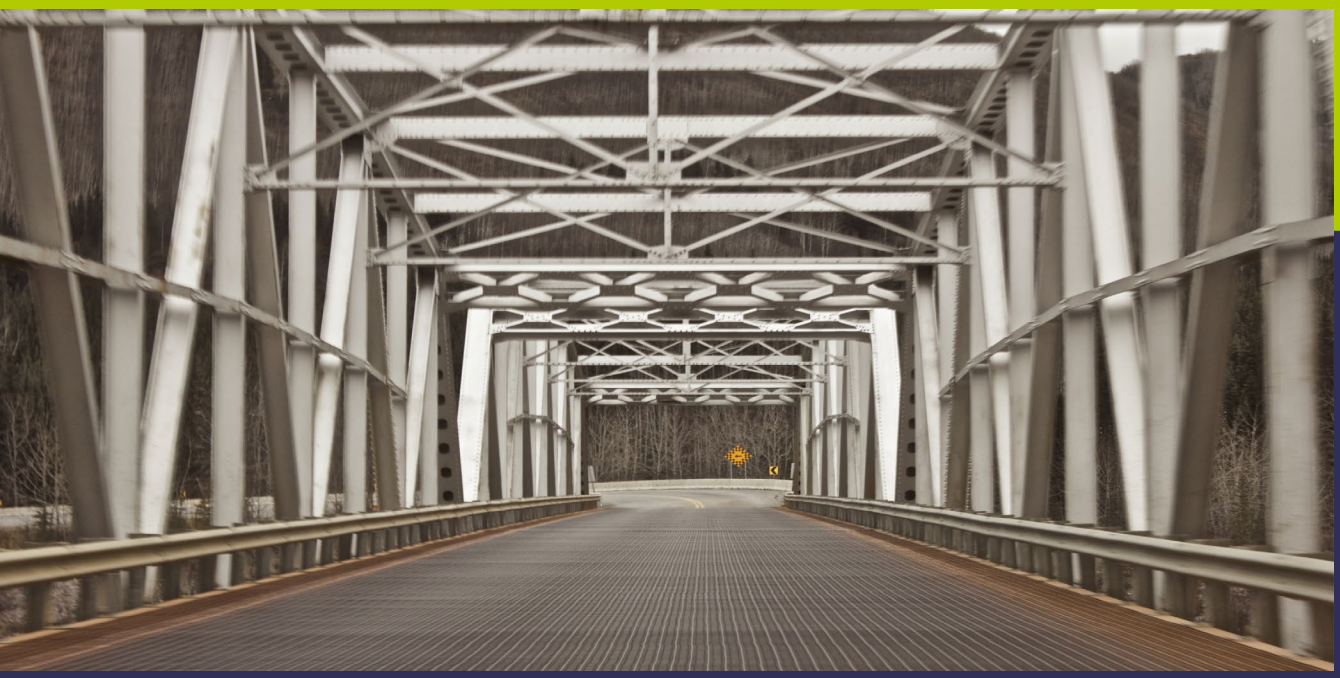
European Commission

EUROPEAN BARRIERS IN RETAIL ENERGY MARKETS



FINAL REPORT

Prepared by vaasaETT REKK MRC CONSULTANTS AND TRANSACTION ADVISERS A member of the MRC Group of Companies THE ADVISORY HOUSE LISTEN-ADVISE-SUCCEED

Energy

EUROPEAN BARRIERS IN RETAIL ENERGY MARKETS PROJECT: Final Report

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

Luxembourg: Publications Office of the European Union, 2021

PDF ISBN 978-92-76-30269-8 | doi:10.2833/5217 | MJ-03-21-085-EN-N

How to cite this report: Lewis, P., Granroth-Wilding, H., Napolitano, L., Zabala, C., Vékony, A., Felsmann, B., & Hirschbichler, F. (2021). European Barriers in Retail Energy Markets Project: Final Report. Luxembourg: Publications Office of the European Union. ISBN 978-92-76-30269-8, doi:10.2833/5217.

Client: European Commission, DG Energy

Title: Final Report – Study on "European Barriers in Retail Energy Markets"

Abstract:

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. 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.

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.

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 claim to represent their views and its findings have not been officially endorsed by them), nearly 150 suppliers and many other stakeholder organizations, across all focus markets. Great Britain was included in the project and cooperation was received from numerous suppliers, the regulator (OFGEM) and other stakeholders. Switzerland and Malta were included to a lesser extent since they are not yet open markets for household customers.

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

Many sources of information were used as part of the project, including an extensive literature review; interviews with national regulatory authorities (NRAs); feedback from market participants (suppliers and other competitors) through questionnaires, interviews, webinars and a major workshop; and extensive data gathering. Whenever possible, information from market participants was verified through further research.

The deliverables of the project are extensive: in addition to this Final Report, the project has produced 28 Country Handbooks (separate reports) as well as a stand-alone Barriers Index methodology/tool and a European Barriers Index Ranking (separate report). Additionally, as part of the process collaborative and dissemination channels were used extensively, including a stakeholder website (with 300 subscribers) and associated subscribed communications, two webinars (one with regulators and one with competitors, each with approximately 40 participants), a Stakeholder workshop with approximately 70 participants at the European Commission and a large number of face-to-face meetings with individuals and groups of stakeholders.

The extensive findings of the project indicate that while barriers are being reduced, and while retail energy markets are heading in the right direction, many serious barriers remain and need to be addressed if potential environment and social benefits from European retail energy markets are to be realized. Many such barriers are very specific to individual markets, but many are pan-European and would therefore benefit from Europe-wide policy to mitigate them.

The Barriers Index produced for the project, in combination with the other insight from the project, additionally provides a clear view on best-practice as well as a tool to map the evolving status of barriers across Europe in the years to come.

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Project forward by EC

Competitive retail markets play an important role in ensuring that consumers benefit from affordable prices, good standards of service, and a selection of offers that caters to their diverse and evolving needs. This role will grow increasingly important as technological advancements in small-scale energy production, energy storage, and digitalisation unlock new energy services that can increase the flexibility of electricity and gas networks.
Despite their important role, the impact assessment for the Market Design Initiative revealed that retail energy markets in the EU are not working as well for consumers as they could be. It showed high levels of market concentration, growing gaps between retail and wholesale prices, and low levels of innovation, all of which were contributing to poor consumer satisfaction in the energy sector.

While the 2019 update of the Electricity Directive helped to tackle many of these issues, this subject requires continuous vigilance, and further work to ensure that all EU consumers can benefit from the Internal Energy Market. This is particularly so in the context of the New Green Deal, and the renewed focus on putting the citizen of the energy system with the new Commission.

Suppliers and other energy service companies face a broad range of hurdles in establishing themselves and operating. The study focuses on hurdles that are specific to the energy sector itself. For example:

- Such actors may need to obtain a license from national authorities before beginning operations in many Member States;
- They need to contract with transmission or distribution system operators to serve customers connected to the grid and get access to metering data;
- They may face sector specific billing or customer switching requirements;
- And access to wholesale and balancing markets require some prior agreement with the market operator.

Whilst these hurdles are intended to ensure that the system functions properly and customers benefit from high standards of service, they may:

- be excessively complex and time consuming;
- require payments or financial guarantees;
- unduly increase costs or make it harder to do business;
- favour certain market actors or business models over others.

The combined weight of these barriers can have a significant negative impact on competition and – by extension – consumer welfare.

This project is the Commission's most comprehensive attempt to map the barriers to competition in the retail energy segment to date.

It takes a two-part approach:

1. A comparative analysis of barriers to entry in national retail energy markets;
2. A performance index, which aims to give us some idea of how easy it is to do business in the energy retail sectors of the Member States.

This project will help realise three general objectives:

1. Motivate beneficial reforms by national authorities without EU legislation.
2. Provide national and EU authorities with information that they could use to enforce and improve market rules. It could identify requirements that may be doing more harm than good, and flag up better ways of achieving regulatory objectives.
3. Reveal the possible future scope for the regional, or EU-wide, alignment of rules and practices in the retail market to boost cross-border competition, whether through bottom-up or top-down initiatives.

EXECUTIVE SUMMARY

Context and Approach

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. 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.

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.

A characteristic that sets this project apart from previous Europe-wide projects looking at the issue of barriers in the energy market is 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 also 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.

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 claim to represent their views and its findings have not been officially endorsed by them), nearly 150 suppliers and many other stakeholder organizations, across all focus markets. Great Britain was included in the project and

cooperation was received from numerous suppliers, the regulator (OFGEM) and other stakeholders. Switzerland and Malta were included to a lesser extent since they are not yet open markets for household customers.

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

Many sources of information were used as part of the project. These included an extremely extensive literature review; interviews with national regulatory authorities (NRAs); feedback from market participants (suppliers and other competitors) through questionnaires, interviews, webinars and a major workshop; and extensive data gathering. Whenever possible, information from market participants was verified through further research.

The expert knowledge of the project consortium was also used to add judgement to the process (the core project team comprised over a dozen researchers and experts from 9 European countries, including international experts who have analysed Europe's energy markets since even before they liberalized).

The deliverables of the project are extensive: in addition to this Final Report, the project has produced 28 Country Handbooks as well as a stand-alone Barriers Index methodology/tool and a European Barriers Index Ranking (contained in a separate report). Additionally, as part of the process collaborative and dissemination channels were used extensively, including a stakeholder website (with 300 subscribers) and associated subscribed communications, two webinars (one with regulators and one with competitors, each with approximately 40 participants), a Stakeholder workshop with approximately 70 participants at the European Commission and a large number of face-to-face meetings with individuals and groups of stakeholders. Altogether, over 1500 pages of reports and approximately 500 engaged stakeholders across all 30 markets.

Key Findings

Survey (questionnaire) responses from 101 European suppliers initially identified the most important issues relating to electricity, gas and aggregation. For electricity and gas markets the issues were largely similar. Aggregation issues were naturally different. The issues in the following figure are in no particular order.

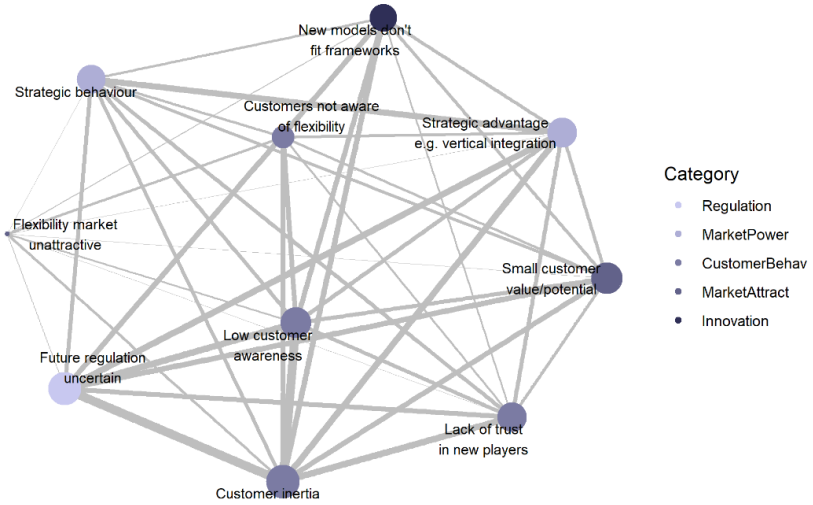
Electricity Supply	Gas Supply	Aggregation
Strategic advantage (e.g. vertical integration)		Market Concentration
Strategic behaviour		DSO Data Advantage
Future regulation uncertain		Lack of price signals
Small customer value / potential		Information imbalance (in favour of established)
Customer Inertia		Lack of trust in new technology
Low customer awareness		Low customer awareness of DR
Lack of trust in new players		Biased DSO treatment of suppliers
Customers not aware of flexibility	Price regulation	Insufficient real-time information
New models don't fit frameworks	Small suppliers disadvantaged	Balancing market favours large generation
Flexibility market unattractive	Procurement risk	System management favours large generation

In general, what stands out is:

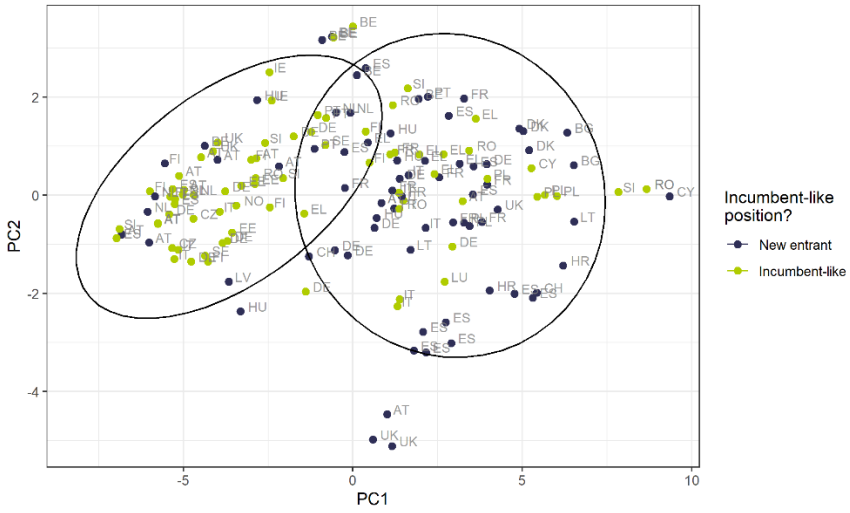
- the significance of the advantage of large, incumbent / established and integrated players;

- the challenges associated with gaining customer awareness, trust and activity;
- the problem of insufficiently reflective prices; the appropriateness and uncertainty of the regulatory environment for innovative offerings;
- the importance of equal access to sufficient and timely information.

What is also interesting is the inter-dependency of issues. Statistical analysis (clustering analysis, PCA analysis and other relational analysis) indicated that while some issues are more related than others, a holistic approach to reducing barriers is essential. For instance, as shown in the following figure relating to electricity (where the thickness of lines indicated the strength of the relationship), customer issues tend to be closely related with each other, but also with the suitability and predictability of regulatory frameworks. In fact, the statistical analysis even indicated clusters of issues that are apparently faced by the respondents.



Perhaps unsurprisingly, but importantly however, the statistical analysis also indicated that these clusters (PC1 and PC2) of issues differ depending on the type of player, especially on whether they are 'incumbent-like' or 'new entrants' (including established new entrants).



Based on the above findings and further refinement through extensive interviews, five over-arching pan-European barrier 'blocks' have been identified: Regulatory dis-incentivisation; Market inequality; Operational ad procedural hindrance; and Customer Inertia. Additionally, a fifth block was created, namely 'Other' to allow for unanticipated but nevertheless important barriers. Within these blocks were classified 10 barrier categories, containing in total 45 specific barriers. These barriers and their relevance to each market is detailed in this report, although for a detailed understanding of each country, the reader is recommended to refer to the relevant country handbooks. On average 18 barriers (ranging from 10 to 25) were identified per market.

Among the 45 barriers, 16 'key Barriers' were identified based on the sum of evidence from the survey, interviews and other research conducted for this study. These key barriers spread across all the barrier blocks and while not all of the barriers are present in all markets, some of the markets appear to have most of the barriers and some of the barriers appear to be present in most markets.

Delving deeper into these 16 barriers, five top barriers were identified:

1. Advantage of vertically integrated market players
2. Low customer awareness or interest
3. EQUAL:
    a. Uncertainty around regulatory future or digitalization
    b. Uncertainty around current regulatory environment or its development
4. Strategic behaviour of incumbent or other market players

Barriers Index Ranking

Additionally, the advanced Barriers Index tool that was developed for this project (available as a separate dedicated report), was provisionally run provide some comparative insight into the level of each barriers category in each of the markets, based on a stand-alone (not dependent upon the other findings of this study), objective, statistical evaluation approach. The results indicate the uniqueness of markets in terms of the burden of barriers they face and suggests that each market needs to follow its own route to the reduction of barriers.

The Index scored correlated reasonably closely with the results from the questionnaire. In fact, the connection was statistically significant for both electricity and gas, although stronger for electricity (the correlation was 0.8 for electricity and 0.58 for gas). While the correlation does not prove the relevance of results of either approach, it does suggest that the overall findings of these separate approaches are complementary

Best Practice and Recommendations

Much has been achieved by European retail energy markets. The study revealed 15 best practice cases relating to 11 separate barriers in 11 markets. In fact, some markets, such as Great Britain are now almost free of significant entry barriers and many critical barriers are gradually being overcome. Indeed, several markets for instance already have data hubs and a number of others are planning them; price regulation is becoming somewhat less common; unbundling is becoming more extensive; customers are becoming more aware; opportunities for flexibility and innovative models are growing, great plans lay ahead for DER and prosumers. These and other developments are clear signs that the environment for competition is, by and large, moving in the right direction.

However, many barriers remain and in most, if not all markets the challenge facing competitors remains substantial. The fact that Great Britain is the only market where former incumbents do not still enjoy the lions' share of customers (among all customers in the market); the fact that two of the surveyed markets were not even considered fully liberalized; the fact that in some markets there is absolutely no way for any supplier to make a profit, regardless of their efficiency; and the fact that annual switching rates in some markets is still in low single figures are just a few of the indications that all is still not well.

But what should be done about these barriers? Well, firstly, it is important to accept that specific solutions to the barriers invariably need to be addressed ultimately on a country by country basis with country-specific consideration. As illustrated by the Country Handbooks which form the core of this study, barriers vary greatly from market to market - not all barriers exist in all markets (some barriers are indeed unique to a given market) and even where barriers are common to many or most markets, the precise nature and severity of the barriers is typically dependent on the context of the markets they are in. Furthermore, a barrier may exist in many markets but only yet be significant in a few. For instance, a data hub and access to advanced customer data may be critical for innovative players in Sweden and Great Britain, but for players in other markets where simply getting customers to switch supplier is the key priority, such barriers matter little at present and will only become an issue when the market and its customers develop further. The study has therefore provided many ideas for recommendations in

the Country Handbooks (though these should be seen more as food for thought rather than proposals), but these are country-level suggestions.

On a pan-European level a few policy suggestions would appear to stand out (in the researchers' opinion, based on this study), although the study would perhaps infer many more:

1. the fundamental barrier posed by vertically integrated players would need to be removed. Full ownership unbundling would appear to the only comprehensive way to achieve this.
2. incumbent suppliers would need to be restricted more in their ability to keep and win-back customers and otherwise inhibit the flow of competition. In some markets, up to 60% of customers that are taken from an incumbent, or start the switching process are won-back almost immediately (even within the switching process) and many more may be won back as soon as the customers' contracts end, due in part to the familiarity of the suppliers and the suppliers' knowledge of the customers they are winning, but due also to many other reasons. It is often easier to stop a switch or win back a customer than to win them and this kind of win-back is typically extremely expensive for a challenging supplier (since the cost of winning a customer is so high).
3. Authorities need to do even more to educate and encourage customers. There are good best practices out there that can be followed.
4. Authorities need to understand that for many of the most innovative players in the market, especially the smaller ones, the time periods through which future-facilitating regulations evolve are often longer than those players can sustain themselves for. Investments require regulatory clarity and predictability and while a few years may seem like a short time for a regulator, it is a lifetime for a new player with a great idea but only two years of capital. While waiting many years for a data hub, access to greater value from flexibility, or the establishment of a fully digital retailer, many excellent players will fall by the wayside. As the energy market evolves quicker (increasingly similar to telecoms and IT, of which it is comprised), so too must authorities.
5. Access to data is absolutely critical for many of the best challengers in the market. It is not enough to simply say that the customer own it and suppliers can have it. What is needed is a means for suppliers (for whom the customer has permitted) to get the right kind of data in the right kind of time frame, with sufficient simplicity and reliability. Unfortunately, this is often not the case. While there are many plans to reduce this barrier (not limited to smart meters), it remains a major hurdle and only time will tell if it will be overcome. It would need to be dealt with as a matter of urgency if there is to be a smart future.
6. There is also a need, in many markets to improve the attractiveness of the business case associated with entering and competing in the market. Price regulation is not in all cases a barrier. In fact, in Great Britain for instance, the recent implementation of the price cap was actually supported by some challengers because their lower cost to serve enabled them to compete comfortably underneath the price cap whereas some of the more established players were unable to do the same. However, in some markets price regulation essentially kills the market and in others it makes it far less attractive. Combined especially with the small size of some markets, the consumer and environmental / energy efficiency obligations in others, and other barriers such as obligations to collect (even in cases where customers default on payment) revenue for e.g. DSOs and tax authorities, a small regulated margin results at best

in suppliers deciding not to enter the market. At worst it results in the failure of challenger suppliers because of the impossibility of the business case. It is therefore recommended that price regulation be avoided. There are, however, other ways to improve the attractiveness of the market, including for instance creating more harmonization between neighbouring markets. Even if two markets remain different, many suppliers see opportunities to gain scale from entering multiple regional markets as long as the differences between the markets are not too great.

These suggestions should, however, naturally be considered in light of the broader implications, social and economic, that any related actions might result in.

INTRODUCTION & OUTLINE

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.

Objectives

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.

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

Scope & Scale of Research

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

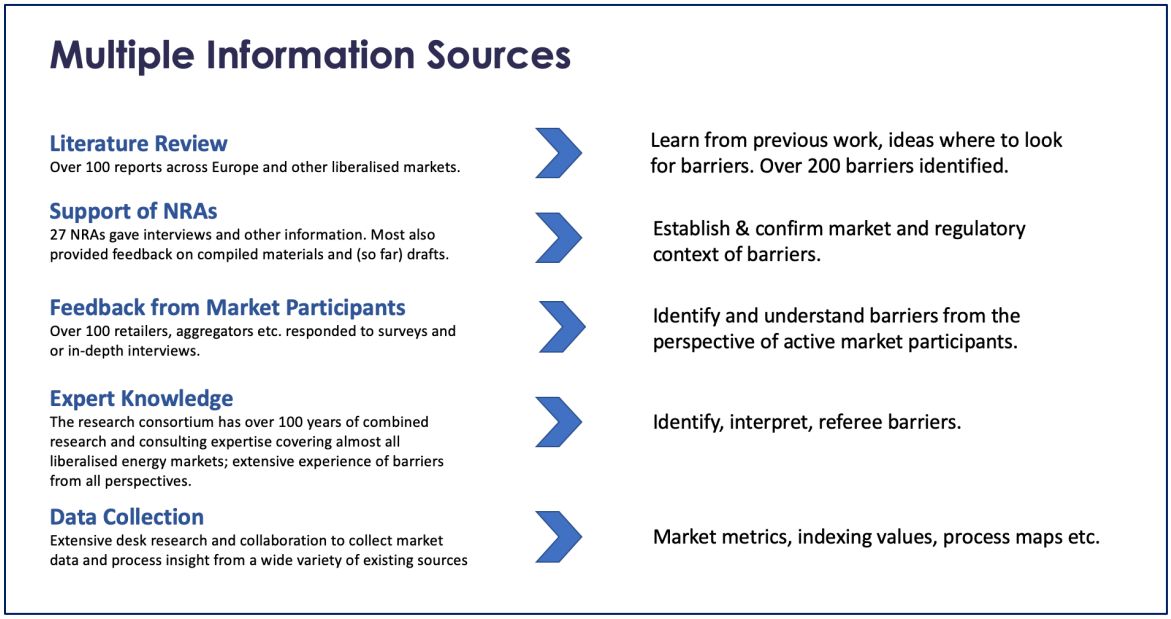
The project focuses on retail (supply), including also demand aggregation services, other additional offerings and new model retail, especially relating to the household segment customers (in some markets households and smaller SMEs may be difficult to distinguish). The project additionally concentrates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

Sources of Information

Many sources of information were used as part of the project. These included an extensive literature review of over 100 public reports, to assist in the targeting of survey questions; interviews with national regulatory authorities (NRAs) to understand the regulatory context in markets; feedback from market participants (suppliers and other competitors) and extensive data gathering for the purpose of collecting market metrics, market processes and index values. For the latter, the task of identifying sources that could deliver comparable and reliable index values was a key challenge of the researchers. The expert knowledge of the project consortium (which has extensive experience from the markets and issues concerned was also used to add judgement to the process. Specifically,

the core project team comprised over a dozen researchers and experts from nine European countries, including international experts who have analysed Europe's energy markets since even before they liberalized.

Figure 1 – Multiple Information Sources



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

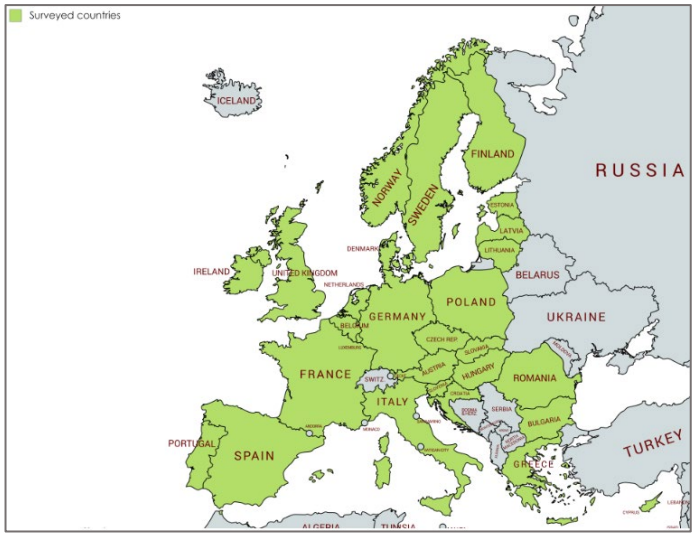
The project has three key deliverables: 28 country handbooks; a Barriers Index and the overall final report (this report).

Country Handbooks

These provide a detailed review of the background, context, processes and observed barriers in each of the markets surveyed. 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. Handbooks were not produced for Switzerland and Malta due to the non-fully liberalised status of those markets.

Specifically, the country handbooks, which are intended to be comparable, contain the same following elements:

Market Overview



In order to allow for putting specific barriers into perspective, the market overview provides an overview of the most important market characteristics including market background, market structure, political and regulatory orientation, regulatory market characteristics and context for aggregation/demand response.

The information for this section is based on expert knowledge, enriched by various publicly available sources and validated by NRAs as well as other market participants. The presented data is derived from public as well as consortium-owned databases and NRAs provided the latest numbers available for the respective countries. All data and information sources are clearly listed and referenced in the individual country reports.

Barriers

As described above, the focus of the study was on identifying existing barriers to entry and competition. This section of the handbook provides an overview of all existing barriers in a country, a detailed description of the national issues and potential solutions. Additionally, every barrier block is supplemented by a performance index, ranking the countries.

Whether a barrier exists in a market or not is based on a quantitative and qualitative assessment. In-depth interviews and the conducted survey provided the required input in order to determine the existence of a barrier in a market. To reduce the risk of misjudging the specific situation in their market due to a lack of information, factual validation of the identified barriers has been conducted with the NRAs and other market participants. The assessment of the existence of market barriers only highlights their existence, but it does not judge the issue in a broader context. There might be good reasons why barriers exist and there might also be a lack of viable alternatives at this given point. Nonetheless, for a new market entrant, those barriers exist, therefore directly affecting the decision to enter and operate in a market and directly effecting the level of competition in the country.

Performance indicators

In order to add another quantitative aspect to the study and enable additional comparability between the markets, indicators measuring the countries performance in the barrier blocks have been developed. These indicators are the basis of the Barriers Index. A summary of the indicators and the Barriers Index methodology can be found below and a detailed methodology for the index can be found in the Barriers Index Report. It is very important to highlight that the index is not evaluating the performance of NRAs or any other market actor. The duties of NRAs differ largely throughout the European countries and in some cases NRAs alone, do not have a direct impact on the existence of a barrier or the performance in a specific barrier category.

Process maps

The final chapter of the handbooks provides insights into the processes required to enter and operate in the countries' electricity and gas markets. Process maps are also referenced throughout the report in order to provide context for the barriers.

Following the webinar with NRAs, the consortium was able to send out the defined archetype describing the high-level process steps and requirements to enter and operate in the energy retail market of each country. This generic archetype served as guidance/framework for the country specific archetypes and ensured comparability between markets.

Finally, processes and requirements were captured first-hand by evaluating of given regulatory frameworks and analysing market actor relationships. The correctness of the archetypes as well as the clarification of questions was ensured through interviews with market players.

Barriers Index

This is an analysis 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 within and across the focus markets. The report also includes a ranking of the focus 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. The Index methodology was developed through a robust, peer-reviewed approach, implementing best practice design through an extensive literature review, the market monitoring expertise of the research team, and through consultation with the European Commission and key stakeholders.

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.

The index is a composite indicator that combines single performance indicators, which capture different types of barriers, into one final score. Its structure follows the barrier categorisation that is used in the country handbooks. Each of the four categories (regulatory dis-incentivisation, market inequality, operational and procedural hindrances, customer inertia) contains two indicators and the total of eight indicators are combined into one composite indicator in a later step. Each indicator is a single quantitative value, either taken from established databases or other quantitative sources, or developed as a checklist of qualitative observations relevant to that indicator.

As the index quantifies barriers, high scores are attributed to high barriers, and the best performing countries will be those that receive low indicator scores. Thus, every indicator is transformed (or constructed) in a way that 0 means that the barrier in question is not present on the market, and 10 means that the barrier reaches its maximum value.

The Barriers Index aims to capture the barriers directly, to measure their causes and not their consequences. Many potential indicators (e.g. switching rates or the number of entrants) could indicate that entry barriers are present on the market, but these metrics are unable to identify the individual barriers, the real causes. As the main goal of the index is to draw authorities' attention to the key hurdles, the indicators must be well targeted to measure specific obstacles (e.g. burdensome licensing or excessively complex switching processes).

The performance indicators are presented in the country handbooks at the end of each barrier section. The Final Report presents the results of the Barriers Index, while detailed methodology description and result tables are given in the Barriers Index Report.

Performance indicators

The potential indicators have been assessed and selected based on the following criteria:

Solvable: The barrier must be solvable or at least influenceable by regulation. It is preferable to include barriers that can be directly affected by regulatory actions than those which can be only influenced indirectly.
Relevant: The indicator must capture the barrier as directly and fully as possible. Indirect indicators (proxies) and indicators that captures only a small part on the barrier are less preferable.
Simple: The indicator must be easily interpretable and understandable by the target audience. It requires to use simple concepts and computation methods.
Reliable: The indicator must correctly measure what it is intended to. The criteria of accuracy and coherence is covered here together.
Available: Data must be accessible, affordable, and available in a timely manner.

As the project identified 45 different barriers, which are classified into nine categories and four blocks, the indicator-set cannot cover all barriers. The selection of the indicators is therefore also a selection of barriers that will be covered by the index. The coverage of the index can be enhanced by use of sub-indicators, which quantify different specific barriers within a barrier category (or different aspects of a barrier), thus the indicator will be basically a mini-composite indicator. This approach provides flexibility in indicator selection within the fixed 4x2 structure of the Barriers Index. Thus, the composite index can rely on more information where it is possible (many suitable indicator are available), without giving extra weight to the barrier category in hand.

The following table presents the structure of the index and the list of indicators.

Table 1 - Structure of the Barriers Index and list of indicators and sub-indicators

Barrier category	Indicators	Metrics (sub-indicators)
Regulatory dis-incentivisation	Market foreclosure by price regulation	1A: Penetration of price regulation 1B: Mark-up of the regulated offer
	Regulatory burdens and unpredictability	2A: Regulatory burdens 2B: Regulatory unpredictability
Market inequality	Competitive advantage of vertically integrated suppliers	3A: Market share of vertically integrated suppliers 3B: Strictness of DSO unbundling
	Unequal access to wholesale markets	4: Liquidity of the wholesale market
Operational and procedural hindrances	Length of licensing procedure	5: Time to get a supplier license
	Quality of data access	6: Quality of data access
Customer inertia	Comparability of offers	7A: Consumer's inability to compare offers 7B: Availability of comparison websites
	Perceived difficulties of switching	8: Perceived difficulties of switching

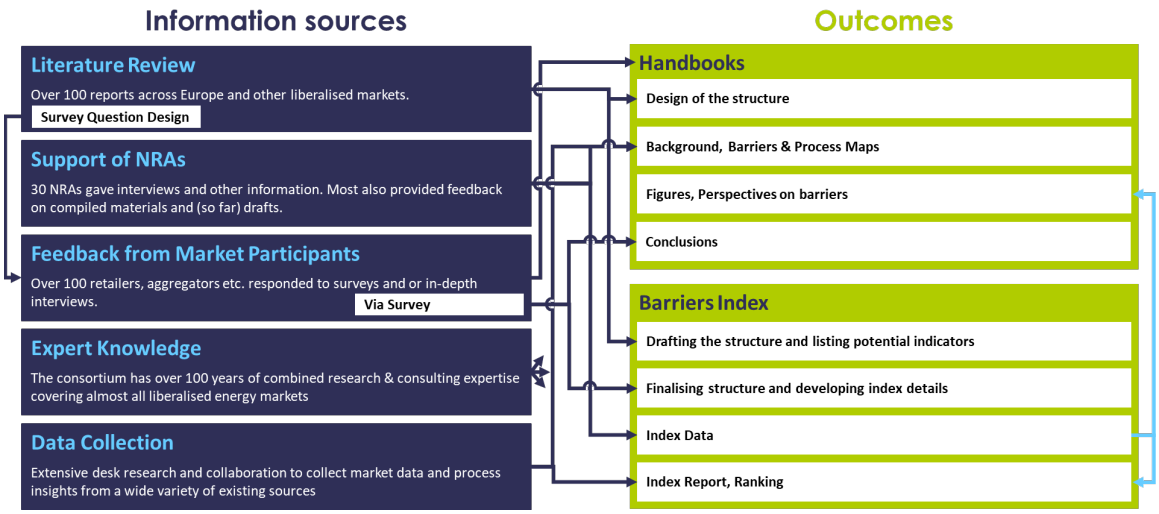
During the design of the Barriers Index, our general approach was to follow simple methods, to create an easily interpretable composite index, and to avoid arbitrary methodological decisions. Thus, to reach our main results, we used equal weights and additive aggregation. However, other weighting and aggregation methods were also applied as part of a sensitivity analysis to check the robustness of the results.

For the presentation of the results we choose to use stacked bar charts as this shows the structure of the scores. Additionally, ordinal rankings will be also presented, as this is even more interpretable, and rankings in general are less sensitive to data and methodological changes than the scores.

DATA COLLECTION

The project combined several information sources in order to derive the main deliverables - referred to here as outcomes. The following figure provides an overview of all information sources used and how they contributed to the specific outcomes.

Figure 2 - Flow Chart: Information Sources and linked Outcomes



Literature Review

An exhaustive literature review was the basis for the analysis and identification of the existing barriers. Over 100 reports across Europe and other liberalised markets were identified, reviewed and analysed. After the collection of known reports and literature by the Consortium and the DG Energy, the results were consolidated. As a result, already-identified market barriers have been collected, described, fed into a database and cross-referenced to the reports. This resulted in an initial list of more than 200 barriers.

Support of NRAs

Throughout the process of compiling the reports, NRAs have provided highly valuable input regarding all aspects of the reports. NRAs have also been invited to provide feedback on draft versions and the index methodology.

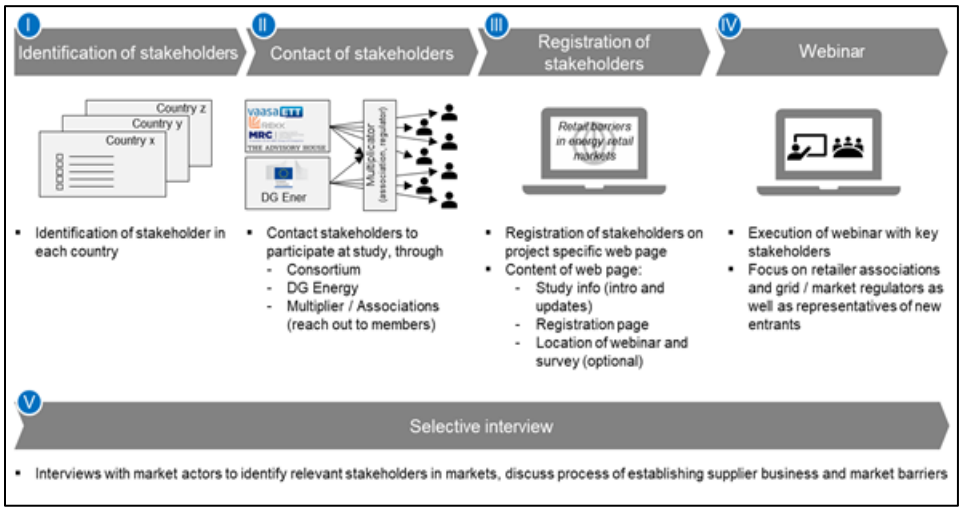
Feedback from Market Participants

To achieve maximum stakeholder engagement and ensure equal awareness and access to participation for all stakeholders, stakeholders were encouraged to participate in the study through a web page (https://www.european-energymarketbarriers-project.eu/) which was heavily promoted through social media and directly through the European Commission, CEER, the Consortium and other partners. Over 300 people subscribed to the site.

The site provided relevant information about the study and, through a registration form, stakeholders could register their interest in taking part in the study by providing basic information about themselves (e.g. contact details, type of organization, interest to participate in webinar, telephone interviews etc.). All stakeholder data was kept strictly confidential.

The Consortium used the list and information of registered stakeholders to communicate with those stakeholders (in accordance with their stated preferences) about webinars, the questionnaire, interviews, workshops, deliverables and dissemination activities.

Figure 3 – Actions of the external market outreach



Workshops and Pre-Interviews

Webinars and other discussions took place as part of the research for (and dissemination of) this project. Specifically, two webinars – one for regulators and one for suppliers and other competitors – took place prior to the questionnaire and interviews to inform stakeholders about the research process and provide an opportunity to preliminarily raise barriers and other issues in the markets concerned. Altogether, 60 regulators and suppliers participated in these events. Additionally, the researchers discussed this work with CEER members at a CEER meeting in Brussels, and with a number of suppliers individually in order to prepare the questionnaire and interviews more appropriately. After the questionnaires and interviews had been analysed, a stakeholder workshop event took place, hosted by the European Commission in Brussels. Approximately 70 stakeholders participated, including an approximately equal number of competitors and regulators, in addition to other interest groups. The event enabled preliminary results to be presented and discussed, but more importantly enabled selected suppliers to present their experiences to the audience, and enabled regulators and other authorities to respond. The event was an important opportunity to disseminate the findings of the project to-date and to gather additional insight and clarification to assist in the completion of the research.

Surveys and Interviews

The primary research mediums used in the project were an extensive online questionnaire (see ANNEX - 3) and semi-structured 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 the project web site, social media and by other direct means) to potential respondents from 17th June until late October 2020 but remained open until late February 2020 so that stakeholders contacted during Country Handbook development had the chance to respond.

Survey design

The survey design was based on the project's literature review, alongside the professional insight and experience of the consortium partners into energy markets and survey design. Based on the barriers identified through this initial input, the survey was structured around seven main categories: "Regulatory barriers", "Data access and quality", "Equality of market players and market power", "Customer awareness and engagement", "Market attractiveness", "Market processes and system requirements", and "Innovation". Each category contained several specific quantitative questions, formulated to dig deeper into already-identified barriers, and the opportunity for qualitative comments. In order to minimize the burden on respondents, the number of questions was kept as low as was possible while still accommodating all potential barriers.

Quantitative questions were formulated to be applicable to all relevant types of market players across all markets. The same structure was used for each barrier category: one overall question for the category as a whole, followed by a list of more specific questions to be graded. All questions used a Likert scale, i.e. a grading from 1 (no effect) to 5 (large effect), formulated broadly as "To what extent does this issue hinder you in doing business?" All questions had a "Don't know / Not applicable" option outside of the Likert scale. The list of specific questions was product-specific, i.e. electricity and gas had separate questions. In addition, for each category, a separate block of questions only for demand aggregators was included. Respondents were only shown questions relevant to them (electricity/gas/demand aggregation). Respondents were also asked about characteristics of their business, e.g. whether they are owned by an incumbent and, if so, whether they compete outside an incumbent area. Each response was specific to a particular country.

The questionnaire was constructed using a dedicated online tool. The questionnaire was also open to active players and those who were not currently active in a market but recently had been or plan to be soon. To attract as large and unbiased sample as possible, the questionnaire was shared with potential respondents through the project website, social media, and direct emails to direct emails to project subscribers and known contacts. The survey was only made available in English; no respondents contacted the consortium partners to request

answering in their own language, despite an invitation to do so being included in the questionnaire introduction. The survey was promoted to respondents from 17th June until late October 2020 but remained open until late February 2020 so that stakeholders contacted during Country Handbook development still had the chance to respond.

Data validation and analysis

To avoid skewed or otherwise difficult-to-handle responses, the questionnaire was designed so that all quantitative answers were compulsory and included an email validation step to avoid non-genuine answers or bots. Answers that appeared inconsistent or difficult to interpret have been addressed through interviews.

Data visualisation and quantitative analysis were conducted using specialist statistical tools. The investigation examined differences between players (traditional suppliers vs. aggregators, new entrants vs. ex-monopolists), interrelationships between different barriers, and market clustering (whether particular configurations tend to occur together across different markets). Due to the low response rate in some countries, this investigation was carried out at the European level only. Analyses explicitly accounted for differences in response rate between countries. Note that the analysis per country presented in the Country Handbooks is qualitative, using input from the survey as well as direct interviews with stakeholders, consultation with NRAs, and the project consortium's desk research and expertise.

Expert Knowledge and Database

Throughout the project, the expert knowledge within the consortium but also through an existing network of the consortium partners enabled a detailed view on all related aspects of the study. Barriers have previously already been identified through literature review but even more important, through numerous projects with customers facing those barriers in the relevant markets. The extensive experience from all perspectives also enabled a balanced view on the barriers which have been raised throughout the study. The expert knowledge was also essential in designing the Barriers Index methodology, which can be found in ANNEX – 5).

On top of that, the consortium has access to central databases with key energy market information for all relevant countries. An extensive individual data collection (desktop research) was necessary in order to fill data gaps in the existing databases.

This data access has proven very valuable for enriching the market overview sections of the country handbooks with comparable quantitative market insights and especially for the calculation of the performance index.

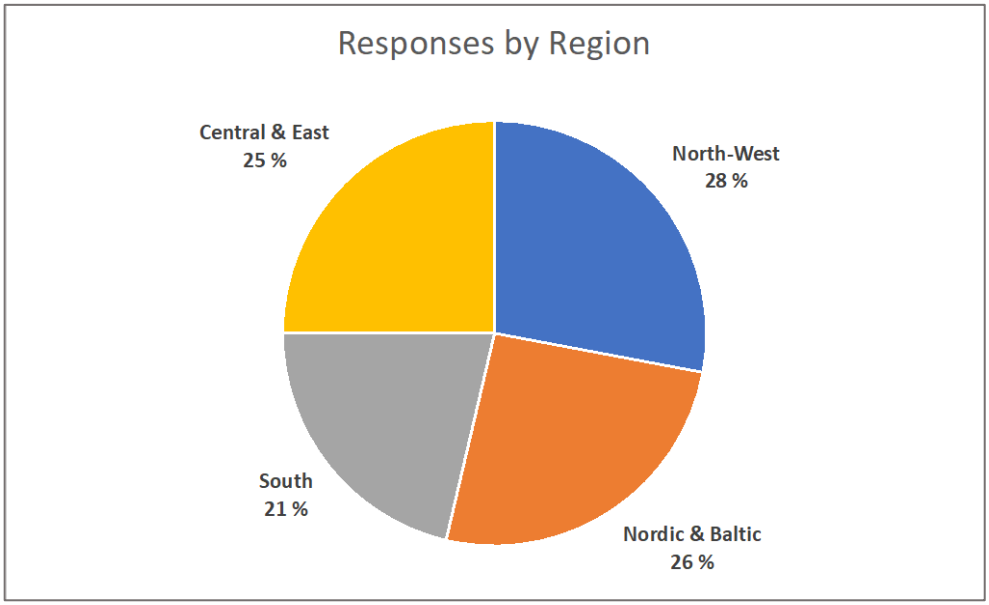
SURVEY & INTERVIEW RESULTS

The Overall 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.

Figure 4 - Responses by region



Analysis of the sample shows that responses were spread evenly among the regions. Furthermore, 66% of responses were non-incumbent competitors compared with 34% which were former incumbents in the markets concerned. In many cases the former incumbents are only former incumbents in one region within the overall country they are in.

A large proportion of the former incumbents are furthermore active across multiple regions and countries, and therefore are both incumbents and non-incumbents, defenders and challengers. Among the non-incumbent players were a mix of more established competitors and more recent new entrants, along with more traditional

supplies, new model suppliers and aggregators. More information on the nature of the response can be found in the Final Report for this project.

Survey results

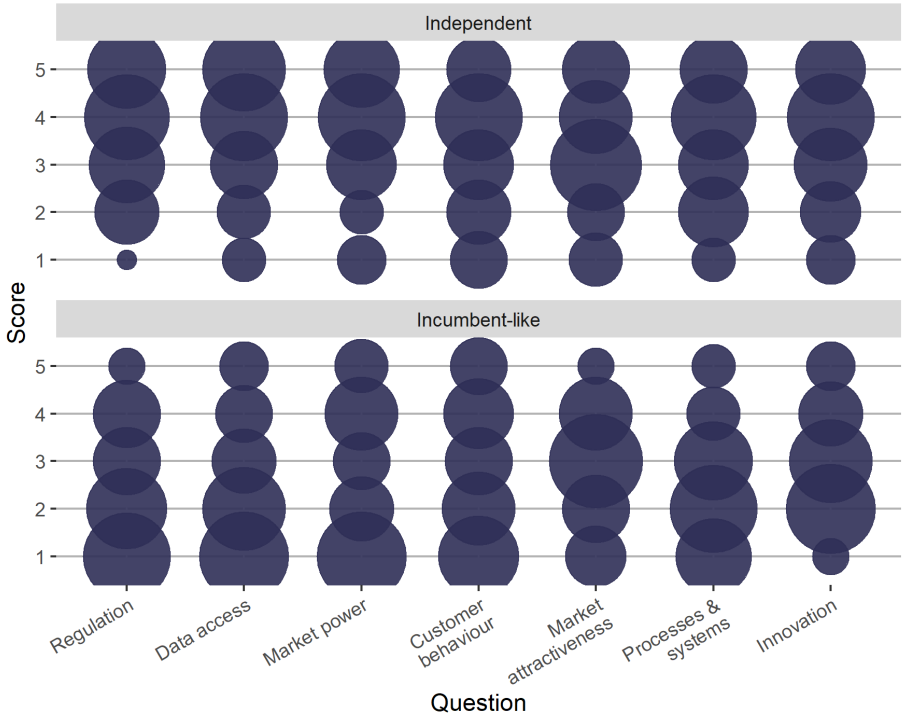
In total, 101 credible and complete questionnaire responses were received. Note that the full qualitative analysis was also based on many additional interview responses and desk research. Many survey respondents engaged also in the open (free text) questions, indicating a real interest in contributing to the study. There was an even split (51 and 50 responses respectively) between companies in an incumbent-like role (wholly or partly owned by an incumbent, and/or had customers obtained by default) and independent companies. Of the responding incumbent-like companies, most (78%) were active outside their incumbent region. Hence, the survey outcomes evenly represent different types of market actor, despite an imbalance in the number of responses received from each market, ranging from 0 to 11. Most respondents (90%) answered for both electricity and gas or electricity only. Although only 14 respondents identified themselves as an aggregator, 45-80% of all respondents answered something other than "not applicable" to the aggregator-focused question in each section, indicating some involvement in end-user demand response.

Types of market player

There were clear differences between the different question categories in how different types of actors experienced the market. Across all suppliers (excluding aggregators), scores were in general distributed rather evenly in each category. However, comparing responses between different types of supplier or product showed marked differences.

New entrants experienced a very different regulatory and operational environment to incumbent players. Across all categories new entrants tended to rank barriers more highly. These differences were statistically significant in the categories "Regulation", "Data access", "Market power" and "Processes and systems". Differences between new entrants and incumbents were around twice as large in "Regulation" and "Data Access" (new entrants ranked barriers more highly by an average score of 1.0 and 1.1, respectively) as in "Market power" and "Processes and systems" (0.6 and 0.4 respectively). No data was available on whether each respondent was part of a vertically integrated undertaking and hence comparison between unbundled and bundled suppliers was not possible. However, given that across Europe the incumbents tend to be the vertically integrated actors, bundled vs. unbundled companies would probably display similar patterns to incumbent vs. new entrant companies.

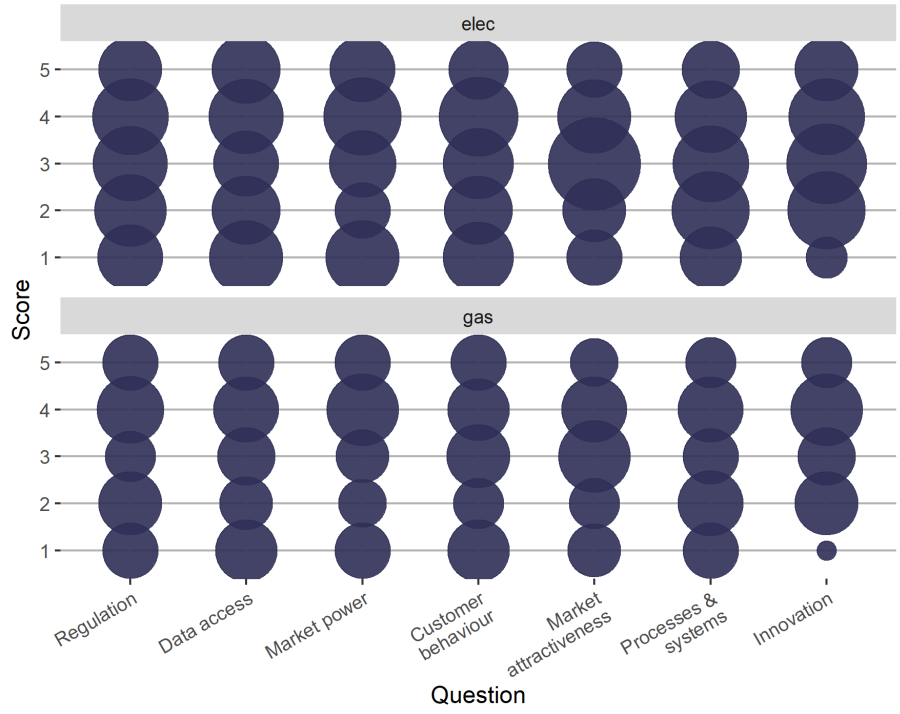
Figure 5 - Scores given in each category by new entrants vs. incumbents



Note: Scores indicate respondent perceived importance of a barrier. 1=low/no importance, 5=high importance.

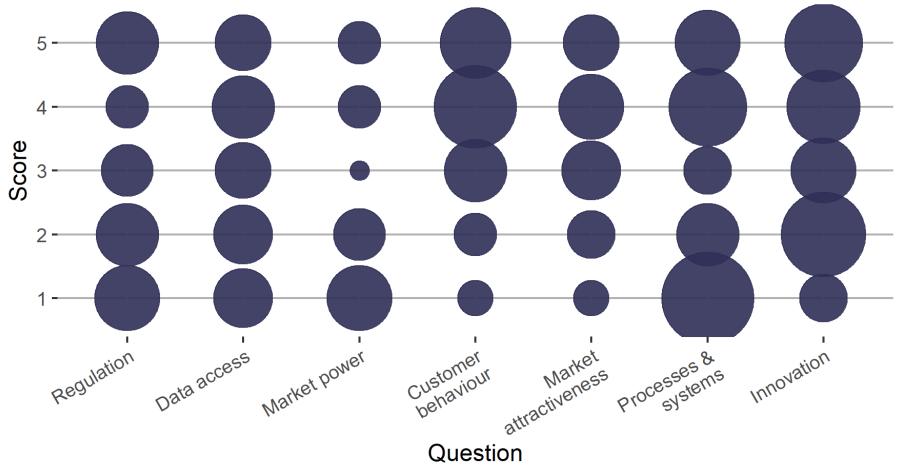
Comparing between products, on the other hand, showed little differentiation in how gas and electricity suppliers experience the markets. In no category were scores statistically significantly different between electricity and gas respondents.

Figure 6 - Scores given by suppliers in electricity vs. gas



Aggregators responded very differently to traditional suppliers, both incumbents and new entrants. This indicates that issues for novel players entering the market will not be entirely solved by the same interventions that would benefit new entrants with more traditional business models. Aggregator scores were in many categories more clustered than the scores given by suppliers, with "Customer behaviour", "Market attractiveness" and "Processes and systems" showing many responses with high scores, i.e. barriers perceived as important. The aggregator-specific questions generally received higher scores, i.e. were perceived as a stronger barrier, than the supplier questions.

Figure 7 - The distribution of overall scores given by aggregators



As expected, there were substantial differences between the study countries in how barriers were perceived by market players. The following figure shows the average (median) scores given across the entire questionnaire in each country. Mirroring the finding above, countries with high barriers in electricity broadly also had high barriers in gas. While some countries (e.g. Poland) had similar average scores for each category, others (e.g. Ireland) had much lower scores in some categories than others.

Figure 8 - Average scores in each category for each study country (electricity)

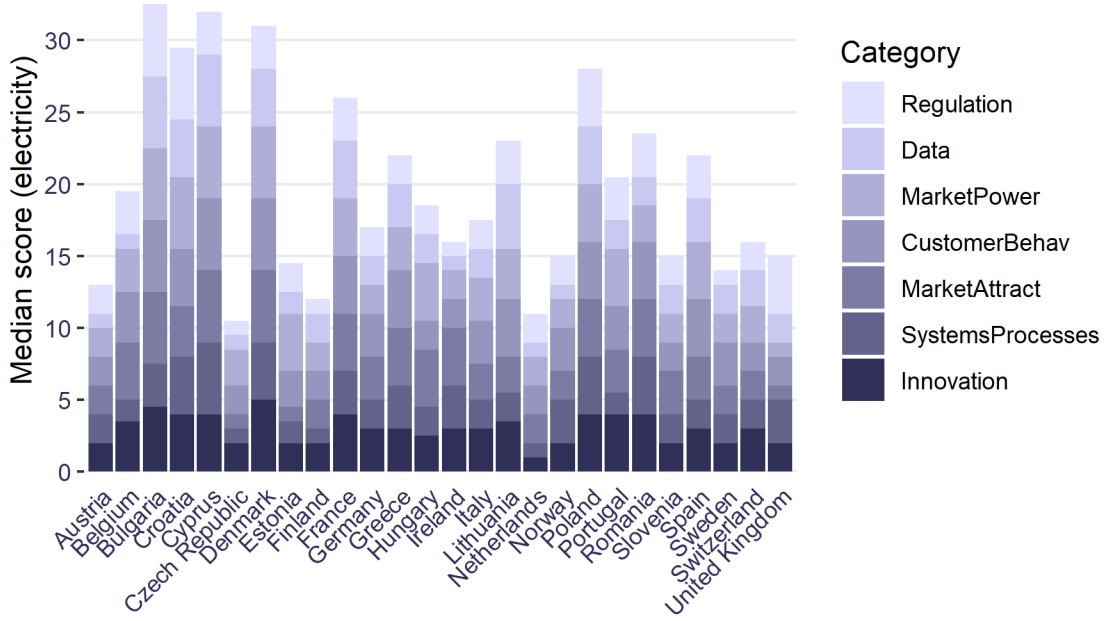
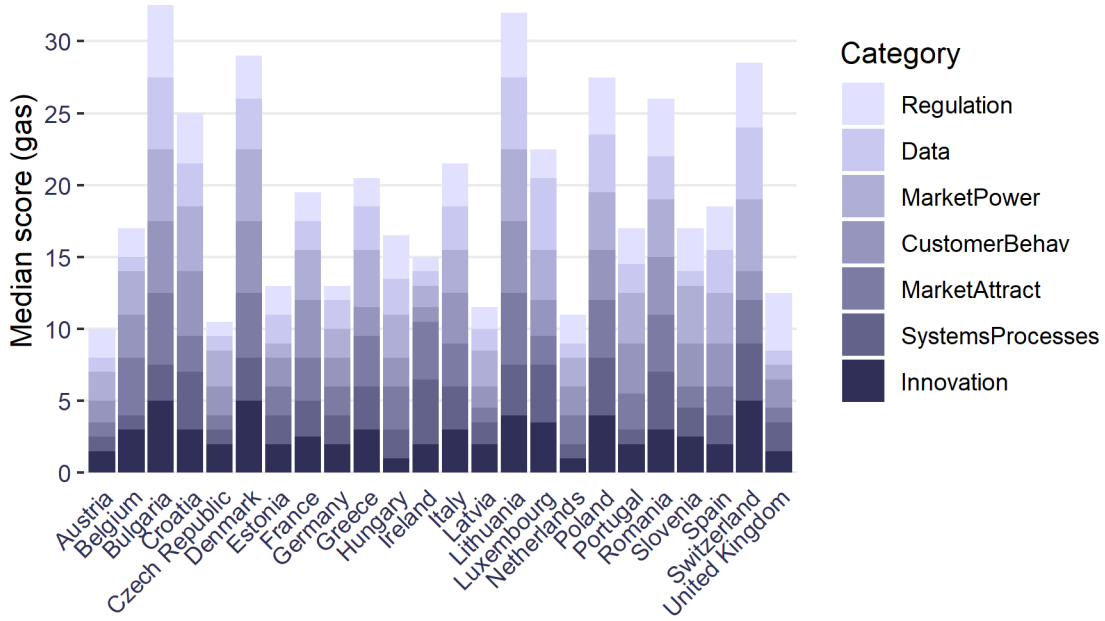
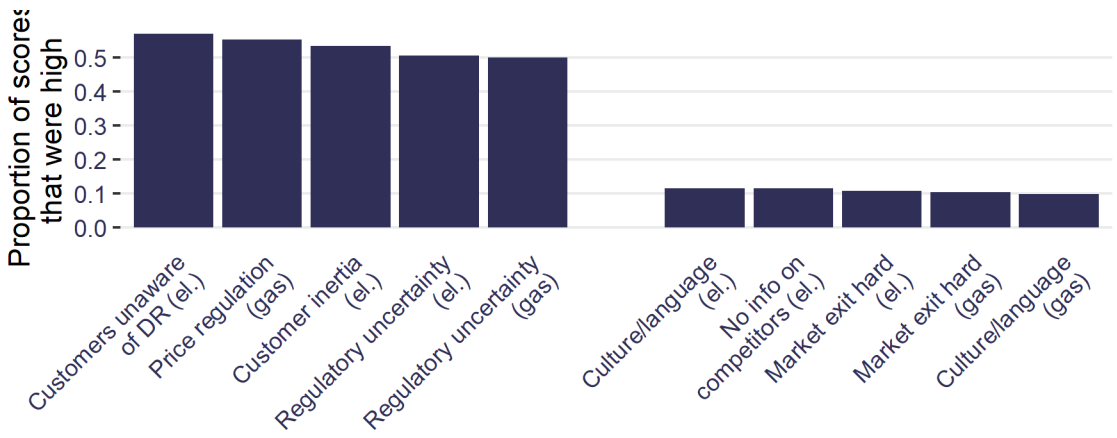


Figure 9 - Average scores in each category for each study country (gas)



Looking in more detail at the specific sub-questions, there was a lot of variation across responses as to which scored highly (4 or 5). Only 4 questions received high scores in more than half of responses.

Figure 10 - The five specific questions most and least often ranked 4 or 5



Note: figure shows most and least consistent barriers across all respondents. Score of 1=100%

Market types

To investigate whether market experiences differentiated into particular types, i.e. showed similar responses to similar question depending on e.g. country or market actor type, we conducted a clustering analysis on the specific questions across all categories. An initial k-means clustering analysis revealed two main clusters of responses. These clusters were further investigated using PCA (Principal Components Analysis), which maps the many individual questions onto fewer aggregated, constructed variables (principal components, PCs) that each contain parts of all the individual questions. The PCA showed that the first principle component (PC1) explained 41% of the variation across responses, while the second (PC2) explained a further 6%. The five questions (topics) that were most important to PC1 were:

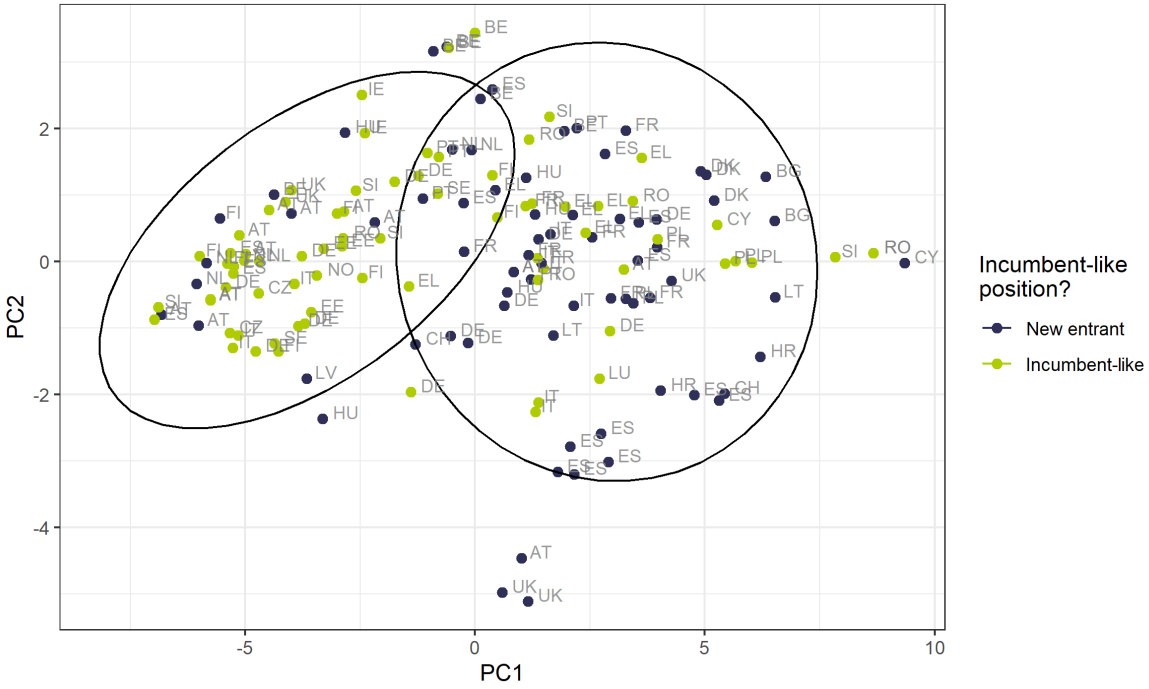
- **Market power:** strategic advantage of specific market players (e.g. incumbents, vertically integrated suppliers, supplier of last resort)
- **Innovation:** obstruction by other market players
- **Regulation:** uncertainty concerning future regulatory developments (e.g. unstable, political protection of status quo, high lobbying influence)
- **Innovation:** new business models and solutions don't fit into existing regulatory and system frameworks
- **Data:** data critical for operations is difficult to access or of low quality (e.g. customer master data, meter data, grid costs)

The five most important questions to PC2 encompassed variation that was not represented in PC1, and all concerned market attractiveness.

While responses from some countries clustered tightly together, other countries had very variable responses. There was more of a pattern in how different market players clustered, with more new entrants falling into cluster 1 (higher PC1, broadly reflecting higher scores given to key barriers) and more incumbents falling into cluster 2

(lower perceived barriers). This illustrates that market position/power is an important factor in how easy it is for suppliers to do business on the energy markets across Europe.

Figure 11 - Clustering of questionnaire responses in relation to respondent's market position



Note: each response's country is shown in grey text on the plot.

Key barriers identified through surveys

To define the key barriers across Europe, we began by carrying out a deeper analysis of the survey results, investigating links between different areas and the relevance given by respondents both to individual questions and groups of questions. This basis was complemented considerably by further stakeholder input gathered in interviews and by the expert judgement of the consortium, to establish which barriers were both most prevalent and most severe at the pan-European level.

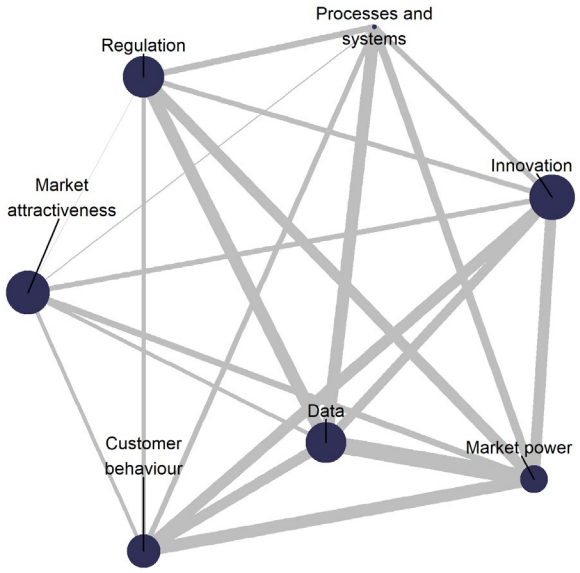
Interrelationships between survey questions

To quantitatively examine links between different issues more specifically, we used a network approach. The network graphs below illustrate the frequency with which survey questions scored highly (i.e. were perceived as barriers) by the size of the points, and how often two questions scored highly in the same response (i.e. both perceived as barriers) by the thickness of the lines joining the points. We begin by looking at the overall questions, answered at the start of each category of questions, then look in more detail at the specific questions answered by suppliers, with electricity and gas separated, and aggregators.

Looking first at the overall questions, the two areas that were highly ranked together most often were Market Power

and Data. This was borne out in the interviews, where many respondents noted that the advantage of players such as the incumbent or vertically integrated suppliers was predominantly in data access: these players are able to access their large customer base's data directly, including historical data, while other players may suffer delays or refusals when accessing data from e.g. DSOs. Customer Behaviour also showed relatively strong links with several other aspects, namely Market Power, Innovation and Data. This suggests that players or markets who experience customers as being unmotivated to engage in the market also suffer from unfavourable conditions in these various aspects of the market environment, indicating that the market as a whole is not yet well-developed and hence perhaps unattractive to engage in, or customers are unaware of their opportunities. These issues are discussed in detail in the Country Handbooks. The weak link between Regulation and Market Attractiveness was reflected in interviews, where regulatory issues often referred to uncertainty or lack of clarity affecting business planning, rather than regulation directly influencing the economic market landscape.

Figure 12 - Relationships between the overall questions (topics) in each category



Note: (Line thickness shows how often two questions scored highly in the same response, and the size of the purple points shows how often that question scored highly across all responses)

Digging into more detail around the specific questions, gas and electricity showed slightly different barrier landscapes. While gas showed a relatively even network of links, in electricity there was more variation in how strongly linked certain questions were, indicating that barriers are more concentrated to certain parts of the market. In addition, in electricity issues affecting novel services were more pronounced than in gas. Issues concerning strategic behaviour/advantage (of players like the incumbent or vertically integrated supply companies) were also more pronounced in electricity than gas. In both products, customer awareness (i.e. level of information about market engagement possibilities) was strongly linked with customer inertia (i.e. motivation to use those possibilities), and indeed these issues were frequently raised in an interconnected way by interview respondents. In both products, regulatory uncertainty was linked with the strategic advantage of other players, indicating that markets that lack clarity in how the energy system will develop are also those where the pre-liberalisation actors

retain market power, to the detriment of other players, i.e. that market development is generally slow-moving or undirected. Interestingly, in both products customer inertia was also strongly linked with regulatory uncertainty, despite these aspects at first glance being quite independent of each other in terms of the structure of the energy market/system. Again, this could reflect market environments that are experienced as being sluggish overall, with an unclear post-liberalisation regulatory direction coupled with customers unmotivated to interact with the markets due to factors such as insufficient choice, savings or information.

Figure 13 – Relationships between the 10 most important questions (topics) in electricity

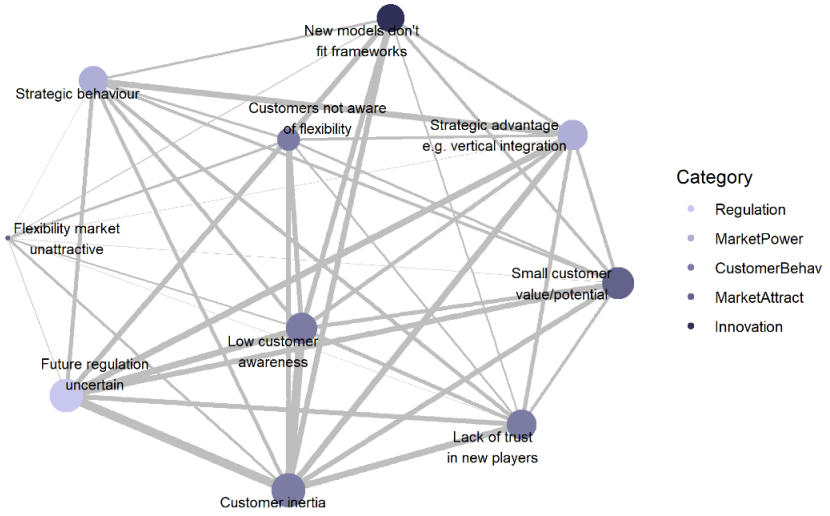
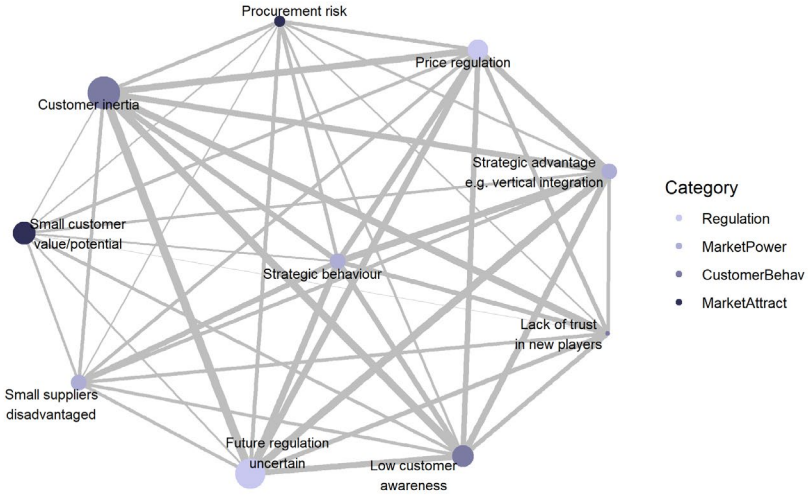


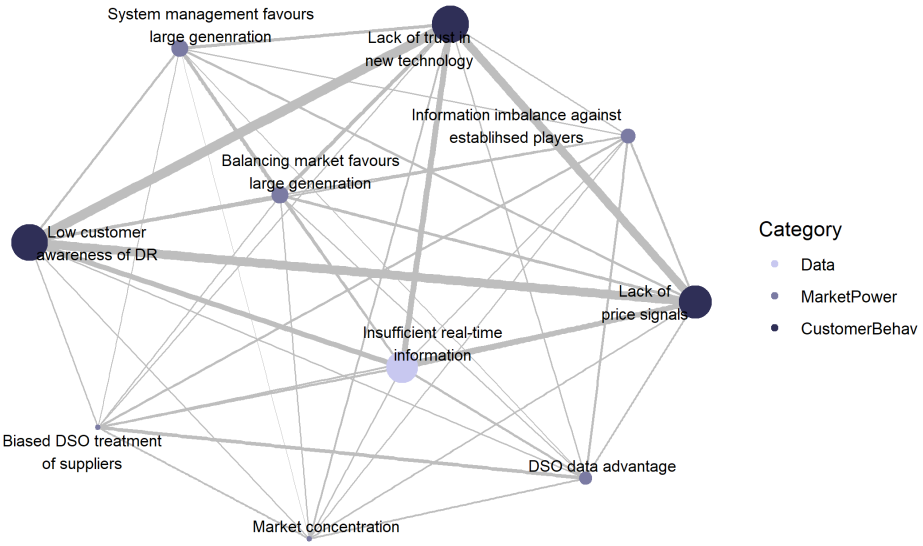
Figure 14 – Relationships between the 10 most important questions (topics) in gas



In contrast to suppliers, aggregators' ten most important questions showed a clear separation between important, interlinked issues and those with less significance. The three most frequently high-scoring questions were also most strongly interlinked, and all concerned customer understanding of and motivation to participate in demand response (DR). This suggests that the biggest hindrance in energy systems across Europe to more novel services is the customer base's unreadiness for them. However, it should be noted that in many countries the market and

systems for DR are not yet sufficiently developed for there to be any commercial activity in end-user DR, and such countries are not represented here. Following these issues, the lack of real-time information for customers was also an important issue with relatively strong links to the three main issues. However, despite data access featuring both here and in interview responses as a barrier to rolling out DR services, more data-specific questions were not as consistently ranked as important, nor closely linked with other issues. These issues were: imbalance in information access with other players, DSO advantages in data access, and biased DSO treatment of other players. These market power inequalities were often raised in interviews with novel service providers and were present in the top ten most important questions yet were not as systematically present across responses as the customer behaviour considerations. Conceptually, of course, as DR becomes more established in more markets, we would expect both customer-related and data-related aspects to mature in parallel.

Figure 15 - Importance of & links between the 10 most important aggregator-specific questions



Interviews and Other Research

In addition to the above identification of the key barriers (through analysing the survey results, investigating links between different areas and the relevance given by respondents both to individual questions and groups of questions), the results of the interviews complemented considerably the interpretation of the questionnaire analysis by adding additional insight into the barriers and barrier relationships that were identified through the questionnaire. In fact, the interviews strongly underscored the vast majority of the findings of the questionnaire as well as providing greater depth of understanding of them. However, the interviews also identified additional barriers, while questioning some others.

The result was the evolution of the list of barriers and the insight into them. The re-assessment drew additionally on feedback and evidence from defending suppliers as well as on reviews by regulators and governments (directly and through the final workshop). Combining the breadth of perspective and evidence required the expert

judgement of the consortium, to establish which barriers were both most prevalent and most severe at both a national and pan-European level.

The barriers that were ultimately identified, had therefore been through a multi-stage process that incorporated a wide range of stakeholders.

Identified Barriers

Barrier Classification

The literature review, questionnaires, interviews and workshops revealed a total of over 200 barriers facing the European retail energy market. In order to reach a sufficient degree of comparability without losing the required level of detail and distinguishability, these barriers were consolidated. In fact, over the course of this project, in an evolutionary manner, barriers have been classified into blocks, categories and a list of the most prominent barriers which fit the mandate of this project.

Specifically, four over-arching pan-European barrier 'blocks' have been identified, namely:

1. Regulatory dis-incentivisation,
2. Market inequality
3. Operational and procedural hindrance
4. Customer Inertia.

The four blocks are defined as follows:

- Regulatory dis-incentivisation: 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.
- 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.
- 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.
- 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.

Additionally, the study allowed for 'other' barriers that did not fit into the primary classification described above. The four Barrier Blocks are further divided into nine Barrier Categories, which in turn divide into 45 specific barriers (44 excluding 'other'). The only barrier identified in the 'other' block/category is 'Small Market or Customer Value.'

Table 2 – Barrier categorisation and grouping

BARRIER BLOCKS	BARRIER CATEGORIES	BARRIERS
Regulatory Disincentivisation	Price Regulation Burden (-sharing) Reg. unpredictability Access to innovation	45 Individual Barriers identified
Market Inequality	Unbundling & market power Equal access to & maturity of wholesale	
Operational & Procedural Hindrances	Sign-up and operations compliance Data access & processes	
Customer Inertia	Customer orientation	

All barrier categories and specific barriers are defined in detain in ANNEX - 2.

Barriers by Market

The specific barriers as they apply to each market are described in detail the associated Country Handbooks. However, as illustrated by the following tables (where light blue cells denote barriers that have been identified in a given market and green cells denote incidences of best practice), it would appear that the 45 barriers are both numerous and diverse across the categories and markets.

It is important to note however:

- the fact that a barrier has been identified in a given market in the following tables, does not indicate the degree of significance of that barrier in that market. The same barrier may occur with differing levels of severity in each market. While the study has identified what it sees as the more substantial barriers in many markets, barriers within a given market are not otherwise compared in terms of severity.
- the absence of a barrier for a given market in the following tables, does not necessarily mean that the barrier does not exist, only that it was not identified. Conversely, where barriers are identified they will be supported by varying degrees of certainty.

As such it is therefore extremely important for the reader to be aware that the following tables represent only the barriers that have been indicated through the process of research conducted for this study, and as such should be considered in combination with the greater detail provided in the Country Handbooks, and in light of the research limitations incurred by a relatively high-level, qualitative approach. The researchers nevertheless believe

that the following tables afford a good overall picture of the barriers as they are experienced across the surveyed European markets.

Table 3 - Barriers by market

Group	Category	Barrier	Markets
Regulatory disincentivisation	Price regulation	Price regulation discriminates against certain suppliers	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
		High penetration of price regulation	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 margin of regulated offer (margin squeeze)	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
	Burden(-sharing)	Obligation to collect tariffs unrelated to energy on behalf of others	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
		Obligation to keep a minimum security stock as a gas reserve	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
	Regulatory unpredictability	Suppliers face uncertainty because of a newly liberalized regulatory...	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
		Uncertainty caused by industry actors influencing legislation,....	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
		Uncertainty regarding future regulatory developments,....	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	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
		Uncertainty regarding environmental obligations and non-renewable...	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
	Access to innovation	Data protection issues	AT BE BG HR CY CZ DE DK EE FI FR EL HU IE IT LV LT LU NL NO PL PT RO SK SI ES SE UK
		Lack of incentivisation for novel pilot projects or post-pilot market rollout	AT BE BG HR CY CZ DE DK EE FI FR EL HU IE IT LV LT LU NL NO PL PT RO SK SI ES SE UK
		Lack of data for innovative product development	AT BE BG HR CY CZ DE DK EE FI FR EL HU IE IT LV LT LU NL NO PL PT RO SK SI ES SE UK
		No fit between new business models and existing regulation/obligations	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	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 information and incentives for demand-side grid management	AT BE BG HR CY CZ DE DK EE FI FR EL HU IE IT LV LT LU NL NO PL PT RO SK SI ES SE UK
		Market structures does not incentivize novel products (missing market value)	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

Group	Category	Barrier	Markets
Market inequality	Unbundling & market power	Lack of brand unbundling	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
		Discriminating, strategic behaviour of incumbent, and obstruction...	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...	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
		Limited or biased access to production	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
		Discrimination against new and small market players in capacity...	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
	Equal access to & maturity of wholesale market	Discriminatory market platform access (standards, guarantees, etc.)	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 liquidity in the wholesale market	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
		High price or volume risk in energy procurement	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

Group	Category	Barrier	Markets
Operational and procedural hindrances	Sign-up & operations compliance	Poor availability of information for market entrants & active participants	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
		Heavy administrative process for entry (registration / licensing)	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
		High financial requirements (incl. long working capital cycles)...	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
		Excessive reporting requirements during operations	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
		Excessive information requirements around billing and energy labelling	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
		Highly complex or country-specific systems & processes	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
		Regional differences or differences between DSOs within a country	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
		Cumbersome or biased switching process	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 environmental obligations	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	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
	Data access & processes	Lack of data hub	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
		Complex, heterogenous IT infrastructure and/or low level of digitalisation	AT BE BG HR CY CZ DE DK EE FI FR EL HU IE IT LV LT LU NL NO PL PT RO SK SI ES SE UK
		Missing access or poor quality of operations-critical data	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

Group	Category	Barrier	Markets
Customer inertia	Customer orientation	Lack of information regarding available offers and switching possibilities.	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	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	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
		Changing supplier is cumbersome or has little pay-off for the customer	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
		Consumers prefer status quo	AT BE BG HR CY CZ DE DK EE FI FR EL HU IE IT LV LT LU NL NO PL PT RO SK SI ES SE UK
		Lack of trust in new or foreign suppliers and in new technology	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

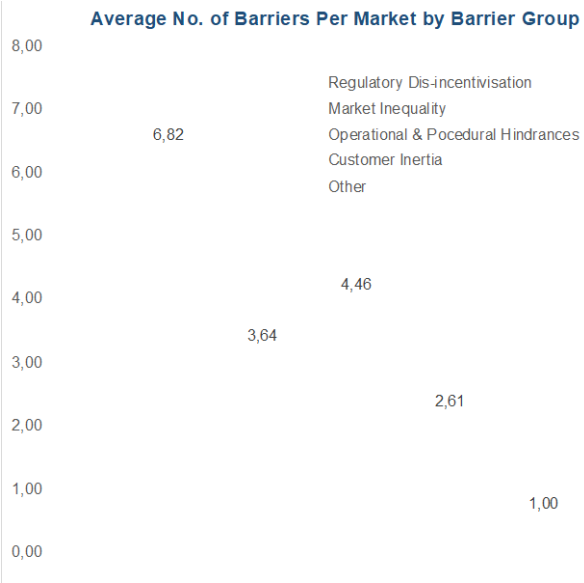
Group	Category	Barrier	Markets
Other	Other	Small market or customer value	AT BE BG HR CY CZ DE DK EE FI FR EL HU IE IT LV LT LU NL NO PL PT RO SK SI ES SE UK

Key	
	Barrier indicated or Identified in Market
	Best Practice Market

On average eighteen barriers were identified per market and four per barrier block per market. In the regulatory dis-incentivisation block each market had an average of seven barriers; for operational and procedural hindrances it was five barriers and for market inequality and customer inertia it was four and three barriers respectively. While

these numbers do not per se indicate which bloc is more significant, they do infer that while all blocks are important, regulatory dis-incentivisation is the key concern.

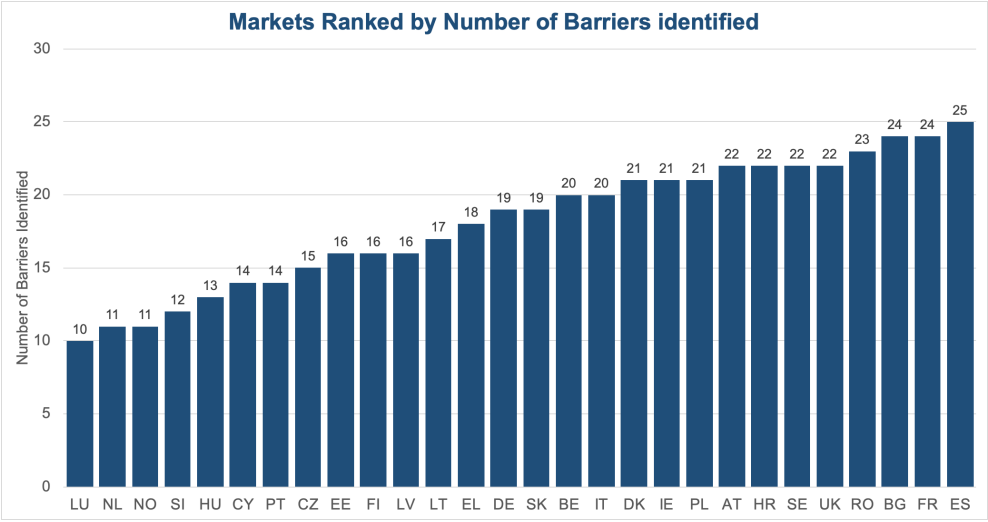
Figure 16 – Average Number of Barriers per Market



The tables also show however, that eleven markets have been identified as having best practice in relation to (altogether) eleven separate barriers, with a total of fifteen best practice cases.

By adding up the number of barriers identified per market, a cautious ranking (accepting the limitations of such a comparison as explained above) of the markets reveals which markets experience the fewest and most barriers. In this respect Luxemburg, Netherlands and Norway have the fewest while Bulgaria, France and Spain have the most. It is important to note however, that the number of barriers does not per se indicate the sum of all barriers (a market may have many small barriers or few large barriers).

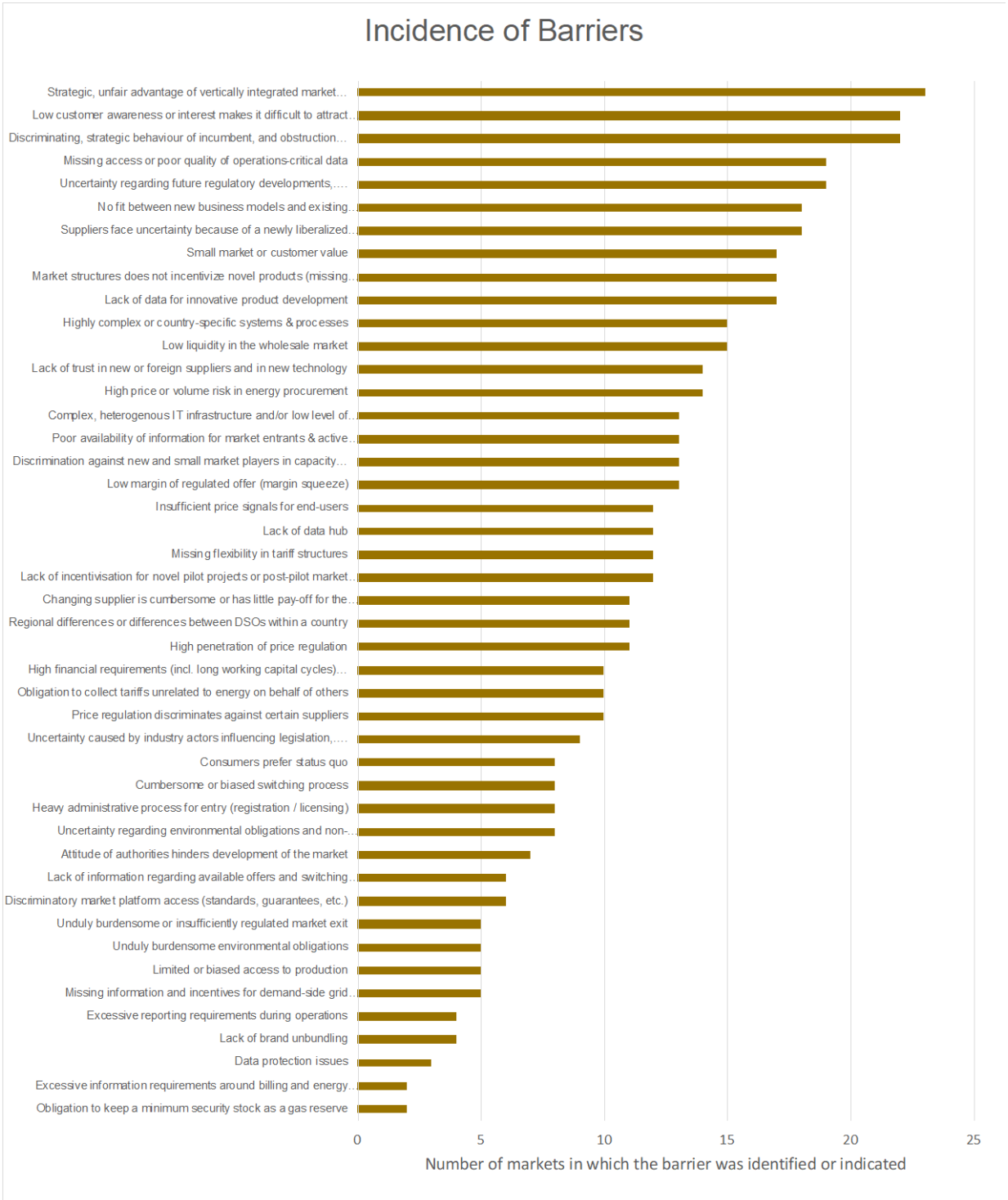
Figure 17 – Markets ranked by number of barriers identified (electricity, gas and aggregators)



Key Europe-Wide Barriers

If we simply look at the incidence of each of the 45 barriers, regulatory disincentivisation accounts for 37% of barriers per market, compared with operational and procedural hindrance for 24%, market inequality for 20%, customer inertia for 14% and other barriers for 5%. A clear ranking of barrier incidence also emerges.

Figure 18 - Barriers ranked by incidence



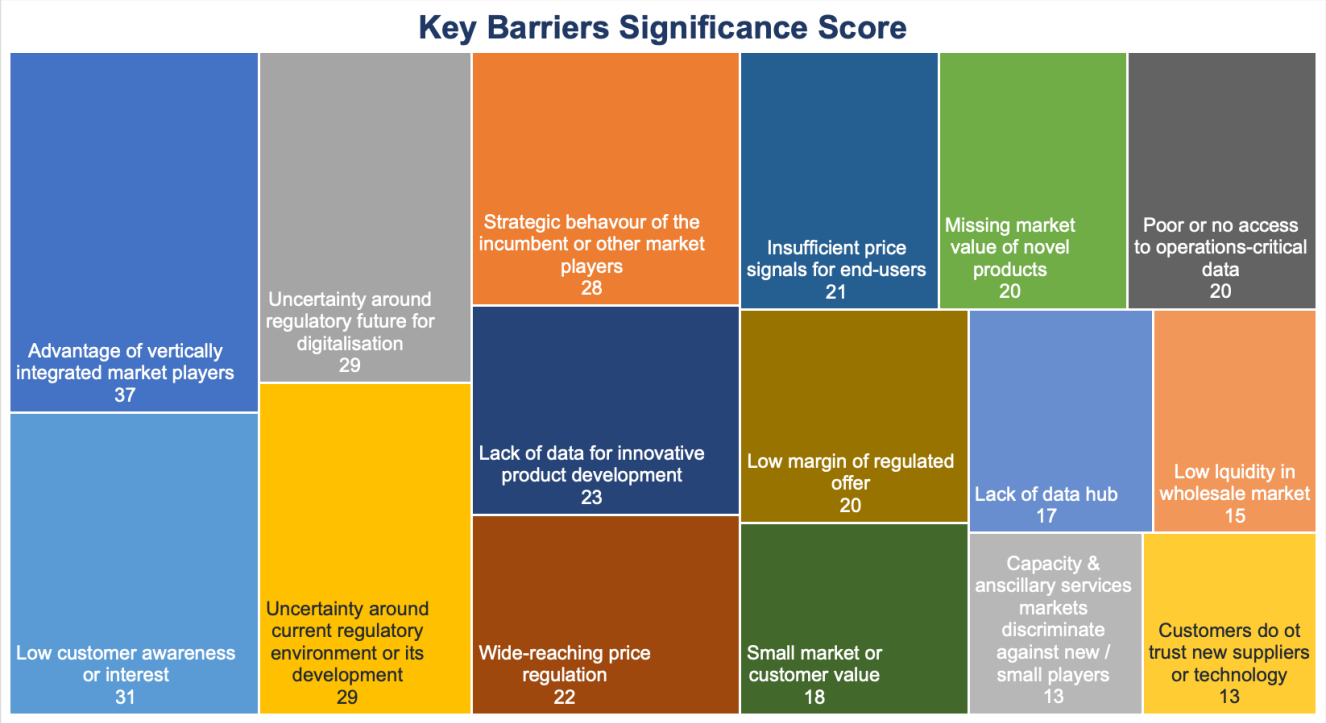
By combining this insight with insight into the severity of the barriers in each market, along with insight into unique, country specific barriers, 16 'key Barriers' were identified based on the sum of evidence from the survey, interviews and other research conducted for this study. These key barriers again spread across all the barrier blocks (including the 'Other' block, specifically 'Small Market or Customer Value'). It can be seen that while not all of the barriers are present in all markets, some of the markets appear to have most of the barriers and some of the barriers appear to be present in most markets. Furthermore, many of these 'key barriers' are seen as more substantial (indicated by red cells) in many cases.

Table 4 - Key Europe-wide barriers

If we rank the 16 Key Barriers by giving a score of 1 to each barrier in a market where it appears present, and a score of 2 where it appears more severe, we can derive a Key Barriers Significance Score whereby the higher the score the more prevalent and severe the barrier would appear to be. By doing this, as illustrated by the following figure, we see that the top five barriers are identified as:

5. Advantage of vertically integrated market players
6. Low customer awareness or interest
7. EQUAL:
    a. Uncertainty around regulatory future or digitalization
    b. Uncertainty around current regulatory environment or its development
8. Strategic behaviour of incumbent or other market players

Figure 19 - Key Barriers Significance Scores



Regarding the first and fourth above-mentioned barriers, it is perhaps surprising that after nearly two and a half decades since the earliest residential electricity markets liberalised in Europe, the most prevalent and severe barriers are still related to the position and behaviour of incumbent and especially vertically integrated incumbent companies in the market. This means that at least new entrants and other independent suppliers, but also many active incumbent suppliers that are trying to win customers from outside their incumbent areas, suffer from this issue - facing a market where a level playing field has still not yet been established.

In a market where the default pre-disposition of the customer with a right of choice is to do nothing and/or choose the utility that they know, it is essential that policy makers are aware that this issue is far from solved. In fact, in some markets the incumbent suppliers and vertically integrated utilities are in such a strong position that – as one put it – "we are not afraid of losing customers to new entrants because we keep the best ones" or put simply Lupus non timet canem lantrantem. The solution to this issue lies in part in removing the ability for vertically integrated and other incumbent players to take advantage of their position, but ultimately it would appear that the better way

to remove such advantage would be to remove the incumbency and vertical integration that underpins that advantage.

Regarding the issue of low customer awareness or interest, it is undeniably difficult to get customers interested in energy. Around the world the industry has tried desperately to garner customer excitement through expensive marketing and an array of distributed energy resource-related and innovative offerings such as consumption feedback, home energy management, and EV-related offerings. Despite this, by and large customers remain uninterested and driven largely (if at all) by price related issues. However, this barrier is in itself dependent on others such as a lack of data for innovative product development, uncertainty relating to the regulatory future for digitalisation, the lack of data hubs and insufficient price signals for end-users. It is also made more difficult by incumbent utilities which blur the innovation-related image boundaries between their regulated network and non-regulated retail activities – even when brand unbundling has taken place - helping customers to feel that the future rests with the incumbent.

This barrier or set of barriers as it should more accurately be seen, should therefore not be seen as an unavoidable barrier (or as one regulator put it: a failure on the part of supplier to develop interesting offerings) or one that is beyond the influence of policy, but rather as an ecology that needs to be nurtured in a holistic fashion. In short, if barriers around data access, innovative development and the uncertainty of regulation can be overcome (and not hindered by incumbency and integrated utility related barriers) then so too may the barriers preventing customers becoming interested in - and ultimately active in - the future of innovative and competitive energy offerings, something that is essential if European energy and environmental goals are to be met.

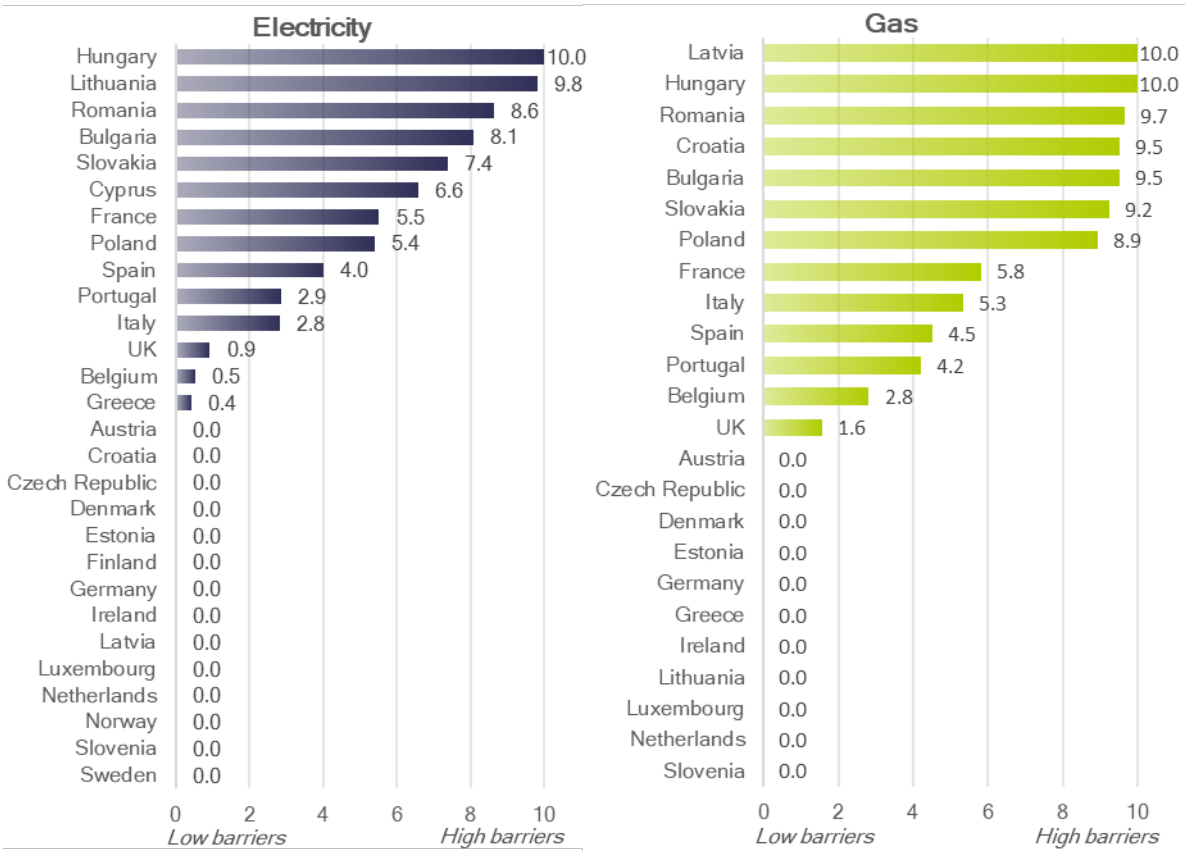
BARRIERS INDEX

Barriers Index - Performance indicator results

Regulatory dis-incentivisation

Market foreclosure by price regulation is measured with two sub-indicators, the penetration of price regulation (among residual customers), and the mark-up of the regulated offer.

Figure 20 – Performance indicators - Market foreclosure by price regulation



Price regulation is present on 14 out of the 28 analysed electricity markets, therefore, the average score is quite low (2.6). Amongst the affected countries the average is much higher (5.2). The combination of the high share of the customers with regulated price and the low margin of the regulated offer may lead to market foreclosure in Hungary, Lithuania, Romania[1] Bulgaria, Slovakia and Cyprus[2]. In five countries, price regulation has a moderate penetration and/or the level of the regulated price can be matched by competitors, but this situation can also prevent entry by reducing the contestable part of the market. There are three markets where the low penetration

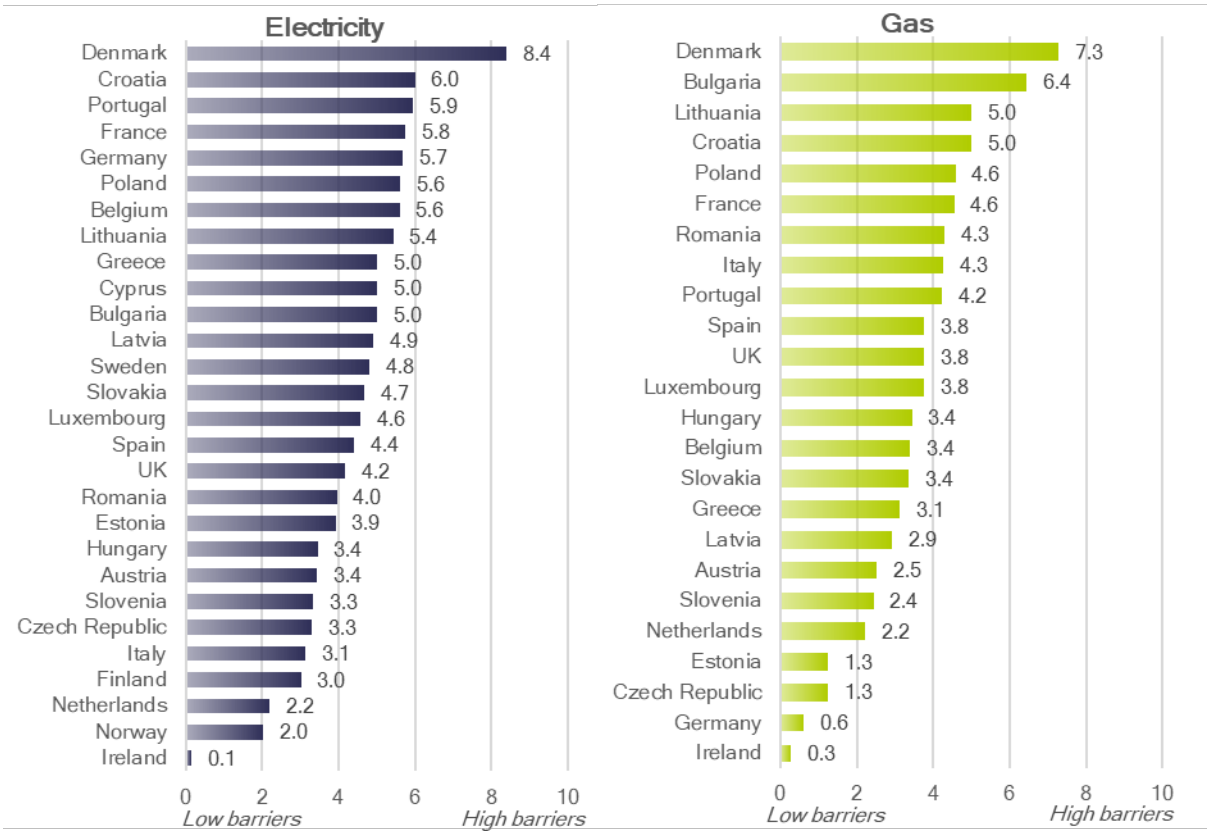
[1] Romania abolished price regulation in 2018, however it reintroduced it in 2019. According to the current plan it will eradicated by the end of 2020.
[2] In case of Cyprus mark-up data was not available therefore the average value have been imputed.

and the high mark-up of the regulated offer suggest that price regulation does not constitutes a severe entry barrier, while in fourteen countries such barrier is not present at all.

The indicator scores are higher in the gas markets (average: 3.8, amongst affected: 7.0), than in the electricity markets, especially because it is more common that the regulated price is set below competitive levels. Regulated offers are present in 13 out of 24 analysed markets, Price regulation is likely to foreclose the markets in Latvia, Hungary, Romania[3], Croatia, Bulgaria, Slovakia and Poland). In the other six counties, price regulation leaves some space for market competition but may deter entry by reducing the contestable part of the market. In eleven countries such barriers are not present at all.

The **regulatory burdens and unpredictability** indicator quantifies the non-energy share of the energy bill in an average household, and regulatory unpredictability that was measured via the supplier survey conducted for this project. For this barrier, gas markets received lower scores in average, then electricity markets (3.5 vs. 4.4). The reason is the higher average tax level on electricity, while the predictability scores are similar in the two markets.

Figure 21 – Performance indicators - Regulatory burdens and unpredictability



Denmark received the highest barrier scores in this category, regarding both electricity and gas markets. This is due to the topmost tax levels in Europe, in combination with the maximum scores received from the suppliers in relation to unpredictability of the regulatory framework. On the other hand, Ireland's top performance in both

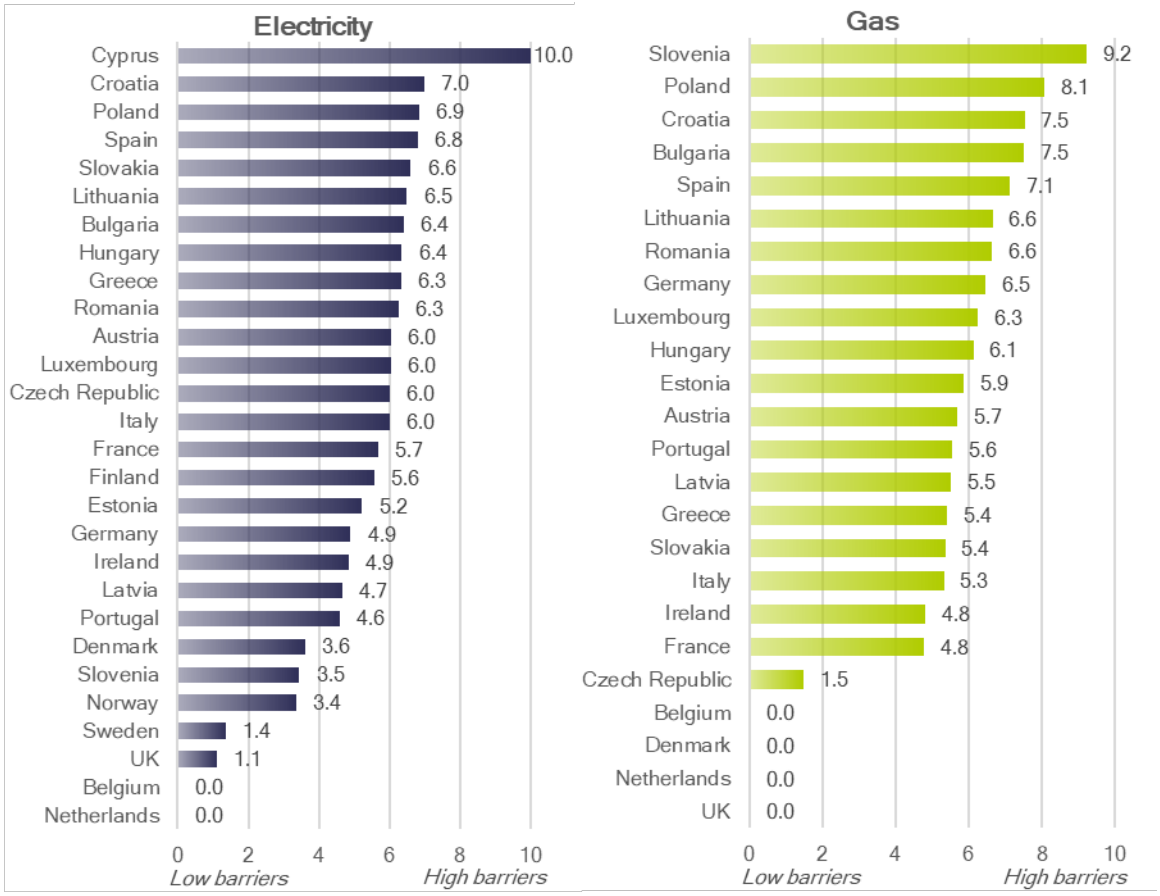
[3] As of March, price regulation will be phased out in July 2020 in the Romanian gas market.

markets is mainly a result of maximum satisfaction with the regulatory predictability, as the share of the non-energy components in the bill is close to the average value in both markets.

Market inequality

The competitive advantage of vertically integrated players - as measured by the market share of vertically integrated suppliers (on the residential market), and the strictness of DSO unbundling – is considerable in most of the countries (the average score is 5.1 in both markets). Vertically integrated suppliers have ca. 65% market share on average, but as legal unbundling is obligatory for larger DSOs (>100.000 customers), unbundling scores are lower in general.

Figure 22 – Performance indicators - Competitive advantage of vertically integrated suppliers



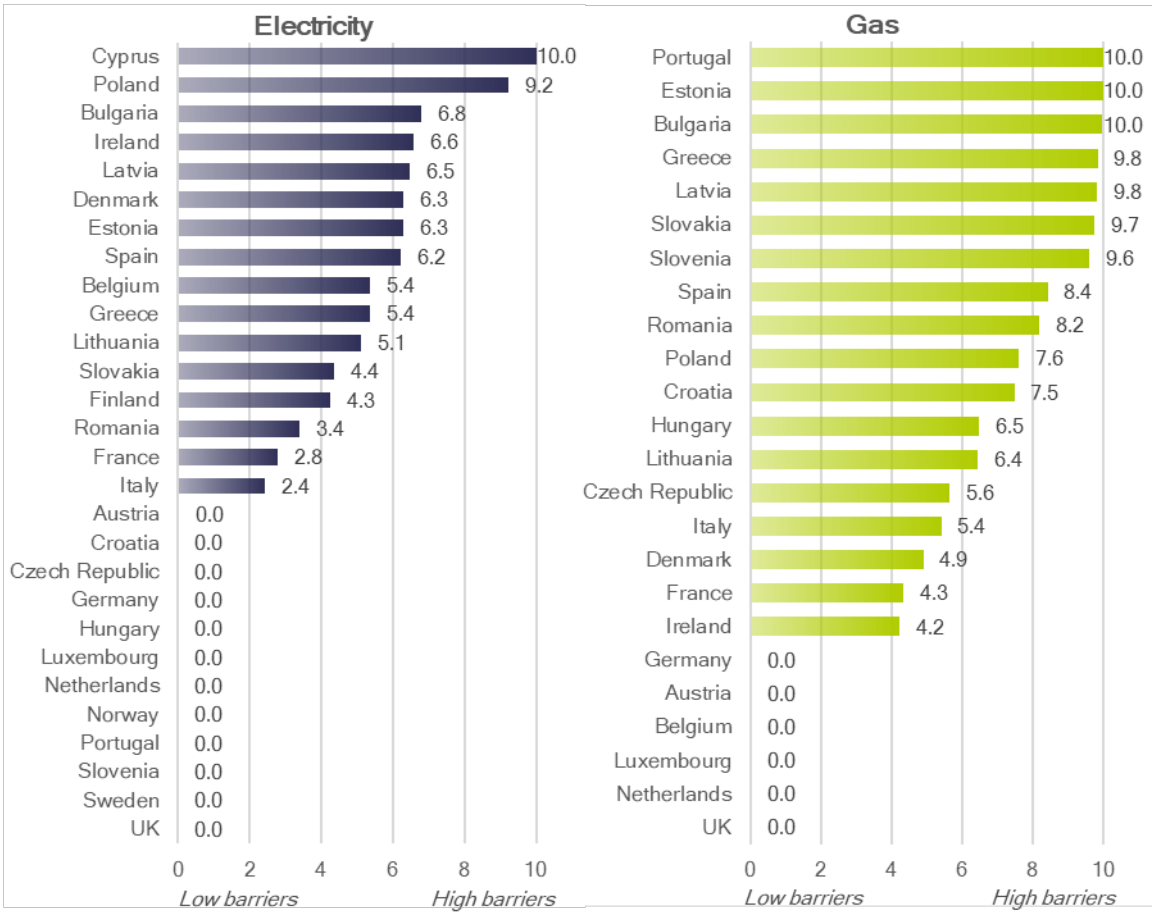
Cyprus has the maximum score because electricity customers are served by an integrated company. In gas, Slovenia is in similar situation, as the DSOs are small, integrated companies (exempt from the legal unbundling rules), and they supply the vast majority of the market.

On the other end of the scale, DSOs are fully independent companies in the Netherlands, Belgium, Denmark (only gas) and the UK (only gas), thus none of the suppliers are part of a vertically integrated group. Very few small integrated companies are present in the electricity markets of the UK and Sweden, while most of the suppliers are independent in the Czech gas market.

Access to wholesale markets is measured by quantifying the liquidity of wholesale markets. High score means that the accessible part of the wholesale traded volumes is relatively low compared to the consumption of the country.

Based on the data, access to wholesale markets is a much bigger issue in the gas markets (5.8) than in electricity markets (3.0). In electricity, 12 countries (out of 28) have no liquidity-related entry barriers, while only moderate barriers are observable in another 3-5 countries. Cyprus and Poland achieved the highest scores as the whole or majority of the wholesale traded volumes are traded outside of organised marketplaces (long-term contracts or other bilateral deals).

Figure 23 – Performance indicators – Unequal access to the wholesale market

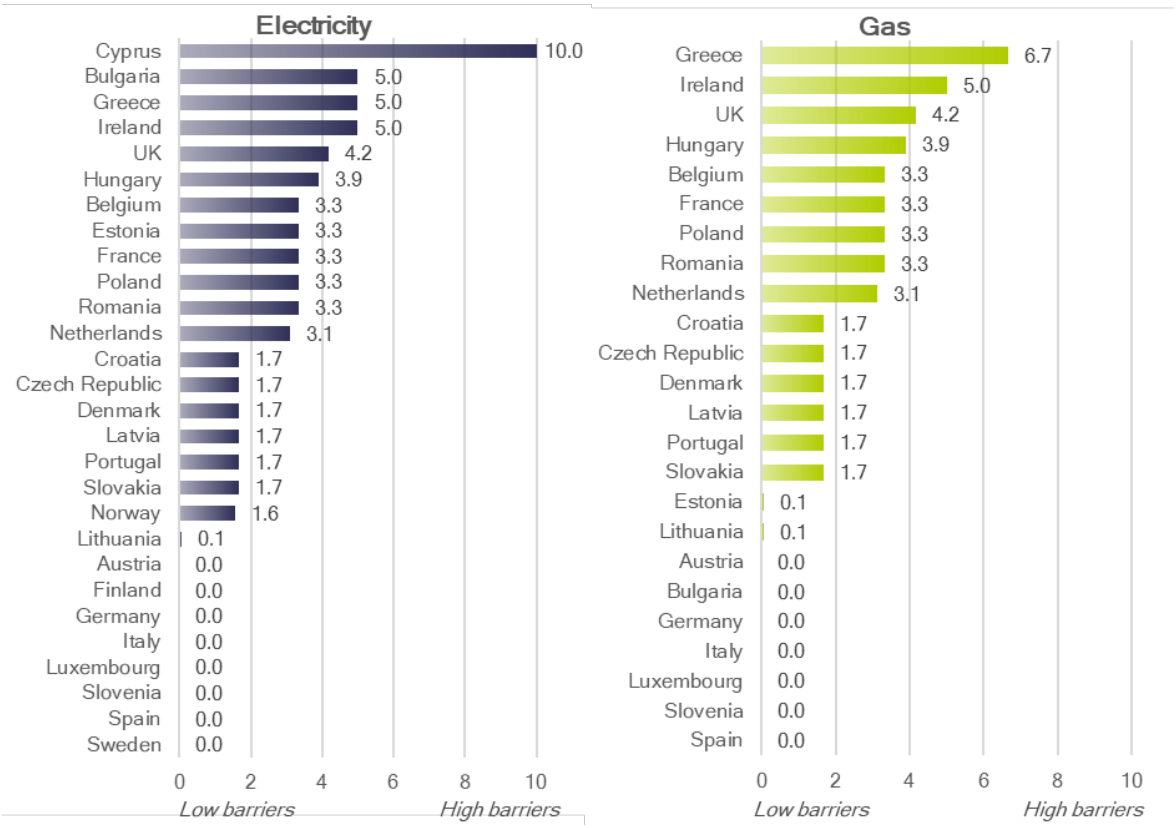


Six of the gas markets are liquid enough to receive zero score for that indicator, while the others have a striking 7.7 average score, suggesting that low gas hub liquidity (or non-existence of a centralized trading platform) is a widespread issue in Europe. The results suggest that suppliers face very severe barriers regarding energy procurement in seven countries, and there are other four countries also with high obstacles.

Operational and procedural hindrances

The complexity of the licencing procedure is quantified by the time that requires to get a supplier licence. It can be assumed that the length of the procedure is also related to its complexity. 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. The length of supplier licensing procedure is somewhat shorter in the gas markets (an average of 35 vs. 41 days), but the difference in mainly due to the fact that Cyprus (with a topmost value of 6 months) is only analysed regarding electricity.

Figure 24 - Performance indicators - Length of licensing procedure

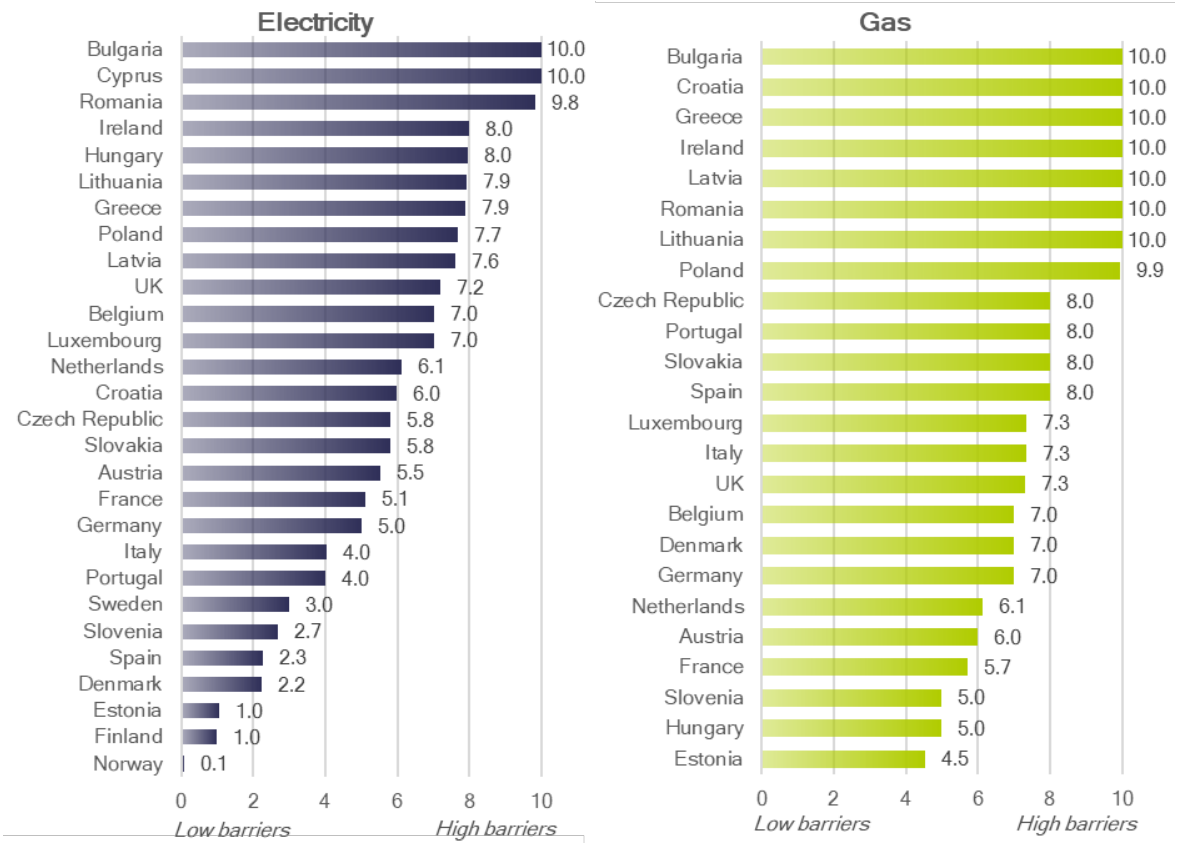


There is no licensing in eight electricity and seven gas markets. For the other countries, the average length is 58 days in electricity (52 days without Cyprus), and 49 days in gas markets. There is only a 1-day procedure in Lithuania (both markets) and Estonia (gas), while there are seven electricity and six gas markets where the licensing takes only 30 days. It can be concluded that licencing procedures longer than 60 days can constitute an entry barrier, but every country that maintains licencing could aim to reduce its length to approx. 30 days.

The 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 a website or data hub, and smart meter rollout is limited.

Barriers relating the quality of data access are significantly more severe in the gas markets (7.8) than in the electricity markets (5.6). In addition, data availability and reliability was also lower in the gas sector. Out of the 28 electricity markets in the analysis, data format is standardised for billing and switching processes in 24 countries, but only five countries applies international standards. The situation is worse regarding data access, as website access or data hubs are present only in thirteen countries. The average smart meter rollout is ca. 40% in electricity, while only 5% in gas markets.

Figure 25 – Performance indicators - Quality of data access

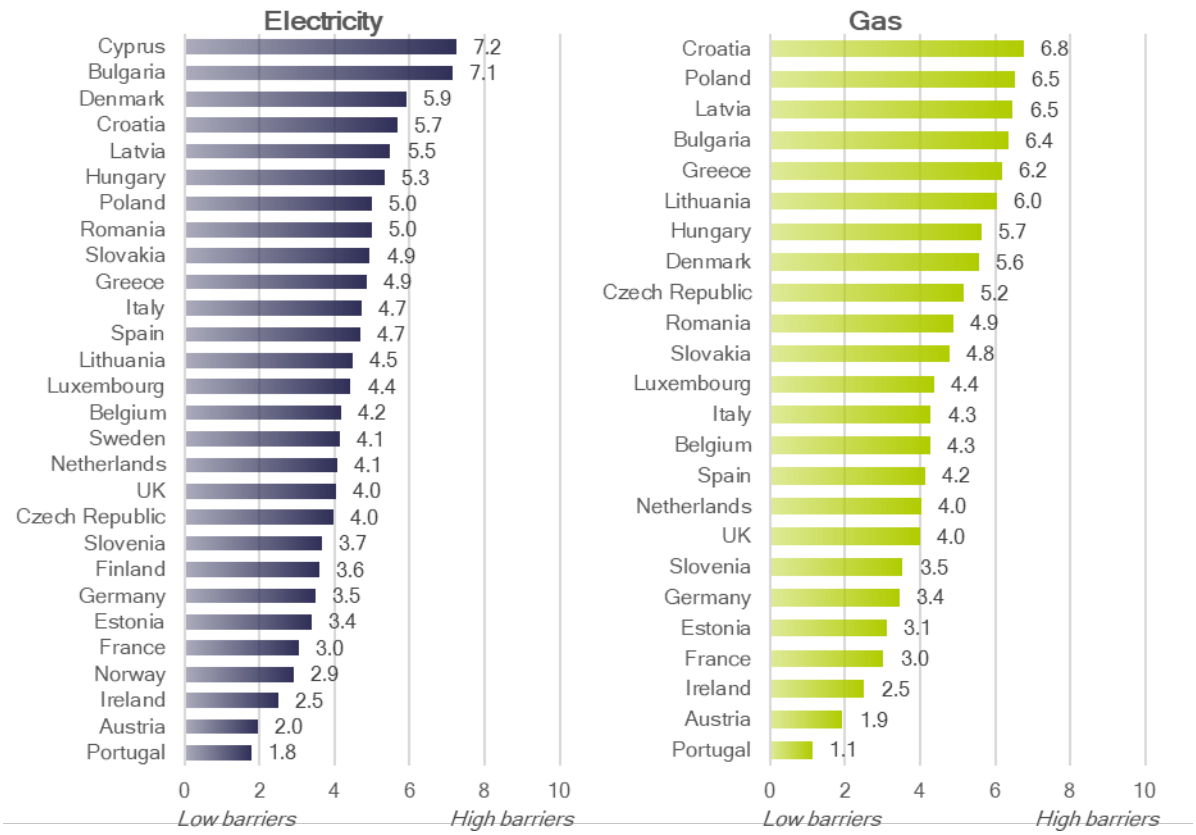


In relation to electricity, Bulgaria and Cyprus received 10 points, but Romania is also very close to the maximum score. For gas (at least) eight countries' performance are equal or very close to the maximum score. In general, Nordic countries perform very well regarding data access issues, as they mostly apply international data standards, operate data hubs, and have a near complete smart meter rollout.

Customer inertia

The comparability of offers is measured by combining two approaches. The customer's opinion is explored based on a survey commissioned by the DG Justice and Consumers. The supply side is quantified with a checklist indicator which covers the availability of comparison websites, based on their number and functionalities. In sum, a high score is attributed if the consumers gave low scores for comparability, and there are no comparison websites in the country.

Figure 26 - Performance indicators - Comparability of offers



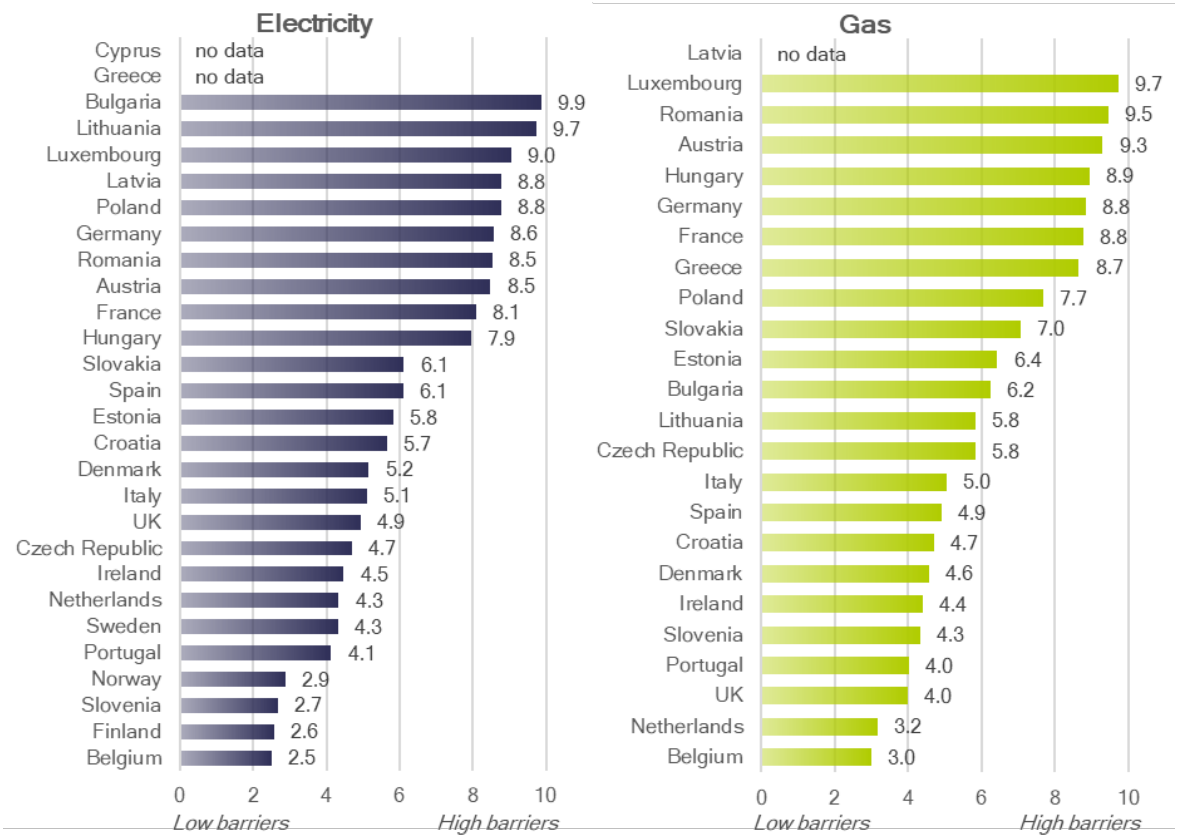
The indicator scores are similar for the two markets (4.3 and 4.5 in average), and the ranking is almost identical. It suggests that comparison websites mainly cover both markets, and the offers are also communicated in a similar way.

The top performer is Portugal in both markets, as many reliable comparison websites are available, and this is reflected in customers' opinions as well. Austria, Ireland, France, Estonia and Germany are also amongst the best performers in both markets.

The perceived difficulties of switching 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 the high share of consumers reporting bad experiences with, or a poor opinion of, the switching process, among all customers who considered switching.

On average, approx. 60% of the customers have had a bad experience or opinion of the switching process in both markets, which is a quite high number. In relation to electricity markets, three groups of countries can be separated based on the indicator score. Ten countries received close to, or above, 8 points (80%), twelve countries achieved an intermediate score of around 4-6 points, and there are four countries (Belgium, Finland, Slovenia and Norway) with between 2.5 and 3 points. Regarding the gas markets, the results are more continuous, but a similar categorisation can be made: seven countries has close to or above 9 points, while two countries (Belgium and Netherlands) achieved ca. 3 points.

Figure 27 - Performance indicators - Difficulties of switching

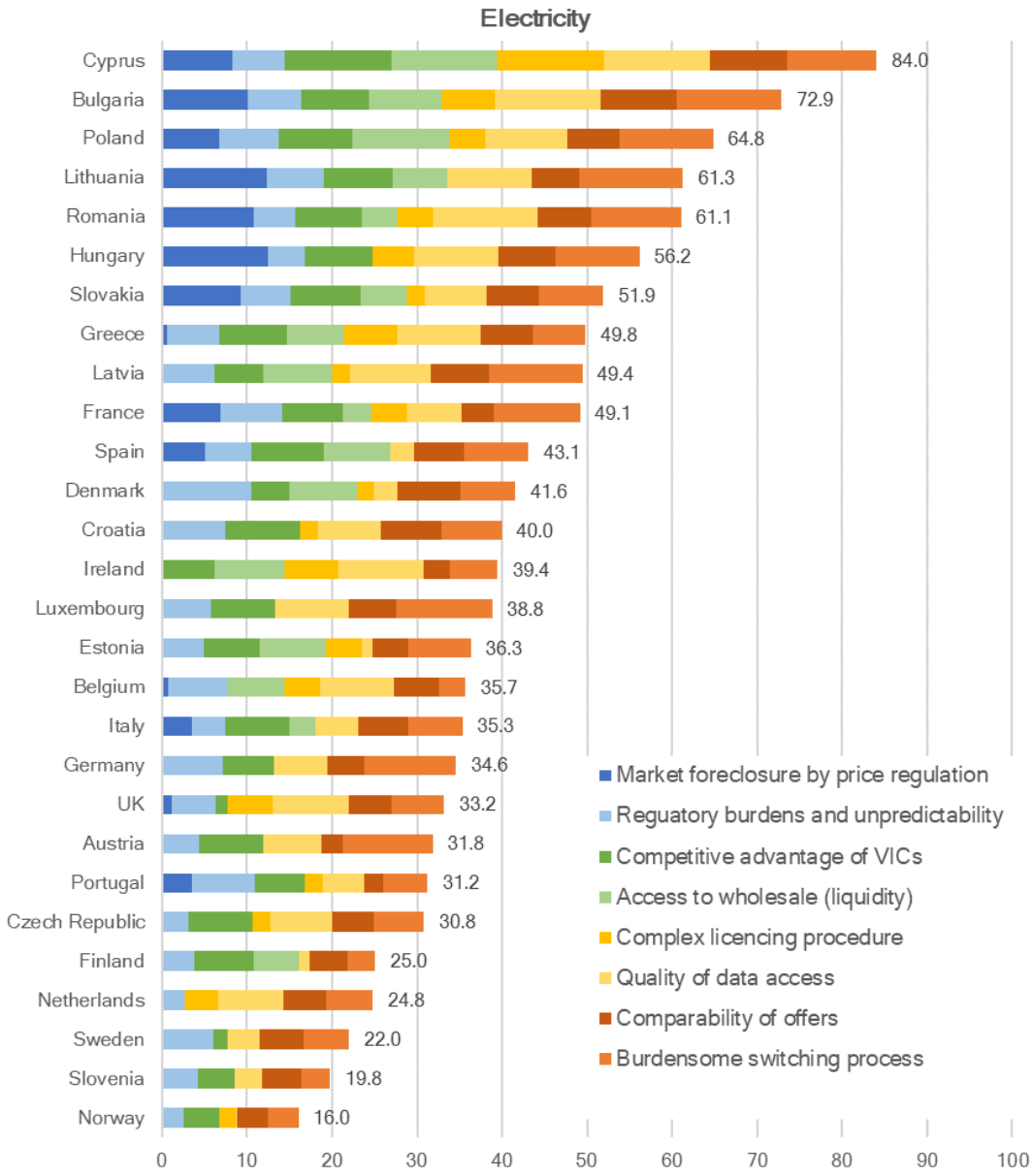


Barriers Index - Ranking

Electricity

The overall result of the Barriers Index on the electricity markets is presented below. According to the index, entrants to the Norwegian market faces the fewest barriers, but the electricity markets of Slovenia, Sweden, Netherlands and Finland are also outstandingly entrant friendly. The common feature of these countries that they do not regulate the end-user prices, and there is no licencing obligation for new suppliers (except in the Netherlands). On the other side, Cyprus is the toughest nut to crack for a supplier (reaching 84 point out of the maximum 100), while Bulgaria, Poland, Lithuania and Romania are also amongst the high-barrier countries. In general, countries with extensive price regulation (dark blue bar) are at the top of the list.

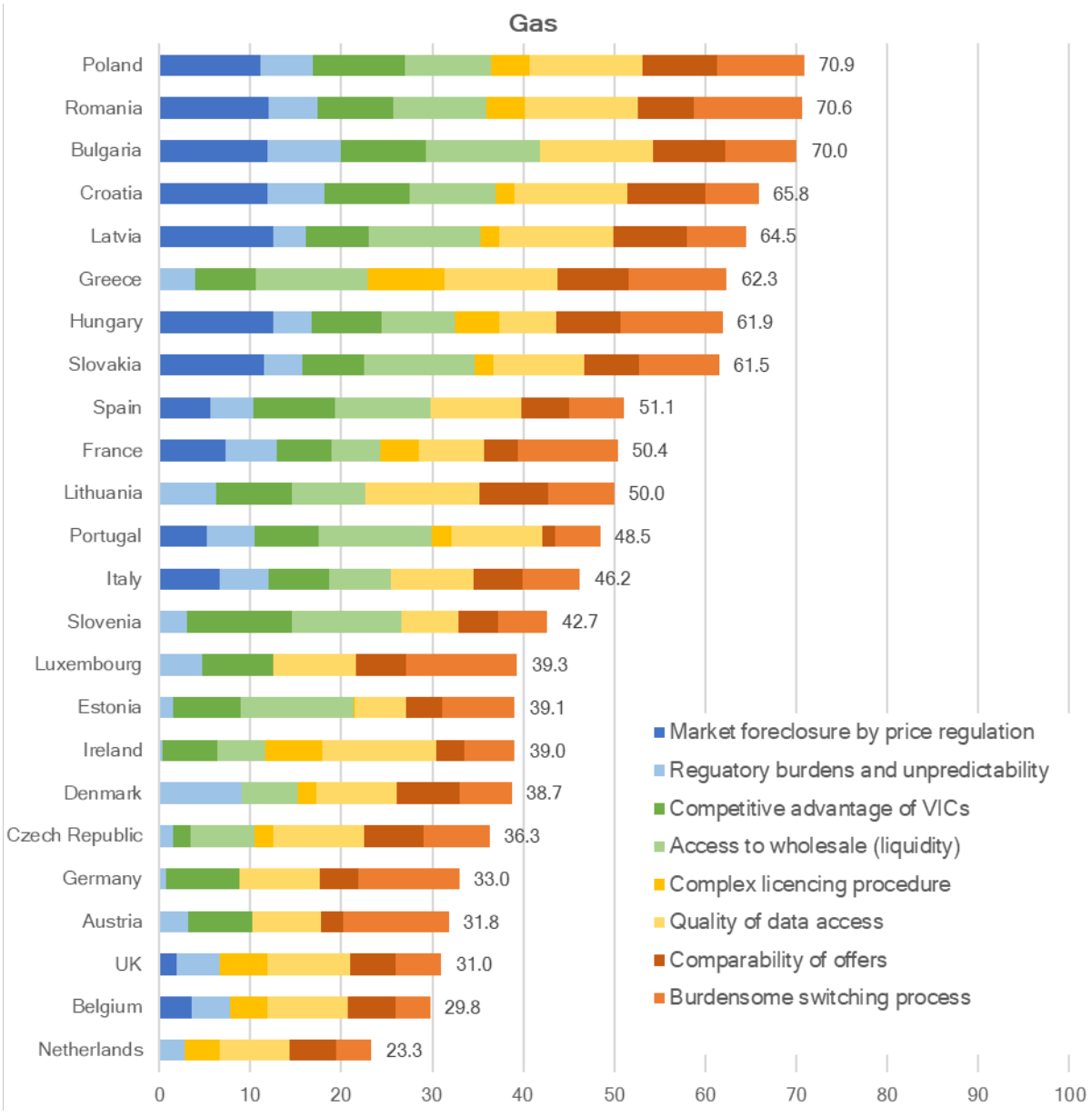
Figure 28 - Barriers Index - Electricity



Gas

Amongst gas markets, the Netherlands is in first place, while the Belgian, the British, the Austrian and the German markets are also open for new entrants. Poland, Romania and Bulgaria are mainly closed (achieving approx. 70 points out of 100), and suppliers face significant barriers in the gas markets of Croatia, Latvia, Greece, Hungary and Slovakia as well.

Figure 29 - Barriers Index - Gas



Summary

The following table presents the ranking of European retail electricity and gas markets based on the Barriers Index.

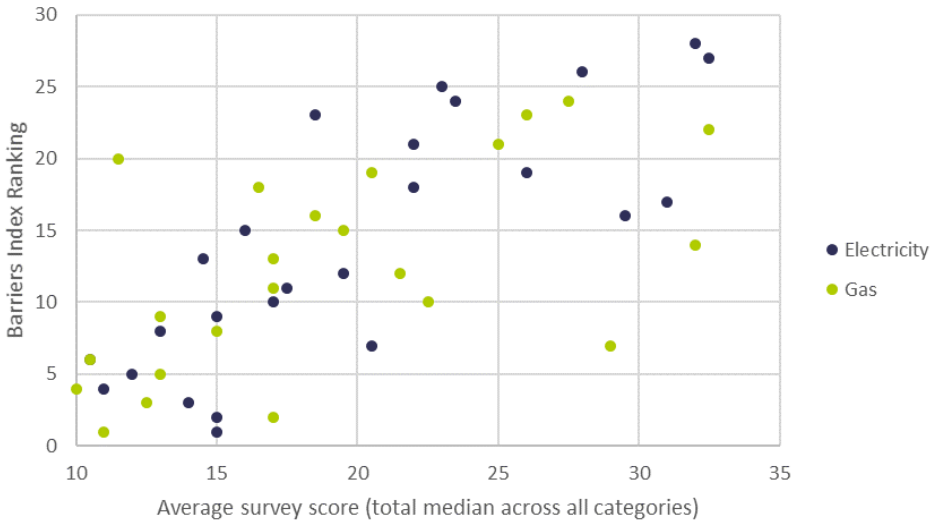
Electricity markets	
Rank	Country
1	Norway
2	Slovenia
3	Sweden
4	Netherlands
5	Finland
6	Czech Republic
7	Portugal
8	Austria
9	UK
10	Germany
11	Italy
12	Belgium
13	Estonia
14	Luxembourg
15	Ireland
16	Croatia
17	Denmark
18	Spain
19	France
20	Latvia
21	Greece
22	Slovakia
23	Hungary
24	Romania
25	Lithuania
26	Poland
27	Bulgaria
28	Cyprus

Gas markets	
Rank	Country
1	Netherlands
2	Belgium
3	UK
4	Austria
5	Germany
6	Czech Republic
7	Denmark
8	Ireland
9	Estonia
10	Luxembourg
11	Slovenia
12	Italy
13	Portugal
14	Lithuania
15	France
16	Spain
17	Slovakia
18	Hungary
19	Greece
20	Latvia
21	Croatia
22	Bulgaria
23	Romania
24	Poland

SIMILARITY OF INDEX & SURVEY RESULTS

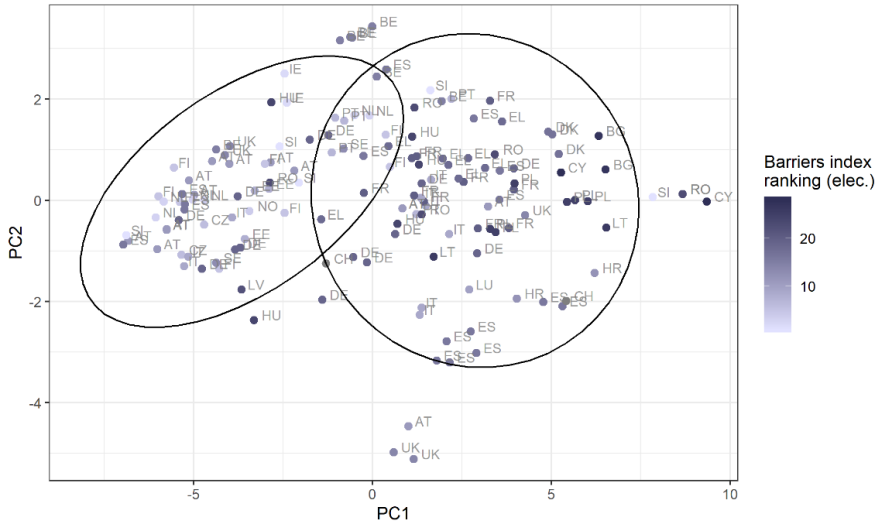
The Barriers Index Rankings were supported by the findings from the stakeholder survey. In both electricity and gas, countries that were ranked more highly in the Barriers Index, i.e. had higher barriers, also had higher average scores across all question categories. This connection was statistically significant for both products, although stronger in electricity (correlation is 0.8 in electricity and 0.58 in gas).

Figure 30 – The connection between the Barriers Index Rankings and the survey results



Similarly, the clustering analysis of the survey results showed that countries that fell within the first cluster (higher PC1, broadly reflecting that key barriers were perceived as more important) tended to be those with higher barriers rankings, i.e. greater barriers perceived across the market. This consistency between the questionnaire and Barriers Index suggests that countries with less favourable conditions regarding the five main areas above (i.e. those questions that tended to score similarly within a response) also have less favourable market environments overall, as shown by the Index.

Figure 31 – Clustering of questionnaire responses in relation to country's Barriers Index ranking



BEST PRACTICES

In this research we have also identified best practices across Europe, within the different categories of barriers studied in each of the 28 countries. In the table below, we report three cases of best practices that have been found helpful to remove barriers in different EU countries, from the regulatory and operational point of view but also from the perspective of competition between suppliers in the market.

Table 5 - Top picks for identified best practice

Top picks for identified best practices	
Barrier Block 1: Regulatory Dis-incentivisation **Barrier: High penetration of price regulation**	
General description of the barrier: The existence of price regulation means that a significant part of the market is not (or hardly) contestable for a new entrant. Consumers that have access to regulated services are extremely difficult to reach with competitive offers. If this segment is big, only a small part of the market (generally non-household customers) is contestable. Price regulation maintains the old structure of the market, where consumers do not face risks, do not have to care about comparing offers and choosing a supplier. Price regulation keeps the market in an immature phase where neither consumers nor suppliers can learn how a competitive market works.	**Identified country for best practice: Portugal** Portugal removed end-user price regulation for non-household customers and the transitional period initially ended in 2016. During that period, the NRA, sets a tariff (called the 'transitional tariff'), which may include an additional value, whose objective is to promote customers to switch to a free market tariff. Lastly, under the terms of Government Ordinance N. 39/2017 of 26 January 2017, consumers who still have regulated tariffs (1 million approx.) have an extra transitional period, up until 31 December 2020, to choose an electricity market supplier. While, under the terms of Government Ordinance N. 144/2017 of 24 April 2017, customers in the natural gas market, have a transitional period until 2023. In this study we found that a clear roadmap and transitional periods have been an effective way to phase-out price regulation regime.
Barrier Block 2: Market Inequality **Barrier: Strategic, unfair advantage of vertically integrated market players and lack of transparency**	
General description of the barrier: DSOs are required to separate distribution activities from supply both legally and in practice, so that unregulated distribution activities do not cross-subsidise any supply business. However, co-ownership is allowed, and small DSO/supplier companies are often exempted from any unbundling. Vertically integrated companies are still able to use their market power to gain an information advantage, allowing them to e.g. target customers based on consumption profiles or win back customers during the switching process.	**Identified country for best practice: UK** 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.
Barrier Block 3: Operational and Procedural Hindrances **Barrier: Lack of data hub**	
General description of the barrier: There is no centralized data hub or a platform for switching and access to DSOs information. This increases the time and effort required by suppliers to access customer or network data, e.g. to enact a switch or target potential new customers, and thus tends to favour suppliers with a high market share (and hence access to large amounts of customer data, including historical usage data) or suppliers vertically integrated with a DSO such that the parent company benefits from DSOs providing data directly to the supplier side.	**Identified country for best practice: Denmark** The development of the Data Hub 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 one actor (the TSO) had a clear system-wide responsibility to implement the changes, enabling streamlining of the process. Market players report the launch of the Data Hub as the most important recent innovation in Denmark's energy system.
Barrier Block 4: Customer Inertia **Barrier: Customer Orientation**	
General description of the barrier:	**Identified country for best practice: Norway**

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 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.

Across Europe, the current market designs are the legacy of previously established practices at the time of national monopolies where the main actors were the today's incumbent suppliers. However, on one hand, if from this situation incumbent operators inherit a competitive advantage if compared with other suppliers' ability of winning and keeping customers in the free market. On the other hand, other advantages that often are indicated by new suppliers as barriers are instead only advantages for well established companies in general. Such a characteristic can be observed in every market and industry. One example is the ability of well-established companies in accessing credit from financial institutions.

ANNEX 1 - Literature review

The Literature Review can be found in a separate document.

ANNEX 2 - Barrier definitions

This annex gives full definitions of all barriers identified across Europe in this study. The definitions are general and pan-European (designed to encompass all instances/examples of the barrier as identified in any European market).

1. Regulatory dis-incentivisation

Within regulatory dis-incentivisation, barriers across Europe have been sub-categorised into four areas encompassing 17 specific barriers:

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.
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.
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.
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).

1.1. Description of regulatory dis-incentivisation barriers: Price regulation

Price regulation discriminates against certain suppliers. Price-regulated markets can be explicitly discriminatory if they only allow one (or few) market participant to serve price-regulated customers. The level of discrimination depends on the specific design of the country regulation. For instance, by only allowing the incumbent suppliers to offer the regulated price to a specific customer segment, other market participants are per se excluded from this market.

High penetration of price regulation. The part of the market eligible for regulated prices is not (or only partly) contestable for a new entrant. Consumers that have access to regulated services are extremely difficult to reach with competitive offers. If this market segment is big, i.e., price regulation has high penetration, only a small part of the market (generally non-household customers) is contestable. Price regulation maintains the old structure of the market, where consumers do not face risks and do not have to care about comparing offers and choosing a supplier. Price regulation keeps the market in an immature phase where neither consumers nor suppliers can learn how a competitive market works.

Low margin of regulated offer (margin squeeze). It is common across Europe that price regulation sets the regulated price to a defined level and allows all market participants to serve customers within this regulated segment. However, this can create a barrier in the market if the regulated price is set to such a low level that only companies that can benefit of economies of scale are able to generate a sustainable margin. All other market participants will be confronted with a margin squeeze, making it very difficult to compete. The greater the size of the regulated customer segment the stronger the barrier, as it reduces the contestable part of the market for smaller players. Furthermore, a lack of transparency in the pricing mechanism increases the barrier by making it difficult for market players to anticipate the regulated price and price against it.

1.2. Description of regulatory dis-incentivisation barriers: Burden (-sharing)

Obligation to collect tariffs unrelated to energy on behalf of others. The obligation to collect non-energy-related tariffs, with the risk of delayed or non-payment, presents a barrier as it can substantially increase the total risk as well as required cash reserves. Combined billing, a billing regime in which the supplier provides the customer with one bill containing the cost for electricity and for the network, usually also encompasses taxes and others service fees. The supplier is considered the only contact point responsible for all those charges, and are thus also financially responsible for collecting them, e.g. having to pay the DSOs regardless of whether the suppliers manage to collect money from their customers. Suppliers hence assume this risk, which might be increased further when DSOs require suppliers to pay them advanced deposit. In other markets, energy suppliers may be tasked with collecting fees for unrelated services, e.g. TV licence fees, or providing other services, e.g. energy efficiency measures.

Obligation to keep a minimum-security stock as a gas reserve. Gas laws or by-laws across Europe require gas suppliers to hold particular strategic gas reserves, usually expressed in bcm or days of supply as a proportion of the company's sales. This implies a significant cost for the supplier in order to begin operations as new entrants to the retail market must finance significant initial investments and negotiate long-term supply contracts before obtaining the right to operate in the market.

1.3. Description of regulatory dis-incentivisation barriers: Regulatory unpredictability

Suppliers face uncertainty because of a newly liberalized regulatory environment or uncertain future development of the regulatory framework. Uncertainty can arise from a brand-new regulatory environment, which may include poorly defined responsibilities between actors, lack of or understaffed responsible departments/authorities that the supplier must communicate with, etc. Also, suppliers may experience uncertainty because of unpredictability around what the future regulatory framework will look like and hence what business opportunities will be possible.

Uncertainty caused by industry actors influencing legislation, e.g. incumbent or associations shape legislation. While cooperation between authorities and market actors is essential for functioning and lasting market developments, industry bodies or actors may be given too much power to shape legislation, allowing the legislation to be shaped for the benefit of these actors to the detriment of other actors or customers or market competitiveness. This also increases uncertainty for market players around what the legislation will look like when complete.

Uncertainty regarding future regulatory developments, especially in the field of digitalisation and new technology. New technological advances require regulatory frameworks in order to be fully rolled out without excessive business risk for suppliers. Smart meter rollout targets, progress and associated rights and obligations can be a main source of uncertainty. Also, regulatory uncertainty regarding the future of demand response aggregation or other novel services can hinder investment/innovation in these areas.

Attitude of authorities hinders development of the market. The regulator, TSO and/or government do not view a well-functioning competitive energy market as a high priority, or are mistrustful towards new products and services, or do not seek or use the cooperation of market players. This atmosphere can discourage new entrants and novel developments. Such an attitude may also favour the incumbent through involving it directly in regulation or through inertia around regulation to decrease its market share.

Uncertainty regarding environmental obligations and non-renewable generation capacity. Environmental obligations such as energy efficiency schemes and certificates of origin may present a barrier as they lead to an increasing amount of bureaucracy and costs and must therefore be incorporated into suppliers' business planning. Furthermore, uncertainty around the future of nuclear, coal and gas generation capacities increase price risk.

1.4. Description of regulatory dis-incentivisation barriers: Access to innovation

Data protection issues. GDPR and national data protection regulation can present a barrier to innovative product development due to difficulties in obtaining information on e.g. consumption patterns that would allow companies to develop market-relevant services.

Lack of incentivisation for novel pilot projects or post-pilot market rollout. Lack of financial incentives as well as missing technical support can be a major barrier for conducting pilots in DR and other novel technologies, as the piloting firm then bears all the risk for this experimental work. Projects started as pilots may even be tied by explicit conditions that they cannot remain on market after the completion of the pilot. This discourages participation, as there is no immediate commercial reward.

Lack of data for innovative product development. Smart meters open up opportunities for novel demand-side and aggregation services that rely on almost real-time consumption data to be able to match grid requirements and balancing product bids. Aggregators must be able to access customers and their data independently of suppliers, who in effect constitute a competitor for the DR provider/aggregator.

No fit between new business models and existing regulation/obligations. Regulatory frameworks need to provide an environment for not only piloting new business models but also allow for further advancements without risking any grid stability, e.g. net-metering schemes and self-consumption. Regulators' requirements/obligations designed for traditional suppliers may not make sense for innovative players who are nonetheless bound by them. Unclear current regulation around demand response aggregation, such as missing role definitions, makes it challenging for novel services to enter and grow.

Missing flexibility in tariff structures. Tariff structures' potential to be flexible is a main driver of demand flexibility as it allows the design of incentive-based tariffs with several Time-Of-Use tariff zones, encouraging customers to consume when it is cheaper. This is true for grid as well as energy components. Rigid or flat structures, which are defined by regulation, hinder new and innovative demand-shifting offerings on the market.

Missing information and incentives for demand-side grid management. Grid operators could reduce outlay on network expansion by instead procuring demand reduction or storage to aid grid control. However, operators are often unaware of this possibility, or subject to a support scheme built around CAPEX (infrastructure investment) rather than OPEX (procuring novel services) and hence incentivized to build rather than utilize flexibility services.

Market structures does not incentivize novel products (missing perceived value). Without an existing demand and/or mindset for novel services such as DR, new entrants face the barrier of establishing the entire market before they can act in it. A low level of perceived value can due to a technology lag, customers' being unaware or not incentivized, or little competition between traditional suppliers resulting in little need for suppliers to innovate/differentiate.

2. **Market inequality**

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

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. Below, we describe these barriers related to market power in more detail.

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.

   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.

2.1. Description of market inequality barriers: Unbundling and market power

Lack of brand unbundling. Similarities in the name and logo of the incumbent supplier and the DSO negatively impact the retail market in terms of competition, as customers are unaware that they are two separate entities and hence of their opportunity to choose supplier. Even where the supplier and DSO have implemented a different branding, there is a big difference regarding which company carried over the logo – and hence consumer relationship and trust - of the former vertically integrated company.

Discriminating, strategic behaviour of incumbent, and obstruction by other market players. The incumbent/existing suppliers are able to use tactics in pricing, customer access, combined billing (including the cost of social tariffs) etc. not available to new entrants. For example, large established players can afford to apply predatory pricing for certain customers to retain them. Market players with a lot of power, i.e. market share, may act in an obstructive way, especially around data exchange. This can especially disadvantage small suppliers with only a limited customer base to draw data from. If regulated DSOs are involved in other areas of activity such as customer care or flexibility services, it can narrow deregulated suppliers' potential to expand into these areas.

Strategic, unfair advantage of vertically integrated market players and lack of transparency. DSOs are required to separate distribution activities from supply both legally and in practice, so that unregulated distribution activities do not cross-subsidise any supply business. However, co-ownership is allowed, and small DSO/supplier companies are often exempted from any unbundling. Vertically integrated companies are still able to use their market power to gain an advantage in terms of information, allowing them for example to target customers based on consumption profiles or win back customers during the switching process, or in terms of access to financing through e.g. DSOs favouring sister companies when procuring services.

Limited or biased access to production. Market participants who also own generation assets can use their power to withdraw production capacity from the open market, thereby limiting liquidity in the wholesale market. Small suppliers with little bargaining power may be disadvantaged, e.g. if there is no standardization around PPAs.

Discrimination against new and small market players in capacity and ancillary services markets. The balancing landscape was designed mainly for and remains focused on large-scale generation. This can exclude smaller-scale/aggregated generation or demand-side bids from participating in balancing markets as they cannot meet the product requirements. Inefficient capacity markets can lead to a market distortion, benefitting specifically incumbents and other established market players who are able to meet the large generation-focused market conditions (bid minimum size, treatment of users with asymmetric balancing etc.).

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

Discriminatory market platform access (standards, guarantees, etc.). If the same requirements/treatment for establishing market access are applied regardless of company size, small suppliers bear a disproportionate administrative or financial burden for market access. Hence, without a progressive scheme based on company size indicators, small operators find it hard to enter. Wholesale may also discriminate against novel participants by not being open to DR bidding into the market, either directly or operating through e.g. linked bids.

Low liquidity in the wholesale market. A lack of liquidity in the wholesale market is a barrier to operation as it leads to higher prices and risks, and therefore increases sourcing costs. Market participants with a lot of market power can withdraw their production capacities from the wholesale market and thus discriminate against other players.

High price or volume risk in energy procurement. Volume and price risk, due to the difference in time and volume between procurement and billing, raises risks for market participants and therefore presents a barrier. This is a

particular problem in combination with a lack of hedging opportunities that would allow companies to insure against wholesale price fluctuations.

3. Operational and procedural hindrances

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

1) Sign-up & operations compliance. Sign-up, licensing or registration, along with other administrative requirements or system establishment such as arranging contracts with relevant stakeholders (TSOs, DSOs, BRPs) are among the first steps that a new supplier undergoes to enter and operate in a retail energy market. To deliver natural gas or electricity to final consumers in Europe, an energy supplier usually needs to be registered to a certain institution list, or to proceed with a notification, or follow a process to grant a licence. Entrance processes for suppliers often requires commitments such as a minimum standard of customer service obligations, requirements on service quality, to provide financial guarantees or to have a communication system in place.

   In most responding NRA countries, suppliers need to register and make contracts with certain stakeholders (mainly TSOs and DSOs) to procure the access to the energy grid: transport capacity, balancing. This procedure can be very different from a country to another. Accessing wholesale markets and balancing may also require a license or prior agreement/registration with the market operator. In some markets, business processes to enter and operate in the retail market can be extremely detailed and burdensome. The lack of a functioning national wholesale market may also hinder the entrance of retail companies that are not vertically integrated.

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.

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

Poor availability of information for market entrants & active participants. Detailed information about legislation, licensing requirements and procedures during operations etc. are not readily available, or only in the local

language. This makes it difficult for potential new entrants to (1) understand the market and judge its suitability for their business; (2) efficiently go through the entry process to establish on the market; (3) operate effectively and efficiently.

Heavy administrative process for entry (registration / licensing). The processes required to enter a market constitute a large administrative burden. Overly complicated and very time-consuming processes and requirements present a barrier in terms of the time and money that new entrants must invest. This barrier refers to all steps required to obtain a license or registration allowing participation in the market as a retailer.

High financial requirements (incl. long working capital cycles) and forced risk during operations. High financial requirements such as securities and minimum account balances for balancing services and procurement, as well as long working capital cycles, e.g. due to expensive IT infrastructure, can present a barrier due to the amount of capital that must be set aside. This is a challenge especially for small and new retailers. A high level of risk, e.g. non-refusal right of customers, can similarly act as a barrier.

Excessive reporting requirements during operations. Excessive reporting requirements to governmental bodies, the NRA and other market participants cause high administrative and hence infrastructure costs to suppliers. This is a barrier to entry and operation in cases where suppliers cannot see how this reporting is necessary to protect customers or benefit the market and can particularly affect small suppliers.

Excessive information requirements around billing and energy labelling. Excessive billing and labelling information constitutes a barrier when the market participants are required to disclose a disproportionate amount of information on the customer bill, which may be challenging to collect and curate. All information on the bill that does not add any value for the customer can be regarded as disproportionate.

Highly complex or country-specific systems & processes. The systems landscape (forecasting, customer service etc.) can require significant costs, especially when first being established. Limits to or costs of outsourcing can fall disproportionately on smaller suppliers with less expertise in-house. If these systems are similar to those required in other 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.

Regional differences or differences between DSOs within a country. Different regions within the country or different DSOs' grid areas have different processes, data formats etc. This requires more effort from the supplier to be active across many regions, compared to if there were national standardisation. Examples of such difference include DSOs' reporting on operational data and non-transparent forecasting methodology.

Cumbersome or biased switching process. Switching is difficult for the suppliers due to the amount of information that must be provided, the time it takes, permissions that must be sought, complex technical systems etc. Existing suppliers have an advantage because they are the default supplier if the switch is not completed and may get warning for pre-emptive win-back.

Unduly burdensome environmental obligations. Environmental obligations such as energy efficiency schemes and certificates of origin may present a barrier as they can lead to increased bureaucracy and costs. Such obligations can be perceived as a barrier particularly if their relevance to the market is not clear to suppliers or if their implementation is felt to be unfair.

Unduly burdensome or insufficiently regulated market exit. The possibility for suppliers to exit the retail market very easily or being able to act without sufficient/timely sanctions on improper behaviour, is not advantageous to market function, nor does it transmit confidence to customers. Unethical and irresponsible suppliers may negatively affect the retail market by discouraging new suppliers from entering and reducing customer trust and hence willingness to engage with the market. At the same time, the exit process should not be unduly burdensome as suppliers deciding on potential market entry will take this into consideration.

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

Lack of data hub. There is no centralized data hub or a platform for switching and access to DSOs information. This increases the time and effort required by suppliers to access customer or network data, e.g. to enact a switch or target potential new customers. This tends to favour suppliers with a high market share (and hence access to large amounts of customer data, including historical usage data) or suppliers vertically integrated with a DSO such that the parent company benefits from DSOs providing data directly to the supplier side.

Complex, heterogenous IT infrastructure and/or low level of digitalisation. Heterogenous and complex IT infrastructure, required to communicate and exchange data with all relevant market participants, or a high level of manual processes in such exchanges, can both increase costs substantially. Such systems can be financed more easily by large market players via economies of scale, so small players are disadvantaged for technical reasons.

Missing access or poor quality of operations-critical data. Non-availability, delayed or low quality of operations-critical data (incl. smart meter data) presents a main barrier as it increases the need for manual processing and therefore costs. Especially in combination with information advantage, this can give of certain market participants such as DSOs and incumbents a major advantage in providing the required service level to the customers.

4. Customer inertia

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

Customer orientation. Whether customers want to or can engage with the market depends on a broad range of market characteristics, including how well authorities inform and support customers and how energy companies are viewed by the customer. For example, if there is no trusted central place to compare offers from different suppliers, customers may struggle to make an informed choice; or if customers perceive all energy companies as irresponsibly profit-driven, or providing a poor service, they may feel there is nothing to be gained from switching.

Moreover, across Europe, most energy markets have been liberalized relatively recently (last 20 years, some only a few years ago), so for a considerable portion of customers the potential for them to engage may still feel unfamiliar.

4.1. Description of customer inertia barriers: Customer orientation

Lack of information regarding available offers and switching possibilities. 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. Obligations on suppliers around bill structure and explanation over billing components and their impact on the final price can also prevent suppliers from showing how certain aspects of their service (e.g. the actual source of energy they are delivering or from an energy efficiency service) sets them apart and hence gaining a competitive advantage.

Low customer awareness or interest makes it difficult to attract customers. If customers are not well informed about their opportunities to participate in the market or are not motivated to use them, or find the market too complex to access, they are not driven to seek out or engage with new energy suppliers. If energy is not a core priority for customers in their lifestyle (due to e.g. low prices, lack of interest/"sexiness" etc.), it is difficult to engage them in the market overall. This barrier also prevents uptake of novel services such as DR, as the benefits are difficult to promote to customers who do not already value energy or their role in the market.

Insufficient price signals for end-users. Many factors can mean that market price signals do not reach end users, e.g. small energy component of bill, low energy prices, simplified/estimated settlement, etc. With limited price signals, there is little incentive for customers to engage with the market as they have limited power to bring their costs down, or to see an impact of their behaviour on their bills.

Changing supplier is cumbersome or has little pay-off for the customer. A slow switching process, one prone to delays and errors, or having to pay to switch, may discourage customers to switch, which in turn lead to low customers engagement. Effective price competition between suppliers requires rapid, effective, such that customers see the benefit to them in a short timeframe. Also, if there is little financial gain for customers to switch, it discourages participation.

Consumers prefer status quo. Customers can experience strong incentives to stay on a regulated price (e.g. because it is cheaper) or with their current, usually incumbent supplier (e.g. because of mistrust of switching processes or of quality of other suppliers, or because there is no explicit driver to make the effort to engage in the market).

Lack of trust in new or foreign suppliers and in new technology. Lack of trust in new and/or foreign suppliers can be caused by previous bankruptcies in the market or simply customer unfamiliarity with the new supplier's quality of service. This presents a barrier for new suppliers trying to attract customers, as they have to invest heavily in building a new relationship. Customers and hence retailers may also mistrust new technology, at least until they

have been convinced that it is useful and will not disrupt their lifestyle, which is difficult to do until enough people use the technology.

5. Other

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

5.1. Description of other barriers: Other

Small market or customer value. A small population and/or low consumption hinders profitability. Market size as a barrier could be ameliorated by better harmonization of markets.

ANNEX 3 - Survey questions

The survey questions can be found in a separate document.

ANNEX 4 - Country Handbooks

The County Handbooks can be found in separate documents.

ANNEX 5 - Barriers Index report

The County Handbooks can be found in separate documents.

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MJ-03-21-085-EN-N

Publications Office
of the European Union

ISBN 978-92-76-30269-8