MW even though the Regulation sets the limit at 500 kW. Derogations have also been set on the trading blocks, and only Germany has implemented 15-minute periods.
- Market-based redispatching has only fully developed to comply with the Regulation in Finland and in most countries redispatching is handled by the TSO and only in cases of insufficient bids they resort to the market (e.g., France).
- Among the resource adequacy mechanisms introduced after the entry into force of the Electricity Regulation, in Greece and the UK demand is still discriminated against in favour of generation.

## EMD and innovation

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# Has the Electricity Directive fostered the creation of innovative services?

The Electricity Directive included a series of provisions<sup>4</sup> aimed at fostering and encouraging the creation of innovative services coming from the demand side and the use of its flexibility. Those provisions vary from the creation of a framework for DR aggregation to the different modalities of consumer-supplier-aggregator interaction. Until the end of 2020 only France had adopted some of the provisions and allowed DR to participate to all markets, and some countries like Greece, Ireland, UK and Ireland had barely adopted any of these provisions at all.

- In most countries independent aggregators still need prior consent from the consumers' supplier to engage with them. The only exceptions are France and Germany (only for the balancing market). Suppliers can still discriminate against customers that engage with an aggregator in most countries, except France, Italy, Romania and soon Finland and the UK.
- No country takes into account the overall system efficiency benefits of demand side flexibility when calculating the compensation to suppliers.
- Free access to final customer data, based on consumer's consent, is allowed in France, Finland, Germany and Slovenia. This is a significant barrier for innovation, as it limits the possibility for independent market parties to assess the potential of clients.
- No specific framework to enable citizens energy communities has been implemented so far. Greece, Italy, Slovenia, Spain are either using already existing provisions or using experimental schemes to later develop a full framework.

<sup>4</sup> Articles 12, 13, 15-17 and 23 of the Electricity Directive

## Consumer access to real time price signals

# Do consumers have access to close to real time price signals?

One of the pillars of the Electricity Market Design<sup>5</sup> is providing consumers with adequate price signals, both to value their flexibility and to make the best decisions concerning their electricity consumption. The EMD proposes a move from regulated prices to market-based prices with dynamic grid tariffs. This is one of the aspects that has had a more uneven development, with some countries excelling and others lagging behind significantly.

- Finland, Germany, Greece and Ireland have limited regulated prices, and Italy, Romania and the UK are phasing them out for households and SMEs between 2021 and 2023.
- Dynamic price contracts, linked to wholesale and spot market prices, are available in Finland, Italy, Spain and the UK, and France offers time-of-use tariffs. The dynamic aspect is applied in most cases only to the energy component of the electricity bill.
- Network tariffs with a dynamic component are only fully available in France, Finland and the UK. Some countries are adopting similar mechanisms, Slovenia is testing out dynamic tariffs on pilot projects and Spain has adopted a time-of-use network tariff.
- Smart-metering is a key component to the development of efficient price signals. Most European countries are very advanced in the smart-meter roll-out, with the Nordics, Spain, Italy standing out. However, in many cases these are first generation smart meters that don't fully comply with the measurement requirements in the EMD provisions.

# GLOSSARY



# Glossary

Country	Acronym	Name	Description
EU	<b>aFRR</b>	<b>Automatic Frequency Restoration Reserve</b>	The reserves primary purposes are to continually: (1) balance the supply and demand, and (2) maintain system frequency. This reserve is activated automatically. The use of FRRs enables activated FCRs to deactivate and be ready to use in case of new disturbances.
EU	<b>AS</b>	<b>Ancillary Services</b>	Services procured by the transmission system operator to support the transmission of electric power from generators to consumers. They are used to maintain the proper flow and direction of electricity, address imbalances between supply and demand, and help the system recover after a power system event.
GB	<b>BM</b>	<b>Balancing Mechanism</b>	One of the tools used by National Grid, the GB Transmission System Operator, to balance electricity supply and demand close to real time.
GB	<b>BMU</b>	<b>Balancing Mechanism Unit</b>	Units of trade within the Balancing Mechanism. Each BM Unit accounts for a collection of plant and/or apparatus, and is considered the smallest grouping that can be independently controlled.
EU	<b>BRP</b>	<b>Balancing Responsible Party</b>	Entities responsible for maintaining supply and demand on the energy markets. Each BRP must strive to be balanced in real time, and that BRP is financially responsible for the imbalances to be settled with the connecting TSO.
EU	<b>BSP</b>	<b>Balancing Service Provider</b>	A market participant providing balancing services to its Connecting TSO.
EU	<b>BTM</b>	<b>Behind the meter</b>	An asset located behind a demand meter on a customer site.
EU	<b>C&amp;I</b>	<b>Commercial and Industrial</b>	Non-domestic customers.
EU	<b>CEP</b>	<b>Clean Energy Package</b>	A set of eight EU directives and regulations aims to provide an update to the European energy policy framework, aiming at facilitating the energy transition and providing a modern European energy market.
EU	<b>CHP</b>	<b>Combined heat and power</b>	A technology that generates electricity and captures the heat that would otherwise be wasted to provide useful thermal energy. CHP can be located at an individual facility or building, or be a district energy or utility resource.

Country	Acronym	Name	Description
EU	<b>DA</b>	<b>Day ahead</b>	The day before delivery. Generally used in the context of electricity spot markets.
		<b>De-rating</b>	Capacity Mechanism contracts are awarded on the basis of de-rated- rather than nameplate- capacity. The capacity de-rating factor reflects the average availability of an asset under real-world conditions. Reliable asset classes receive high de-rating factors upward of 0.9, while assets like batteries receive much lower factors.
EU	<b>DSO</b>	<b>Distribution System Operator</b>	The operating managers (and sometimes owners) of energy distribution networks, operating at low, medium and, in some EU member states, high voltage levels (LV, MV).
EU	<b>DS3</b>	<b>Delivering a Secure, Sustainable Electricity System</b>	Collective name for Ireland's electricity market (including ancillary and reserve services) aimed at achieving their 2020 renewable targets.
GB	<b>DUoS</b>	<b>Distribution Use of System</b>	Network charge in GB used to cover the cost of distribution system operation, paid by all customers and generators.
EU	<b>FCR</b>	<b>Frequency Containment Reserve</b>	Reserves which are constantly used by the system operator to maintain system frequency as supply and demand constantly changes. It is automatically activated and is the fastest response possible once deviation from the reference frequency has been detected.
EU	<b>FOM</b>	<b>Front of meter</b>	An asset connected directly to the electricity network, instead of behind a customer meter.
GB	<b>GSP</b>	<b>Grid Supply Point</b>	Connection point between the transmission network and the distribution network.
EU	<b>ID</b>	<b>Intraday</b>	The day of delivery. Generally used in the context of electricity spot markets.
EU	<b>mFRR</b>	<b>Manual Frequency Restoration Reserve</b>	This reserve is activated when a serious grid imbalance or congestion issues arises. The mFRR primary purposes are to resolve: (1) major or systematic supply and demand imbalance, (2) a significant frequency variation, and (3) major congestion issues. This reserve is activated manually.

Country	Acronym	Name	Description
EU	<b>RR</b>	<b>Replacement Reserve</b>	Replacement reserves enable activated FRRs to deactivate and be ready to use in case of new disturbances. This service is only available in approximately half of the EU countries.
GB	<b>TCR</b>	<b>Targeted Charging Review</b>	A significant code review being conducted by the GB regulator, Ofgem, which will bring in changes to the charging methodology of transmission network use of system charges.
EU	<b>TERRE</b>	<b>Trans European Replacement Exchange</b>	The European implementation project to create a common marketplace across Europe for exchanging replacement reserves.
GB	<b>TNUoS</b>	<b>Transmission Network Use of System Charges</b>	Network charge in GB used to cover the cost of transmission system operation, paid by all customers and generators.
EU	<b>ToU</b>	<b>Time of use</b>	A type of electricity tariff that varies at different times of day.
EU	<b>TSO</b>	<b>Transmission System Operator</b>	The operating manager of the transmission system and party responsible for system balance.
DE	<b>TU</b>	<b>Technical Unit</b>	Technical unit (“TU”) = a power generating unit or consumption unit or electricity storage unit.
IT	<b>UVAM</b>	<b>Virtually Aggregated Mixed Units</b>	Italian ancillary service product dedicated to distributed resources.
GB	<b>VLP</b>	<b>Virtual Lead Party</b>	A non-BRP participating in the balancing mechanism, typically an independent aggregator.
EUE	<b>VPN</b>	<b>Virtual private network</b>	An encrypted connection over the Internet from a device to a network.

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