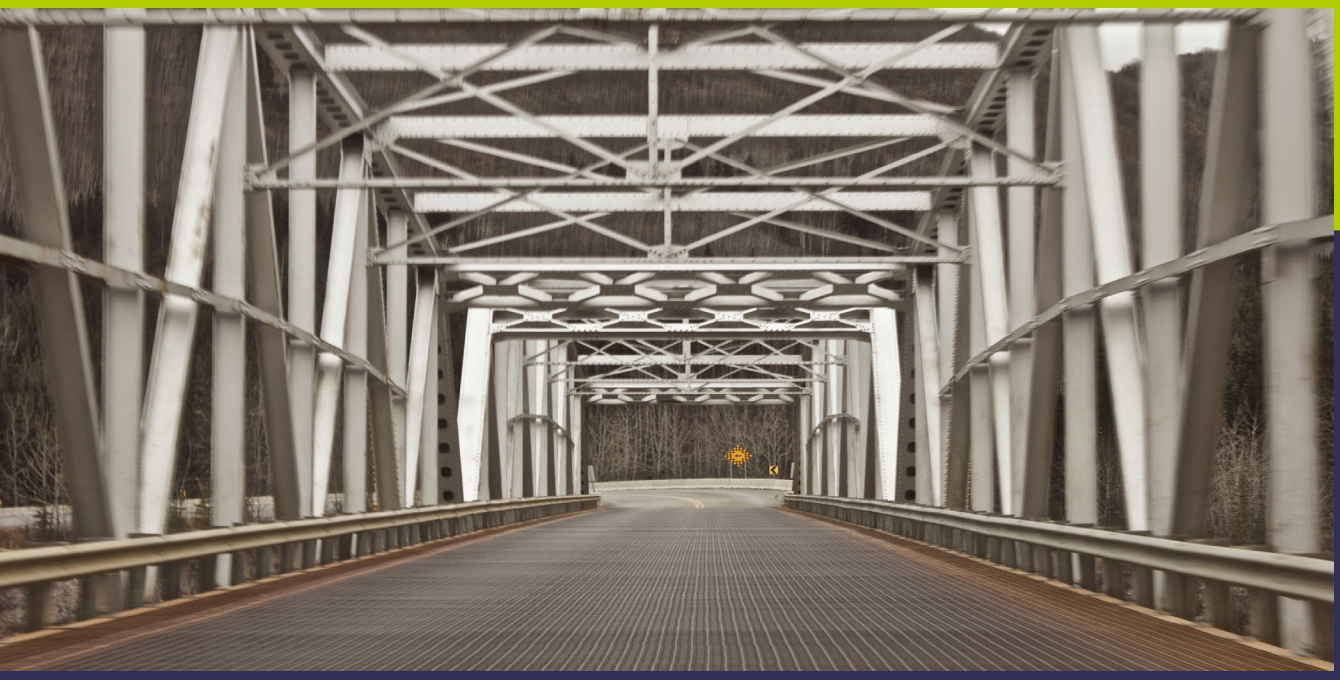
European Commission

EUROPEAN BARRIERS IN RETAIL ENERGY MARKETS



FINLAND
Country Handbook

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Energy

EUROPEAN BARRIERS IN RETAIL ENERGY MARKETS PROJECT: Finland Country Handbook

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Please note that this and the other country handbooks form just part of the deliverables of the “European Barriers in Retail Energy Markets” project. For more detail on methodology, Europe-wide results and the Barriers Index, please refer to the following associated reports: “Final Report of the European Barriers in Retail Energy Markets Project”; “Report on the European Retail Energy Market Barriers Index”

SUMMARY

Project Outline

The following project outline describes the overall European Barriers in Retail Energy Markets Project. It relates to all the countries and markets which are the focus of the project.

The Context

European retail energy market liberalization is now well into its third decade in the most mature markets. Customers of electricity and gas are now free to choose their electricity and gas suppliers in nearly all markets across the EU and in a number of other European markets. At the same time, the European Commission and national European regulators have created a basis for non-discriminatory market access for energy suppliers through a series of regulations and directives. In theory at least, the European retail energy market is a place where new suppliers and providers of retail services can enter the market and compete relatively freely and on equal terms for customers in the market; a place where formerly incumbent electricity suppliers can compete for gas customers and where gas suppliers can compete for electricity customers; a place where a supplier from one region or jurisdiction can compete in another, without facing unreasonable or excessive barriers; a place where a capacity aggregator or other innovative business model can compete to provide its services to retail energy customers.

Objective

The European Barriers in Retail Energy Markets project was established to research the extent to which the theory is the case in practice; the extent to which energy suppliers across Europe face a variety of barriers to enter and compete in the market; to identify which barriers exist and to provide some suggested solutions to those barriers. The project thereby aims to support the European Commission and Member States in developing policy and implementing actions to reduce barriers.

This project has also designed and calculated a performance index that ranks different countries according to how easy it is to do business in the retail energy segment by combining a selection of measurements into a single score. The project is on the other hand, not intended as a measure or indicator of the ‘competitiveness’ of any given market, and it does not in this respect judge the effectiveness of regulatory authorities or governments, many of which have put great effort into developing their markets.

It is also important to note that all the markets included in this research are continuously evolving. Changes are being planned and improvements (and in some cases additional barriers) are possible as a result. While this project highlights and considers known future changes, it cannot make assumptions as to the effectiveness and outcomes of those changes. This project is therefore weighted in the present, based on the actual context in the market, whilst accepting that the present context may change, in some cases imminently.

Competitor Perspective

What sets this project apart from previous Europe-wide projects looking at the issue of barriers is above-all that it primarily takes the perspective of the competitor rather than any objective view of regulators, economists or academics. This is an important distinction since it requires an acceptance that even if the existence of specific barriers may not seem logical or rational, and even if they are not permitted or legal, even if they were supposed to have been eradicated, those barriers are significant at least in the experience or expectations of competitors in the market.

Notwithstanding this however, the project does not simply accept whatever competitors claim. On the contrary, the researchers have gone to great lengths to ensure that claims are challenged and justified. Cooperation with regulatory authorities to understand the regulatory context of claims, along with survey and interview feedback from competitors (including incumbent suppliers) with alternative perspectives or points of view, have also been considered to ascertain a balanced evaluation of the barriers in any given market. This approach may therefore be of value to policy makers, and complementary to other studies addressing market outcomes.

In some cases, claims by respondents have been made which cannot be corroborated. For instance, there have been claims by many respondents across Europe about integrated utility behaviours that represent barriers to independent suppliers in the markets. Barriers apparently resulting from a lack full ownership unbundling. Such behaviours may well be regulated against, may even be considered illegal, and authorities may have powers to investigate them – and maybe do so. They are impossible to prove given the mandate and resources of the researchers of this project, yet they are widely reported by respondents and broadly documented in other researches. Such barriers may be considered allegations by the respondents, but where they appear to merit further consideration they have been raised since their potential impact on competition is substantial.

Scope & Scale of Research

The project focuses on electricity and (in most cases) gas markets in 30 European countries, namely the EU27 states plus Great Britain, Norway and Switzerland. It was conducted over the course of more than a year with the cooperation and assistance of nearly all of the relevant national regulatory authorities (the report does not however represent their views and has not been ratified by them), around 150 suppliers and many other stakeholder organizations, across all focus markets. Great Britain was included in the project and cooperation was received from numerous suppliers, the regulator (OFGEM) and other stakeholders. Switzerland and Malta were included to a lesser extent since they are not yet open markets for household customers.

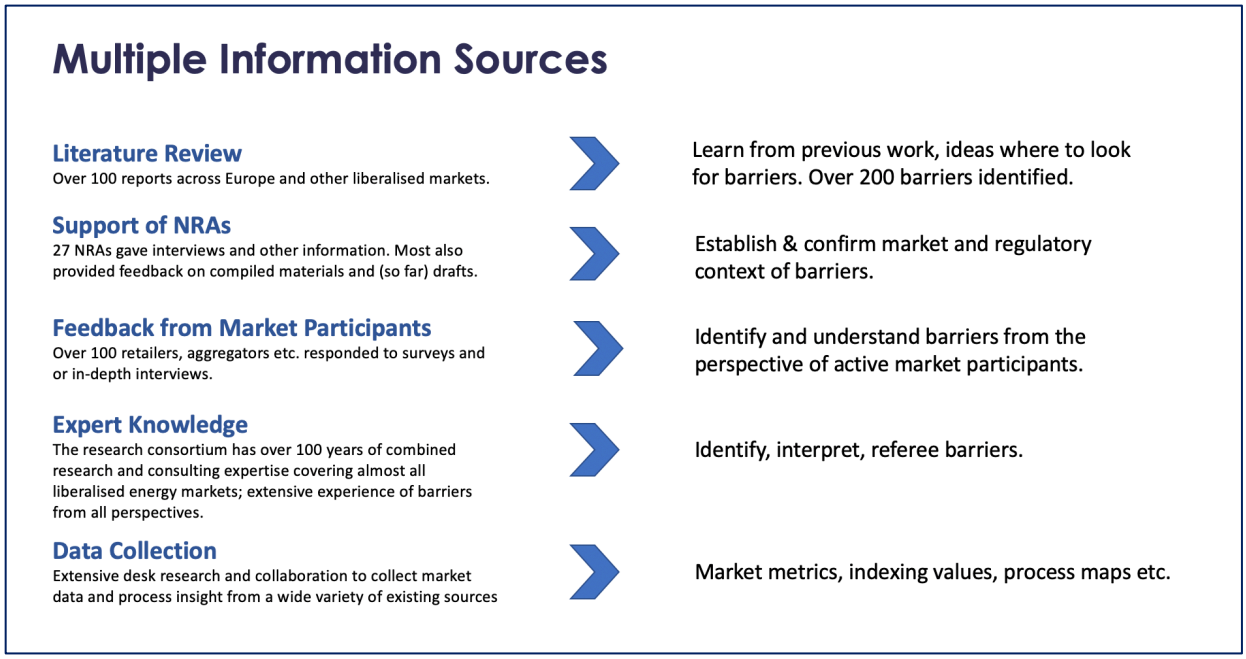
The project focuses on retail (supply), including also demand aggregation services, other additional offerings and new model retail, especially relating to the household segment customers (in some markets households and smaller SMEs may be difficult to distinguish). The project additionally concentrates primarily on barriers that are specific to the energy (electricity and gas) retail market – as opposed to barriers that are true of most markets, such as basic business costs and risk - and it gives priority to barriers for which a potential solution might be sought, as opposed to barriers which are a fact of any energy market and which could not realistically be overcome (such as the barriers relating to the core price volatility of energy as a commodity). The project does not aim to list every possible barrier in the market, however small.

Sources of Information

Many sources of information were used as part of the project. These included an extensive literature review of over 100 public reports, to assist in the targeting of survey questions; interviews with national regulatory authorities (NRAs) to understand the regulatory context in markets; feedback from market participants (suppliers and other competitors) and extensive data gathering for the purpose of collecting market metrics, market processes and

index values. For the latter the task of identifying sources that could deliver comparable and reliable index values was a key challenge of the researchers. The expert knowledge of the project consortium (which has extensive experience from the markets and issues concerned was also used to add judgement to the process. Specifically, the core project team comprised over a dozen researchers and experts from nine European countries, including international experts who have analysed Europe's energy markets since even before they liberalized.

Figure 1 – Multiple Information Sources



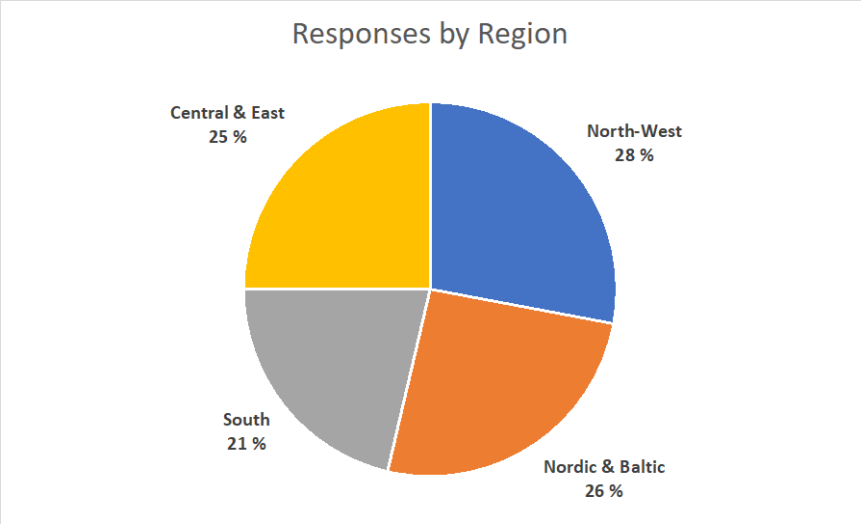
Surveys & Interviews

The primary research mediums used in the project were an extensive questionnaire and in-depth interviews. The purpose of the questionnaire, which contained separate questions depending on the type of respondent, was to provide a comprehensive and structured identification, weighting and magnitude of the barriers as experienced and perceived by suppliers and other competitors. Questions were categorized and broken down according to what was known through the body of existing literature and the experience of the project consortium, ensuring that all known barriers were addressed by the questionnaire. The questionnaire additionally facilitated the identification of barriers that hitherto had not been revealed by the literature review, or which were country specific. Interviews provided additional support and clarification to the findings from the questionnaire as well as allowing respondents to focus on top-of-mind barriers and the interviewers to dig deeper into key and / or unclear issues. While some respondents provided both questionnaire and interview responses, many provided one or the other.

The survey was publicly and widely promoted (via web sites, social media and by other direct means) to potential respondents from 17th June until late October 2019 but remained open until late February 2020 so that stakeholders contacted during Country Handbook development had the chance to respond. The dissemination of information on the project was further facilitated by a widely promoted public website through which over 300 people subscribed.

The Competitor Sample

143 questionnaire and interview responses were received representing 120 unique market-specific responses covering 28 focus markets. 71% of responses were through questionnaires versus 29% through interviews. Malta (a closed market for household customers) and Slovakia were the only markets from which responses were not received, although three additional markets received a level of response which was considered insufficient on which to conclude barriers based solely or primarily on respondent feedback. In these markets, namely Bulgaria, Cyprus, Czech Republic, the project consortium applied their expert insight and additional desk research to support the analysis of the markets. Switzerland, also a closed market for household customers, also naturally received insufficient response. The responses from 24 markets were therefore considered sufficient for the purpose of interpreting the barriers within those markets primarily based on respondent feedback. It is important to note that the response rate in no way impacted the index, which is not dependent on responses.



Analysis of the sample shows that responses were spread evenly among the regions. 66% of responses were non-incumbent competitors compared with 34% which were former incumbents in the markets concerned. In many cases the former incumbents are only former incumbents in one region within the overall country they are in. A large proportion of the former incumbents are furthermore active across multiple regions and countries, and therefore are both incumbents and non-incumbents, defenders and challengers. Among the non-incumbent players were a mix of more established competitors and more recent new entrants, along with more traditional supplies, new model suppliers and aggregators.

More information on the nature of the sample and responses can be found in the Final Report for this project.

Confidentiality

The importance of data protection and anonymity within the project cannot be stressed enough. Most respondents provided information on condition of anonymity. It was promised by default to questionnaire respondents and was in most cases explicitly requested by interviewees. Many participants additionally stated that they were nervous to respond at all since they were active in a market where there were only a handful of suppliers (or at least independent suppliers) which they felt meant that their responses could easily identify them. This risk was perceived as even greater in cases where the participant had made public statements on issues that would be contained in the research (the risk of readers putting two and two together was a concern). In some cases, respondents stated that they even feared a backlash from other stakeholders if their identity was revealed, or (for

e.g. a brand-new entrant in a market with one brand-new entrant) stated that if we revealed that they were a new entrant the market authority would instantly know who they were and that they were afraid it might inhibit their entry process.

Under such circumstances, it was decided that not only would all responses be anonymous, but also that the type of respondents would not be revealed in connection with given responses on a country level. It has been claimed by a handful of market authorities that this policy reduces the value of the research. The researchers feel that it in fact increases the value of the research since it has allowed respondents to provide information in an uninhibited fashion in a European market where, by and large, independent suppliers – and especially independent new entrant suppliers – are few and far between.

Deliverables

The project has three key deliverables:

- **28 country specific handbooks** detailing the barriers identified in each country together with suggestions for possible solutions. While most of the handbooks cover electricity and gas markets, some only cover electricity or cover gas to a lesser extent due to the absence or limited presence of gas. Additionally, two countries, Malta and Switzerland do not have country reports due to their closed nature with respect to household customers.
- **A robust, peer-reviewed barriers index** of how easy it is to do business in each country. The European Retail Energy Market Barriers Index, contained in the separate European Retail Energy Market Barriers Index Report, allows the objective comparison of market barriers across the focus markets. The report also includes a ranking of the focus markets.
- **An overall Final Report** containing a full project description and bringing together the findings and common learnings from all countries.

The Barrier Index and Ranking

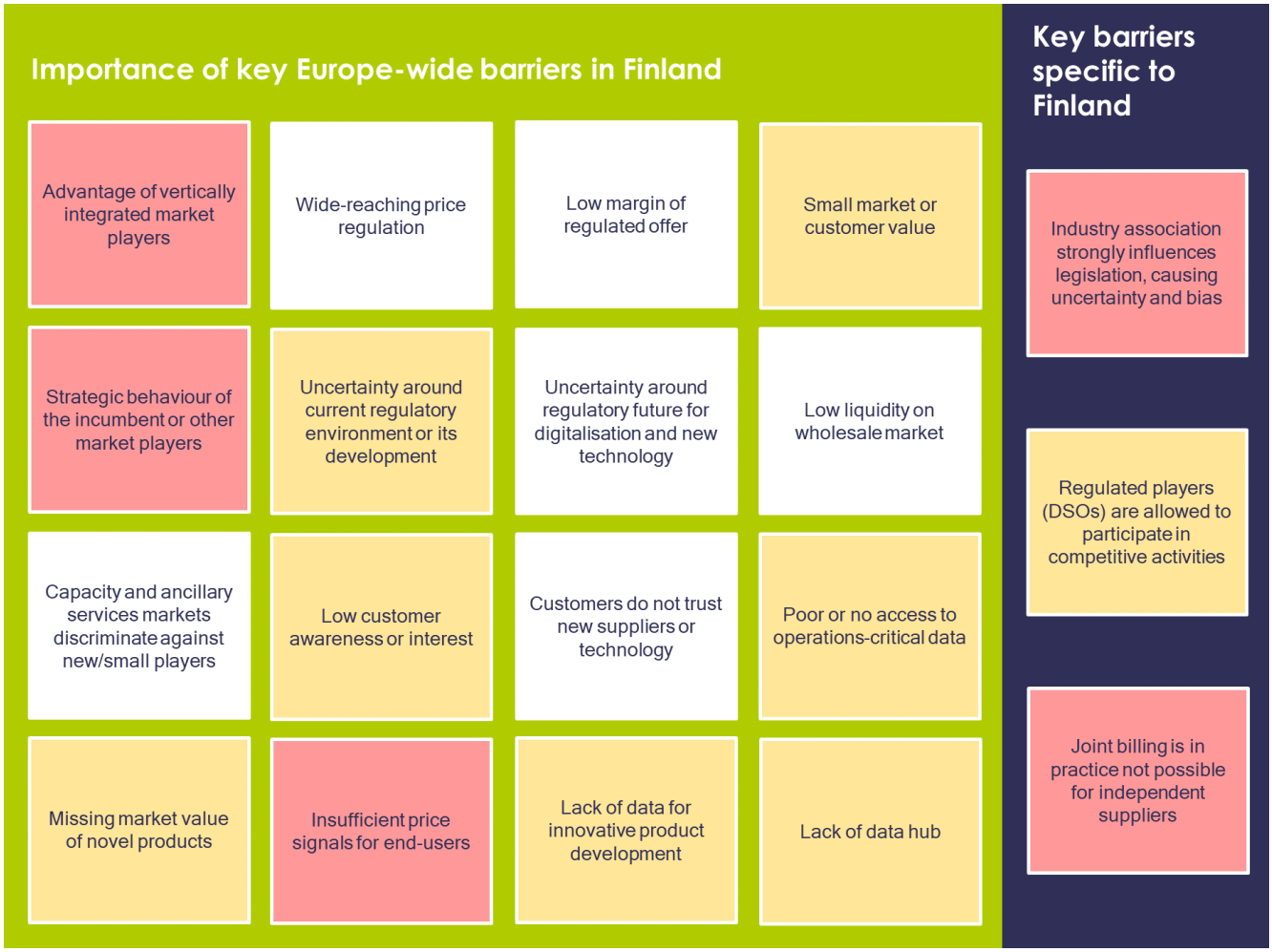
The purpose of the 'European Retail Energy Market Barriers Index' is to enable a degree of comparability between the barriers' context in each of the markets. It is based on metrics that can be collected for all markets, metrics for which available data currently exists. As such it provides a simple, best-available proxy benchmark measure for each of the categories of barriers identified by the project, for each market, and thereby ranks each market. It is intended to be used as an evolving periodical index and ranking on a European and national level.

The index and ranking should, however, presently be considered more of an approach and an indication than an absolute or definitive ranking. It represents the current state of market monitoring data in Europe and will evolve over time as data availability improves. Over time we would expect and recommend that governments and NRAs advance new metric collection to better enable future editions of the index and ranking.

A full description of the Index, its methodology and detailed findings and the ranking can be found in the separate Index report for this project. Within each country handbook the index values for that given country is presented.

Key barriers in the Finnish market

The following figure highlights the key barriers to entry in the Finnish market.



LEGEND

Has not been raised, indicated or identified as a barrier in this country

Has been raised or indicated as an issue in this country

- May include issues that still are present in the country or are experienced by suppliers even though regulation to address the issue has been enacted by the regulator and effects still awaited; reporting a lag between the regulatory framework structure and its awaited effects
- May include issues where suppliers suffer the effects despite the country being relatively advanced on this topic compared with other EU countries, pilot projects being in place or institutions working to overcome the problem.

Has been identified as an issue in this country and is supported by facts, data or substantial respondent evidence in light of limited initiatives deployed by institutions to control or overcome the issue.

Key recommendations

The Finnish electricity market has active customers but relatively few new entrants and is still dominated by a large number of small, local suppliers integrated with the local DSO. At the same time, the country is a leading example of welcoming novel products such as demand response on to the markets. This environment raises a number of barriers that still put off or hinder new entrants.

- **Vertical integration of local incumbents & DSOs.** Most suppliers are small, vertically integrated, local incumbents. This raises issues around informal information flows, the DSO's potential to favour its affiliated supplier over independents, and data accessibility. From our studies across Europe, it appears that requiring ownership unbundling is the only lasting intervention that could alleviate this issue,
- **DSO heterogeneity & data access.** The scattered and diverse DSOs have different processes and formats for data, such that much data handling effort is required by suppliers wishing to act across several DSO regions. This should significantly improve with the introduction of the Data Hub in 2022, which also has the potential to significantly improve fairness towards independent suppliers in terms of data access.
- **Regulatory uncertainty.** Although to some extent unavoidable in an evolving market, uncertainty around regulatory developments make it difficult for businesses to plan effectively. In areas of development such as proposed changes to billing and network rules to improve flexibility, and considering the role of industry lobbyists in shaping legislation, market players would appreciate more communication and explicit time planning from the authorities so as to minimize this uncertainty.

MARKET OVERVIEW

As one of the earliest markets to deregulate and liberalise (1998), Finland is generally regarded as a developed, efficient and mature electricity market, with a highly effective and liquid wholesale market (part of the Nordic wholesale market) and an active level of competition. Despite having only three million household electricity customers and essentially no gas market, it can also be seen as a substantially sized market in terms of electricity network size, capacity, generation and consumption.

Given it's highly digitalised customer base, its proximity to the relatively similar neighbouring Nordic markets of Sweden, Norway and Denmark, and a somewhat liberal, yet responsive and evolutionary approach to regulation, the Finnish Electricity market has seen a significant number of new entrant competitors - including pan-Nordic players and aggregators – and some innovative model offerings from new and incumbent players alike, such as community solar and virtual power plants. Scaled entry has, however predominantly been through acquisition and the entry of large incumbent players from other Nordic countries and through growth of incumbent challenger brands.

While a large proportion of customers have switched supplier at least once, former incumbent retailers have managed to retain the vast majority of Finnish customers and independent new entrants have not managed to organically grow to a large size. What's more, the State has retained substantial interests in the market and across the sector, and municipalities - which have retained ownership of the vast majority of suppliers (mostly at least ownership bundled with incumbent network businesses) – have long enjoyed major home advantage and resisted regulatory change that might have brought a more substantial transfer of power in the market.

Background

The Nordic wholesale electricity market

Finland is part of the Nordic market along with Norway, Sweden and Denmark. The installed capacity in the market at the end of 2017 was 105GW and total consumption in 2017 was 387TWh p.a. Norway set the model for deregulation in 1991 when Statnett was created an independent transmission system operator (TSO); point access to networks was introduced which allows a generator or consumer to pay one charge to access the whole market; and the former cooperative energy only power pool was opened to all comers. Sweden followed with similar changes over the period 1992-96, and a jointly owned market company, NordPool, was created which ran a spot market and managed congestion between price-areas. Finland joined the Nordic market in 1998 and Denmark in 1999-2000. The Baltic countries joined the Nordic market in 2013 and in 2014 the Nordic market coupled to Europe. Critical features that create an integrated wholesale market are 1) a common point access or "entry/exit" basis for charging for the use of the networks; 2) Elspot, which has a monopoly of the physical spot market, is a unifying factor of the market; 3) there is free flow between the areas of the four system operators; and 4) the system operators in each country are bound together through a System Operation Agreement.

The market has no centralised dispatch; the generation companies and other market participants both schedule and dispatch themselves. But "balance responsible parties" have a legal obligation to submit balanced schedules for each hour (which is the settlement period of the market) for each price area in which they are active.

The common Nordic retail electricity market

NordREG, an organization for cooperation between Nordic energy regulators, has long been working towards a common Nordic retail market. Finland is implementing a Datahub – the centralization of key data relating to the retail market – which is part of the proposals for a common market. A supplier-centric model is partly in place in that in switching suppliers one only has to contact the new supplier and not the DSO nor the old supplier. There is no regulation for single billing, but it is possible if agreed by market participants.

The Finnish electricity and gas markets

There have been three strands in the historic development of the electricity supply industry in Finland:

- Municipalities developed distribution networks and district heating, which represent about 15% of the country's generation capacity and meets about half of the heating market. Municipalities also have shares in generation-only plants
- In 1932 the government created Imatran Voima Oy (IVO), the Finnish State Power Company, and in 1954 it created Kemijoki Oy, a hydro power company to develop the resources of the Kemijoki river. IVO took the lead in developing a high voltage transmission grid and the interconnectors with Russia and Sweden. In 1992 the transmission and interconnectors were transferred to a subsidiary which in 1997 was merged with TVS (see below) to create Fingrid in which the State of Finland and the National Emergency Supply agency own 53.14% of the shares and the rest is owned by Finnish financing and insurance companies. In 1998 the government merged IVO and Neste, the former state petrochemicals and oil refining company, to form Fortum. Subsequently Neste and Fortum were demerged, and it remains in the electricity business

owning 3.9 GW of plant in Finland together with a supply business including household customers, and 4.5GW in Sweden together with household customers. The government part privatised Fortum and sold off 49.25% of it.

- Energy intensive industries (notably the pulp and paper industry) have developed cogeneration plant which generate about a fifth of the country's electricity, and also developed generation-only plant (including a share of the only nuclear power plant in the world financed by industrial companies). The energy intensive companies built a transmission system to distribute their power, which in 1990 was reorganised into a company called Teollisuuden Voimansiirto (TVS).

Competitive restructuring was achieved in several stages beginning with the 1995 Electricity Market Act, which:

- required all owners of transmission and distribution networks to provide access on a non-discriminatory basis for all customers whose power requirement exceeded 500kW, a threshold that was removed on 1 January 1997. On 1 September 1998 an amendment to the Electricity Market Act opened access to all Finnish customers based on profiles
- implemented unbundling rules which restricted the extent to which one company could conduct both electricity distribution and sales activities.
- established Sähkömarkkinakeskus as the regulator, which also assumed responsibility for gas regulation, which since 2014 is called Energiavirasto (the Energy Authority)

In 1998 Finland became part of the Nordic wholesale market.

Initially regulation of the competitive retail market was relatively light and simple, and the regulator's approach continues to be pro-competitive, although more proactive especially around novel products and services.

There is no natural gas production in Finland, but there is a small domestic production of biogas at four locations which feeds into Finland's gas transmission network. Finland has gas pipelines to Russia, and from the end of 2019 a new Baltic pipeline integrated the Finnish market with the Baltic states. The Finnish gas market is small and restricted to some 40 locations in the south of the country with only 23,000 household customers most of who use it for cooking. The gas market opened to competition on 1 January 2020, but since it is so small and there is as yet little market activity gas will not be considered further in this report.

Finnish Liberalisation timetable

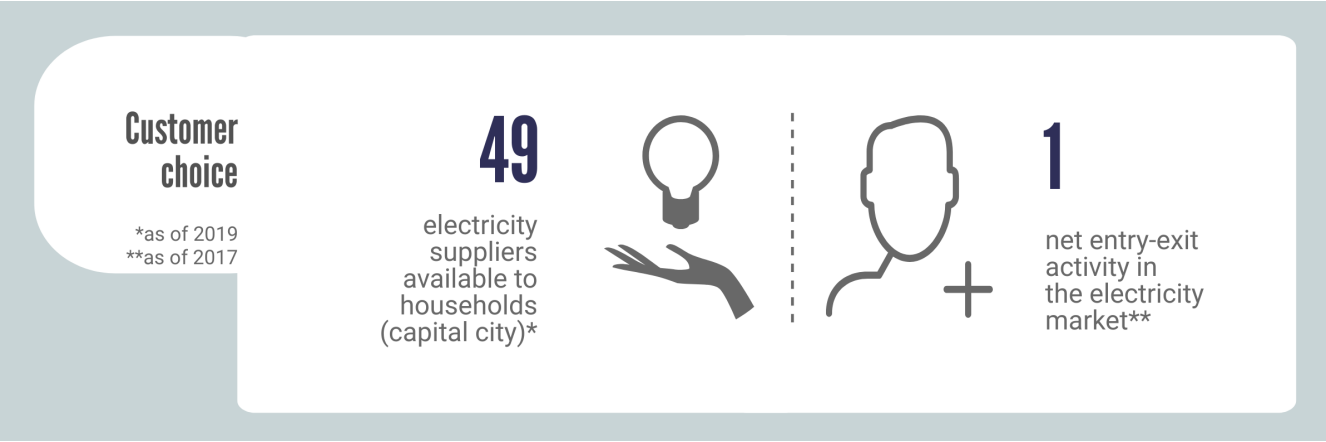
While household customers could switch supplier already in 1997 if they had hourly metering, it was not until 1998 when all customers could freely switch supplier that full liberalisation was achieved in Finland. Finland was nevertheless among the first in Europe to fully liberalise.

- **01.11.1995:** I&C customers > 500kW could switch supplier (but no electricity exchange existed until 1996)
- **01.01.1997:** Customers with hourly metering could switch supplier
- **01.09.1998:** Households with a main fuse max 3x63A and max demand 45kW could switch supplier
- **01.11.1998:** All customers with a main fuse max 3x63A and max demand 45kW could switch supplier

Market structure

Fingrid owns and operates the high voltage system and its subsidiary Fingrid Datahub Oy is responsible for building and operating a Datahub which is due to go live in February 2022. There are 77 DSOs; most are small; 61% are municipally owned; and 39% privately owned. Legal unbundling is only required for network companies with high volumes of transmission (> 200 GWh over three consecutive years), which applies to fewer than half of the DSOs; a further 10 or so have unbundled voluntarily. Larger DSOs (> 50,000 customers, 17 companies in 2018) are further required to separate management interests between their network and retail sales activities. DSOs that do not meet the threshold for legal unbundling are still required to be accounting unbundled, as are legally unbundled DSOs with substantial other activities (> 500,000 EUR or 10% of revenue annually). There is no legal requirement to unbundle ownership. The majority of suppliers still belong to the same corporate group as, or are owned by, one or more DSOs

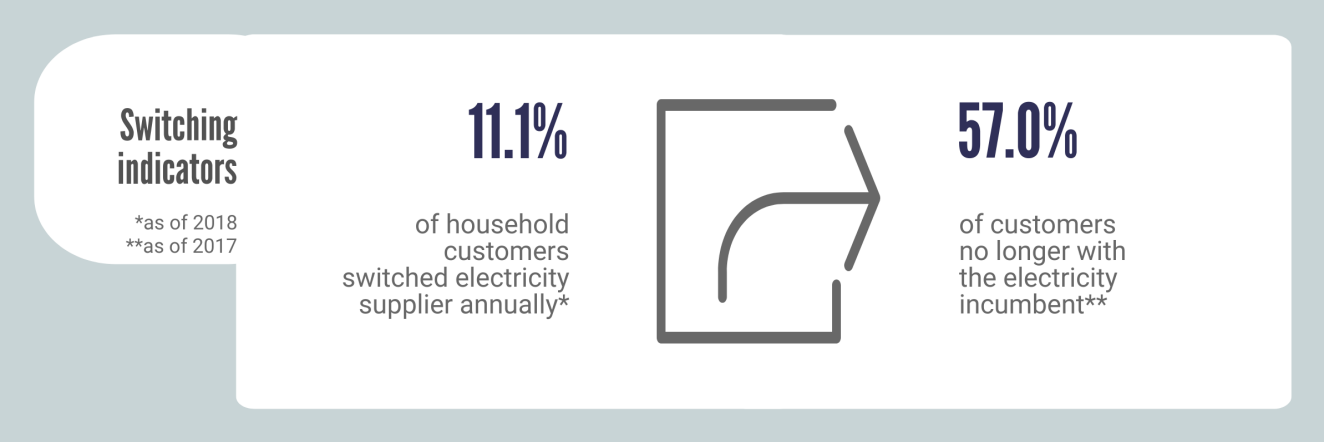
The Finnish electricity generation sector is characterized by a large number of players. There are some 150 companies producing electricity from circa 400 production plants, a total of 67.5TWh in 2018. The largest source of generation is the 25% of the total output derived from two nuclear power stations built in the last century at Olkiluoto (1720MW), which is owned by Teollisuuden Voima Oy, a consortium of Finnish power and industrial companies, and at Loviisa (440MW) which is owned by Fortum. A 1600MW European Pressurised Reactor is being built at Olkiluoto but it is nearly a decade behind schedule and euro billions over budget. One consequence of its delay is that (along with cheaper prices) it contributed to Finland importing nearly a quarter of its power (about 20TWh annually) in recent years from Sweden and Russia. Finland also gets 15% of its power from hydro resources and 24% from district heating schemes. Finland's net imports of electricity from Norway, Sweden and Russia fluctuate between approximately 10 and 15% of energy supply.



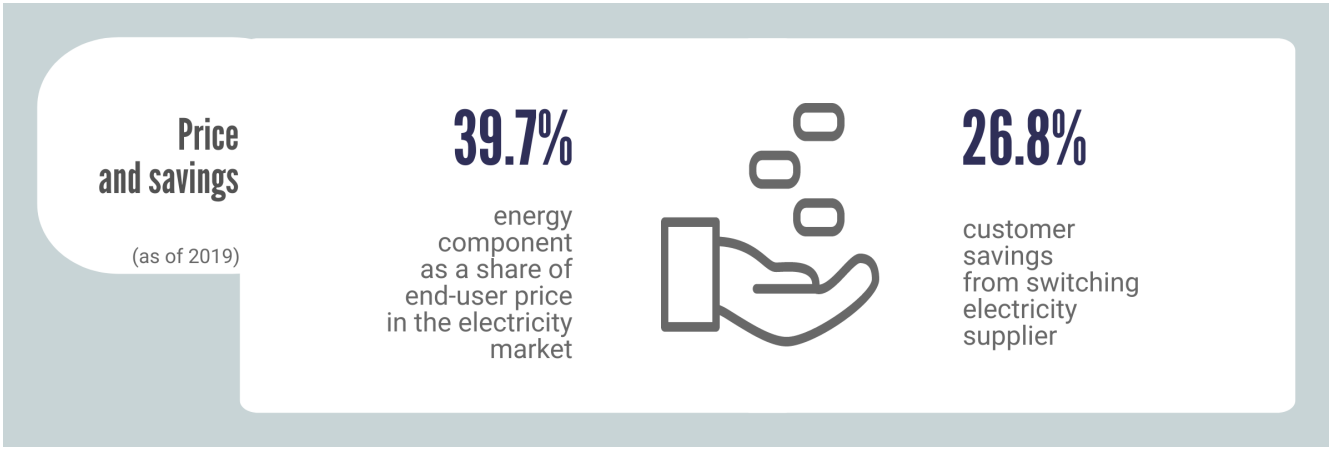
Finland has about 3.1 million household electricity customers. Competition to supply them is intense and margins are small, even negative for some products or at certain times. There are 72 retail suppliers, many of which are municipally owned and are associated with a DSO; 49 operate nationwide while the remainder only compete inside their traditional local area. Only three suppliers have a market share of over 5%, and together they have a combined market share of 35-40% of total sales. The number of new entrants has increased gradually since 2010,

with 11 fully independent retailers together taking about 35% of the market at the end of 2018. The HHI is 600-700, indicating a competitive market.

The local dominant retailer in each DSO area is responsible for selling electricity to household and other specified small customers. Customers marginally prefer open-ended contracts that have no end date rather than fixed-term contracts (49% vs. 41% in 2018 respectively). Contracts with market-linked prices are increasing in popularity, comprising 9% of all contracts at the end of 2018. These have been the subject of several investigations by the regulator on account of the lack of information about the basis of price that was included in the contract.



To promote retail competition the Energy Authority provides a price comparison website. 11% of customers switched supplier in 2018 and around 60% are no longer with the incumbent suppler. A recent study of customers in the Nordic region found the Finnish were the most active of the four Nordic countries in signing a new contract in the last year (34%), and 19% compared contracts without switching. New market rules in Finland enable households to generate and sell electricity themselves, i.e. the market supports prosumers, which contributes to end-users becoming more active participants on the market.



Until the Datahub goes live in February 2022 suppliers must currently communicate directly with DSOs for metering data and customer information but market participants do have interoperable information exchange

systems that send and receive messages (partly automatically). There is no current plan to move to a fully supplier-centric model, but single billing in principle is possible if agreed by market participants.

Regulatory and political orientation

Finland's retail energy market is characterized by a liberal and responsive regulatory attitude whereby the role of the regulator is to facilitate rather than drive or control competition. It is a regulation-light orientation (e.g. no license is required to establish a suppler) orientation where efficiency of the market is the priority and unnecessary interference is avoided. There has, over the years also been a strong push for pan-Nordic harmonization and opportunities as well as consumer centricity, although – despite much being achieved - both have somewhat faltered in recent years and fallen short of original visions. For instance, combined billing is not mandatory, although it is common given that the majority of suppliers can obtain the necessary distribution information from their associated DSO. Nevertheless, a major market development to be implemented over the next few years, in concert with the rest of the Nordic market, is to move to a 15-minute imbalance settlement period for end users, originally planned to launch at the end of 2020 but likely to take several more years.

On a national level, politics (and the public) does not appear to have been overtly interested in retail competition, and as with many aspects of the Finnish retail sector (not only energy), areas of market power and state interest have been little altered. Combined with powerful regional political support for the protection of municipal utilities, the status quo of the retail energy market has not been significantly challenged.

Context for aggregation/demand response

The Finnish electricity system is one of the most conducive in Europe for demand response. The Finnish market is welcoming to new products and services and has taken significant steps towards implementing flexibility. Independent aggregators are permitted to act as balancing service providers (BSPs) and can fill a role as mediator between customers, the TSO and markets. All markets, including the balancing reserve market (except the automatic frequency restoration reserve, aFRR) are open to demand-side participation and aggregated generation. The roll out of smart meters is complete, providing essential infrastructure for end-user DR, and the design of some balancing products has been updated with consumption bids in mind including step-wise activation to ease coordination for aggregators. The regulatory approach to novel energy businesses has tended to be open, allowing participants in without requiring them to fulfill many obligations, and only subsequently building legislation for such business models. This has resulted in a relatively market player-friendly environment for aggregation and DR. Similarly, pilot projects have been encouraged to endure after completion, which has encouraged participation. Hence, there are several commercial DR actors on the market, some of whose offers include home automation.

BARRIERS

The European Barriers to Entry and Competition in Retail Energy Markets project has researched barriers across 30 European markets. From this research, barriers to entry have been identified and grouped into four over-arching pan-European barriers' blocks.

Over-arching pan-European barrier blocks

Barrier Blocks		
	1	Regulatory disincentivisation
	2	Market inequality
	3	Operational and procedural hinderance
	4	Customer inertia

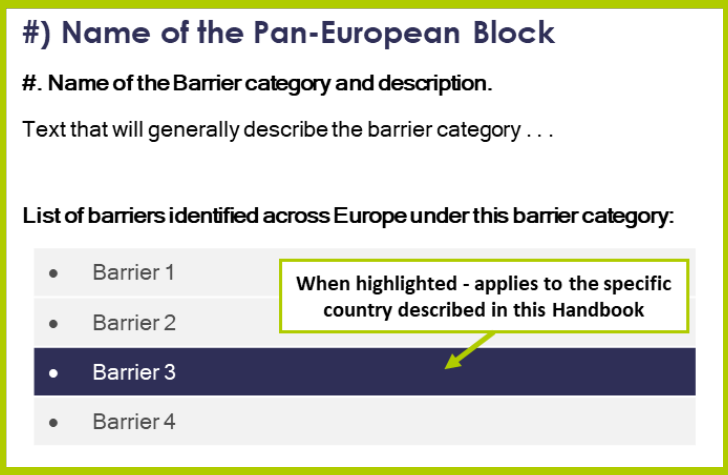
Description of the four-over-arching pan-European barrier blocks:

1. **Regulatory disincentivisation:** barriers arising as a consequence of the general regulatory framework of the natural gas and electricity retail markets. We address the impact of price regulation, burden (-sharing), regulatory unpredictability and access to innovation. All these items may disincentivize competition within the natural gas and electricity retail markets, as well as entrance by new suppliers.
2. **Market inequality:** barriers arising from an uneven playing field for different types of suppliers. Often, certain market players already have a competitive advantage by being very close to the formerly integrated DSO (or still being vertically integrated in case the de-minimis rule applies), controlling a large amount of generation capacity or having a large market share. If market rules do not prevent this, such players can exercise their market power to treat other market players in a discriminatory way, creating market barriers. We examine issues related to unbundling, historical roles and access to market mechanisms.
3. **Operational and procedural hindrances:** barriers arising as a consequence of the complexity and national/regional differences in standards and procedures in different process areas, affecting how easily new entrants can enter and operate in the energy retail market. We look at issues and differences in licensing, signing up and operations compliance, as well as data access, processes and data management from the suppliers' point of view.
4. **Customer inertia:** barriers arising due to customer behaviour and attitude. For the energy market to function, end-users must be willing and able to switch supplier. If customers do not switch supplier, suppliers need not worry about losing customers, so there is no incentive for suppliers to improve their services, minimize prices or innovate to compete for customers. We examine barriers related to customer inactivity or disinterest in the energy markets.

Within each of these high-level blocks are contained sub-categories, which are also mostly pan-European in nature. Each of these sub-categories contain the specific barriers which relate to individual markets as described in the following chapter. Altogether, we identified 45 barriers, most of which broadly across Europe. Only a selection of them apply to the Finnish case, as reported in the following chapters of this handbook.

HOW TO READ AND INTERPRET THE FOLLOWING SECTIONS

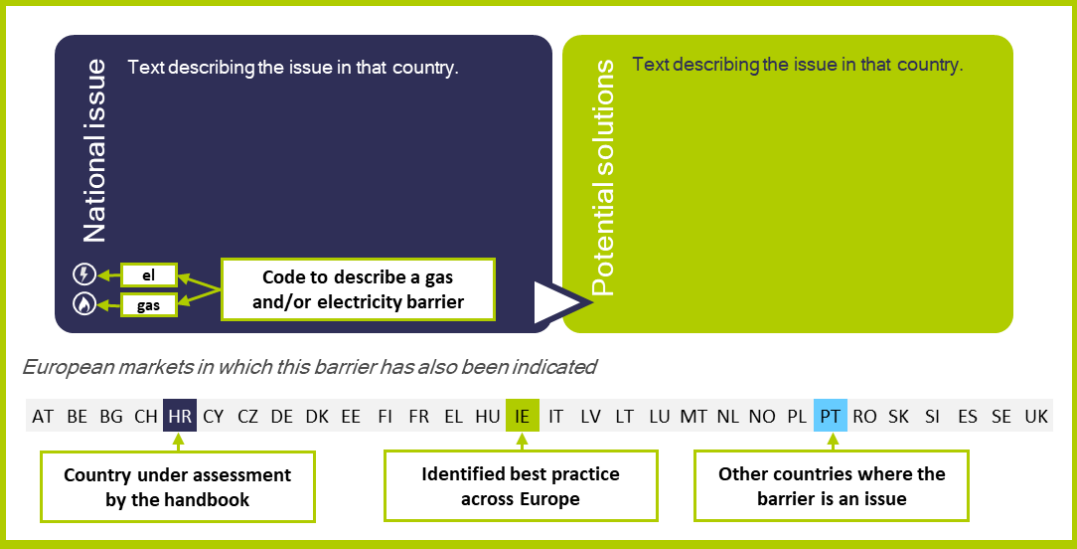
Each of the following four chapters explores one of the four pan-European blocks of barriers and report how each sub-category barrier apply to Finland. When a barrier applies to Finland, it will be highlighted in the table following a general description of the barrier itself as shown in the example below:



As showed in the above figure, the table lists all the barriers we have identified in Europe within the specific barrier category. **Only where a sub-category barrier is highlighted in the table does it means that suppliers raised it as a barrier, and it is a prevalent issue in Finland.**

Highlighted sub-category barriers are then briefly described following a twofold methodology which:

- reports what the suppliers are experiencing in the market as a national issue and
- suggesting potential solutions to the problem as depicted in the below figure.



At the end of each chapter, Finland's performance within the category, according to quantitative indicators, is then presented.

For additional market context, please see Appendix 1: Processes, which gives a high-level graphical overview of the most critical steps involved in establishing and operating as a supplier in the national market.

1) Regulatory disincentivisation

Within regulatory disincentivisation, barriers across Europe have been sub-categorised into four areas encompassing 17 specific barriers[1]:

1. **Price regulation.** Regulated prices usually refer to regulation or control of end-user's prices by a public authority, usually the National Regulatory Authority (NRA). Price regulation can take different forms, such as setting or approval of prices, price caps or various elements of these. In Europe, there still exist Member States which have maintained end-user regulated prices during the market opening process and after, in the intention of protecting households or even non-household customers from significant increases in energy prices, especially in a context of limited competition. In some cases, this regulation has led to below cost prices and to low margin to cover the supplier activity risk, discouraging investments and the emergence of newcomers.
   According to CEER[2], 14 European countries out of 27 answering a recent CEER survey have price intervention in electricity for household consumers. Where regulated prices remain, NRAs tend to consider them as a significant barrier to entry for alternative suppliers. All Member States, where NRAs consider regulated prices as a significant barrier, are planning to remove them, at least for non-household customers. Across Europe, the following specific barriers related to price regulation were detected by this study. Those highlighted in blue have been raised, indicated or identified as barriers in Finland:
   - Price regulation discriminates against certain suppliers.
   - High penetration of price regulation
   - Low margin of regulated offer (margin squeeze)

2. **Burden sharing.** Energy suppliers across Europe are often required to collect payments for services not part of their business, or to provide other services such as services related to energy efficiency, or to manage assets such as those of the metering system. These requirements can pose a barrier for suppliers' operation on the retail market by raising their costs and distracting focus from their core business and might deter entry into the retail market by newcomers. Across Europe, the following specific barriers related to "burden(-sharing)" were detected by this study. Those highlighted in blue have been raised, indicated or identified as barriers in Finland:
   - Obligation to collect tariffs unrelated to energy on behalf of others
   - Obligation to keep a minimum-security stock as a gas reserve

[1] Please note: these definitions are Europe focused, not Finland specific. Highlighted barriers have been identified as country specific.
[2] Monitoring Report on the Performance of European Retail Markets in 2018. CEER Report 4 November 2019.

3. **Regulatory unpredictability.** The establishment of an internal natural gas and electricity market in the European Union is an ongoing process. European legislative packages are boosting this process, making market regulation evolve rapidly. Transposition of regulation into the national regulatory frameworks is not always smooth and NRAs' actions are sometimes unpredictable. This leads to uncertainties for suppliers related to unclear and unknown future developments of the regulatory framework, including the attitude of the institutions that regulate the retail market and oversee market operation and organization. This uncertainty is a barrier that impacts suppliers' business, preventing their entrance in the market, making strategic business planning difficult or forcing them to adopt different approaches during operation. Across Europe, the following specific barriers related to "unpredictability of regulatory framework" were detected by this study. Those highlighted in blue have been raised, indicated or identified as barriers in Finland:

- Suppliers face uncertainty because of a newly liberalized regulatory environment or uncertain future development of the regulatory framework
- Uncertainty caused by industry actors influencing legislation, e.g. incumbent or associations shape legislation
- Uncertainty regarding future regulatory developments, especially in the field of digitalization and new technology
- Attitude of authorities hinders development of the market
- Uncertainty regarding environmental obligations and non-renewable generation capacity

4. **Access to innovation.** Most European energy market are currently designed based on practices as they were during the period of national monopolies by what today are incumbent suppliers. Allowing suppliers and new entrants to be innovative depends not only on the opportunity to compete on prices, but also to diversify, welcoming new products, market actors and business models. When national regulatory frameworks do not take into account innovation in the retail market (regarding e.g. availability and functionality of smart metering, the possibility of flexible contracting and tariffs, or whether the demand side can bid in the balancing system), this may pose a barrier for new market entries, particularly more modern players. If new entrants are to be enabled in order to increase the level of competition in the retail market, regulations must accommodate future developments on the energy markets, especially considering that in the future new entrants may not only be electricity and gas suppliers but also act as aggregators or energy service companies (ESCOs). Across Europe, the following specific barriers related to "innovation-friendliness" were detected by this study. Those highlighted in blue have been raised, indicated or identified as barriers in Finland:

- Data protection issues
- Lack of incentivisation for novel pilot projects or post-pilot market rollout
- Lack of data for innovative product development
- No fit between new business models and existing regulation/obligations
- Missing flexibility in tariff structures
- Missing information and incentives for demand-side grid management
- Market structures does not incentivize novel products (missing perceived value)

1.1 Description of regulatory disincentivisation barriers in Finland: Price regulation

Prices are not regulated in Finland, hence no barriers around price regulation were identified in this market.

1.2 Description of regulatory disincentivisation barriers in Finland: Burden (-sharing)

Obligation to collect tariffs unrelated to energy on behalf of others. From our studies of this market, this issue has the potential to arise but does not appear to risk posing a real barrier in Finland. Combined billing - a billing regime in which the supplier provides the customer with one bill containing the cost for electricity and for the network - usually also encompasses taxes and others service fees. The supplier is considered the only contact point responsible for all those charges, and is thus also financially responsible for collecting them, regardless of whether the suppliers manage to collect money from their customers.

Combined billing in Finland is voluntary for suppliers but preferred by customers and easier to implement for suppliers integrated with DSOs (see section 2.1). Discussions are ongoing about whether to implement mandatory combined billing. Some suppliers are wary of mandatory combined billing as this would entail an economic risk for the supplier from payment of distribution. The need to accumulate more capital as insurance/hedging against non-payment of the network bill, in addition to the supply bill, could be more cumbersome for smaller suppliers. However, based on experience from other markets, combined billing is an effective way to simplify the market for customers and hence make it easier for them to engage, and thus activate the market. Requiring combined billing thus appears to be justified based on its intent to improve market effectiveness, not an undue hindrance.

1.3 Description of regulatory disincentivisation barriers in Finland: Regulatory unpredictability

Suppliers face uncertainty because of a newly liberalized regulatory environment or uncertain future development of the regulatory framework. In the research this barrier was identified as an issue in Finland. Suppliers experience uncertainty because of unpredictability around what the future regulatory framework will look like and hence what business opportunities will be possible.

National issue

Independent respondents in particular were concerned about uncertainty regarding future regulatory developments. A specific example is proposed changes to billing (see section 2.1) and network rules to support demand flexibility which were felt to strengthen the monopoly position of both DSOs and TSO overall, while also differentiating Finland further from other Nordic and pan-European practices, complicating both supplier operation and further harmonization of markets across borders. Another example is that uncertainty around how the playing field will be levelled with regard to regulated DSOs acting on service markets (see section 1.4), which impacts actors' interest in investing in product development.

Potential solutions

These aspects of uncertainty are linked to the overrepresentation of integrated players in lobbying (see below) and their advantage in the market (see section 2.1). The authorities should actively seek to include a wider range of stakeholders in their consultation groups to ensure that all views are taken into account when designing market developments, and ensure that communication and a strong focus on timelines are maintained throughout regulatory development.

European markets in which this barrier has also been indicated

AT	BE	BG	HR	CY	CZ	DE	DK	EE	FI	FR	EL	HU	IE	IT	LV	LT	LU	NL	NO	PL	PT	RO	SK	SI	ES	SE	UK
AT		BG	HR	CY		DE	DK	EE	FI	FR	EL			IT	LV	LT						RO	SK		ES		UK

Uncertainty caused by industry actors influencing legislation, e.g. incumbent or associations shape legislation. In the research this barrier was indicated as an issue in Finland. While cooperation between authorities and market actors is essential for functioning and lasting market developments, if industry bodies have too much power to shape legislation, it may result in legislation being shaped for the benefit of these actors to the detriment of other actors, customers or market competitiveness.

National issue

Due to the structure of the energy market, with many small, local, integrated suppliers, the main industry organization is made up mainly of such players. Hence, the organization underrepresents the views of independent or other novel players and thus tends to favour the status quo, for example in the discussion around joint billing (see section 3.1). Moreover, the association has close links with the ministry in developing details of new legislation, adding uncertainty to how government decisions will be implemented.

Potential solutions

The association cannot be expected to weight up the views of its different types of members. Hence, authorities dealing with the association (energy ministry, regulator, TSO) should be aware of this skew in opinions when interpreting the association's standpoints, and perhaps specifically turn to more independent and novel players for additional consultation before making decisions.

European markets in which this barrier has also been indicated

AT	BE	BG	HR	CY	CZ	DE	DK	EE	FI	FR	EL	HU	IE	IT	LV	LT	LU	NL	NO	PL	PT	RO	SK	SI	ES	SE	UK
AT		BG	HR				DK	EE	FI	FR							LU							SI			

1.4 Description of regulatory disincentivisation barriers in Finland: Access to innovation

Lack of incentivisation for novel pilot projects or post-pilot market rollout. Rather than being a barrier, in this issue Finland was indicated as a good example of how pilot projects can be incentivized. In other markets, lack of financial incentives as well as missing technical support can be a major barrier for conducting pilots in DR and other novel approaches, discouraging participation as there is no immediate commercial reward.

FINLAND BEST PRACTICE CASE: Incentivizing novel projects

Finland was raised by respondents as the best example among the Nordic countries of authorities encouraging pilot projects in novel services/products. The high opinion was mainly due to the practice of encouraging post-market roll-out of the service/product upon project completion. This raises market players' confidence that the authorities take seriously the need for integrating novel players into the system, and the potential for soon becoming commercially active naturally acts as a strong attraction for companies to get involved in such pilots. Encouraging participation in this way benefits the energy system by making it more likely that projects and players providing crucial new developments will be found. Under the Finnish approach, with good opportunities for suppliers to cooperate with the TSO, flexibility development happens through pilots. Indeed, Finland's energy system is felt to be the most conducive (at least in the Nordics) for products such as DR and aggregation, indicating that lessons have been learnt effectively from pilots.

European markets in which this barrier has been indicated

AT BE BG HR CY CZ DE DK EE FI FR EL HU IE IT LV LT LU NL NO PL PT RO SK SI ES SE UK

Lack of data for innovative product development. In the research this barrier was indicated as an issue in Finland. In order to leverage high-resolution data for novel demand-side and aggregation services, market actors must be able to access near-real-time consumption data to be able to match grid requirements and balancing product bids.

National issue

While data access is through DSOs (see section 3.1), accessing real-time or historical consumption data is difficult for independent suppliers, such as third-party aggregation providers. Moreover, this and other information (e.g. about a customer's existing load control equipment or grid tariffs) are not available in a uniform format, making it difficult for market players to handle. Together, this hinders both developing customer-friendly products and targeting customers for offers.

Potential solutions

The Data Hub, due to launch in 2022, should solve this issue by placing all players on an equal footing with regards to data access. This barrier highlights the importance of also including access to historical data in the hub design.

European markets in which this barrier has also been indicated

AT BE BG HR CY CZ DE DK EE FI FR EL HU IE IT LV LT LU NL NO PL PT RO SK SI ES SE UK

No fit between new business models and existing regulation/obligations. In the research this barrier was indicated as an issue in Finland. Regulatory frameworks need to provide an environment in which new business models can be developed beyond the pilot stage without unnecessary risks to business or grid stability. Unclear current regulations regarding demand response aggregation, such as lack of role definitions, makes it challenging for novel services to enter and grow.

National issue

Innovation is deterred by unclear regulation. The major issue in Finland is that the role of different market actors (DSOs vs. suppliers vs. third parties) is poorly defined. This lack of clarity allows regulated players (DSOs) to participate in the competitive market with e.g. storage and aggregation services and add-on products e.g. solar panels, reducing supply companies' motivation to innovate. Further, there is no room for market players to innovate or compete in aspects such as customer service, because the network monopolies are still visible to the customer and handle many situations directly.
By thus narrowing the role of market players that would otherwise provide these end-user services, the competitive market in fact becomes monopoly-dominated. This all risks hampering innovation by others.

Potential solutions

The roles of different market actors in providing novel services - who is allowed to do what, and associated obligations - should be clarified. An extreme but concrete solution would be to exclude DSOs from any activity "behind the meter" and restrict/prevent them from any competitive market activities. Such a restriction of DSOs to network activities only will soon come into force in Norway. The legislative approach should be clearly developed soon, to minimize uncertainty for market players (see section 1.3). Tighter regulation around novel services per se need not be necessary: a relatively loose regulatory environment for novel services was in fact appreciated by market players for enabling innovation (see section Context for Demand Response above).

European markets in which this barrier has also been indicated

AT BE BG HR CY CZ DE DK EE **FI** FR EL HU IE IT LV LT LU NL NO PL PT RO SK SI ES SE UK

Missing flexibility in tariff structures. In the research this barrier was indicated as an issue in Finland. If tariff structures can be flexible/dynamic, they can drive demand flexibility by encouraging customers to consume when it is cheaper. At the same time, a very heterogeneous national landscape of how DSOs set their prices can be difficult for suppliers to deal with.

National issue

While only a minority of respondents felt that tariff structures in themselves were problematic (not incentivising flat consumption or reflecting system use), consistency and data around grid tariffs was raised more widely. The DSO tariff structure is diverse, which significantly complicates the processes and launch of new services, particularly for suppliers acting nation-wide and dealing with many different DSOs (see section 3.1). It is difficult for independent suppliers to access data on a customer's grid tariff, preventing both combined billing (see section 2.1) and developing and targeting demand-side services.

Potential solutions

The Energy Authority should investigate whether some interim measures can be taken before the data hub goes in to mitigate the data difficulties, and obstacles impeding combined billing. Simply standardizing DSO tariffs is not an ideal solution as that could as a side-effect constrain the development of dynamic tariffs. Indeed, the Smart Grid Working Group recently concluded that Finland needs more flexible grid tariffs, such that the price structure allows the potential of flexibility to be captured.

European markets in which this barrier has also been indicated

AT BE BG HR CY CZ DE DK EE FI FR EL HU IE IT LV LT LU NL NO PL PT RO SK SI ES SE UK

LATVIAN BEST PRACTICE CASE: Grid tariff flexibility

Inflexible tariffs can **no longer pose a barrier** to innovative products in Latvia, as recent regulatory changes enabled networks to charge more dynamically for distribution. In 2016 **differentiated distribution tariffs** were introduced for electricity market, which have been shown to **reduce end-user costs**. In 2019 differentiated distribution tariffs were introduced in natural gas market. Through these tariffs, end users are incentivised to decrease their connection capacities if appropriate, reducing their distribution costs and freeing up system capacity both for security and efficiency of supply and new connections.

Missing information and incentives for demand-side grid management. In the research this barrier was raised as an issue in Finland. If grid operators are to reduce outlay on network expansion by instead procuring demand reduction or storage to aid grid control, support schemes should be built around OPEX (procuring novel services), incentivizing the use of flexibility services, rather than CAPEX (infrastructure investment).

National issue

Although DSOs are interested and see the need for flexibility, incentives are entirely CAPEX based, effectively excluding DR services and their OPEX-based benefits from these financing structures.

Potential solutions

Incentives structures for DSOs should be fundamentally reconsidered to allow for OPEX-based flexibility to be at least as attractive an option as CAPEX-based grid expansion.

European markets in which this barrier has also been indicated

AT BE BG HR CY CZ DE DK EE FI FR EL HU IE IT LV LT LU NL NO PL PT RO SK SI ES SE UK

Market structures does not incentivize novel products (missing perceived value). In the research this barrier was indicated as an issue in Finland. Without an existing demand and/or mindset for novel services such as DR, new entrants face the barrier of establishing the entire market before they can act in it.

National issue

Despite its relative innovation-friendliness and openness to DR, the demand-side market was still felt by suppliers to be unattractive due to the low perceived value of innovative products and services.

Potential solutions

This barrier will be alleviated without direct intervention as a result of growing number of novel offerings and a maturing market. The Energy Authority and government should continue to encourage new products onto the market and shaping legislation to fit new actors in an evolving energy system.

European markets in which this barrier has also been indicated

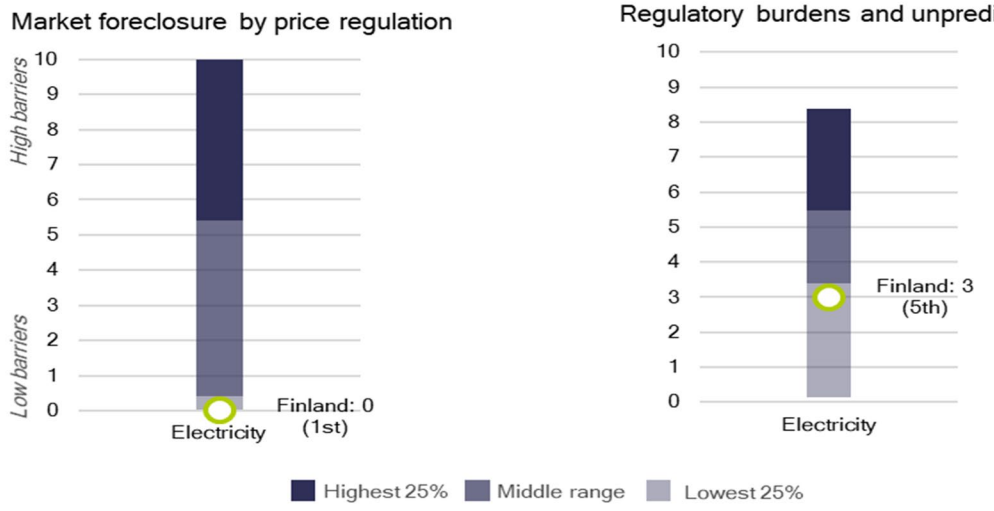
AT	BE	BG	HR	CY	CZ	DE	DK	EE	FI	FR	EL	HU	IE	IT	LV	LT	LU	NL	NO	PL	PT	RO	SK	SI	ES	SE	UK
		■	■		■		■	■	■	■	■		■	■				■			■	■	■		■	■	■

1.5 Finland's performance in this barrier category

The following figure shows quantitative indicators of how far regulatory disincentivisation acts as a barrier in this market. The values for Finland are shown against the range across all analyzed countries. These scores contribute to the performance index. The performance indicators of regulatory disincentivisation are the following:

- **Market foreclosure by price regulation:** The index consists of two sub-indicators, the penetration of price regulation (among residual customers), and the mark-up of the regulated offer. A high score is attributed if a high share of customers is supplied at regulated price, and the mark-up is significantly lower than the average mark-up in the competitive markets.
- **Regulatory burdens and unpredictability:** The index consists of two sub-indicators. Regulatory burdens reflect the non-energy share of the energy bill in an average household, which are regulated (taxes, network fees). Regulatory unpredictability was measured via the related question in the supplier survey conducted for this project. A high score is attributed if the share of the non-energy elements is high, and if survey respondents scored the question highly (as an important barrier).

Performance indicators



Finland was ranks joint 1st across Europe for price regulation, as no prices are controlled. In terms of regulatory unpredictability Finland ranks highly (5th across all studied countries).

2) Market inequality

Within market inequality, barriers across Europe have been sub-categorised into two areas encompassing 8 specific barriers[3]:

1. **Unbundling and market power.** In order to facilitate better competition and improve performance of the individual parts of the energy companies, the Energy Directives introduced rules for legal, functional and accounting unbundling between DSOs and supplier. Although legal unbundling has been implemented throughout all EU member states, barriers arising from vertical integration can still be observed in many markets, raising the question if the required level of unbundling is sufficient in order to meet the goal of a fair and competitive retail market. Companies serving less than 100 000 customers are only obliged to implement accounting unbundling.

   In order to avoid confusion among end customers between the separate parts of integrated energy businesses, brand unbundling has been a focus area for NRAs over the last years. Nevertheless, in several EU countries, the difference in the branding of the supplier and the DSO is perceived as insufficient. Strategic and unfair advantages for incumbent suppliers around transparency, pricing and access to information and data occur in most of the European countries studied. Access to production capacities can also be limited for small suppliers if market players with a large generation portfolio can withdraw production capacity from the accessible markets. Balancing and ancillary services markets can also be distorted as they are often still designed to mainly benefit large-scale generation, discriminating against smaller market participants. Across Europe, the following specific barriers related to "unbundling and market power" were detected by this study. Those highlighted in blue have been raised, indicated or identified as barriers in Finland:

   - Lack of brand unbundling
   - Discriminating, strategic behaviour of incumbent, and obstruction by other market players.
   - Strategic, unfair advantage of vertically integrated market players and lack of transparency.
   - Limited or biased access to production.
   - Discrimination against new and small market players in capacity and ancillary services markets.

2. **Equal access to and maturity of wholesale market.** The wholesale markets present one of the most important sources for energy procurement for all market participants. New and small suppliers tend to have weaker bargaining position in bilateral negotiations, which occurs higher sourcing costs, therefore leading to a competitive disadvantage. Access to a well-functioning wholesale market (an energy exchange) therefore enables smaller suppliers to buy energy for competitive prices.

[3] Please note: these definitions are Europe focused, not Finland specific. Highlighted barriers have been identified as country specific.

Barriers related to the wholesale market can arise by discriminatory market platform access and the absence of any viable alternative. Furthermore, a lack of available products and low liquidity can both lead to an increase in risk, disadvantaging small market participants substantially more than large, established suppliers. Across Europe, the following specific barriers related to “equal access to and maturity of wholesale market” were detected by this study. Those highlighted in blue have been raised, indicated or identified as barriers in Finland:

- Discriminatory market platform access (standards, guarantees, etc.)
- Low liquidity in the wholesale market
- High price or volume risk in energy procurement

2.1 Description of market inequality barriers in Finland: Unbundling and market power

Discriminating, strategic behaviour of incumbent, and obstruction by other market players. Most respondents in Finland raised this as a barrier. The incumbent/existing suppliers are able to use tactics in customer access and particularly the affordability of combined billing that place new entrant suppliers at a disadvantage. If regulated DSOs are involved in other areas of activity such as customer care or flexibility services, it can narrow deregulated suppliers' potential to expand into these areas.

National issue

Market players consistently identified billing as a significant barrier, specifically the fact that joint billing is in practice very difficult for independent suppliers due to effort and cost around obtaining the necessary data. Independent suppliers moreover see voluntary joint billing as inconvenient for consumer; a simpler process would be favourable. Suppliers integrated with DSOs (the majority) are much more easily able to offer combined billing under the current data exchange systems (see section 3.2), giving them an advantage over independents in terms of customer offers, and are felt to be over-represented in discussions around this topic (see section 1.3).

Potential solutions

Recommendations from market players on ideal billing systems should be interpreted in the context that the majority of market players are integrated incumbents. For example, the proposed changes - where the customer chooses split or joint billing - will require double processes and hence continue to favour vertically integrated DSO/suppliers over independent retailers. However, the coming Data Hub should help streamline these systems. Mandatory combined billing, including equal access to distribution data, would put all players on equal terms in this respect. It would also simplify customers’ perception of the market, which could encourage more engagement.

European markets in which this barrier has also been indicated

AT BE BG HR CY CZ DE DK EE FI FR EL HU IE IT LV LT LU NL NO PL PT RO SK SI ES SE UK

"In Finland there are 2 products where the law enforces the buyer to arrange transport: wine from abroad and electricity. Regarding wine the rationale is clear: make transport difficult in order to protect the Alko retailer monopoly. But why is the same applied to electricity?"

Strategic, unfair advantage of vertically integrated market players and lack of transparency. In the research this barrier was identified as an issue in Finland. Co-owned or vertically integrated suppliers' connection with the DSO gives an advantage in terms of information, allowing them easier access to data, especially historical data, for example to target customers based on consumption profiles or win back customers during the switching process. There is also potential for integrated companies to cross-subsidise from the distribution to the supply side, and hence offer lower prices, and for DSOs to favour sister suppliers when procuring services.

National issue

The market structure in Finland, like the other Nordic countries, is dominated by small, local, integrated DSO/suppliers, exempt from unbundling requirements. These suppliers have easier access to customer data and trust, and hence have an advantage over independents in terms of data access, billing processes and customer service provisions. This translates to a market advantage in activities such as customer service, dual billing, targeting DR etc. See also the linked issue of DSOs participating in the competitive market (section 1.4).

Potential solutions

An example solution comes from Norway, where DSOs will soon be required to completely unbundle (as is already common in Great Britain), irrespective of size. (and their activities restricted to network activities only, see section 1.4). If such an extreme measure is not implementable in the near future, legislating for a a transparent interface between different areas in vertically integrated companies (such as production and sales) could reduce their possibilities to exploit their data advantage, although this will be ameliorated by the upcoming Data Hub (see section 3.2). More transparency could also reduce the margin-lowering effect of allowing integrated companies to participate in competitive markets (section 1.4)

European markets in which this barrier has also been indicated

AT BE BG HR CY CZ DE DK EE FI FR EL HU IE IT LV LT LU NL NO PL PT RO SK SI ES SE UK

GREAT BRITAIN BEST PRACTICE CASE: Unbundling of DSOs and supply businesses

Great Britain provides an example of well-functioning separation between distribution and supply. Ten of the 14 electric DNOs (distribution network operators) are free standing companies, while 4 are part of groups that include generation and supply businesses. Of the 4 companies that distribute gas, only 1 is part of a group that also owns a gas supply business. The companies that have generation or gas supply affiliates are effectively unbundled. In this study, we found no evidence of incomplete unbundling presenting a problem in Great Britain. DNOs are prohibited from providing end-user services, they are invisible to the customer, and no suppliers in the study had experience of the supplier/DNO relationship being exploited.

Discrimination against new and small market players in capacity and ancillary services markets. In the research, this was indicated as an area where Finland provides a positive example, although some aspects were also raised as a barrier. While the balancing system remains focused on large-scale generation, smaller-scale/aggregated generation or demand-side bids can be excluded from participating in balancing markets as they cannot meet the product requirements. Significant steps have already been taken in Finland to welcome novel energy resources into the balancing markets.

National issue

For historical reasons, rules around balancing and reserves still favour production over the demand side. Aggregators working across BRP regions need a large pool (5 MW) within each region to participate in most products, which may be difficult to achieve for new entrants. While pooling of loads is allowed, pooling of both consumption and production is currently not allowed. Moreover, the DSO's role in controlling flexibility is unclear (see also section 1.4).
Metering is only mandated to be hourly, while the balancing markets operates on 15-minute bids), preventing customer loads without 15 minute metering from acting directly on the market.

Potential solutions

The regulator and TSO should continue working in the same spirit to remove the remaining barriers as far as fundamental product requirements allow. Allowing pooled bids of consumption and production, for example, could present new opportunities by e.g. combining the speed of demand-side response and the energy of hydro plants. Similarly, allowing pooling of bids across BRP regions would facilitate building up sufficient demand-side portfolios.
15-minute end-user metering is due to be introduced over the next few years. Provided the costs of upgrading meters are likely to pay off in terms of flexibility provision, hastening this roll-out would greatly benefit flexibility as there are already market players poised to use this information in product development.

FINLAND BEST PRACTICE EXAMPLE: Consumption bids in balancing

Several respondents active in aggregation and demand response expressed satisfaction at how Finland has redesigned balancing products to make them amenable for demand-side bids, complemented by its market-centric approach to DR. This indicates a willingness to let flexibility play a bigger part in the evolving energy system. Indeed, Finland's attitude to DR is positive and flexible, with respondents feeling that Fingrid is easy to work with and open to novelties. Many of the market structures for DR are an example of how to incorporate demand-side flexibility into the energy system. Some products are necessarily constrained by e.g. fast response times or minimum bid size due to their function, which make them difficult for DR providers to fulfill. However, open-minded amendments such as allowing pooling of loads, enabling step-wise activation or reducing minimum bid size where possible have opened up several products to DR. Developments remain ongoing, e.g. imbalance settlement for aggregators is currently under discussion. Progressive changes at the consumer end have also helped open the aggregation market in Finland, for example allowing 3rd party providers to access customers. Market players reported that the other Nordic countries are now developing in the same direction that Finland already has done, in this and other DR- and novelty-related aspects.

European markets in which this barrier has also been indicated

AT BE BG HR CY CZ DE DK EE FI FR EL HU IE IT LV LT LU NL NO PL PT RO SK SI ES SE UK

2.2 Description of market inequality barriers in Finland: Equal access to & maturity of wholesale market

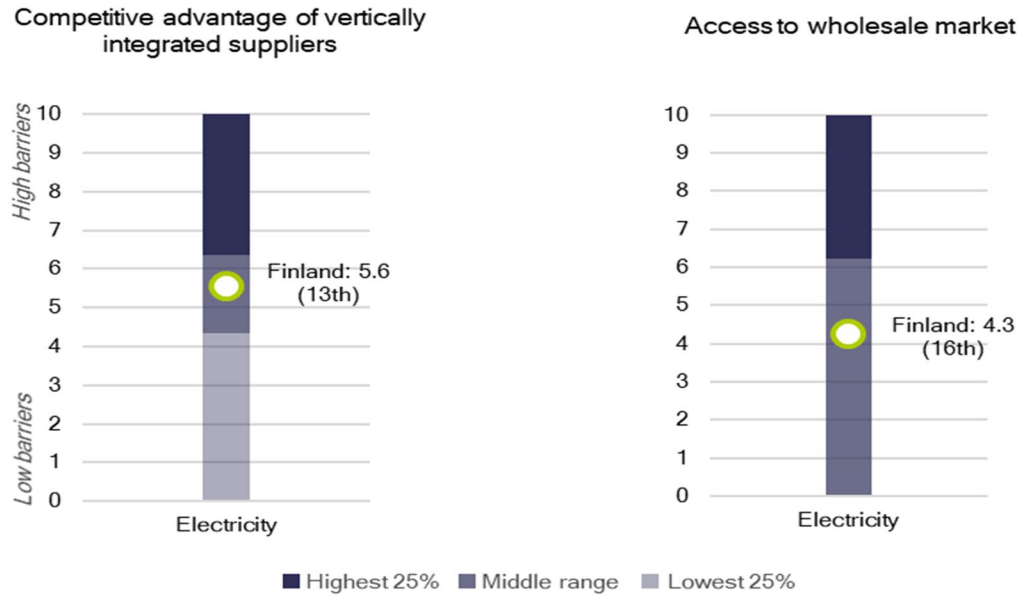
No substantial barriers were raised in relation to wholesale in Finland.

2.3 Finland's performance in this barrier category

The following figure shows quantitative indicators of how far market inequality acts as a barrier in this market. The values for Finland are shown against the range across all analyzed countries. These scores contribute to the performance index. The performance indicators of market inequality are the following:

- **Competitive advantages of vertically integrated players.** The index consists of two sub-indicators, the market share of vertically integrated suppliers (on the household competitive market), and the strictness of DSO unbundling. A high score is attributed if the vertically integrated suppliers have a high aggregated market share, and the unbundling regime is not very strict (brand unbundling is not in force, high share of local, integrated companies).
- **Access to wholesale market.** The indicator measures the accessibility of the wholesale market by quantifying the liquidity of wholesale markets. High score is attributed if the traded volume is relatively low compared to the consumption of the country (churn rate). Traded volume includes volumes that are traded at hub as recorded by brokers (OTC) or exchanges and does not include 'contracted' (LTC or other bilateral deals) volumes which are conducted 'off market'.

Performance indicators



Finland ranks in the middle of the European range for the competitive advantage of vertically integrated suppliers and access to wholesale.

3) Operational and procedural hindrances

Within operational and procedural hindrances, barriers across Europe have been sub-categorised into two areas encompassing 13 specific barriers[4]:

1. **Sign-up & operations compliance.** Sign-up, licensing or registration, along with other administrative requirements or system establishment such as arranging contracts with relevant stakeholders (TSOs, DSOs, BRPs) are among the first steps that a new supplier undergoes to enter and operate in a retail energy market. To deliver natural gas or electricity to final consumers in Europe, an energy supplier usually needs to be registered to a certain institution list, or to proceed with a notification, or follow a process to grant a licence. Entrance processes for suppliers often requires commitments such as a minimum standard of customer service obligations, requirements on service quality, to provide financial guarantees or to have a communication system in place.
   In most responding NRA countries, suppliers need to register and make contracts with certain stakeholders (mainly TSOs and DSOs) to procure the access to the energy grid: transport capacity, balancing. This procedure can be very different from a country to another. Accessing wholesale markets and balancing may also require a license or prior agreement/registration with the market operator. In some markets, business processes to enter and operate in the retail market can be extremely detailed and burdensome. The lack of a functioning national wholesale market may also hinder the entrance of retail companies that are not vertically integrated. Across Europe, the following specific barriers related to "sign-up & operations compliance" were detected by this study. Those highlighted in blue have been raised, indicated or identified as barriers in Finland:

   - Poor availability of information for market entrants & active participants
   - Heavy administrative process for entry (registration / licensing)
   - High financial requirements (incl. long working capital cycles) and forced risk during operations
   - Excessive reporting requirements during operations
   - Excessive information requirements around billing and energy labelling
   - Highly complex or country-specific systems & processes
   - Regional differences or differences between DSOs within a country
   - Cumbersome or biased switching process
   - Unduly burdensome environmental obligations
   - Unduly burdensome or insufficiently regulated market exit

[4] Please note: these definitions are Europe focused, not Finland specific. Highlighted barriers have been identified as country specific.

2. **Data access & processes.** Data access and management refers to the processes by which data are sourced, validated, stored, protected and processed and by which it can be accessed by suppliers or customers. In a well-functioning energy retail market, it is important that the information required to operate in the market is available to newcomers (subject to applicable legislation on data protection). This may include information on, for example, individual consumption or more specific meter details. This data is required in order for suppliers to carry out their market role, such as initiating a switch, or billing a customer. A standardized approach to the provision and exchange of data creates a level playing field among stakeholders and helps to encourage new, challenging market actors to enter the market. In order to avoid data management and access processes acting as a significant barrier to entry, Member States' initiatives to standardize data format and processes, including investments in data hub infrastructure, have the potential to make a positive impact. Across Europe, the following specific barriers related to "data access & processes" were detected by this study. Those highlighted in blue have been raised, indicated or identified as barriers in Finland:

- Lack of data hub
- Complex, heterogenous IT infrastructure and/or low level of digitalisation
- Missing access or poor quality of operations-critical data

3.1 Description of operational and procedural hindrances barriers in Finland: Sign-up & operations compliance

Regional differences or differences between DSOs within a country. In the research this barrier was identified as an issue in Finland. Different DSOs operating in different regions have different processes, data formats etc., requiring more effort from the supplier to be active across many regions, compared to if there were national standardisation.

National issue

Non-uniform and fragmented DSO communications are a barrier especially for companies active across several DSO regions. Different DSOs still have different practices and formats regarding data that make communicating with different players inefficient and thus error-prone. This administrative burden hinders expansion into new regions. Moreover, DSO tariff structure is diverse (see section 1.4), which further complicates processes for actors covering a large geographical area.

Potential solutions

Provided it is well designed the Datahub, due for launch in 2022, will address problems around data standardization. A data cleansing and standardisation project in preparation for the implementation of the Datahub would be valuable.

Tariff structure could be nationally harmonized to some extent; which would also be an opportunity to design tariffs to support flexibility (but see section 1.4).

European markets in which this barrier has also been indicated

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3.2 Description of operational and procedural hindrances barriers in Finland: Data access & processes

Lack of data hub. In the research this barrier was indicated as an issue in Finland. There is as yet no centralized data hub or platform for switching, which increases the time and effort required by suppliers to access customer or network data. This tends to favour suppliers with a high market share (and hence access to large amounts of customer data, including historical usage data) or integrated with a DSO that can provide data directly to the supplier side.

National issue

Acquiring customer data is still somewhat cumbersome as it has to come through the DSOs. This puts independent and new players, including aggregators and DR providers, at a disadvantage against integrated and established suppliers, who can use their existing customer data to develop and roll out suitable products. Typical customer profiles are publicly available, but not personal data that would enable suppliers to e.g. target customers for DR. Data access problems also affect suppliers' ability to provide combined billing (see section 2.1).

Potential solutions

The Datahub, coming in 2022, will level the playing field, provided it is well designed. The Energy Authority should also consider introducing the supplier-centric model, starting by examining the Danish experience with the model. The datahub could even out data requirements across different types of market player.

European markets in which this barrier has also been indicated

AT BE BG HR CY CZ DE DK EE FI FR EL HU IE IT LV LT LU NL NO PL PT RO SK SI ES SE UK

DENMARK BEST PRACTICE CASE: Denmark's DataHub

The development of the DataHub is held up by market actors in other countries as a good example of regulatory development that involved and cooperated with market players. A key aspect of the successful development process was that a single organization (the TSO) had a clear system-wide responsibility to implement the changes, enabling streamlining of the process. Market players report the launch of the DataHub as the most important recent innovation in Denmark's energy system.

NORWAY BEST PRACTICE CASE: A well-designed data hub improved market equality in Norway

The Norwegian market is characterized by a large number of small, local, currently vertically integrated supplier-DSOs. Across Europe, this study has found vertical integration to cause issues around data access, where the integrated supplier (usually the incumbent) has an advantage in data access through its affiliation with the DSO, which collects and controls the information. However, such issues were not raised in Norway. This favourable situation results from the existence since 2019 of a centralized data platform, Elhub, that is functioning near-perfectly according to suppliers to even out the playing field around data access (see section 3.2). Previously, independent suppliers faced delays and obstruction in obtaining customer data from DSOs. The impact on data exchange was so great that one supplier described their dealings with DSOs as "different pre- and post-Elhub worlds". The Elhub moreover allows the regulator to technologically control that actors are behaving appropriately.

Complex, heterogenous IT infrastructure and/or low level of digitalisation. In the research this barrier was indicated as an issue in Finland. Diverse and complex IT infrastructure to communicate and exchange data with all relevant

market participants, especially if manual processes are required, can increase costs substantially and hence favour large market players with economies of scale.

National issue	Potential solutions
Systems-related barriers experience by suppliers included energy market processes being country-specific; processes not being well digitalized; and only a few service providers being available, making outsourcing expensive. Moreover, proposed new market models contain little in the way of harmonization, with other Nordic markets which effectively limits market scope to Finland and deters entry from suppliers in other Nordic countries.	The Energy Authority, government and other Nordic regulators should hasten the development of increased interoperability across the Nordic retail markets, including common data formats and interoperable systems. A similar approach within the country, to align processes between DSOs (see section 3.1), would broaden the scope for market players to act with unified systems across the country.

European markets in which this barrier has also been indicated

AT BE BG HR CY CZ DE DK EE FI FR EL HU IE IT LV LT LU NL NO PL PT RO SK SI ES SE UK

Missing access or poor quality of operations-critical data. In the research this barrier was indicated as an issue in Finland. Non-availability, delayed or low quality of operations-critical data, such as meter data, increases the need for manual processing and hence costs. This can benefit certain market participants such as DSOs and incumbents that already have an information advantage.

National issue	Potential solutions
This barrier applies to aggregation and demand response, as real-time and historical customer data - which is necessary for designing and targeting demand-side offers - is not readily available. Communications must go through the DSOs, entailing a time lag and restricted access to historical data.	The Data Hub should resolve this issue, provided it is appropriately designed in terms of what data is stored and access conditions for third-party market players, (see above).

European markets in which this barrier has also been indicated

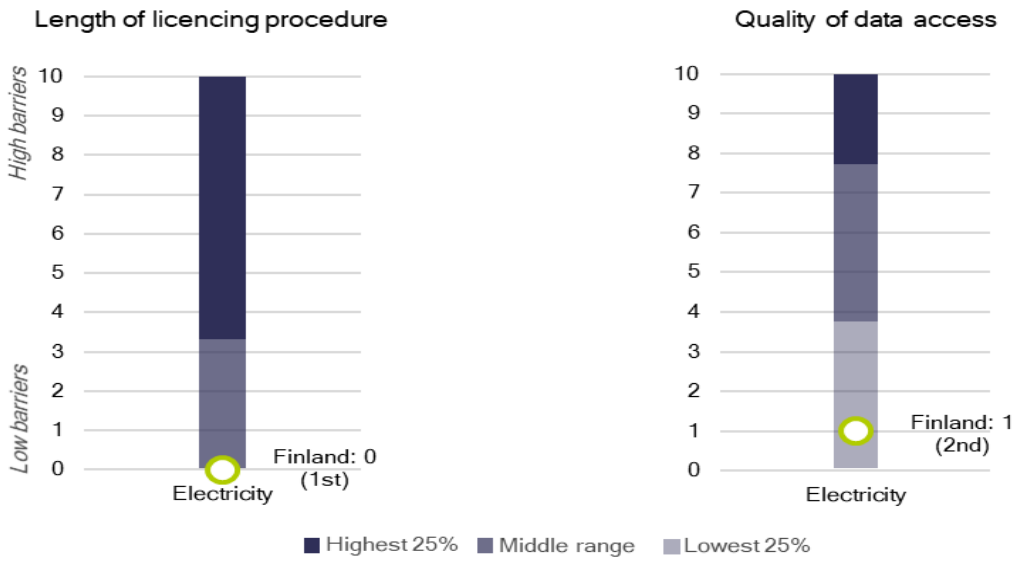
AT BE BG HR CY CZ DE DK EE FI FR EL HU IE IT LV LT LU NL NO PL PT RO SK SI ES SE UK

3.3 Finland's performance in this barrier category

The following figure shows quantitative indicators of how far operational and procedural hindrances act as a barrier in this market. The values for Finland are shown against the range across all analyzed countries. These scores contribute to the performance index. The performance indicators of operational and procedural hindrances are the following:

- **Length of licensing procedure.** The complexity of the licensing procedure is quantified using the legal deadline of the licensing procedure. A higher score is attributed the longer the regulator's authorization period, while a score of 0 is attributed if there is no licensing obligation in the country,
- **Quality of data access**. Barriers relating to the quality of data access are measured with a checklist indicator, which focuses on the DSO's practices regarding data collection and access provision to suppliers. A high score is attributed if the format of the data provision is not standardised, third party access is not available via website or data hub, and the smart meter rollout is small.

Performance indicators



Finland has no explicit licensing for electricity suppliers, hence ranks 1st for the length of its licensing procedure. Finland ranks very highly (2nd in Europe) for quality of data access.

4) Customer inertia

Within operational and procedural hindrances, barriers across Europe have been sub-categorised into one area encompassing 6 specific barriers[5]:

1. **Customer orientation.** Whether customers want to or can engage with the market depends on a broad range of market characteristics, including how well authorities inform and support customers and how energy companies are viewed by the customer. For example, if there is no trusted central place to compare offers from different suppliers, customers may struggle to make an informed choice; or if customers perceive all energy companies as irresponsibly profit-driven, or providing a poor service, they may feel there is nothing to be gained from switching. Moreover, across Europe, most energy markets have been liberalized relatively recently (last 20 years, some only a few years ago), so for a considerable portion of customers the potential for them to engage may still feel unfamiliar. Across Europe, the following specific barriers related to "customer orientation" were detected by this study. Those highlighted in blue have been raised, indicated or identified as barriers in Finland:

   - Lack of information regarding available offers and switching possibilities
   - Low customer awareness or interest makes it difficult to attract customers
   - Insufficient price signals for end-users
   - Changing supplier is cumbersome or has little pay-off for the customer
   - Consumers prefer status quo
   - Lack of trust in new or foreign suppliers and in new technology

4.1 Description of customer inertia barriers in Finland: Customer orientation

Low customer awareness or interest makes it difficult to attract customers. In the research this barrier was identified as an issue in Finland. Customers are not yet driven to seek out or engage with new energy suppliers as energy is not a core priority in their lifestyle (due to low prices, low consumption, lack of interest/"sexiness" etc.). This barrier also prevents uptake of novel services such as DR, as the benefits are difficult to promote to customers who do not already value energy or their role in the market.

[5] Please note: these definitions are Europe focused, not Finland specific. Highlighted barriers have been identified as country specific.

National issue

While customers in Finland are relatively well informed about the market, there is substantial inertia to participate. Energy prices are low, at least partly due to a competitive market, so energy is not a core priority for many consumers, even for those with electric heating and hence high consumption. A further reason may be that interfacing with both distributor and supplier makes customers (those who switch or intend to switch) perceive the market as complex, discouraging them from participating. This complexity could also make it difficult for customers to see where - if anywhere - their power to make savings lies. A lack of awareness plays a bigger role in customers' low level of engagement with demand-side services, which suffer from the low interest in energy overall.

Potential solutions

Lack of engagement despite good awareness suggests that activating the market would require customers to be encouraged to participate, not only increasing their level of information. In line with this, the new directive (Article 18, annex 1) mentions that the suppliers will have to mention the benefits of switching suppliers (in some aspect) in their billing. It awaits to be seen to what extent this measure is sufficient.

If the market appeared less complex to consumers, e.g. with only one interface with the entire energy system, end-users might feel better equipped to engage, including with demand flexibility services.

European markets in which this barrier has also been indicated

AT BE BG HR CY CZ DE DK EE **FI** FR EL HU IE IT LV LT LU NL NO PL PT RO SK SI ES SE UK

"Despite widespread electric heating and hence high household expenditure for electricity, customers are only slightly more active on the Finnish market than in more gas-dependent countries."

Insufficient price signals for end-users. In the research this barrier was identified as an issue in Finland. If market price signals do not reach end-users (due to e.g. a small energy component of the bill, low energy prices, etc.), there is little incentive for customers to engage with the market as they have limited power to see an impact of their behaviour on their bills and bring their costs down.

National issue

Split billing means customers have difficulty in understanding the price components - total costs, how costs are distributed over time - and hence to understand how they can affect their costs. A significant component of end-user bills - grid charges - changes very little. Thus, household customers see little value in adjusting electricity use, so incentives for switching are low. These issues are compounded by electricity prices being low in relation to household income.

Potential solutions

Encouraging combined billing - or at least ensuring an even playing field for all suppliers to provide it (see section 3.2) - could simplify customer's perception of the market and help identify exactly where their savings potential lies, encouraging participation.

European markets in which this barrier has also been indicated

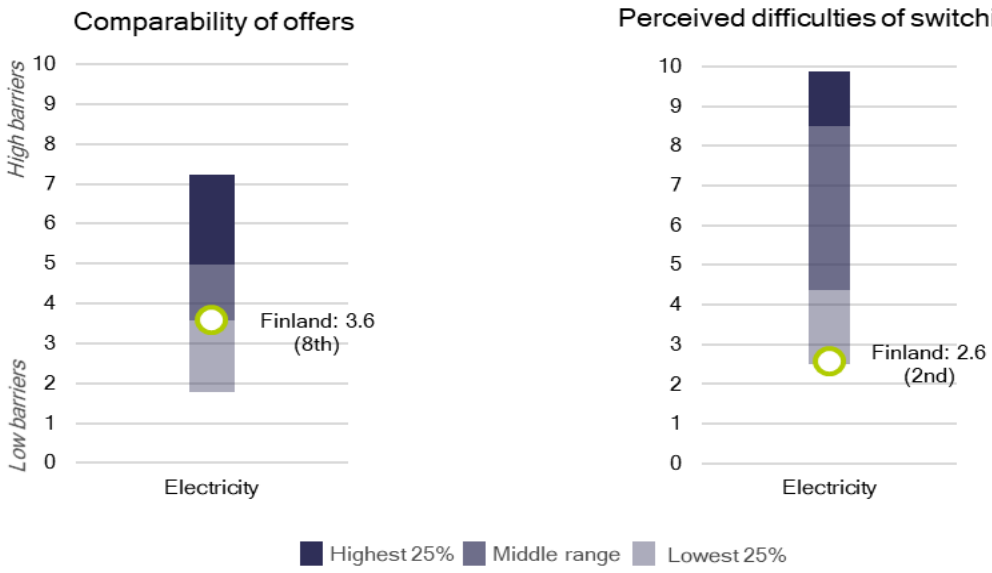
AT BE BG HR CY CZ DE DK EE **FI** FR EL HU IE IT LV LT LU NL NO PL PT RO SK SI ES SE UK

4.2 Finland's performance in this barrier category

The following figure shows quantitative indicators of how far customer inertia acts as a barrier in this market. The values for Finland are shown against the range across all analyzed countries. These scores contribute to the performance index. The performance indicators of customer inertia are the following:

- **Comparability of offers.** The index consists of two sub-indicators. The first measures consumers' ability to compare offers, based on a survey commissioned by the DG Justice and Consumers. The second is a checklist indicator which quantifies the availability of comparison websites, based on their number and functionalities. A high score is attributed if the consumers gave low scores for comparability, and there are no comparison websites in the country.
- **Perceived cost of switching.** Difficulties around the switching process are also measured based on DG Justice's survey. The indicator incorporates the experience and opinions both of customers who have switched, and also of those who have not because they faced obstacles or thought it might be too difficult. A high score is attributed if a high share of consumers reported a bad experience of or poor opinion on the switching process, among all customers who considered switching.

Performance indicators



The index shows few barriers to customer engagement: Finland ranks 8th for comparability of offers, and 2nd for perceived difficulties of switching.

5) Other

Other aspects of the market not directly related to its functions, as addressed above, may also impact suppliers' ease to enter and operate in the market. These relate to characteristics of the market that are not necessarily a barrier per se, but their impact on the energy retail environment could be minimized to benefit market function.

5.1 Description of other barriers in Finland: Other

Small market or customer value. In the research this barrier was identified as an issue in Finland. A small population and/or low consumption hinders profitability and can make market actors risk-averse in relation to innovation. Market size as a barrier could be ameliorated by further harmonization of markets e.g. across the Nordic region.

National issue

Like the other Nordic and Baltic countries, the Finnish market is small, with few customers and low margins. Retail prices are an issue in terms of market attractiveness. Low margins make pricing a challenge for new entrants, as established players with a sufficient customer base are able to make below-cost offers to new customers.
The small market also hampers innovation due to uncertainty of take-up of and return on novel products and services.

Potential solutions

Small margins appear in this market to be driven by active competition rather than structural market issues, so are not a problem in themselves. Nonetheless, it would be advantageous to harmonise market rules and structures to create full interoperability between the Nordic markets, especially in development areas such as whether billing should be combined or novel aggregator-friendly products on the balancing markets.

European markets in which this barrier has also been indicated

AT	BE	BG	HR	CY	CZ	DE	DK	EE	FI	FR	EL	HU	IE	IT	LV	LT	LU	NL	NO	PL	PT	RO	SK	SI	ES	SE	UK

FINDINGS & RECOMMENDATIONS

As seen throughout this project, barriers to entry and operation can constrain the development and functioning of energy markets. Examples of such barriers identified in this project vary widely across EU countries, including issues as wide-ranging as the use of financial guarantees for access to wholesale markets, the presence of price regulation in the market, and burdensome licensing regimes, where the requirements are disproportionate to their protective function.

Finland has 3.1 million household electricity customers, and a very restricted gas market that was not considered in this study. The household electricity market divides into dwellings (mostly urban compartments) which are connected to district heating systems and have a relatively low electricity consumption, and houses which are heated electrically and have a high consumption. The electricity market is diversified and competitive with 72 retail suppliers of whom only three have a market share of over 5% (together they have a market share of 35-40% of sales); 55 suppliers operate nationwide. A recent survey found that Finnish customers were the most active among the Nordic countries in signing a new contract in the last year.

The Finnish electricity system does the most of all the Nordic, and perhaps even European, markets to encourage demand response from households. It has also done the most to run novel pilot projects and encourage post-pilot roll-outs. Although rules regarding balancing still tend to favour production over demand response, Finland is a positive example of how aggregation and demand response can be welcomed onto the balancing markets, and these rules are under constant development to ensure they are as friendly for small generators and loads and aggregators as possible. There are, however, some difficulties in accessing data, such as the fact that it is not in a standard format across DSO, but the Datahub due to go live in 2022 should resolve these difficulties. Innovation is, however, impeded by lack of a clear definition of rules defining the activities of DSOs/suppliers/third parties, which allows DSOs to participate in the markets for services such as storage, aggregation and solar panels. Given the positive attitude of the regulator and TSO towards novel services, however, these issues are likely to be solved in the foreseeable future. Nonetheless, respondents were concerned about uncertainty regarding future regulatory developments, with areas such as proposed changes to billing, network rules to improve flexibility, and the role of industry lobbyists in shaping legislation creating difficulties in business planning for the new regulations. These problems could be easily alleviated by increasing communications about changes; attempting to speed them up where possible; and increasing the transparency of lobbying.

Independent suppliers felt disadvantaged by the current billing regime: joint billing of supply and network fees is voluntary, desirable for customers and in theory open to all suppliers, but in practice the time and effort required by suppliers that are not associated with the local DSO to joint bill was regarded as a barrier. Proposed changes which allow the customer to choose the billing method will in the latter case still require double processes and hence continue to favour vertically integrated DSO/suppliers. There is continuing broader concern over the ability of combined supplier/DSO affiliate which give the suppliers easier access to data and an advantage in customer services, a widespread problem given the market structure consisting of many small, local, integrated supplier-DSOs. Finland could benefit from following the Norwegian lead of fully unbundling all DSOs, preventing them

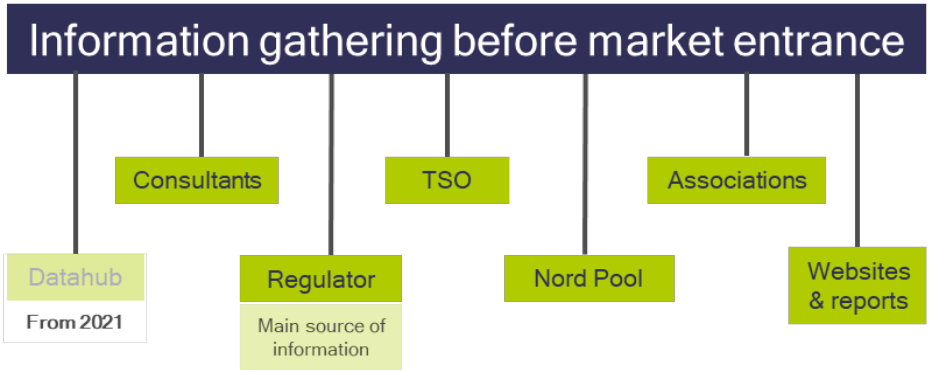
engaging in any commercial activity, and eliminating cross subsidies. This lack of uniformity of DSO systems is also a problem for inefficient and error prone, and the fragmented DSO tariff structure complicates services. Stricter requirements around compatibility of DSO systems could be of value here.

APPENDIX 1: PROCESSES

This section describes market processes in energy retail in Finland. This provides context for the market barriers described above by giving a high-level overview of the most critical aspects involved in establishing and operating as a supplier in the national market. The stages of market entry and operation are described in sequence, each with an illustration ("process map") showing that stage's various processes together with comments/details on market specifics.

Finland opened its gas market in 2020; given this recency and its very small size, we do not examine it here.

1) Information gathering before market entry

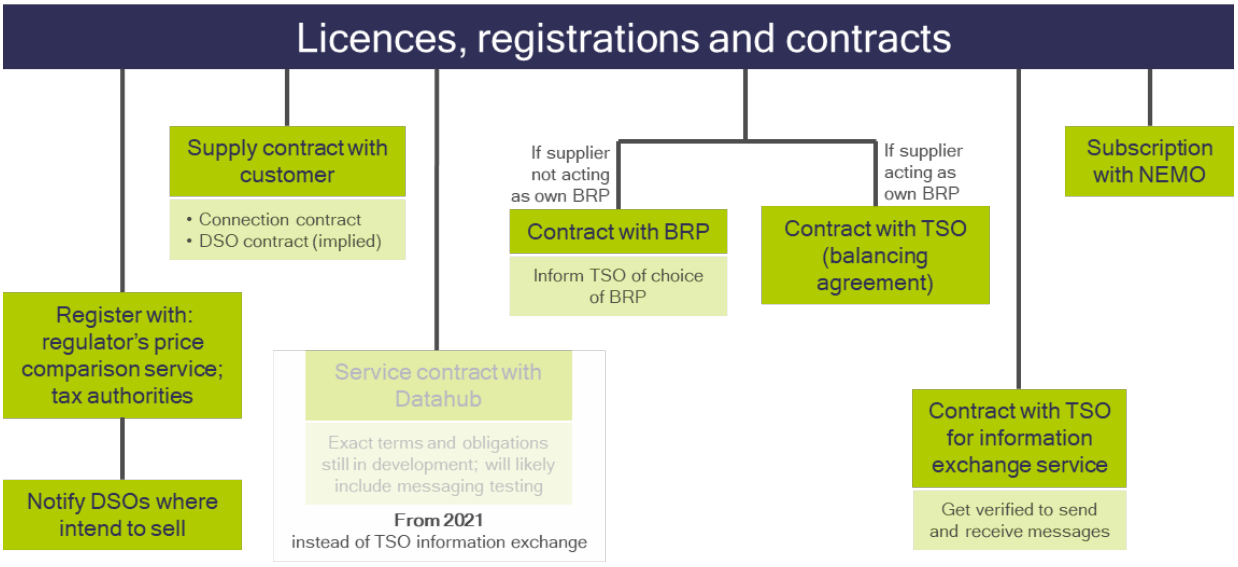


Further comments

The TSO and regulator have much information available also in English.

Establishing as a company is relatively straightforward, with no perceived barriers before market entry.

2) Licences, registrations and contracts

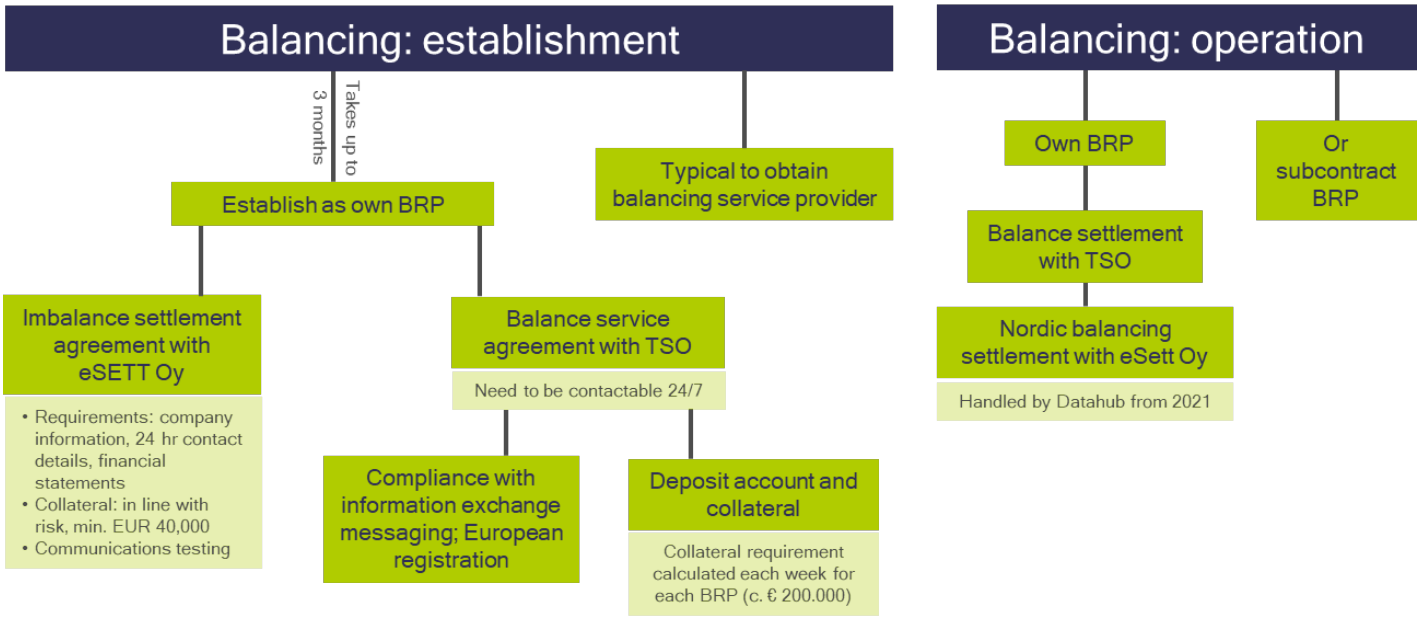


Further comments

Retail supply of electricity does not require a licence or registration with the Energy Authority (regulator). A supplier may be vertically integrated with a DSO. . There is currently one Nominated Electricity Market Operator (NEMO), Nord Pool, but in the near future EPEX and Nasdaq will also start operations.

- DSOs have a broad role also in market-based activities and can offer e.g. customer service, invoicing, even products such as solar panels. The TSO monopoly is also a strong driving force in the market.
- The industry association, Energy Finland, retains considerable power in shaping legislation which is only at a high level from the Ministry for Economic Affairs and Employment. Responsibility for detailed implementation delegated to the association, which is dominated by incumbent suppliers and network operators.

3) Balancing

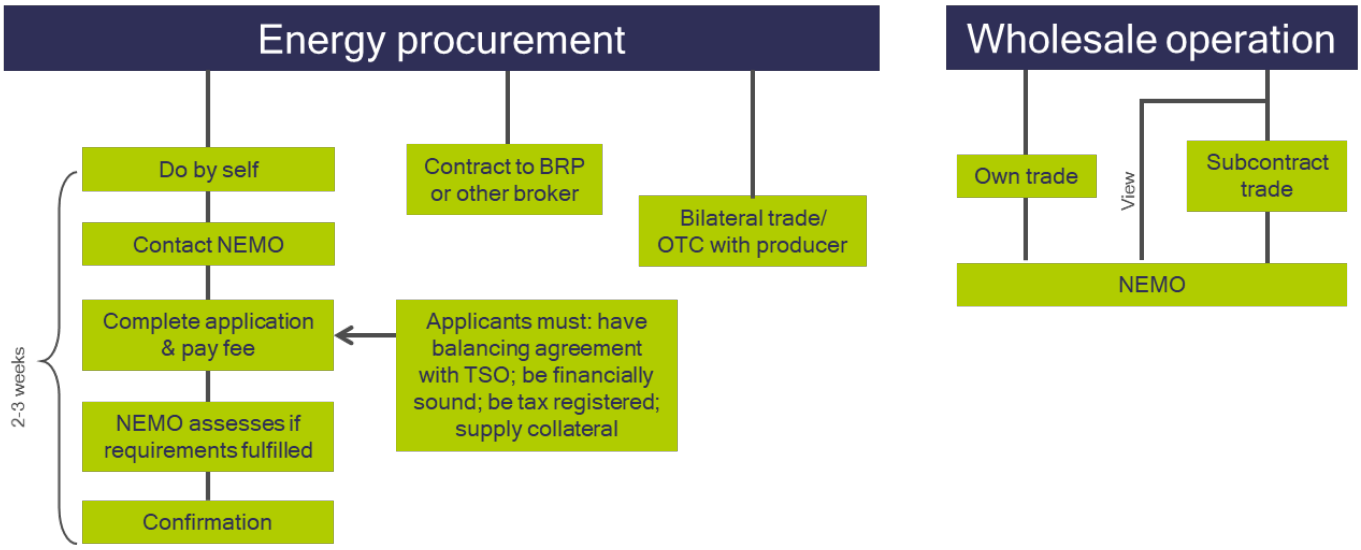


Further comments

The terms of the balancing service agreement with the TSO are equal for all players and are public. The joint Nordic balancing concept is under continued development, seeking to develop a joint balancing market and to keep Finland aligned with the Nordic power market in the future.

- eSett handles Nordic-wide balancing both in terms of settlement and system control. National TSOs retain ultimate responsibility for their regions because bottlenecks in cross-border transmission prevents a full system synchronization.
- Prices on the balancing markets have decreased significantly over time, making participation here (which is particularly important for DR providers and aggregators) less rewarding.
- It is unclear how storage facilities should be treated, as compared to production or consumption.

4) Wholesale

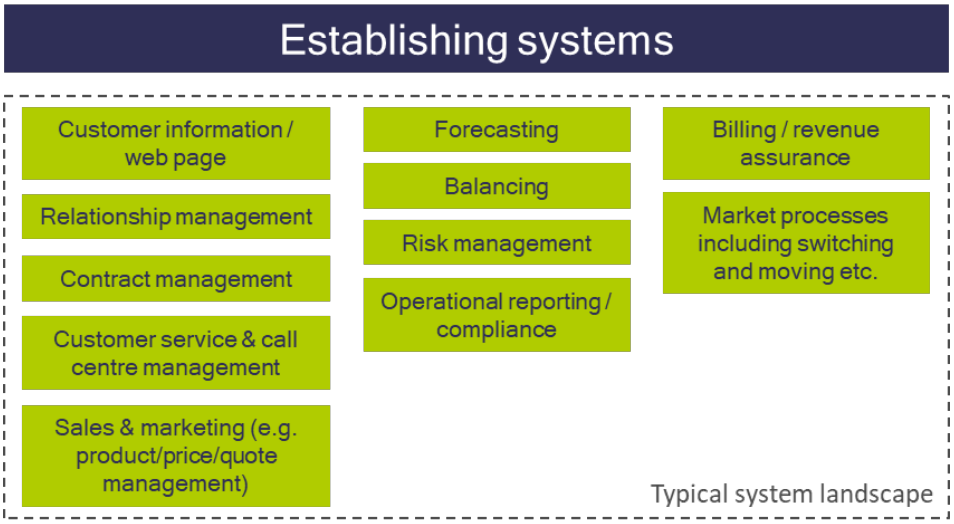


Further comments

Finland was part of the first wave of introductions of cross-border trading on the pan-European intra-day market (XBID), launched in June 2018. This system allows orders submitted in any of the participating bidding zones to be used in continuous matching in any of the other zones. Nord Pool is currently the only trading platform, but a multi-NEMO framework was implemented in 2017; EPEX Spot plans to launch day-ahead and intraday trading in 2019 and Nasdaq Oslo has also obtained permission to act.

- Different NEMOs might have different collaterals
- For Nord Pool, it is possible to have one registration for access to all national markets, but for this to be possible the participant must have at least one legal representative.
- Some large players are concerned about the decreasing liquidity of the wholesale markets.

5) System landscape

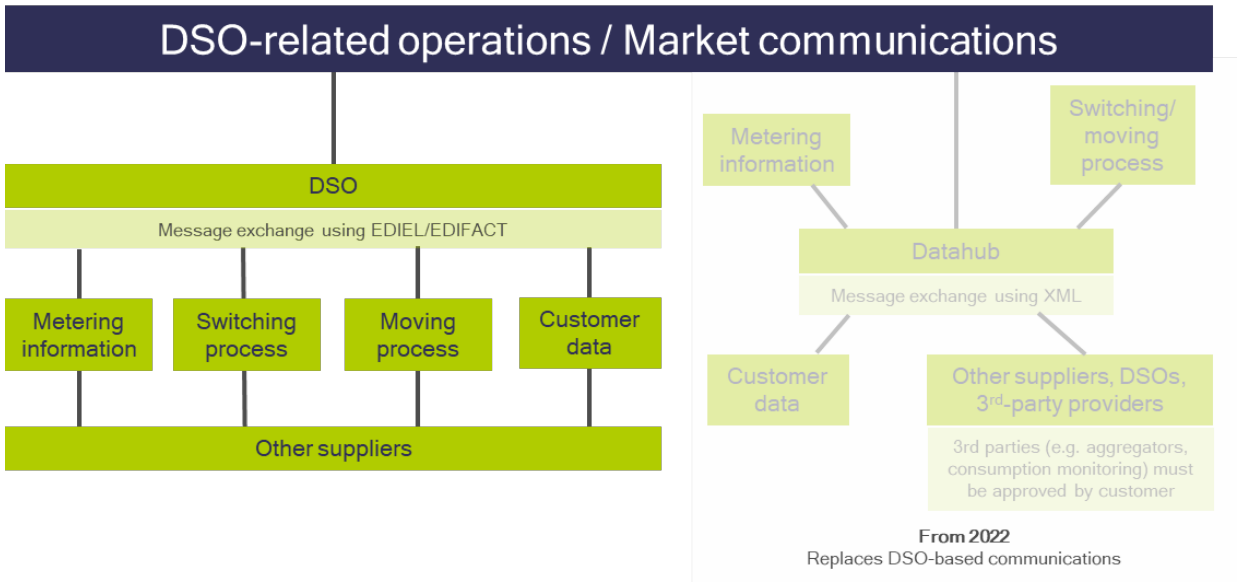


Further comments

The IT and communications systems underpinning suppliers' operations are very country-specific, i.e. can be used only in the Finnish market

- The main sales channel is telemarketing and other direct marketing, e.g. stands in public places. With many customers not actively engaged in the market, offers on comparison sites do not reach a very wide audience.

6) DSO-related operations & market communications

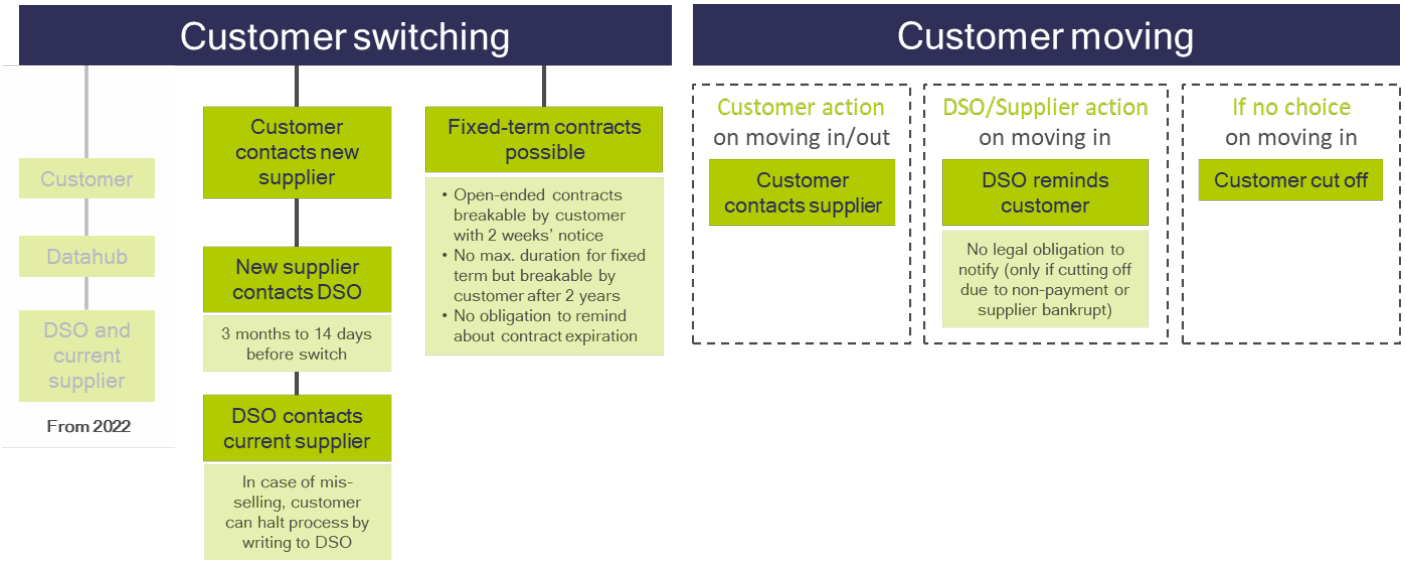


Further comments

Compared to other European markets, data is readily available and of good quality. Although data exchange is still bilateral between DSO and supplier in each case, the TSO is due to launch its Datahub in February 2022. The Datahub will harmonise many processes across the whole market, including DSO communications, but will not provide any new functionality as such. The communication overhaul will also level the playing field in terms of data access for smaller and novel players. However, the Datahub is not currently envisioned to be part of a shift to a supplier-centric model: customers will continue to interface with the market through DSOs as well as suppliers.

- The Datahub will level the playing field with regards to data access, opening data of the same quality to all players on equal terms. This will ease entry of new players into the market.
- As a consequence, it is hoped that the Datahub will boost market efficiency as well as enable customers to participate directly in the markets
- Currently DSOs are obliged by law to provide data on request.
- Customers will have to approve sharing their data with third parties through the Datahub

7) Customer switching & moving

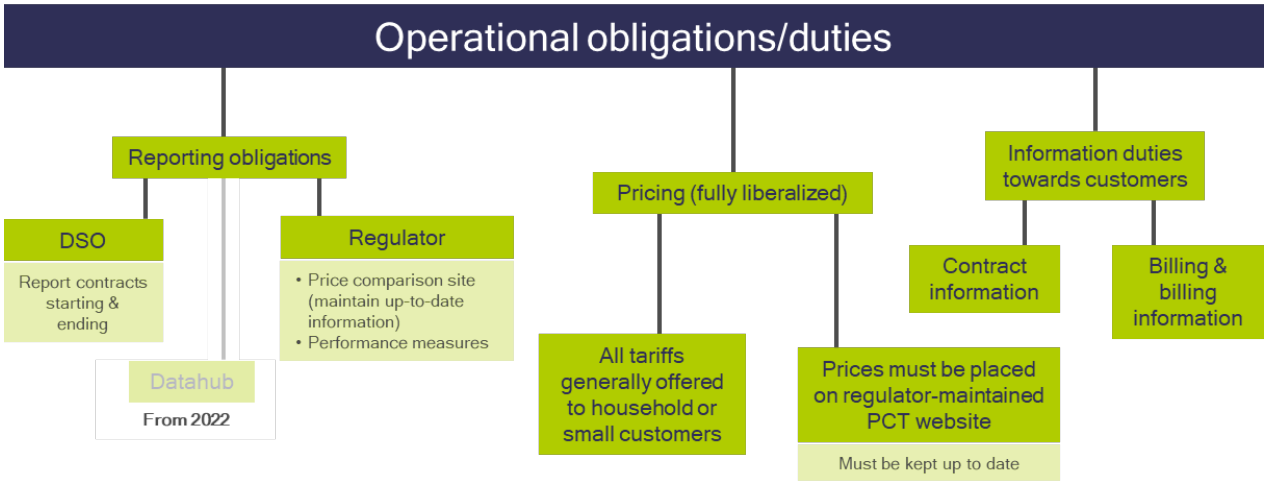


Further comments

End-user electricity costs in Finland are relatively low in relation to household income. Moreover, only a small proportion (< 1/3) of consumer costs is open for competition; the rest of the end-user bill is made up of taxes and grid fees. Billing is often split but it is possible to agree on combined billing, at least with some suppliers, and billing intervals.

- Switching rate may not reflect actual levels of customer engagement: a recent report found that 61% of Finnish customers had at least compared their current contract with others
- Joint billing – which is optional - is preferred by customers, especially when energy costs are low. Customers value convenience as a service. The DSO collects taxes.
- The key demographic for new entrants is 35-50 year-olds who own large electrically-heated houses.
- There is ongoing discussion about introducing a supplier-centric model, in which suppliers would be the primary contact for customers for billing both supply, distribution and taxes, along with customer service, thus simplifying market engagement for customers.

8) Operational obligations/duties

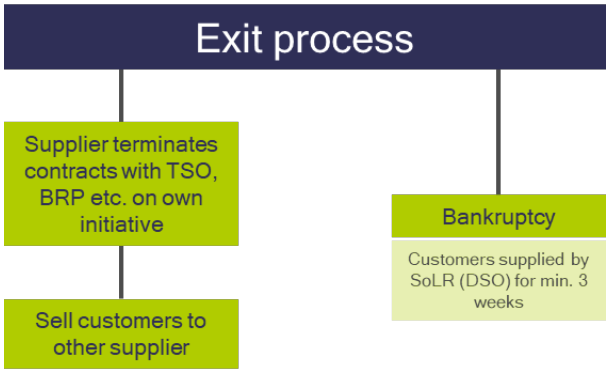


Further comments

Over 99% of consumption points in Finland had a smart meter by the end of 2017. The balance settlement is based on hourly data transitioning to 15 minutes for all customers. Joint billing for sales and distribution is voluntary, and can currently only be practically done for customers whose supplier is also their DSO. The dominant supplier in each DSO area has an obligation to supply households and small customers, at a publicly known reasonable price, and are required by law to have reasonable terms, conditions and limitations that do not restrict competition.

- Today, it is mostly local, integrated players that are able to offer combined invoicing and related services for electricity supply and distribution; such integrated, convenient services are known to be appreciated by customers.
- It has been suggested that for the next generation of smart meters, load control functionality should be mandatory, enabling many more customers (at least those with significant controllable load) to participate in DR.
- Regulator can investigate pricing on own initiative or in response to customer complaints
- DSO is responsible for metering
- REMIT transparency regulation applies, meaning that actors must publish inside information that, if it were made public, is likely to significantly affect wholesale prices
- Further standardisation of end-customer contracts would not be beneficial, as stricter requirements on terms could hamper the development of new services

9) Market exit



Further comments

In the case of supplier bankruptcy, the DSO informs the consumer about the supplier's bankruptcy and that the supply will consequently be disconnected, and supplies electricity for at least 3 weeks after that (effectively, the DSO is the supplier of last resort. Customers must themselves actively find a new supplier during that period.
If the bankrupt supplier was the dominant supplier, the regulator places the "obligation to supply" on a new dominant supplier.

- Even under obligation to supply, prices are not regulated or directly monitored.

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