



EUROPEAN BARRIERS IN RETAIL ENERGY MARKETS



NORWAY Country Handbook

Prepared by **vaasa** **ETT**  **REKK** **MRC** | CONSULTANTS AND TRANSACTION ADVISERS  **THE ADVISORY HOUSE**
A member of the MRC Group of Companies LISTEN · ADVISE · SUCCEED

Energy

EUROPEAN BARRIERS IN RETAIL ENERGY MARKETS PROJECT: Norway Country Handbook

VaasaETT
REKK
MRC
The Advisory House

Contact:

Philip Lewis, VaasaETT, philip.lewis@vaasaett.com
Balazs Felsmann, REKK, balazs.felsmann@rekk.hu
Chema Zabala, MRC, jmlopez@mrc-consultants.com
Florian Hirschbichler, The Advisory House, florian.hirschbichler@advisoryhouse.com

Manuscript completed in July 2020

The European Commission is not liable for any consequence stemming from the reuse of this publication.

Luxembourg: Publications Office of the European Union, 2021



© European Union, 2021

The reuse policy of European Commission documents is implemented based on Commission Decision 2011/833/EU of 12 December 2011 on the reuse of Commission documents (OJ L 330, 14.12.2011, p. 39).

Except otherwise noted, the reuse of this document is authorised under a Creative Commons Attribution 4.0 International (CC-BY 4.0) licence (<https://creativecommons.org/licenses/by/4.0/>). This means that reuse is allowed provided appropriate credit is given and any changes are indicated.

For any use or reproduction of elements that are not owned by the European Union, permission may need to be sought directly from the respective rightholders.

PDF ISBN 978-92-76-30262-9 | doi:10.2833/97471 | MJ-02-21-192-EN-N

How to cite this report: Lewis, P., & Granroth-Wilding, H. (2021). European Barriers in Retail Energy Markets Project: Norway Country Handbook. Luxembourg: Publications Office of the European Union. ISBN 978-92-76-30262-9, doi:10.2833/97471.

TABLE OF CONTENTS

SUMMARY	4
Project Outline	4
Key barriers in the Norwegian market	12
Key recommendations	13
MARKET OVERVIEW	14
Background	14
Market structure	16
Regulatory and political orientation	18
Other market characteristics	19
Context for aggregation/demand response	20
BARRIERS	22
1) Regulatory disincentivisation	24
2) Market inequality	30
3) Operational and procedural hindrances	34
4) Customer inertia	38
5) Other	42
FINDINGS & RECOMMENDATIONS	44
APPENDIX 1: PROCESSES	46
1) Information gathering before market entry	46
2) Licences, registrations and contracts	47
3) Balancing	48
4) Wholesale	49
5) System landscape	50
6) DSO-related operations & market communications	51
7) Customer switching & moving	52
8) Operational obligations/duties	53
9) Market exit	54

This document has been prepared for the European Commission however it reflects the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

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.

Focus Markets



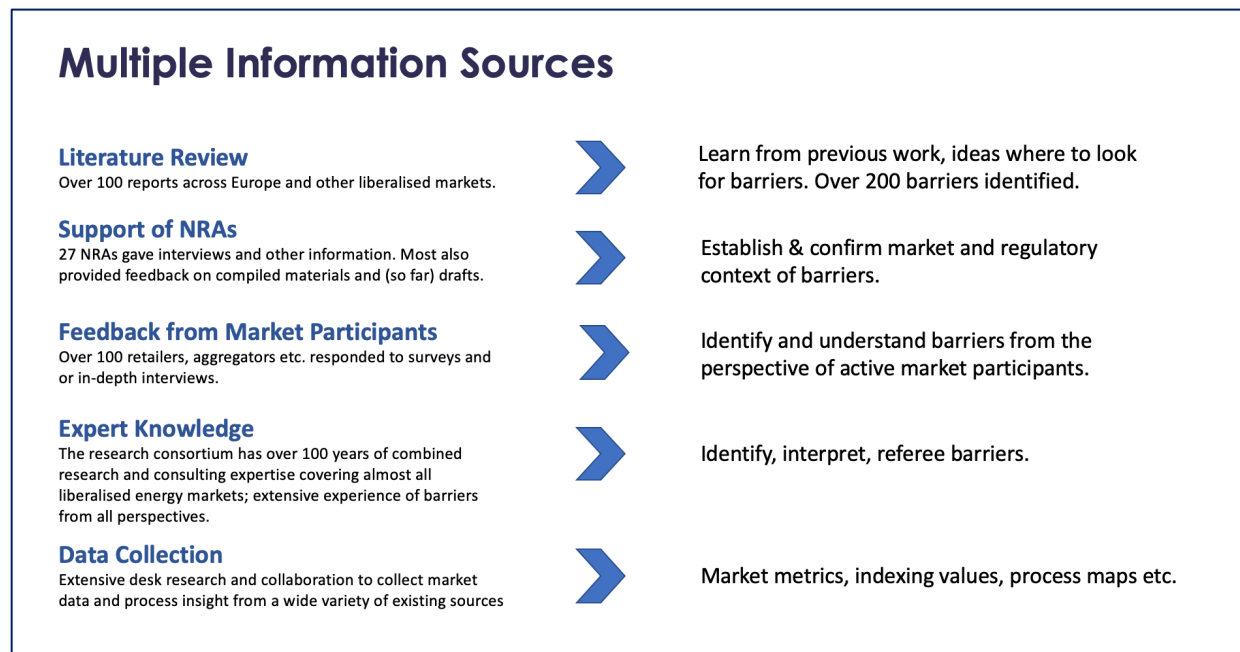
The project focuses on retail (supply), including also demand aggregation services, other additional offerings and new model retail, especially relating to the household segment customers (in some markets households and smaller SMEs may be difficult to distinguish). The project additionally concentrates 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

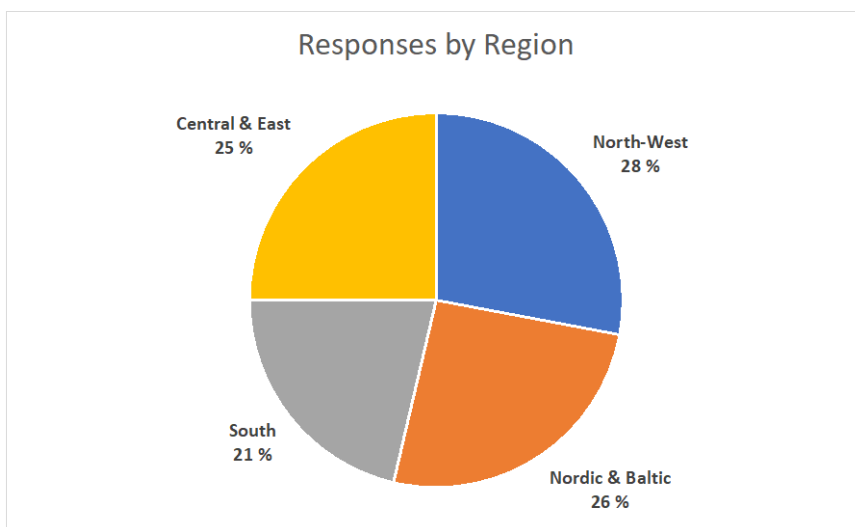
The primary research mediums used in the project were an extensive questionnaire and in-depth interviews. The purpose of the questionnaire, which contained separate questions depending on the type of respondent, was to provide a comprehensive and structured identification, weighting and magnitude of 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 suppliers, 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

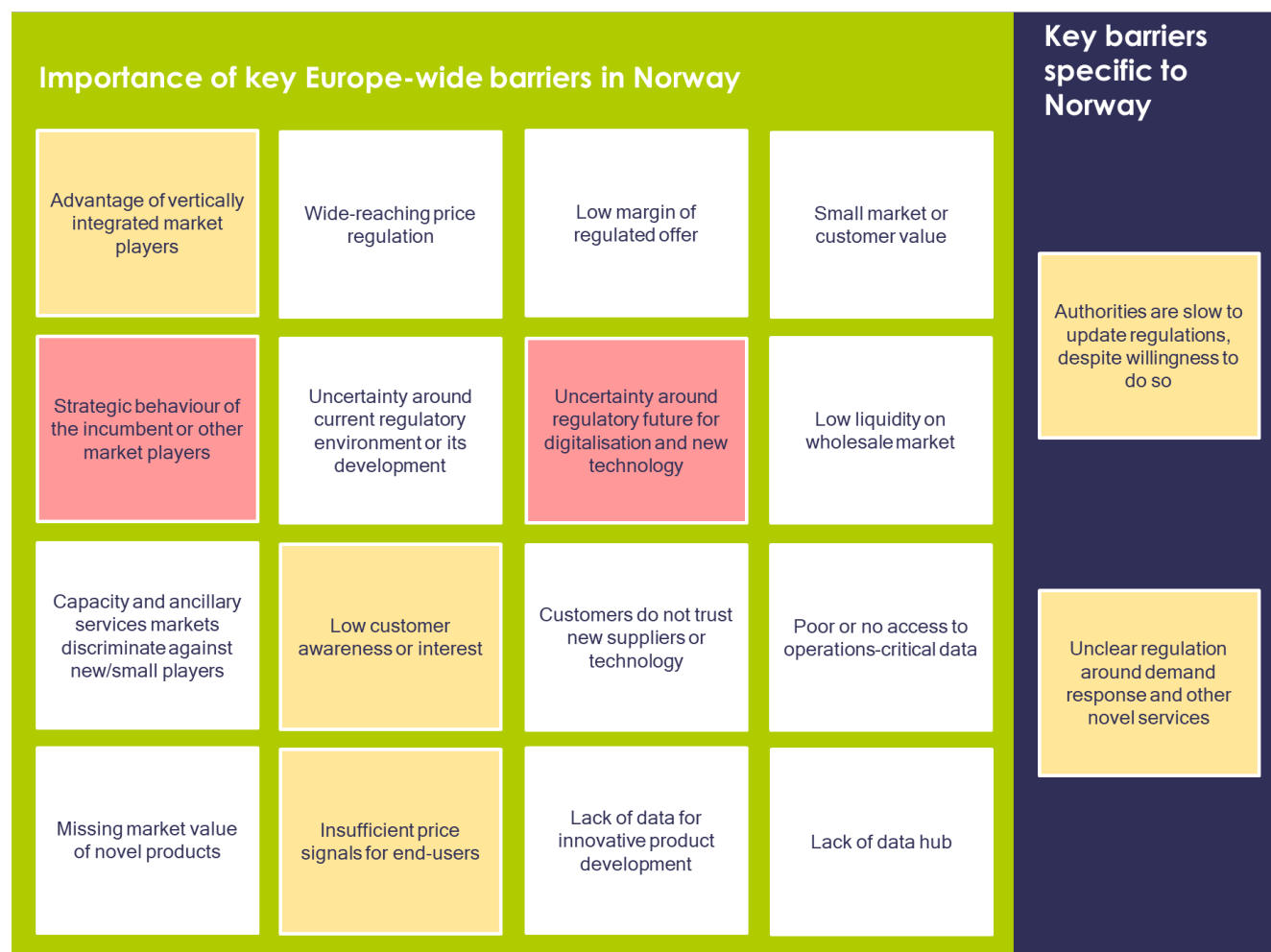
The purpose of the 'European Retail Energy Market Barriers Index' is to enable a degree of comparability between the barriers' context in each of the markets. It is based on metrics that can be collected for all markets, metrics for which available data currently exists. As such it provides a simple, 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 Norwegian market

The following figure highlights the key barriers identified in the Norwegian 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.

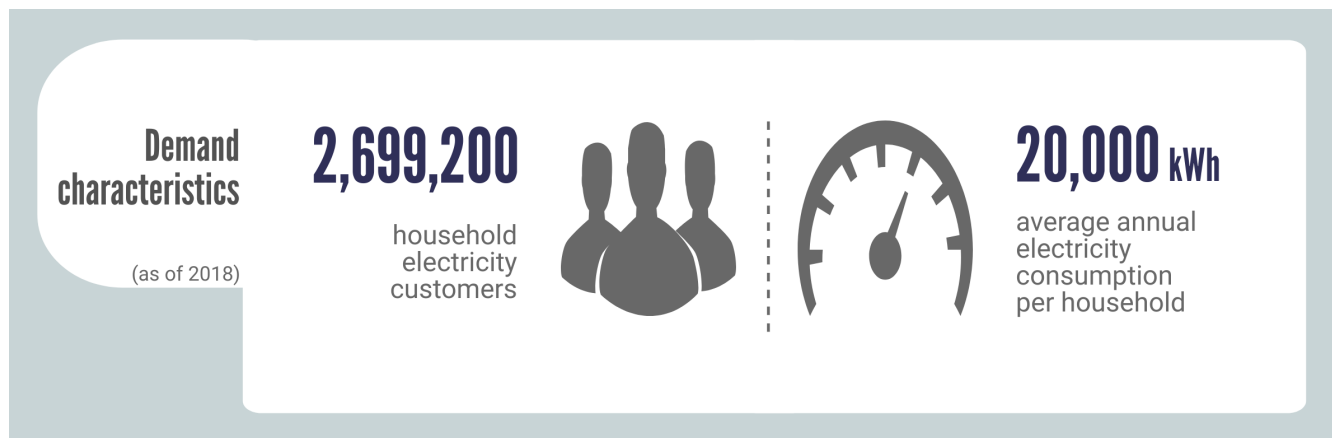
Key recommendations

The Norwegian market is broadly very well-functioning, with numerous suppliers, a high customer switching rate and a proactive regulator. Nonetheless, some barriers remain that prevent suppliers from establishing and operating to their full potential.

- **Vertical integration and related incumbent advantage.** The dominance in the market of small, local incumbent suppliers integrated with DSOs raises a number of issues, e.g. incumbent advantages in accessing customers. Further, DSOs are currently able to act on the competitive markets to provide services such as EV charging. All these various advantages will be addressed in 2021 when all DSOs will be required to unbundle completely and prevented from offering commercial services.
- **Regulatory uncertainty and time lag.** Although the regulator is positive towards novel actors, the timeline for regulatory changes to welcome such actors was felt by such actors to be too slow in comparison with their business needs. Uncertainty around regulatory developments was also felt to hinder business planning. These issues could easily be managed by increased communication from NVE with market players, including around early stage planning and timelines.

MARKET OVERVIEW

As the first electricity market in Europe to fully liberalise, Norway is generally regarded as one of the most developed, efficient and mature electricity markets in Europe with a highly effective and liquid wholesale market (part of the Nordic wholesale market), an active and innovative competition environment, and a retail price that is both dynamic and highly reflective of wholesale costs. Despite having less than three million household electricity customers and essentially no household gas market, it is a relatively large market in terms of installed capacity, generation (almost entirely Hydro based) and consumption (the highest per capita electricity consumption in Europe).



Given it's very wealthy and digitalised customer base, its proximity to the relatively similar neighbouring Nordic markets of Finland, Sweden and Denmark, it's liberal, yet responsive and evolutionary approach to regulation, and the highest per capita uptake of EVs in the world, the Norwegian Electricity energy market is often seen as an attractive market for innovative new entrant competitors. A market where smart grid and smart retail offerings are gaining momentum and already starting to show a business case.

In light of this, it is perhaps somewhat surprising that the Norwegian market has had relatively few new entrants other than through acquisition and the entry of a small number of large players from other Nordic countries. While the majority of customers have switched supplier at least once, former incumbent retailers have managed to retain the vast majority of Norwegian customers - largely through the establishment of daughter challenger brands as well as effective win-back - and new entrants have not managed to organically grow to a large size.

Background

The Nordic wholesale electricity market

Norway is part of the Nordic market along with Denmark, Finland, and Sweden. The installed capacity in the Nordic market as a whole 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 marketplace, NordPool, was created which ran a spot market and managed congestion between price-areas through implicit auctions. Finland joined the Nordic market in 1998 and Denmark in 1999-2000. The Baltic countries joined the Nordic market in turn during 2010-2013 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, 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.

There is market-based 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, the association of Nordic regulators of the four countries has long been working towards a common Nordic retail market. Norway has implemented a Datahub - the centralization of key data relating to the retail market - which is part of the proposals for a common market, and NVE is looking into the possible future models for combined billing and future design of the Norwegian retail market. This work is at an early stage.

The Norwegian electricity market

The Norwegian electricity supply industry had its origins in municipalities developing local distribution supplied by hydro plant which they built, and from industrial companies like Norsk Hydro¹ building power stations to meet their own demand and selling their surplus power. The historical development resulted in a fragmented and predominantly publicly owned industry (85% of the generation capacity remains publicly owned) consisting of more or less integrated generation and distribution undertakings.

In 1987 the Norwegian government published an energy paper which advocated restructuring along more market orientated lines. This led to the Energy Act 1990 that came into operation on 1 January 1991. The preamble to the Act makes it clear that the Stortinget (Parliament) considers there is nothing special economically about the provision of electricity, observing that “The sale of energy between generators, distributors and large customers lends itself to market conditions...”. The Act opened access to all transmission and distribution networks to all customers and generators on non-discriminatory terms and introduced “point access” tariffs. It also introduced a new regulatory framework empowering the Norwegian Water Resources and Energy Directorate (NVE) to regulate the industry, in conjunction with the Norwegian Competition Authority (Konkurransetilsynet) which is responsible for enforcing competition law.

¹ Norsk Hydro is Norway’s largest company with widespread interests in Europe and North America in chemicals, fertiliser, oil, gas, and aluminium. In Norway it consumes about 13TWh annually and owns generation that produces 8TWh p.a.

In December 1991 the former state-owned generator and transmission owner, Statkraftverkene, was dissolved, and its production facilities were vested with Statkraft SF and its transmission assets with Statnett SF. Then as noted previously the Norwegian wholesale and retail electricity markets merged in stages with the other Nordic markets.

Norwegian Liberalisation timetable

While household customers could switch supplier already in 1991, it was not until 1997 when the costly need for hourly metering and a switching fee had been removed, that the market could be considered truly liberalised, the same year as the Great Britain gas market, but prior to any other European electricity market.

- **01.01.1991:** All customers legally eligible to switch through the energy act (but required hourly metering)
- **01.01.1995:** Small/Household customers could switch without hourly metering, but a reduced 246Nkr switching cost remained and switching suppliers could only take place 4 times per year at the beginning of a quarter. In 1998 switches were allowed every week (took place on Mondays).
- **01.01.1997:** Switching possible without charges

Market structure

Statnett owns nearly all of the transmission network. Most Norwegian DSOs are municipally owned. The seven DSOs with >100 000 customers who supply about 58% of customers are legally and functionally unbundled. These companies must also participate in a compliance program through annual reports that allow NVE to monitor how well the DSOs fulfill unbundling requirements. The approximately 110 smaller DSOs are currently exempt from these provisions, but a law passed in 2016 will require them to unbundle legally by the end of 2020 and participate in a compliance programme.

Generation & interconnections

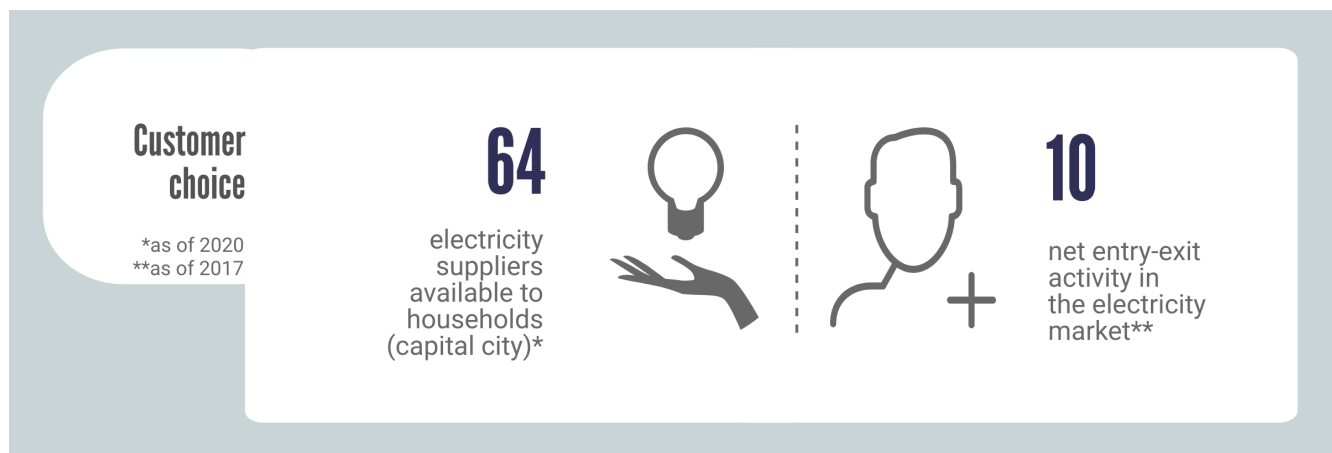
A total of about 225 companies generate electricity with a total capacity of 35.5GW of which 32.6GW is hydro. State-owned Statkraft is by far the largest producer with an installed capacity of 8356 MW and an annual average production capacity of 35 TWh. There is, however, widespread cross-ownership in the Norwegian power industry; Statkraft owns 45% of Adger Energi, which is the third largest generator; 43.4% of BKK, which is the fourth largest generator; and 66.6% of Skagerak Energi, and it has shares in other companies. Its “share” of the installed capacity of the plants these companies own is nearly another 4000MW, which brings its market share of generation to about 40%.

Norway has cross-border interconnectors with Sweden, Denmark and the Netherlands, and smaller capacity connections with Russia (28MW) and Finland (100MW). In 2018 a total of 20.5 TWh was traded through the interconnectors with Norway: about 40% with Sweden, 24% with Denmark and 36% with the Netherlands. Two further interconnectors are under construction to Great Britain (North Sea Link) and Germany (NordLink), both

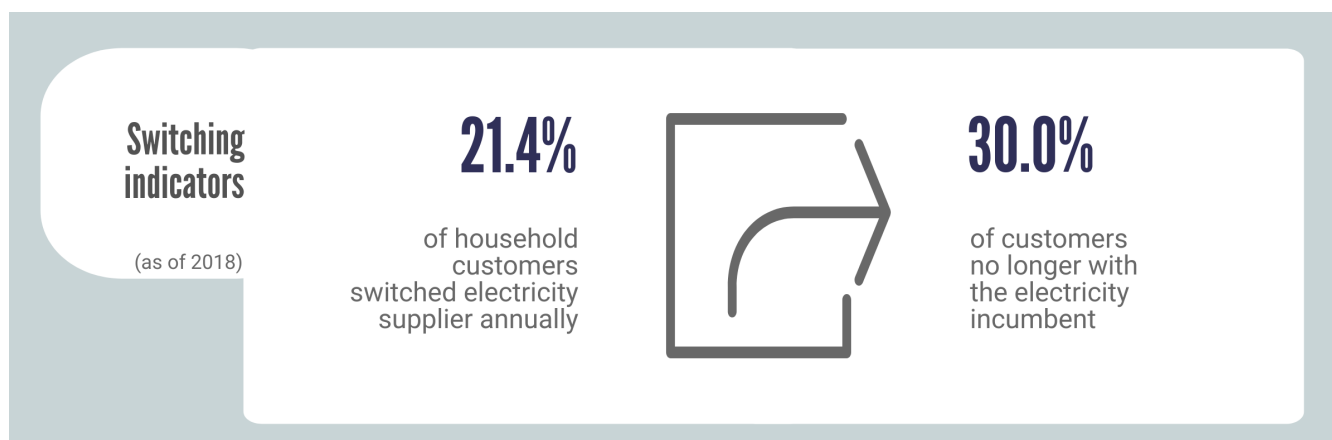
with a capacity of 1400 MW and expected to be operational in 2021. An additional link to Scotland is under consideration with estimated commissioning in 2024.

State of competition

The Norwegians pressed for, and achieved, a more competitive mass retail market earlier than the other Nordic countries for a number of reasons. Norwegians consume more, hence spend more, on electricity, and consequently it is of greater interest to Norwegian households than those in the other Nordic countries (many of whom heat their apartments from district heating systems). NVE has wide powers and has acted effectively to remove barriers to switching and to competition.

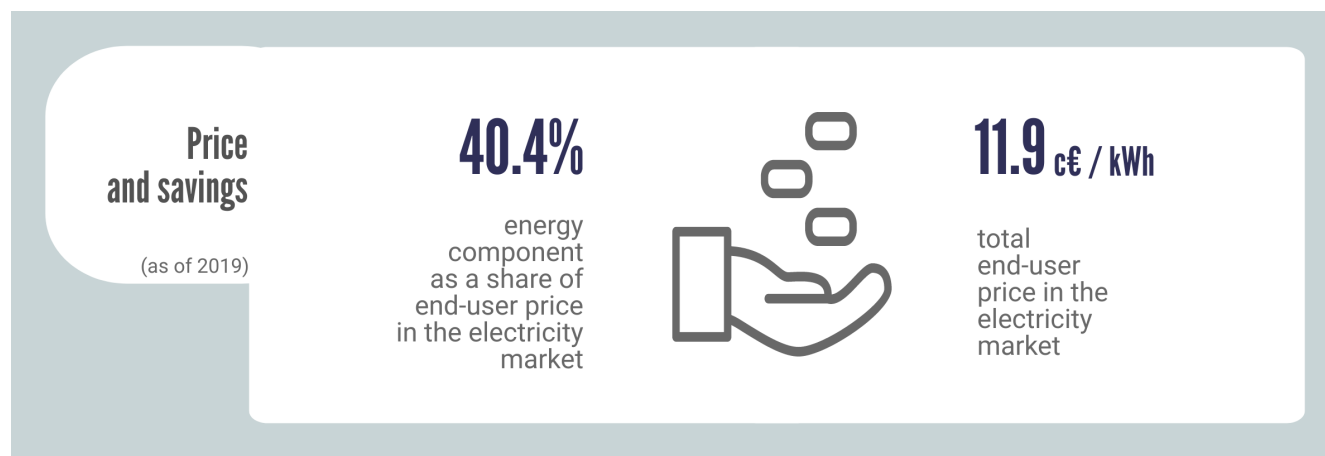


The number of suppliers in the market (150 in 2019, including three new entrants in 2018) is large relative to Norway's small population, and a household customer in Oslo was able to choose between 64 suppliers. Nevertheless, most incumbent suppliers are small, local, integrated with the local DSO and still dominant in their local network area, with an average of about 70% of customers, a share that has been stable for several years. This market structure of local dominance means that no actor has a large proportion of customers on the national level and does not appear to have impacted the switching rate, which has been increasing, reaching over 21% in 2018, one of Europe's highest switching rates.



A web survey by NordREG in late 2018 among 1,500 Norwegian household electricity customers found that 26% were “active customers” (signed an electricity contract in the past year) and another 16%, the highest across the Nordic countries alongside Finland, were “aware customers” (compared contracts in the past year without switching). Both the companies and the population in Norway have longer experience, and hence are more attuned to, the swings in price that come with a pure hydro-system, and consequently proportionately more are willing to accept spot and variable price contracts are contracts that loosely follow the wholesale prices, but that are fixed for a shorter time period and can be changed on two weeks’ notice by the supplier.

Spot-linked contracts make up 75% of household contracts, with variable-prices contracts accounting for 23% and fixed-price only 3%. Customers can choose from a wide range of other contract types, for instance split or variable contracts with a price cap or price guarantee, contracts bundled with other products (gift certificates, airline mileage bonuses, etc.) or contracts including guarantees of origin².



Norway’s consumption is increasing overall, setting a record of 135 TWh annually in 2018 due to a cold spring, increased electrification and high consumption by heavy industry.

Norway is a large producer of gas, but only a small amount (1TWh in 2018) is used by households in areas with gas distribution networks in the southwest of the country. Gas is not analysed in this report.

Regulatory and political orientation

A forerunner in energy market liberalization, the Norwegian authorities continue to present a competition-friendly attitude. The market is active, including among end-users, indicating that market developments have broadly achieved their aim. Given Norwegians customers’ high consumption and belief that hydro resources are an integral part of the country, there is high and political interest in electricity and its price.

² This is an electronic document proving to a final customer that the corresponding 1MWh of electrical energy was produced from the renewable sources.

The regulation authority, NVE is an effective regulator and is very pro-competitive. Nonetheless, similarly to many otherwise active and forward-thinking regulators across Europe, pro-competition structures do not always favour all companies equally and some complications exist. While there is no price regulation in Norway, any entity engaged in physical trading, generation and/or distribution of electric energy in Norway is required to hold a trading license from the regulator (although at the end of 2018, 478 companies held a trading license - indicating that licensing is not too difficult)

Furthermore, while the regulation is clearly focused on a customer centric future, it is perhaps surprising that Joint billing, while widespread, is still not mandatory.

NVE wants to stimulate increased participation in R&D activities to support a more efficient operation and utilization of the electricity network. To achieve this, NVE has designed a scheme where distribution companies receive full financial coverage for up to 0.3% of their regulatory asset base for R&D projects that meet certain criteria. The DSOs run their own pilots.

While DSOs or associated companies currently provide many other services such as charging electric vehicles, electrifying harbours etc. The legal unbundling requirement that will enter into force 1 January 2021 requires the DSO to stop offering commercial services which must then be organized in separate legal entities. NVE's suggestion on a new branding requirement (out on public consultation) will, if passed, require separate branding between the DSOs and companies within the same company group that offer commercial services of any kind. In addition, there will be separate branding between DSOs and suppliers. Another market development over the next five years will be the regulator improving the voluntary scheme for combined billing to make it more attractive for suppliers to participate in.

Other market characteristics

Norway's reliance on hydro means that prices can swing significantly from year to year depending on the availability of water. Thus in 2018 wholesale prices increased by approximately 50% compared with 2017. A cold spring drained the reservoirs, which was followed by a summer drought that led to reservoirs not being sufficiently refilled. Despite importing more electricity to cover this shortfall, the overall annual electricity flow was still a net export from Norway.

Norway has set ambitious climate goals and is a global leader in the uptake of electric vehicles. Despite its already green electricity system, Norway is still reliant on fossil fuels economically - it is one of the world's largest energy exporters (5th largest oil exporter), and the petroleum industry one of the largest consumers of domestic electricity.

Context for aggregation/demand response

Hydro plays such a large part in the electricity system that interest in demand-side flexibility and storage has been a low priority compared to the other Nordics. However, as urbanization increases, local networks are being strained and turning to flexibility as a grid control solution. Hence, DSOs are interested (and should be involved) in developing the frameworks and infrastructure for DR and other flexibility services and products, such as load control and aggregated loads bidding into the balancing markets. Implicit demand response (DR) by end users is already incorporated to some extent into the energy system, as most contracts are spot based and all customers have smart meters. On the system level, one example of current flexibility developments is the large DSO Agder, which is currently developing a large-scale battery pilot. The TSO is also acutely aware of the need for flexibility to ease system-wide control challenges; the pricing area around Oslo, for example, has different rules so as to encourage flexibility. In 2019 a DataHub (Elhub) went live and the roll-out of smart metering to household customers was completed. Smart meters measure production as well as consumption, allow end-users access to their own consumption data every 2-10 seconds), and have a Home Area Network (HAN) that enables end users to connect to different energy control systems. Hence, infrastructure for high-resolution consumption tracking and flexibility is in place. As of 2019, Norway had three active providers of DR services.

The regulator is keen to welcome increasing amounts of DR and other efficiency/flexibility services, such as battery storage. Both generators and consumers can submit bids (min. 10 MW, response time up to 15 mins) on the regulation power market, and pilots are underway to reduce this minimum requirement. All consumers have a right to produce their own electricity and to sell their surplus to a freely chosen electricity supplier (same as their supplier), and network companies are required to connect prosumers and receive their production. Prosumers feeding in less than 100 kW are not charged the fixed network charges for production. In 2018 there were about 2000 prosumers in Norway. The regulator is developing a series of measures to encourage customer market participation using new technologies and services, such as plans to update grid tariffs to encourage load shifting.

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 Norwegian case as reported in the following chapters of this handbook.

HOW TO READ AND INTERPRET THE FOLLOWING SECTIONS

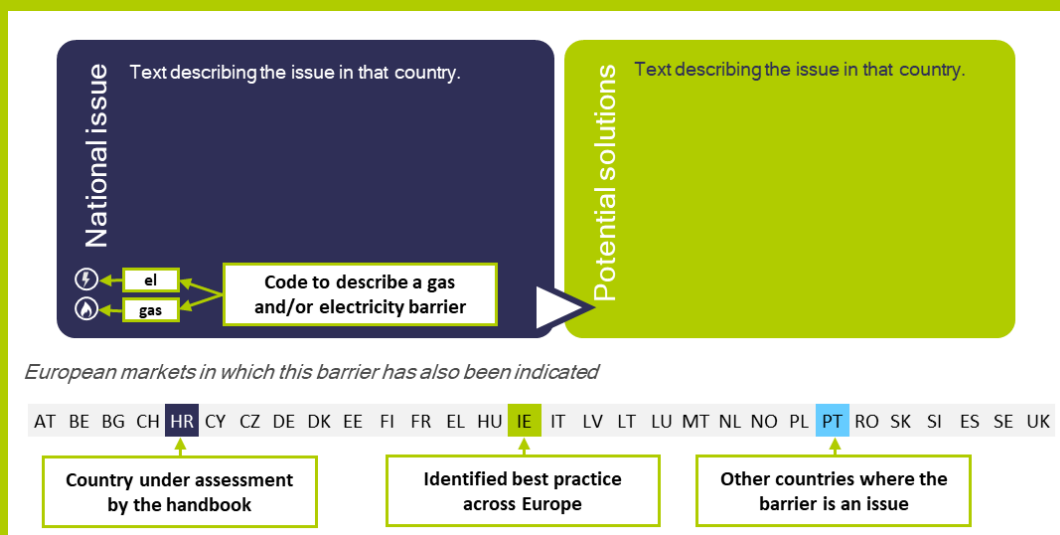
Each of the following four chapters explores one of the four pan-European blocks of barriers and report how each sub-category barrier apply to Norway. When a barrier applies to Norway, it will be highlighted in the table following a general description of the barrier itself as shown in the example below:

#) Name of the Pan-European Block	
#. Name of the Barrier category and description.	
Text that will generally describe the barrier category . . .	
List of barriers identified across Europe under this barrier category:	
• Barrier 1	When highlighted - applies to the specific country described in this Handbook
• Barrier 2	
• Barrier 3	
• Barrier 4	

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

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, Norway'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 barriers³:

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 CEER⁴, 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 Norway:

- 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 Norway:

- Obligation to collect tariffs unrelated to energy on behalf of others
- Obligation to keep a minimum-security stock as a gas reserve

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

⁴ 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 Norway:

- 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 Norway:

- 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 Norway: Price regulation

There is no price regulation, although NVE monitors the market closely to check for abuses, hence no barriers related to price regulation were identified in Norway.

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

Obligation to collect tariffs unrelated to energy on behalf of others. From our studies of this market, this issue exists but does not appear to pose a real barrier in Norway. 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, are financially responsible for collecting them and hence bear a risk of non-payment, e.g. having to pay the DSOs regardless of whether the suppliers manage to collect money from their customers.

Norway has a hybrid billing system, in which DSOs must provide combined billing if requested by the supplier while suppliers can choose not to also bill their customers for network fees and associated taxes and levies. The hybrid billing system entails an economic risk for the supplier, who bears the risk of non-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. This barrier 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 Norway: Regulatory unpredictability

Uncertainty regarding future regulatory developments, especially in the field of digitalisation and new technology. In the research this barrier was indicated as an issue in Norway. With rapid technological change ongoing, regulatory frameworks must be developed at the same pace in order for suppliers to roll out novel products without excessive business risk.

National issue

Market participants expressed some concern about regulatory changes. Although the authorities express interest and willingness to develop the markets, action is slow and consequently the Norwegian electricity system is constantly between regulations, leading to uncertainty. The lack of firm regulatory developments leaves market players little concrete knowledge around which to plan products.

Potential solutions

Despite these concerns, regulation by NVE is relatively stable compared to some other systems. Including schedules in planning from an early stage, and communicating them to stakeholders, could improve market players' perception of regulatory certainty. On the other hand, in a rapidly evolving energy system and market environment, uncertainty during regulatory developments is to a considerable extent unavoidable.

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

Attitude of authorities hinders development of the market. In the research this barrier was indicated as an issue in Norway. Although the regulator is positive towards welcoming novel and innovative (primarily smart) products and services onto the market, claims have been made that practical action does not always keep pace. It should be noted that this issue is heightened in Norway because the market is more suitable than most to such offerings. In markets where such offerings are less suitable, the issue may not be raised.

National issue

Linked to the barrier above, market players felt that the regulator was slow to put their positive ideas into action. While establishing on the market, innovative players are tightly time-constrained as they need to start generating revenue as soon as possible.

Potential solutions

The regulator's time frame, which must include e.g. legal considerations and taking whole-market dynamics into account, is naturally much longer than that of new entrants. Nonetheless, NVE could consider e.g. expediting decision-making processes around novel businesses. Other areas where developments are already underway to improve the situation for novel payers include learning from outcomes from regulatory sandboxes, which currently require participants to revert to normal regulation after 5 years of exemption, a timeframe that may not be suitable for a company with longer economic horizons.

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

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

No fit between new business models and existing regulation/obligations. In the research this barrier was indicated as an issue in Norway. Regulatory frameworks need to provide an environment in which suppliers and other

service providers can pilot and advance new business models without risking grid stability, e.g. net-metering schemes and demand response aggregation. Unclear regulation, such as missing role definitions, can make it challenging for novel services to enter and grow.

National issue

Regulation around DR in Norway is not mature, making it difficult for independent market players to know what their obligations would be and what services they would be permitted to offer. This has the potential to lead to limited entries in this field, keeping the market for DR/aggregation unattractive.

Potential solutions

Despite a lack of regulatory clarity, a few established players are already providing aggregation and DR, showing that this situation does not prevent such activity. Possibilities for novel business models do exist; for example, providers of services such as EV charging need not be electricity supply companies. Nonetheless, improved clarity and regulatory processes would help get these novel markets off the ground.

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. From our studies of this market, it appears that this has the potential to pose a barrier in Norway. Grid tariff structures' potential to be flexible is a main driver of demand flexibility as it allows the design of incentive-based tariffs with e.g. several Time-Of-Use tariff zones, encouraging customers to consume when it is cheaper, as opposed to rigid or flat grid tariff structures.

National issue

Grid tariff structure is relatively fixed, with regulations around how DSOs may compose their prices. If these regulations are too strict, there is a risk of missing an opportunity to encourage flexibility through additional price signals to end users, which could encourage load shifting.

Potential solutions

This potential barrier is currently being addressed as the authorities are aware of the value of this route to flexibility. A system of flexible grid tariffs is being tested, aiming for a more dynamic, potentially capacity- rather than volume-based. After not being initially well received it remains under development, and a public consultation on new principles for grid tariffs is ongoing.

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

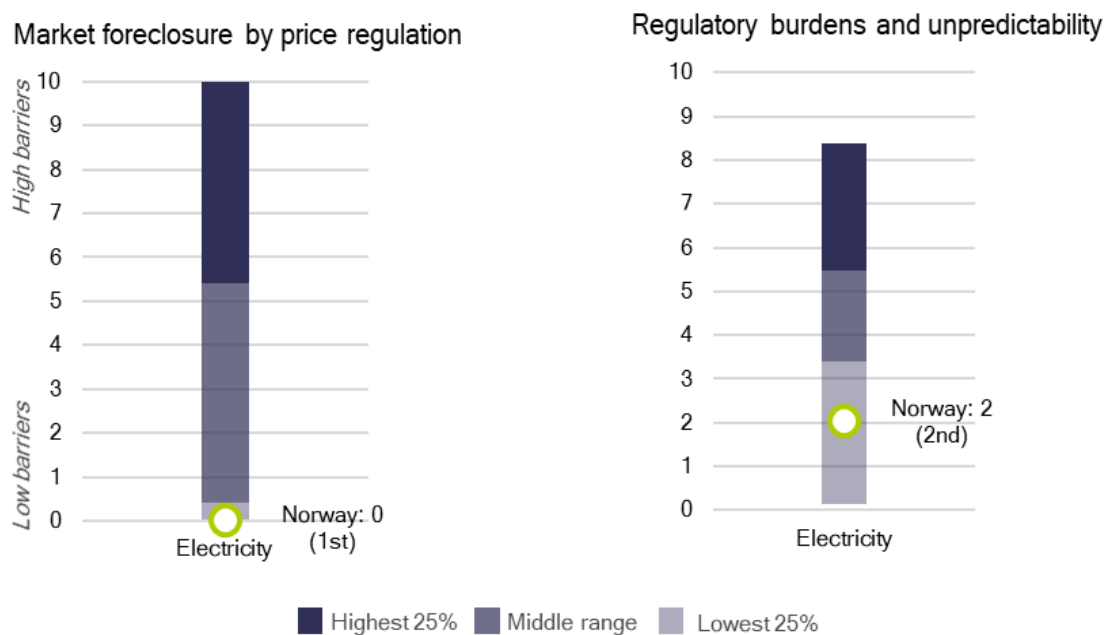
Inflexible tariffs can **no longer pose a barrier** to innovative products in Latvia, as recent regulatory changes enabled networks to charge more dynamically for distribution. In 2016 **differentiated distribution tariffs** were introduced for electricity market, which have been shown to **reduce end-user 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.

1.5 Norway'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 Norway 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



Norway has no price regulation and so ranked joint 1st across the studied countries on this indicator. It also ranked very highly (2nd across Europe) for regulatory burdens and unpredictability.

2) Market inequality

Within market inequality, barriers across Europe have been sub-categorised into two areas encompassing 8 specific barriers⁵:

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 Norway:

- 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.

⁵ Please note: these definitions are Europe focused, not Norway 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 Norway:

- 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 Norway: Unbundling and market power

Discriminating, strategic behaviour of incumbent, and obstruction by other market players. In the research this barrier was identified as an issue in Norway. The incumbent/existing suppliers are able to leverage customer trust in a way that is not available to new entrants. In addition, regulated DSOs can be involved in other areas of activity such as customer care or flexibility services, which narrows deregulated suppliers' potential to expand into these areas.

National issue

Because DSOs are not prevented from undertaking other business such as service provision, some market participants feel that DSOs get in the way of the retailer's market role. Hence, regulated actors are narrowing the business potential of actors on the unregulated, competitive market. Nonetheless, given the active market, these issues are less marked than in other similar markets.

Incumbents have a natural advantage of familiarity with customers, who moreover perceive them as local players supporting the local community. This customer preference has the potential to give incumbents an advantage during win-back.

Potential solutions

This barrier will be much alleviated in January 2021 when legislation comes into force prohibiting DSOs from commercial activities. In the mean-time, market players would benefit from more clarity surrounding the role of DSOs in providing services such as storage, EV charging etc., to determine which types of market player they are competing against - and hence design their offers - regarding different products and services across the energy spectrum.

The issue of customer trust towards familiar incumbents rather than new players could be relieved to some extent by information campaigns to explain that security of supply is not related to the supplier.

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

Strategic, unfair advantage of vertically integrated market players and lack of transparency. In the research this barrier was indicated as an issue in Norway. The Norwegian market is dominated by local DSO/supplier companies, small enough to be exempted from any unbundling. These vertically integrated players enjoy an advantage in terms of the customer relationship, and moreover DSOs themselves are able to provide commercial services such as storage or EV charging.

National issue

As in the other Nordic countries, Norway's energy system is characterized by many small, local, integrated supplier/DSOs. These suppliers have the potential to leverage the DSO's customer relationship. This is compounded by DSOs' ability to offer services that fall in the deregulated market, e.g. EV charging (see previous barrier). These barriers are claimed by some to persist despite DSOs being legally required to handle information in such a way that no single supplier can benefit, suppliers being obliged not to act on such information if they were to receive it.

It has also been claimed that some aspects of legislation to separate network and supply activities leave room for interpretation and hence potential abuse, such as requiring DSOs tenders to be competitive "as far as possible". Additionally, novel companies working with data outside the remit of the Elhub have faced reluctance and delays from DSOs in accessing that data.

However, the regulation on acquisitions by network owners only apply to purchases from a parent company or an associated company. In other sectors, acquisitions within a group of companies is not regulated. Hence, the regulation which requires DSOs to issue tenders should increase access to other service providers. Furthermore, concerning acquisitions made by DSOs from suppliers, the option not to tender is only used in emergency situations or related to grid operation or control centre services. These services are bought from production companies or the parent company, not from suppliers.

Potential solutions

Norway already places a clear focus on monitoring unbundling issues, and is taking further steps to mitigate them. The barrier should be removed when regulation comes into force in January 2021 requiring all DSOs, irrespective of size, to be affiliate unbundled and prohibiting DSOs from offering commercial services. Aspects of regulation already serve to reduce the impact of vertical integration on customer choice; for example, when DSOs act as suppliers of last resort, they must increase the price after six weeks to encourage a customer to enter the market. The data hub has also reduced the data advantage of integrated suppliers.

It is notable, however, that issues around data advantages for integrated suppliers that are common across Europe were not raised in Norway. This is a result of the appropriately designed Elhub near-perfectly fulfilling its intended function to even out the playing field around data access (see section 3.2).

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.

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

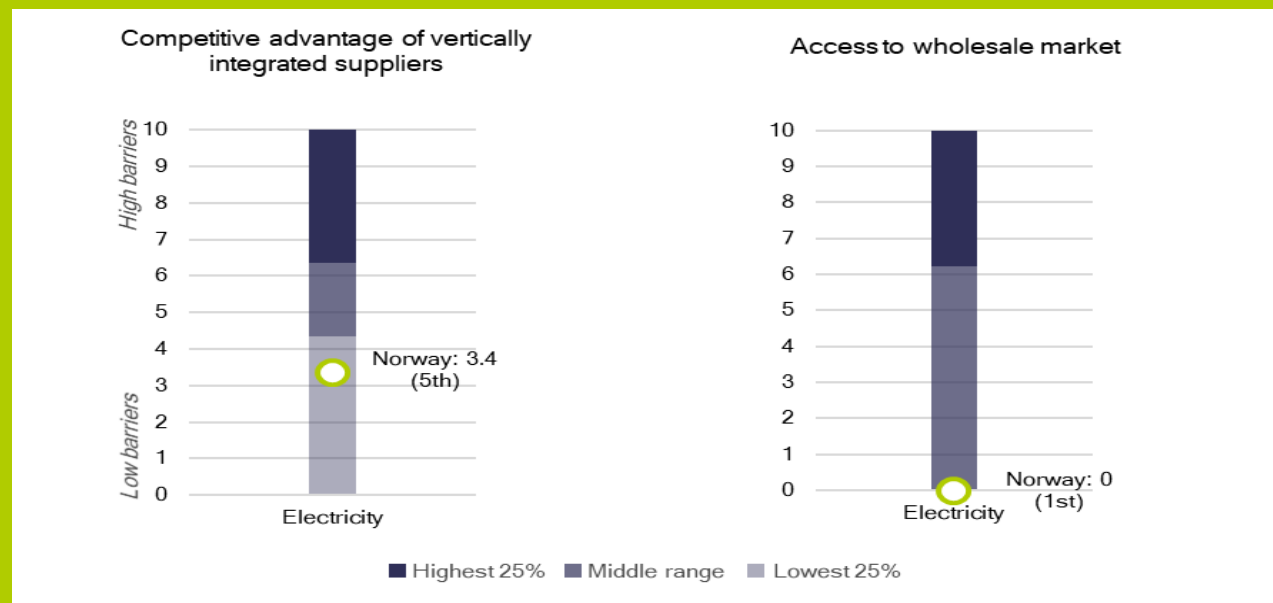
No barriers around wholesale were identified in Norway.

2.3 Norway'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 Norway 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



Norway was ranked at the high end of the European middle range (5th) for competitive advantage of vertically integrated players. For access to wholesale it was joint 1st.

3) Operational and procedural hindrances

Within operational and procedural hindrances, barriers across Europe have been sub-categorised into two areas encompassing 13 specific barriers⁶:

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

⁶ Please note: these definitions are Europe focused, not Norway specific. Highlighted barriers have been identified as country specific.

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 Norway:

- 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

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 Norway:

- 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 Norway: Sign-up & operations compliance

Highly complex or country-specific systems & processes. In the research this barrier was indicated as an issue in Norway. Establishing systems landscapes (forecasting, customer service etc.) can be costly and/or require outsourcing, which tends to impact smaller suppliers harder. If systems are similar across different markets, this investment can be capitalised on when expanding to other markets; if they are country-specific, expansion requires the same investment again in the new market.

National issue

The country-specific nature of systems required for operations in Norway was found to be frustrating by Nordic-wide players, as it effectively limits the scope of investment in systems to each national market.

Potential solutions

Closer harmonization of systems, e.g. for data and billing, across the Nordic region would allow suppliers to more easily expand into these neighbouring and otherwise-similar 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

Unduly burdensome or insufficiently regulated market exit. In the research this barrier was raised as an issue in Norway. Market exit per se is not problematic, but the possibility for suppliers to act without sufficient/timely sanctions on improper/irresponsible behavior can undermine customer confidence and negatively affect the retail market by discouraging new suppliers from entering.

National issue

Supply companies are free to offer low prices, then increase them once the customer has been acquired. This encourages competition but risks ultimately having the effect of reducing customer trust in market players and hence willingness to engage with the market.

Potential solutions

In other markets with slow or insufficient sanctions on suppliers who do not meet their obligations (e.g. Great Britain), this study has observed frustration from market actors that this reduces customer trust in any new - and potentially irresponsible - supplier. Price changes are currently buffered for customers by a mandatory 2-week notice period, such that the customer can change supplier before the increases take place. The regulator is currently developing the comparison tool to require reporting how long each offered price will last to further increase transparency for customers, which should mitigate this issue.

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

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

No barriers were identified regarding data access and processes in Norway.

NORWAY BEST PRACTICE CASE: Well-designed data hub improved market equality

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.

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

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.

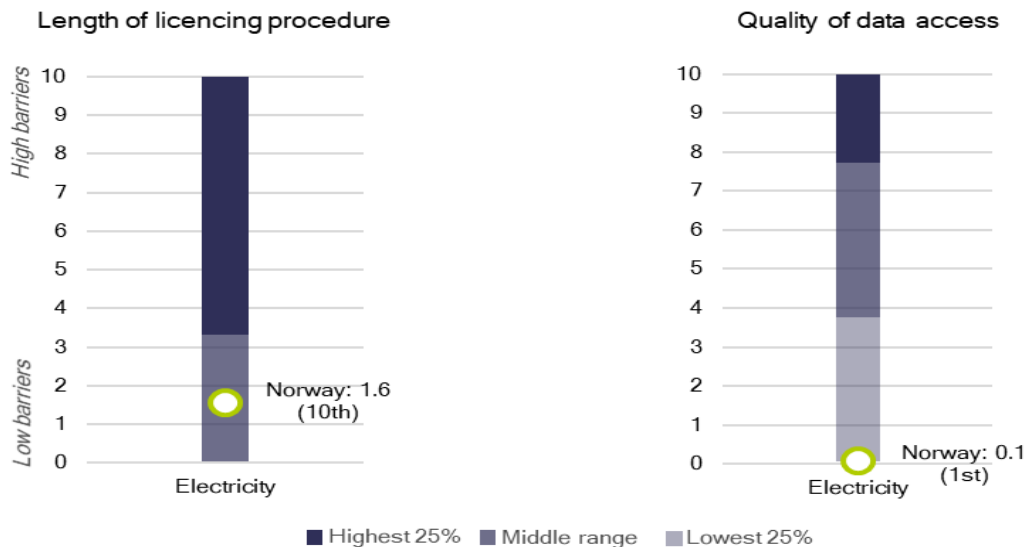
3.3 Norway's performance in this barrier category

The following figure shows quantitative indicators of how far operational and procedural hindrances act as a barrier in this market. The values for Norway 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



Norway was ranked moderately (10th) for licencing procedure and 1st times for data access.

4) Customer inertia

Within operational and procedural hindrances, barriers across Europe have been sub-categorised into one area encompassing 6 specific barriers⁷:

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

⁷ Please note: these definitions are Europe focused, not Norway specific. Highlighted barriers have been identified as country specific.

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 Norway:

- 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 Norway: Customer orientation

Lack of information regarding available offers and switching possibilities. From our studies of this market, it appears that Norway provides a good example of how this barrier has been overcome. In some markets, customers have no neutral way to compare offers or information on how and why to switch supplier. If available, comparison may only be possible based on price rather than e.g. green credentials. This makes it hard for customers to engage with the market on their own terms.

NORWAY BEST PRACTICE CASE: Customer information

Norway has one of Europe's highest switching rates, driven by an informed and interested customer base who have by a wide margin the highest household electricity consumption. DSOs must provide customers with neutral information on how to choose a retailer which is available in the network area, and information about the national price comparison web site. The national price comparison website Strompris.no ranks contracts according to their estimated total cost and is monitored by the regulator to ensure that prices there reflect those on the suppliers' own websites. NVE also publishes a weekly online view of retail market prices. Underlying this, the focus of the market on similar products (open-ended spot-linked contracts) makes it easier for customers to compare offers between suppliers as there are fewer variables to account for. In addition to information on available offers, the authorities actively provide plentiful information on how and why to switch, and the switching process is easy and fast for the customer.

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**

Low customer awareness or interest makes it difficult to attract customers. In the research this barrier was indicated as an issue in Norway, particularly around demand response (DR). If customers are not well informed about or motivated to use opportunities to participate in novel aspects of the market, or energy is simply not a core priority for customers in their lifestyle (due to e.g. low prices, lack of “sexiness” etc.), it is difficult to engage them

in taking up novel services such as implicit DR (responding to price/market signals). Its benefits are difficult to promote to customers who do not already value energy or their role in the market.

National issue

A minority of suppliers experienced low customer awareness as a substantial barrier. This related especially to demand response, due to customers' low awareness of their DR options and limited experience with demand-side flexibility options (hence also a lack of trust that the technology will work).

Potential solutions

Given its positive track record in keeping customers informed about their opportunities on the energy market, a concerted information effort by the authorities about these novel opportunities would improve the situation.

It is notable that some DR players felt customer awareness to be the biggest barrier, while others felt most hindered by the lack of price signals (see next barrier). Different players having different concerns suggests a generally immature market, rather than specific barriers, and makes it difficult to know where to target interventions most effectively.

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

Insufficient price signals for end-users. Norway is one of the leaders in Europe in terms of price reflectivity. Nevertheless, the research indicated this barrier remains - for now at least - an issue in Norway. Although spot-based contracts are very common in Norway and real-time prices available, few (though an increasing number) end-users experience tangible price variability. Without sufficient price signals, there is less incentive for customers to engage with the market, in particular flexibility services, as their behaviour will have a limited impact on their bills - although the rapid growth in EVs (Norway is Europe's leader) and the emergence of real-time pricing and automation, this appears to be a declining barrier in Norway.

National issue

Because hydro power is so widespread in the market, end-user electricity components are generally low and wholesale price varies relatively little. Thus, even though the majority of customers (> 70%) are in direct contact with market price signals through their spot-based contracts, there is limited economic incentive for individual customers to participate in the market. This is a particular barrier for engaging customers in demand-side flexibility, hence the end-user market for DR is as yet very limited.

Potential solutions

Real-time pricing for end users is already available and expected to grow in popularity, thus encouraging closer engagement through behavioural change in response to available price signals.

Increasing customer understanding of electricity markets, such that they appreciate the value of reducing their own hydro-generated electricity usage to make that green energy available to consumers in other countries, could encourage engagement on criteria other than price. Including load-related price signals in grid tariffs (see section 1.4) could also help. However, see previous barrier regarding the diffuse nature of DR barriers.

European markets in which this barrier has also been indicated

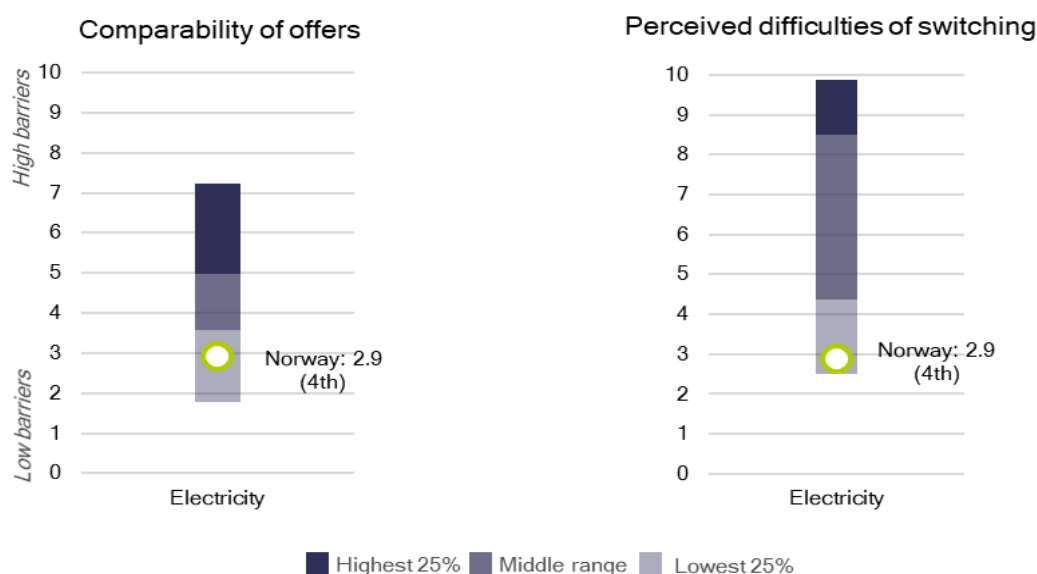
AT BE BG HR CY CZ DE DK EE FI FR EL HU IE IT LV LT LU NL NO PL PT RO SK SI ES SE UK

4.2 Norway'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 Norway 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



Norway was highly ranked (4th across all studied countries) for both aspects of customer orientation.

5) Other

Small market or margins. From our studies of this market, it appears that this could pose a barrier in Norway. A small population and/or low consumption hinders profitability, or market conditions mean low margins. Market size as a barrier could be ameliorated by better harmonization of markets.

National issue

As with the other Nordic countries, Norway's population is small, limiting business potential for suppliers. This is linked with systems and regulations being country-specific (see section 3.1). Although small margins can be a sign of a well-functioning competitive landscape, the limited potential for revenue in a low-margin market can also put off new companies from entering.

Potential solutions

Closer harmonization of markets, for example across the Nordic region, would facilitate suppliers to act over the entire region. This would bring improved prospects for businesses and hence attract more new entrant players. The high Norwegian electricity consumption also increases potential for revenue even with low prices.

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.

Norwegian households have the highest average annual consumption of electricity in Europe as a consequence of cheap prices and widespread electrical heating for dwellings in a cold climate. The very restricted gas market is not considered in this study. Norway was the second European country to introduce a competitive restructuring of electricity and competition to supply households, supported by pro-competitive attitudes both in the government and the regulator (NVE). However, the market remains characterized by numerous (c. 150) local or regional incumbents integrated with the small local DSO and familiar to customers. These companies exert considerable competitive pressure on prices. Given the high expenditure on electricity, most customers now buy on spot prices and so save the cost of a supplier “insuring” against price risk, and the switching level is one of the highest in Europe.

NVE is an effective regulator, and on a European scale the Norwegian market poses relatively few barriers to either entry or growth of new suppliers. There was, however, some concern among suppliers that the authorities are too slow in determining regulatory changes and then implementing them. Nonetheless, despite this mismatch between ideal timescales of novel businesses and regulatory developments, the regulator is forward-looking and pro-active. Market participants also reported uncertainty around regulatory developments, particularly those relating to novel services such as aggregation of demand response. Such uncertainty prevents effective business planning but is to some extent unavoidable in an evolving energy system and could easily be managed by increased communication from NVE with market players, including around early stage planning and timelines.

A major current barrier was the prevalence of vertical integration and the associated advantages for the incumbent supplier in e.g. access to customers or service tenders from the DSO. In addition, DSOs are currently able to act on the competitive markets to provide services such as EV charging, narrowing the market role of supply companies. However, these various advantages will be eliminated in 2021 when all DSOs will be required to unbundle completely and prevented from offering commercial services.

APPENDIX 1: PROCESSES

This section describes market processes in energy retail in Norway. 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.

1) Information gathering before market entry



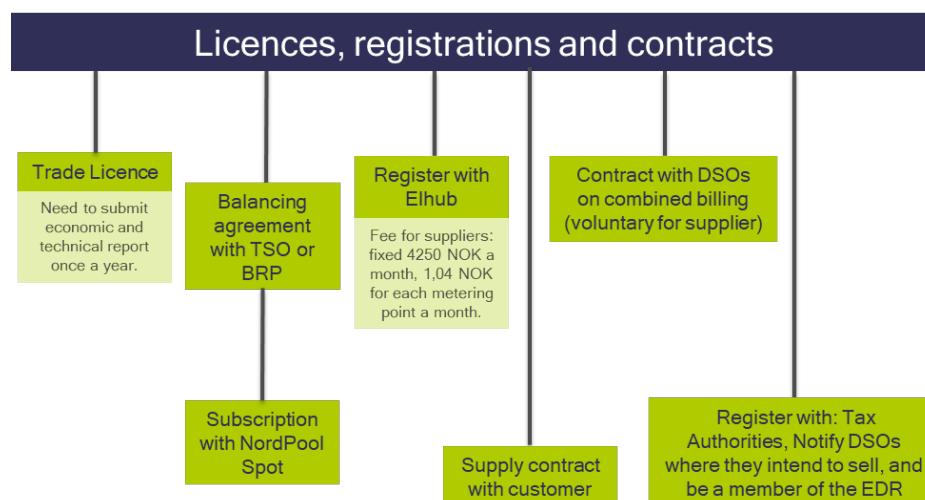
Further comments

In upcoming market transformations, the TSO will likely have a large role which should make changes more centralised and hence be supportive for logistical changes in billing etc.

In gas, current regulation is based on a light-handed approach, as current emerging markets conditions give little scope for regulation and exception from third-party access.

- The national price comparison website, Strompris.no, is maintained by the Norwegian Consumer Council and contains information about all offers available in the market. It is monitored by the regulator to ensure prices there reflect those on the suppliers’ own websites and to check how green certificate prices are presented. Suppliers with inconsistencies are audited by NVE.
- DSOs webpages are also monitored to ensure that their information about electricity suppliers complies with neutrality rules
- The regulator publishes a weekly online overview of retail market prices, including the average price of three standard types of contracts and an estimated accumulated average electricity cost for end customers so far this year. The data come from the Norwegian Consumer Council and Nord Pool.

2) Licences, registrations and contracts



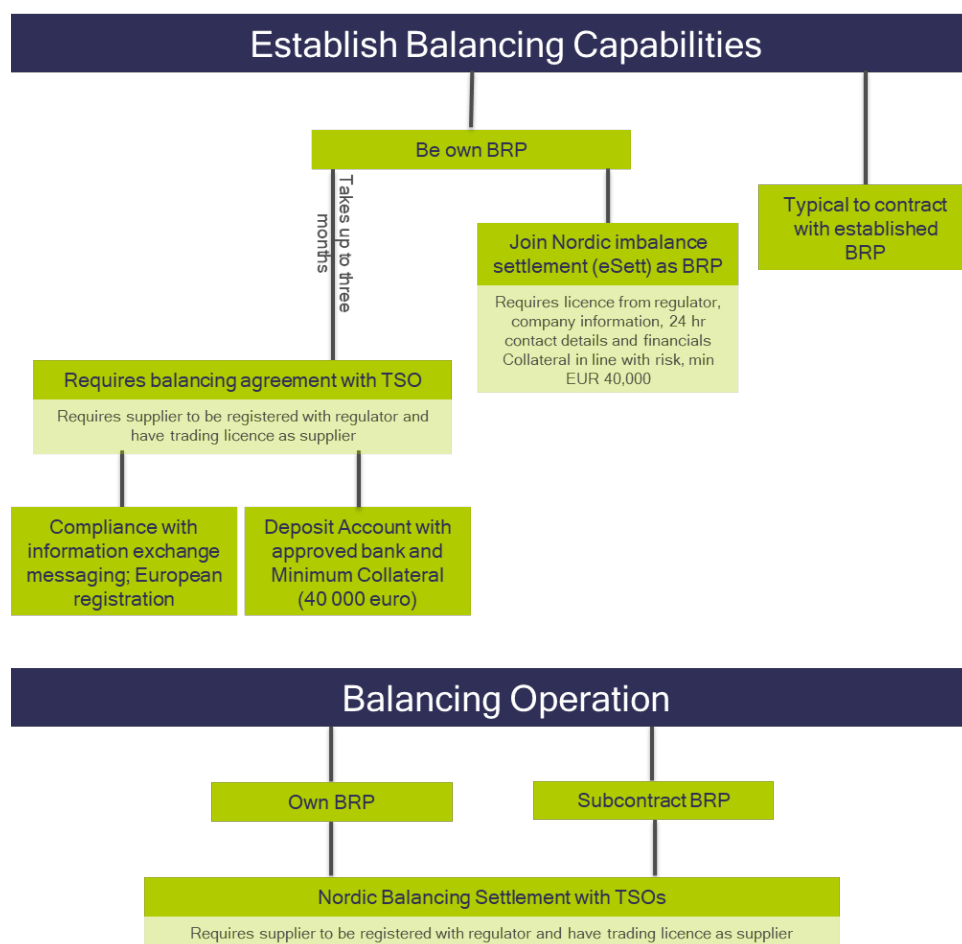
Further comments

According to the Norwegian Energy Act, any entity engaged in physical trading, generation and/or distribution of electric energy in Norway is required to hold a **trading license** from the regulator. A trading license is also required to become a balance responsible party and to trade on a power exchange. This license provides the basis for NVEs supervision and regulation of market actors.

For gas, licenses are currently necessary for introducing gas infrastructure such as gas transmission or LNG facilities in a new region. Companies must have separate accounts for distribution, LNG and storage.

- The licensing regime is intended to be light and transparent, and not to present an undue barrier to competition or market entry
- Providers of services such as EV charging need not be supply companies.
- Application periods are for 3-5 years, and the next application round is in 2021. Application currently takes four weeks but from 2021 application will be automatized, giving most applicants an instant reply. although some applications will still have to be processed manually.
- At the end of 2018, 478 companies (suppliers as well as generators and DSOs) held a trading license.

3) Balancing

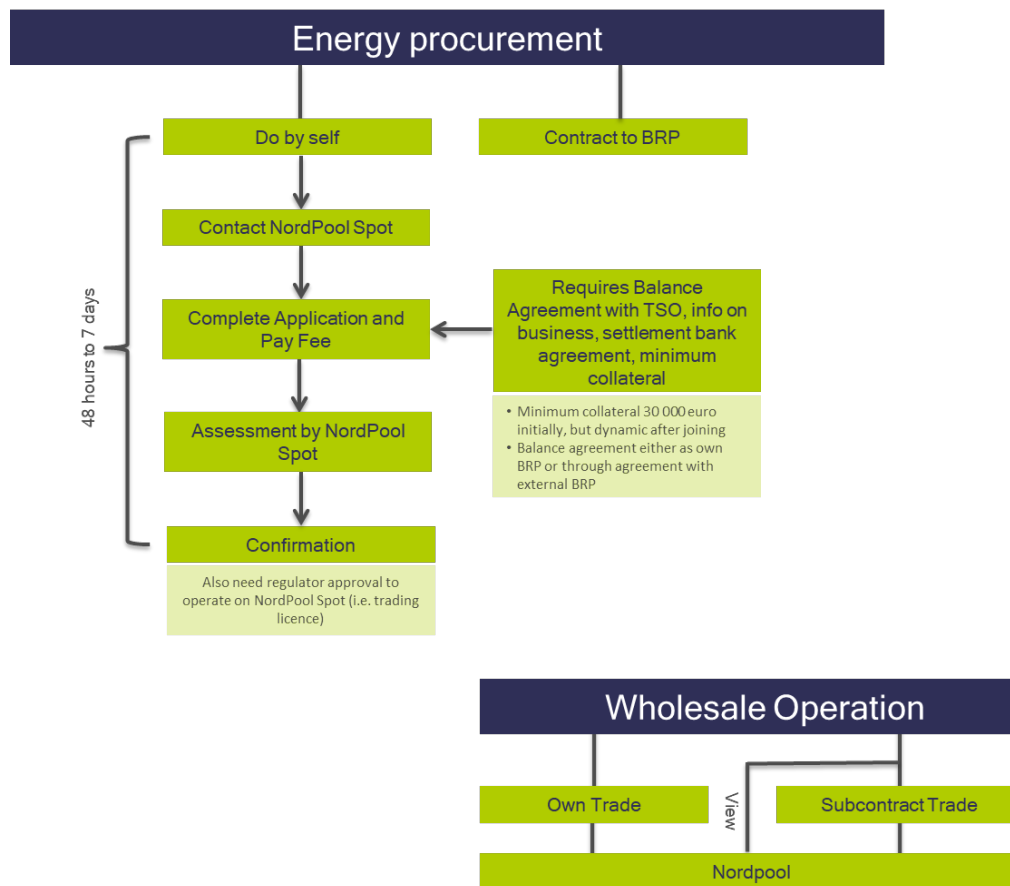


Further comments

Nordic TSOs (except Denmark) collectively operate the Nordic area as one single load frequency control area, with each TSO responsible for national balance within the constraints of cross-border congestion. Imbalance settlement is harmonized across national borders and operated by a single company, eSett Oy. As in the other Nordic countries, the Norwegian TSO runs the national balancing market and acts as the clearing house for the Norwegian part of the balance market

- According to the common Nordic “one-and-a-half price” imbalance settlement model, the consumption balance is settled according to a single price (based on the marginal price of activated mFRR), while production balance is settled based on either the day-ahead clearing price (where the imbalance reduces net system imbalance) or the marginal price of activated mFRR (where the imbalance increases net system imbalance).
- According to Norwegian energy legislation, the TSO may suspend orders/bids in balancing markets if price-setting is not functioning efficiently
- Norwegian regulation enables the TSO in strained operational situations or during operational disturbances to require mandatory participation in the balancing market, regulation of power production (even when not part of the balancing market), and load shedding.

4) Wholesale



Further comments

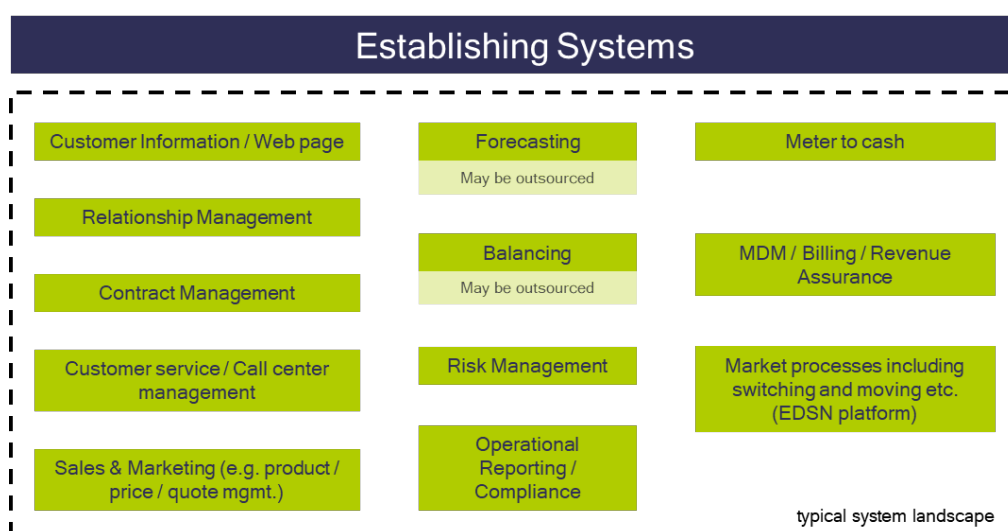
Nord Pool's day-ahead market covers all Nordic and Baltic countries; the intra-day market additionally includes Germany, UK, the Netherlands, Belgium, France and Austria.

In gas, both distribution networks use injected tail gas from LNG production facilities as they are directly connected to upstream pipelines from the Kårstø gas processing plant. Suppliers who wish to supply end users as a third party will have to enter into a bilateral agreement with an upstream supplier to source the gas. The supplier then has to follow terms and conditions created by the distribution system operator and approved by the regulator. The regulator is currently cooperating with the Ministry of Petroleum and Energy to develop new rules around regulation of the downstream gas market, including third-party access and regulated tariffs adapted to local market conditions. However, one of the two distribution systems will have an exemption which will be reassessed after 5 years by NVE.

- Most trade in all Nordic countries happens on the day-ahead market. Across the Nordics and Baltics, the total traded volume on the day-ahead market was 396 TWh in 2018.
- Nord Pool appears to be a well-functioning market with good liquidity, indicated by a high number of market participants and high market. This gives participants confidence in Nord Pool's price formation.
- Market participants in Norway may also enter into bilateral contracts on purchases and sales of specific volumes of electricity at an agreed price and for delivery in an agreed period

- Norway consists of five bidding zones: NO1 (Eastern Norway including Oslo), NO2 (Southern Norway), NO3 (Middle Norway including Trondheim and Molde), NO4 (Northern Norway), and NO5 (Western Norway including Bergen)
- Hydro generation is obliged to sell a share of the average production (up to 10%) at average production cost for a number of hydropower plants to the municipality or county authority where the waterfall is located
- As elsewhere in the Nordics, financial power trading takes place on the Nasdaq OMX exchange in Stockholm, offering market participants price hedging and trade in long-term products and derivatives, including those based on Nordic bidding zone and system prices, plus derivatives of German, Dutch and UK electricity, carbon emissions and electricity certificates. This market place is regulated by the Financial Supervisory Authority.

5) System landscape



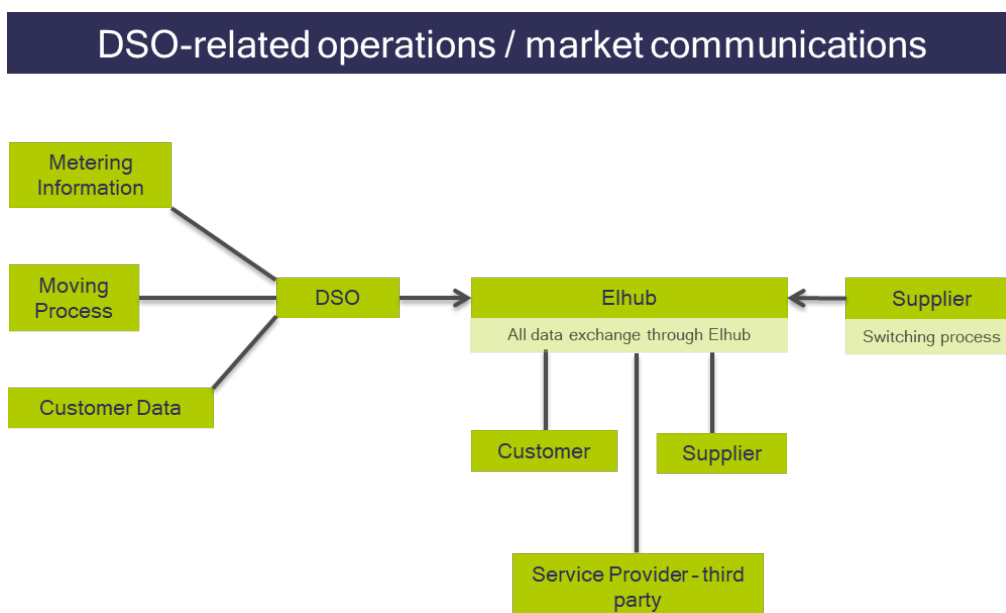
Further comments

The regulator is considering introducing a customer-centric supplier model for the Norwegian electricity market, in accordance with NordREG recommendations which should simplify the market for consumers and hence encourage market participation. Implementation is expected within the next 5 years.

- The regulator favours a model that includes voluntary combined billing, allowing suppliers who do not wish to take on the responsibility and financial risk to be able to opt out, with the intention that this flexibility would improve innovation. At the same time, combined billing can simplify market structure for end-users and thus make it easier for them to engage in the market. NVE considers active, well-informed consumers to be key for the Norwegian retail market.
- A customer-centric model would be a step towards further harmonization of Nordic electricity retail markets; Denmark introduced a supplier-centric model in 2016 and Sweden and Finland are considering this model.
- NVE is assessing how this would be implemented, but in a first consultation market participants raised several concerns with the original plans, which are now being reconsidered.

- On the technical side, all household outtake points are individually metered and settled since 2010. Smart meter roll-out has recently been completed (2019).

6) DSO-related operations & market communications



Further comments

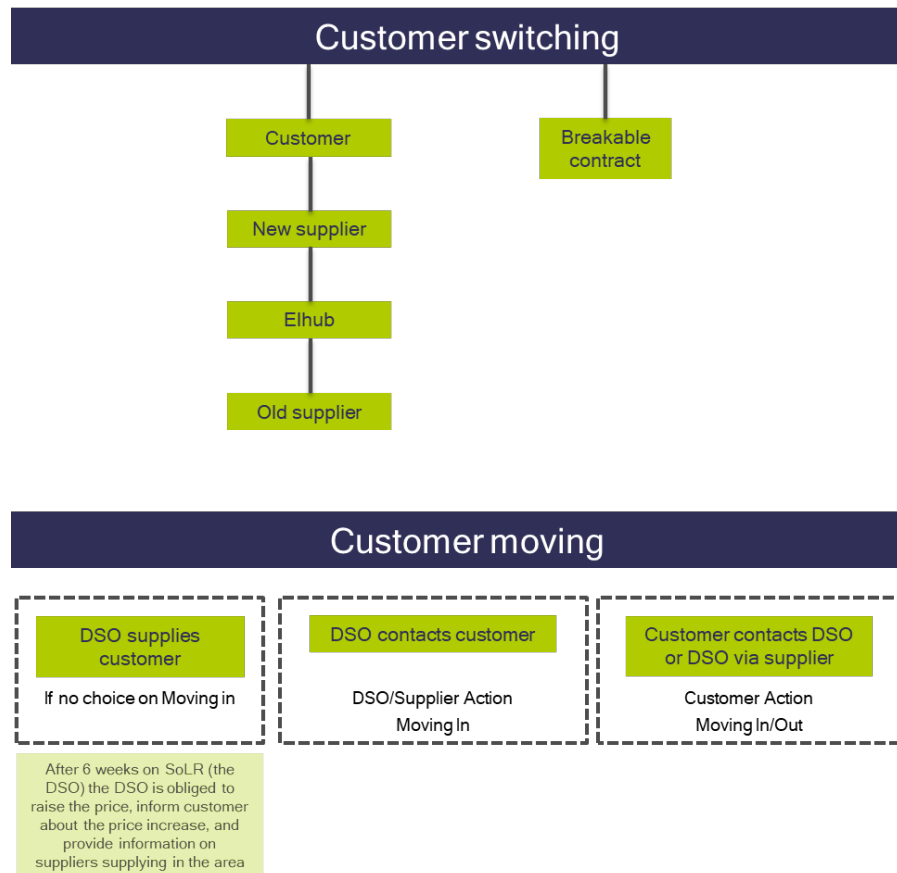
Since the launch of Elhub in early 2019, all communication between DSOs and suppliers goes through this centralized hub. Billing in Norway follows a hybrid model, in which grid companies are required to provide combined billing for household customers if requested by the suppliers.

For gas, there are only 2 distribution networks in Norway, operated independently. There is no transmission network.

- Elhub was launched in parallel with the introduction of smart hourly metering for all customers
- DSOs must give customers easy access to their consumption data by providing access to a web service and putting information in the invoice
- If electricity suppliers want combined billing, they must apply it to all household customers in that DSO area. Under combined billing, the supplier acts as an agent for the DSO when collecting payment and takes on financial responsibility for it.
- All DSOs, irrespective of size, will be legally and functionally unbundled from 2021. All DSOs are already regulated to ensure their management of informing customers, supplier switching, metering data and billing is neutral and non-discriminatory
- Norway is currently testing a system of flexible grid tariffs, in order to promote network development and utilization, and examining customer responses. The initial system was not well received but is under continuous development towards something more dynamic, potentially capacity- rather than volume-based (although this was not popular with stakeholders). Consultation is ongoing.

- DSO revenue caps are set annually, calculated based on benchmarked values of 40% cost recovery and 60% cost norm. DSOs may freely set network tariffs within the revenue cap, as long as they and the conditions are non-discriminatory, objective, and give price signals about effective network utilisation and development.

7) Customer switching & moving



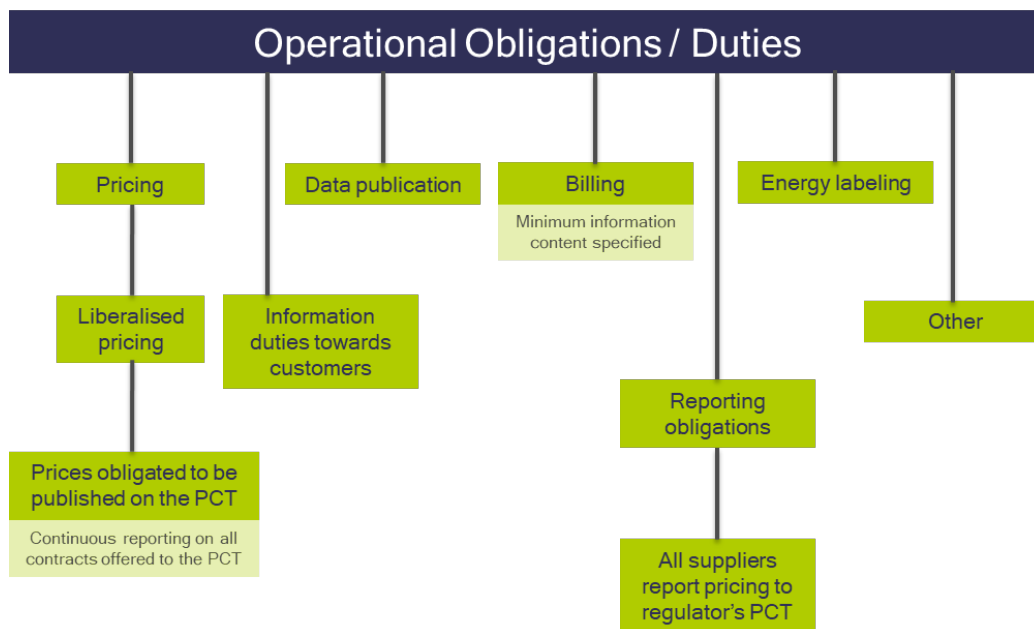
Further comments

For the customer, switching is easy and fast. Authorities actively provide plentiful information on how and why to switch.

- There are no regulated prices in Norway. One market player feels that the main driver of a customer choosing to switching is price
- The price comparison website Strompris.no ranks contracts according to their estimated total cost, including network tariffs and taxes. NVE advises all retail customers to use the website when choosing a supplier.
- DSOs must provide customers with neutral information on how to choose a supplier, which suppliers are available in the network area, and information about the national price comparison web site.
- Currently, the DSO is supplier of last resort (SoLR), who ensures that even customers who have not contracted with a supplier are supplied with electricity. In the last quarter of 2018, 2.3% of households were receiving electricity through the SoLR, over half of which had been with the SoLR for over 6 months

- SoLR price is initially set at a maximum of øre/kWh 5 above spot price, but after 6 weeks the SoLR's price must be designed to incentivise customers to choose a supplier on the market. The DSO as SoLR also has a duty to protect customers from disconnection when life or health is at risk and has a high threshold for disconnecting non-paying customers.
- With the upcoming supplier-centric model, the supplier of last resort will not be the DSO but a supplier. How this will be implemented is not yet decided.
- A web survey by NordREG in late 2018 among 1,500 Norwegian household electricity customers found that 26% were "active customers" (signed an electricity contract in the past year) and another 16%, the highest across the Nordic countries alongside Finland, were "aware customers" (compared contracts in the past year without switching). This leaves 58% of Norwegian customers as "inactive" (have neither switched nor compared contracts in the past year or more). Amongst these, the most common reasons for not switching or comparing were satisfaction with current contract and small financial gains.

8) Operational obligations/duties



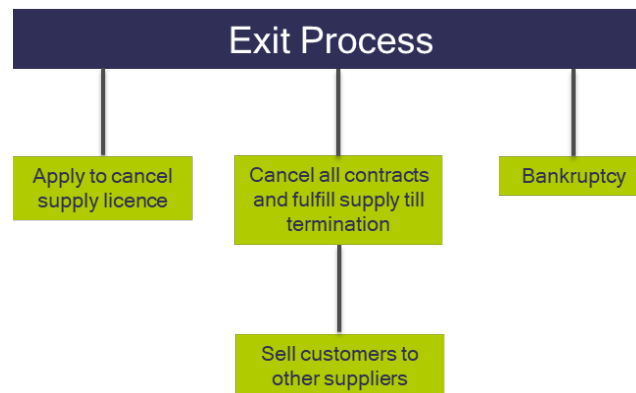
Further comments

Suppliers face a number of information-related requirements.

- A voluntary (hybrid) billing regime was implemented in 2016, in which the supplier effectively acts as an agent for the DSO and incurs responsibility for collection of costs from customers. Over the next five years, the regulator is aiming to improve the voluntary combined billing scheme to make it less burdensome and more attractive for suppliers to participate in.
- Suppliers must report prices in a specific format to the Price Comparison Tool (PCT) run by the Consumer Council; in accordance with general regulations, suppliers may not engage in misleading selling practices.

- New amendments in 2018 aligned the Norwegian market further with EU regulations by guarding against market manipulation and insider trading, including an obligation to publish inside information in the wholesale power market.
- The Norwegian Electricity Appeal Board handles customer complaints that could not be settled directly with the supplier or DSO. All companies with a trading license are members.
- Energy legislation contains no explicit measures for protecting vulnerable customers; instead, they are protected through Norway's general welfare system. Disconnection is prohibited in cases where social services guarantee a customer's payment.
- Norway has detailed regulations and means for handling critical energy situations and energy rationing. However, these have not yet needed to be activated.

9) Market exit



Getting in touch with the EU

In person

All over the European Union there are hundreds of Europe Direct information centres. You can find the address of the centre nearest you at: https://europa.eu/european-union/contact_en

On the phone or by email

Europe Direct is a service that answers your questions about the European Union. You can contact this service:

- by freephone: 00 800 6 7 8 9 10 11 (certain operators may charge for these calls),
- at the following standard number: +32 22999696, or
- by email via: https://europa.eu/european-union/contact_en

Finding information about the EU

Online

Information about the European Union in all the official languages of the EU is available on the Europa website at: https://europa.eu/european-union/index_en

EU publications

You can download or order free and priced EU publications from: <https://op.europa.eu/en/publications>. Multiple copies of free publications may be obtained by contacting Europe Direct or your local information centre (see https://europa.eu/european-union/contact_en).

EU law and related documents

For access to legal information from the EU, including all EU law since 1952 in all the official language versions, go to EUR-Lex at: <http://eur-lex.europa.eu>

Open data from the EU

The EU Open Data Portal (<http://data.europa.eu/euodp/en>) provides access to datasets from the EU. Data can be downloaded and reused for free, for both commercial and non-commercial purposes.

