



EUROPEAN BARRIERS IN RETAIL ENERGY MARKETS



GERMANY Country Handbook

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EUROPEAN BARRIERS IN RETAIL ENERGY MARKETS PROJECT: Germany Country Handbook

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

SUMMARY

Project outline

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

The Context

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

Objective

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

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

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

Competitor Perspective

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

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

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

Scope & Scale of Research

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

Focus Markets



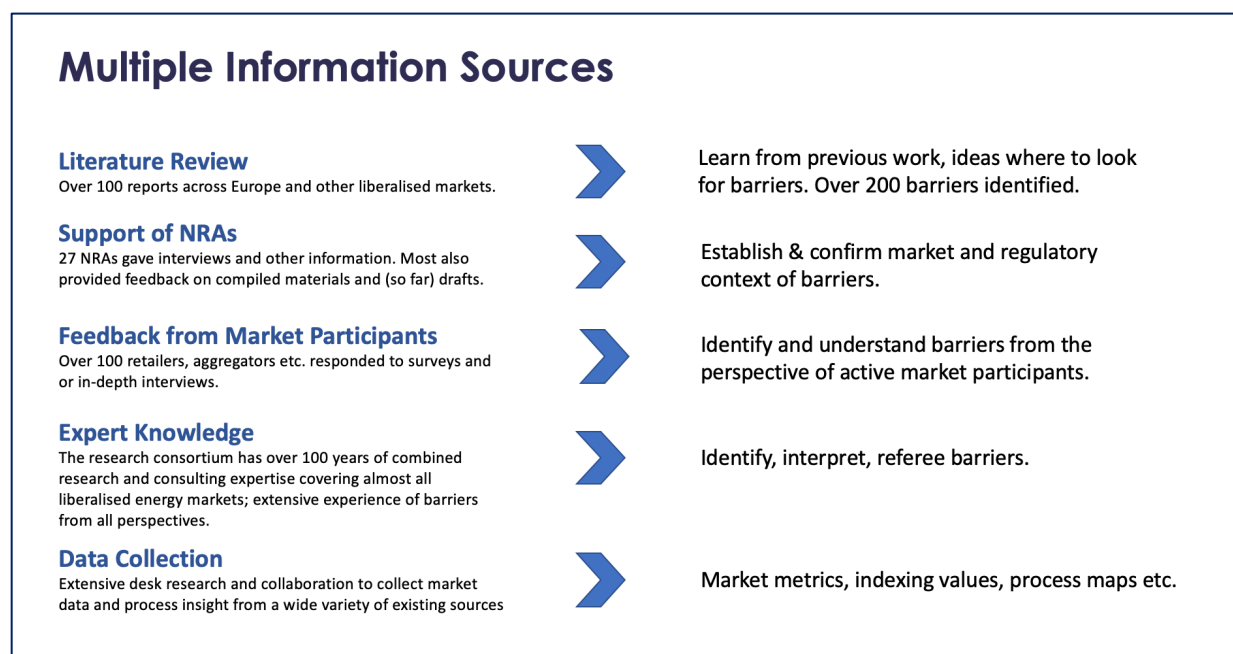
The project focuses on retail (supply), including also demand aggregation services, other additional offerings and new model retail, especially relating to the household segment customers (in some markets households and smaller SMEs may be difficult to distinguish). The project additionally concentrates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

Sources of Information

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

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

Figure 1 - Multiple Information Sources



Surveys & Interviews

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

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

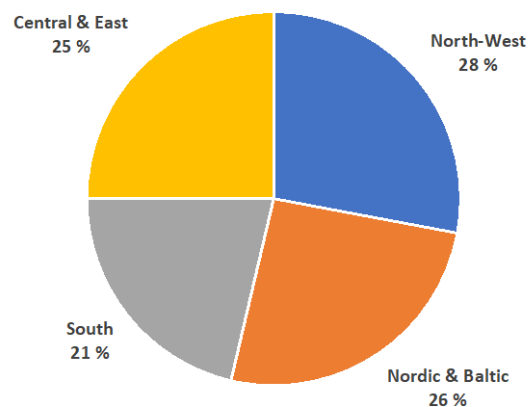
The Competitor Sample

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

Analysis of the sample shows that responses were spread evenly among the regions. 66% of responses were non-incumbent competitors compared with 34% which were former incumbents in the markets concerned. In many cases the former incumbents are only former incumbents in one region within the overall country they are in. A large proportion of the former incumbents are furthermore active across multiple regions and countries, and therefore are

both incumbents and non-incumbents, defenders and challengers. Among the non-incumbent players were a mix of more established competitors and more recent new entrants, along with more traditional supplies, new model suppliers and aggregators.

Responses by Region



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

Confidentiality

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

respondents stated that they even feared a backlash from other stakeholders if their identity was revealed, or (for e.g. a brand-new entrant in a market with one brand-new entrant) stated that if we revealed that they were a new entrant the market authority would instantly know who they were and that they were afraid it might inhibit their entry process.

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

Deliverables

The project has three key deliverables:

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



The Barrier Index and Ranking

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

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

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

Key barriers in the German market

The following figure highlights the key barriers in the German market.



Key recommendations

- **High financial requirements and forced risk during operations - Obligation to collect special taxes and levies and tariffs on behalf of others.** Currently suppliers are responsible for the collection of a couple of taxes, levies and tariffs (on behalf of others. The risk for non-payment of those bills poses a barrier to suppliers. In order to lower this barrier, it is recommended that charges, unrelated to the core suppliers business, should be collected via different methods (eg. obligation to collect the RES by the regulated business - the DSOs).
- **Complex, heterogenous IT infrastructure and/or low level of digitalisation - Missing access or poor quality of operations-critical data:** Especially in the light of an increasing amount of data being generated by Smart Meters, all remaining manual processes need to be fully digitized and automatized. As Germany is following a decentralized approach to data management (no data hub), ensuring a high level of data quality and non-discriminatory access will be another crucial success factor.

MARKET OVERVIEW

Germany has the highest number of energy suppliers, the highest number of electricity metering points and is among the countries with the highest electricity prices (both for households and industry customers) within EU-28. Besides the “Big 4”, there are many small to medium sized suppliers. Two thirds of them are owned by municipalities. Despite many regional mergers, the number of companies active in the German energy market today is considerably higher than it was prior to the market liberalisation in 1998.

Market background

Prior to the market liberalisation in 1998, end customers were tied to their local utility and had no right to choose. In the context of the EU's 1st Internal Energy Market Package, the energy market in Germany was progressively opened. In 1998, by introducing the revised federal energy law (Energiewirtschaftsgesetz, EnWG), electricity customers gained free market access. Although the liberalisation of the gas market started at the same time, gas customers were not able to switch suppliers due to a lack of competition in the market. In 2006, competition in the gas market also started to ramp up and a persistent increase in suppliers on the market can be observed since then.

Based on the EU's 2nd Internal Energy Market Package and the subsequent amendment of the EnWG the Bundesnetzagentur, responsible for the regulation of the electricity and natural gas industry, started its activities in 2005 with the goal of promoting and monitoring fair competition. As independent authority, Bundesnetzagentur's main task is to establish the conditions under which electricity suppliers have access to the networks and the regulation of the tariffs for using the grid.

In 2009 metering in the electricity and gas sector was liberalized, allowing a free market for metering service suppliers.

The final step of market liberalization was the implementation of the 3rd Internal Energy Market Package in 2011, tightening of unbundling requirements for TSOs.

The EnWG and the “Erneuerbare Energien Gesetz” (EEG) are two of the central legal frameworks for the electricity and gas sector. Most energy related EU directives are adopted as additional decrees to the existing legal framework.

After the market liberalisation many independent suppliers were established and since then the number of suppliers and products offered has increased substantially. Today about 132 electricity and 104 gas suppliers are active in the German market.

Market structure

Germany utilities are usually divided into the “Big 4” (RWE, ENBW, E.ON, Vattenfall) and regionals. The German DSO landscape consists of around 889 electricity and 721 gas DSOs, according to BNetzA's market actor registry. Germany has four electricity TSOs: TenneT TSO GmbH (TenneT), Amprion GmbH, 50Hertz Transmission GmbH (50Hertz) and TransnetBW GmbH, corresponding to the four geographical control areas managed by them.

There is a considerably larger number TSOs on the gas market: bayernets, Fluxys Tenp, GASCADE Gastransport, Gastransport Nord, Gasunie Deutschland Transport Services/Gasunie Ostseeanbindungsleitung, GRTgaz Deutschland, terranets bw, Thyssengas, NEL Gastransport, Nowega, Ontras - VNG Gastransport, Open Grid Europe and others. The gas market is divided into two dual-quality wholesale market areas (balancing zones): NetConnect Germany (NCG) and GASPOOL. Both will merge in 2021.

Germany's NRA for electricity and gas is the Bundesnetzagentur¹ (BNetzA). It is responsible for overseeing competition in the German network markets. The five network markets are the gas, electricity, postal, rail and telecommunications networks. The headquarters is in Bonn. The BNetzA is an upper German federal authority in the division of the Federal Ministry of Economics. Legal foundations with which the BNetzA works can be found in the telecommunications, postal and energy industry laws, among others. In addition to promoting and maintaining competition in the network markets by defining the conditions under which providers may use the networks and supply their customers with electricity and gas, the BNetzA has other functions in

- implementing European regulations related to energy supply,
- organizing tender procedures in the context of the energy transition,
- promoting renewable energies,
- provisioning consumers with free access to the networks and nationwide basic services at acceptable prices,
- operating a service portal for consumers,
- acting as an advisor to consumers.

The BNetzA develops points of view on regulatory law. Points of view on anti trust law are developed by the Bundeskartellamt (BKartA). Its main duties in the context of energy supply are

- protection of competition in the markets that are upstream and downstream of the energy networks -- these markets include energy generation, energy trading and the supply of end consumers,
- performing work in the context of merger control, cartel and abuse proceedings and carrying out corresponding sector inquiries,
- working to dismantle barriers to entry and obstacles to change.

Next to the BNetzA, Germany also has regional regulatory authorities (Landesregulierungsbehörden), that are responsible for small DSOs under 100.000 customers. These authorities can be part of the regional economic ministry in the respective part of Germany, thus, while acting independently by law, some political motivation behind decisions cannot be ruled out completely.

Several independent associations play an important role in concentrating and promoting sector specific points of views: The Bundesverband der Energie- und Wasserwirtschaft² (BDEW), the BEE (Bundesverband für Erneuerbare Energien), the BNE (Bundesverband Neue Energiewirtschaft) and others, as well as the Deutsche Energie-Agentur³ (dena) which has close ties with the Germany energy ministry, and is therefore not completely independent.

¹ https://www.bundesnetzagentur.de/cln_122/DE/Home/home_node.html

² <https://www.bdew.de/>

³ <https://www.dena.de/>

With the act on the digitalization of the energy transition, which was passed on 8 July 2016 and implemented in 2017, a regulatory framework has been created for the rollout of electricity smart meters. Referring to the EU's Smart Meter rollout target, which is 80% in 2020, only a few of the EU Member States, that had committed to do, are still on track to reach this deployment goal. Regarding to the "European smart metering benchmark-Report⁴" from the European Commission DG Energy in June 2019, Germany's target period for a large-scale (80% of all metering points) installations is estimated to occur between 2026 and 2030 (according to the European Commission's "European smart metering benchmark-report⁴" of June 2019). In a first step, consumers who consume more than 6,000 kWh p.a. are to be equipped with smart meters with immediate effect, which applies to approximately 15% of electricity consumers in Germany. Metering ownership and meter installation are in the responsibility of the DSO or a 3rd party meter operator in Germany.

Of the 50 million metering points, there was no considerable amount of smart meters installed by the end of 2018. The delay is related to certification delays of the Smart-Meter-Gateway, controlled by the Bundesamt für Sicherheit in der Informationstechnik (BSI). While the certification of the third Smart-Meter-Gateway (SMGW) was completed earlier, the official declaration of technical feasibility by BSI occurred in January 2020. This declaration kicks off the roll out of smart meters, eventually.

In 2017, the German net electricity generation totalled to 601.4 TWh (according to the Monitoring Report⁵ of the BNetzA from 2019). This generation mix consist of 70.5 TWh nuclear power, 137.9 TWh lignite, 83.5 TWh hard coal, 72.3 TWh natural gas, 3.8 TWh mineral oil products, 10.2 TWh pumped storage, 4.3 TWh waste (non-renewable), 14.0 TWh other energy sources (non-renewable) and 204.8 TWh renewable energy sources. Also, important to mention is the renewables' share of net electricity generation which was about 34% in 2017. The gas market is characterized by high imports (1,676 TWh) and exports (743.5 TWh) compared to the level of total gas consumption (935.7 TWh).

The biggest part of utilities' energy procurement is facilitated through OTCs. According to the quarterly report on European Electricity Markets (Q1 2019), the German OTC market (bilateral and cleared) accounts for about 75% of total traded volumes (OTC and exchange, according to the quarterly report on European Electricity Markets (Q1 2019)⁶). The remaining 25% is traded on the European Energy Exchange (EEX). Typically, larger suppliers procure directly on EEX. The most important exchanges for electricity trading in Germany are the EEX (European Energy Exchange) which mainly focuses on power futures and the EPEX Spot (European Power Exchange) which is specialized in the power spot market. In addition, there is also an exchange for gas suppliers: PEGAS (powernext) with spot and future products.

German market unbundling regimes are in line with other EU member states. All German electricity and gas TSOs have been certified as compliant with one of the 3rd Package's unbundling models by the NRA⁷. Electricity and gas DSOs must be legally and functionally unbundled, but ownership unbundling is not required. Many local

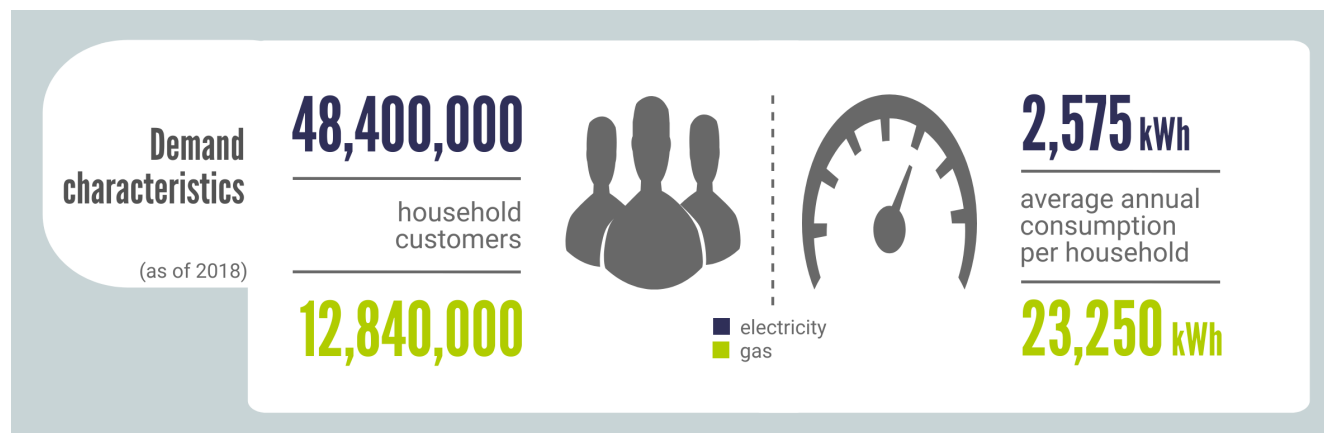
⁴ <https://www.vert.it/SiteAssets/teises-aktai/EU28%20Smart%20Metering%20Benchmark%20Revised%20Final%20Report.pdf>

⁵ https://www.bundesnetzagentur.de/SharedDocs/Downloads/EN/BNetzA/PressSection/ReportsPublications/2019/MonitoringReport2019.pdf?__blob=publicationFile&v=1

⁶ https://ec.europa.eu/energy/sites/ener/files/quarterly_report_on_european_electricity_markets_q1_2019_final.pdf

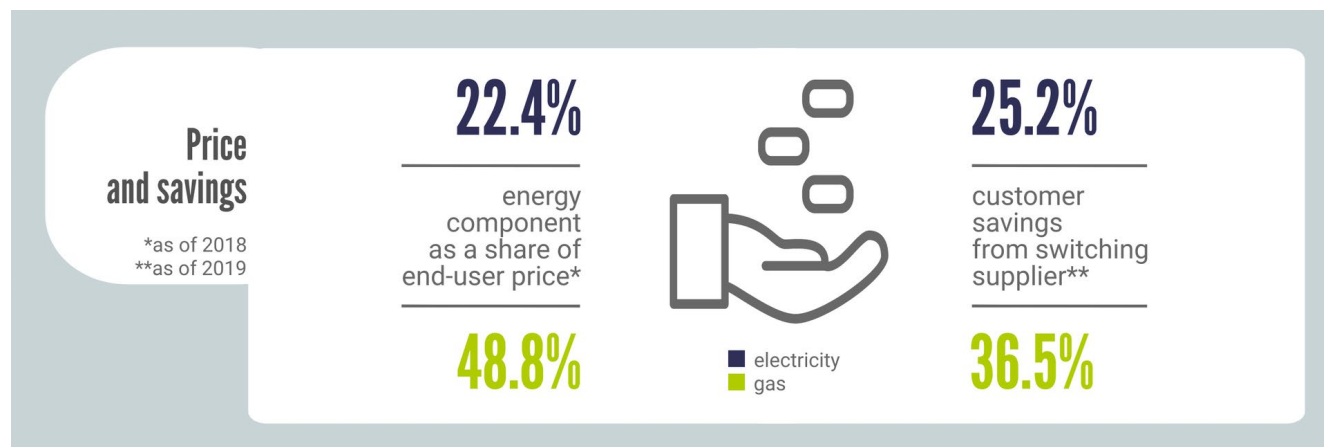
energy companies (about 90% of the electricity- and 95% of the gas-DSOs) are still exempted from the unbundling requirements as they are serving less than 100,000 customers ("de minimis"-rule).

The German retail market consists of around 48.4 million household electricity customers with an average annual consumption of about 2.6 MWh p.a.



The 12.8 million household gas customers are consuming around 23 MWh p.a. on average.

The energy component of the electricity bill accounts for 22.4% for electricity and 48.8% for gas customers, the rest of the bill comprises of grid tariffs, taxes and duties.

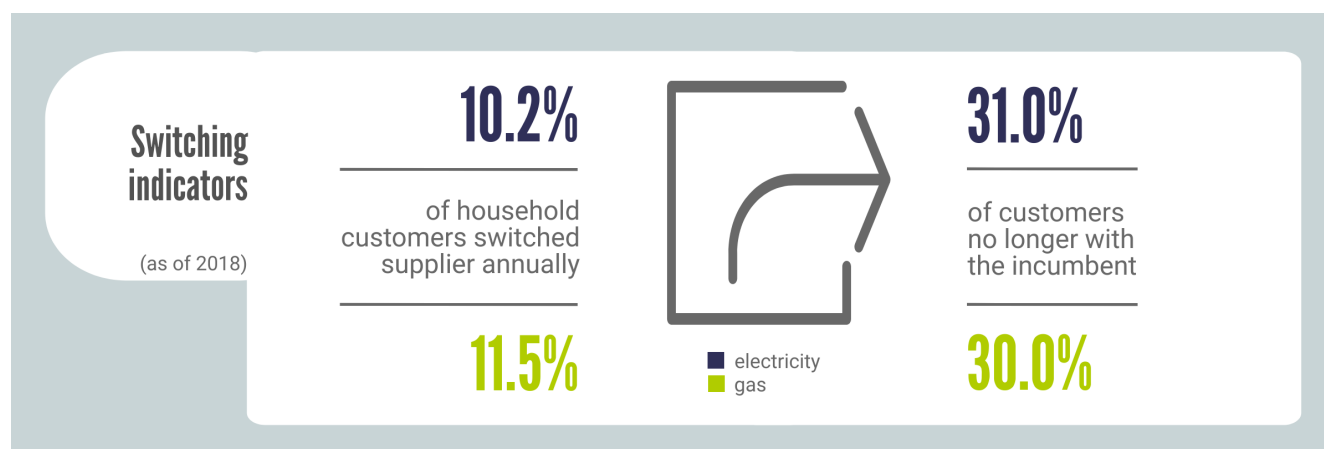


In the grid area of the capital city of Berlin, household customers could choose from more than 150 electricity and gas suppliers. To ensure comparability with other handbooks, this metric was used for each country.



Regarding market competition the 2017 monitoring of the Bundesnetzagentur⁸ reported a cumulative market share downward trend of the four largest undertakings to around 28% in the national market for supplying interval-metered customers and 34% in the national market for supplying standard load profile (SLP) customers on special contracts. The cumulative market share of the four largest retail gas suppliers in 2017 was down to 23% for SLP customers (2016: 25%) and up to 30% for interval-metered customers (2016: 28%) according to the 2018 monitoring report of the Bundesnetzagentur.

Customer switching rates stagnated in recent years at a levels of 10-11% for electricity and 11-12% for gas (households, 2018). In 2018, 31.0% of the electricity customers and 37.0% of the gas customers were no longer supplied by the incumbent supplier.



German switching rates are classified as high, as stated in the November 2017 "Retail Markets Monitoring Report of the Council of European Energy Regulators (CEER) 9".

⁸<https://www.ceer.eu/documents/104400/5988265/C17-Germany+-+EN/95b5a854-2b3a-f2fe-95ef-08b5e708fd51>

⁹<https://www.ceer.eu/documents/104400/6122966/Retail+Market+Monitoring+Report/56216063-66c8-0469-7aa0-9f321b196f9f>

Political and regulatory orientation

The main legal frameworks driving the evolution of energy sector are the EnWG and the Erneuerbare Energien Gesetz (EEG), containing country specific laws and adopting most of the EU directives related to the energy sector.

Germany liberalized its electricity retail markets in 1998 allowing customers to choose their electricity supplier. In 2000, the federal government implemented the Renewable Energy Act (EEG) - a main driver of the expansion of renewable production in the coming years and nuclear phase-out (ultimate lifetime reduction to 32 years). Beginning in 2008, the law led to the implementation of upper non-renewable consumption limits for heating of newly build estates. In 2010, the parliament ratified a long-term strategy outlining the energy supply until 2050, aiming at 40% renewables until 2050. In 2011, after the incident at Fukushima, Germany decided to tighten the deadline of nuclear phase-out to 2022. In 2012, the parliament ratified the extension of the Kyoto-Protocol until 2020. In 2014, a reform of EEG was ratified, and tangible quantitative targets defined:

- Lowering greenhouse gas emissions by at least -55% in 2030
- Increasing the average renewable energy production level to at least 65% in 2030

The 2030 UN Agenda for Sustainable Development, was adopted on 25 September 2015 by Germany. The Agenda contains 17 goals for sustainable development including “Affordable and clean energy”. The German government committed to continuously and ambitiously develop the German Sustainability Strategy¹⁰ (2018) in line with the 2030 Agenda. This strategy also includes new principles of sustainable development.

In 2017, the government implemented a bidding regime for all renewable production projects. In autumn 2019, the Klimaschutzprogramm 2030¹¹ was ratified. Its main goals are:

- Gradual reduction and termination of coal-based electricity generation based on the recommendations of the WSB commission (Kommission für Wachstum, Strukturwandel und Beschäftigung¹²)
- Expansion of RES to 65% of gross electricity consumption by 2030
- Further development and comprehensive modernization of CHP
- Switching heating networks increasingly to renewable energies and unavoidable waste heat
- Real laboratories for the energy transition (Energiewende)
- Implementation of the Energy Efficiency Strategy 2050 (Energieeffizienzstrategie 2050 - EffSTRA)
- Implementation of accompanying measures related to the energy transition (Energiewende)
- Intensification of EU-cooperation
- Implementation of an investment program targeting energy efficiency and process heat from renewable energies
- Furthermore, there is also the well-known German energy transition (Energiewende), embedded in the European energy transition, which has set ambitious goals for 2030 and beyond. Referring to the sixth

¹⁰<https://www.bundesregierung.de/resource/blob/975292/1559082/a9795692a667605f652981aa9b6cab51/deutsche-nachhaltigkeitsstrategie-aktualisierung-2018-download-bpa-data.pdf?download=1>

¹¹<https://www.bundesregierung.de/resource/blob/975226/1679914/e01d6bd855f09bf05cf7498e06d0a3ff/2019-10-09-klima-massnahmen-data.pdf?download=1>

¹²<https://www.bmu.de/themen/klima-energie/klimaschutz/kommission-wachstum-strukturwandel-und-beschaeftigung/>

“Energy Transition” Monitoring Report - “The Energy of the Future”¹³ in 2016, the quantitative targets of the energy transition can be summarized as follows:

- Greenhouse gas emissions at least -55% in 2030
- Renewable energy at 65% in 2030

Regulatory market characteristics

There is no electricity price regulation related to the energy component of the overall bill in Germany, neither for households nor for industrial customers, but antitrust laws prevent pricing rigging. Similar to other EU countries, there is no special license required in order to operate as an energy supplier, but a registration process has to be followed. All new energy supplies (including foreign suppliers) must be registered at the BNetzA in order to supply household customers. More detailed information on the registering process can be found in the appendix under chapter “Licenses, registrations and contracts”.

Suppliers are responsible for the collection of grid tariffs, specific taxes (such as Stromsteuer) and levies (such as EEG Umlage, Konzessionsabgabe, KWK Umlage, StromNEV-Umlage, Offshore-Haftungsumlage and Umlage für abschaltbare Lasten). As it is the supplier’s duty to pay those, they are not compensated by any mechanism in case of non-payment of those additional collection obligations. More information about the billing process is provided in chapter “Operational obligations/duties” in the Appendix 1 “Processes”.

Regarding the wholesale gas market, a merger occurred between the market areas GASPOOL and NETConnect which will be effective in October 2021. The German gas TSOs and the two market balancing group managers GASPOOL Balancing Services and NETConnect Germany (NCG) are working on the design of this new market area. With this merger, which is related to legislative amendments to the German Gas Third-Party Access Regulations¹⁴ (Gasnetzzugangsverordnung) adopted in 2017, the two market areas are to be consolidated into a single entry/exit zone by 1. April 2022. For more information about this topic a website (www.marktgebietszusammenlegung.de) for the planned merger has been set up by the gas TSOs.

Other market characteristics

Due to split of the German-Austrian power price zone in October 2018, there are only 4,900 MW of electricity available for power trading between the two countries through long-term capacities, with additional day-dependent residual capacities in both directions.

The idea of the power zone splitting is aimed at preventing German power travelling in so-called loop flows through Poland, the Czech Republic and Austria back into Germany, which the industry came to find costly and disruptive. This unusual transport route resulted from the fact that transmission lines to deliver power from northern Germany wind parks to industrial consumers in south Germany or even in Austria are years behind implementation. Austria has benefited from this loop flows, as it was able to buy surplus German power at low prices, store it in its pumped-storage plants and resell it at higher prices when supply was tight.

¹³https://www.bmwi.de/Redaktion/EN/Publikationen/Energie/sechster-monitoring-bericht-zur-energiewende-kurzfassung.pdf?__blob=publicationFile&v=7

¹⁴https://www.bmwi.de/Redaktion/DE/Downloads/Gesetz/erste-verordnung-aenderung-gasnetzzugangsverordnung.pdf?__blob=publicationFile&v=6

According to the consultation response by EEX and EPEX SPOT on the First Edition of the “Bidding Zone Review” following key message can be summarized:

“This development has the potential to weaken the market price signal and decrease liquidity, meaning higher trading costs for all market participants and ultimately a less efficient market”.

The following facts regarding the Austrian wholesale market were also mentioned by EEX and EPEX SPOT:

- Trading volume in the German-Austrian power market decreased by 30% from 2016 to 2017 (liquidity went down)

Context for aggregation/demand response

The wholesale electricity markets (intraday and day ahead) are open for demand response (DR). Consent from the supplier/BRP is required. Currently, only suppliers can seize these opportunities because of market circumstances. Independent Demand Response Aggregators are unable to do so far, because of :

- Lack of standardized processes
- Network tariff design that discourages consumers for participating
- Low market prices
- Technical prequalification requirements

The following DR product types reflect the structure of Germany’s reserve market:

- FCR (Primary Control): Primary Control does allow both load access and aggregation. An important is the load, it must be symmetric.
- aFRR (Secondary Control): In the aFRR, demand-side resources are allowed as well as aggregation. In addition, symmetry of the load is not necessary.
- mFRR (Tertiary Control): Demand Response and aggregation are both allowed in the manual frequency restoration reserves (mFRR). The load doesn’t have to be symmetric.

Typical customers are large industry companies (using more than 100.000 kWh/a), such as paper and printing industry, vehicle manufacturing, machine building industry, vehicle manufacturing, metal working industry, food industry, construction industry, and community sewage treatment plants. Typical DR providers are aggregators, VPPs and municipal utilities. Third-party aggregators face the following difficulties when entering the market:

- There is no specific framework in place to define the interactions with the energy retailer and the other market parties.
- The aggregator requires retailer-BRP’s agreement prior to offering consumption flexibility to the market. Reaching a bilateral agreement on schedule exchange and compensation payments with the consumer’s BRP and retailer is difficult. Reason for that is that BRPs/retailers usually see the aggregator as a competitor.

BARRIERS

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

Over-arching pan-European barrier blocks

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

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

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

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

HOW TO READ AND INTERPRET THE FOLLOWING SECTIONS

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

#) Name of the Pan-European Block

#. Name of the Barrier category and description.

Text that will generally describe the barrier category . . .

List of barriers identified across Europe under this barrier category:

• Barrier 1

• Barrier 2

• Barrier 3

• Barrier 4

When highlighted - applies to the specific country described in this Handbook

As showed in the above figure, the table lists all the barriers we have identified in Europe within the specific barrier category. Only if a sub-category barrier is highlighted in the table, it means that suppliers raised it as a barrier, and it is a prevalent issue in Germany. Highlighted sub-category barriers are then briefly described following a twofold methodology which reports what the suppliers are experiencing in the market as a national issue and suggests potential solutions to the problem as depicted in the below figure

National issue

Text describing the issue in that country.

el

gas

Code to describe a gas and/or electricity barrier

Potential solutions

Text describing the issue in that country.

European markets in which this barrier has also been indicated

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

Country under assessment by the handbook

Identified best practice across Europe

Other countries where the barrier is an issue

At the end of each chapter, Country's performance within the category, according to quantitative indicators, is then presented. For additional market context, please see Appendix 1: Process Maps, which gives a high-level graphical overview of the most critical steps involved in establishing and operating as a supplier in the national market.

1) Regulatory disincentivisation

Within regulatory disincentivisation, barriers across Europe have been sub-categorised into four areas encompassing 17 specific barriers¹⁵:

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.

In the majority of the 30 analyzed countries, energy prices are no longer regulated. Where regulated prices remain, NRAs tend to consider them as a significant barrier to entry for alternative suppliers. All Member States, where NRAs consider regulated prices as a significant barrier, are planning to remove them, at least for non-household customers.¹⁶ Across Europe, the following specific barriers related to "price regulation" were detected by this study. Those highlighted in blue have been raised, indicated or identified as barriers in Germany:

- Price regulation discriminates against certain suppliers
- High penetration of price regulation
- Low margin of regulated offer (margin squeeze)

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

- Obligation to collect special taxes and levies and tariffs on behalf of others
- Obligation to keep a minimum-security stock as a gas reserve

¹⁵

¹⁶ CEER Benchmarking report on removing barriers to entry for energy suppliers in EU retail energy markets. April 2016 [footnote wording and format to be improved].

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

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

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

- Data protection issues
- Lack of incentivisation for novel pilot projects or post-pilot market rollout
- Lack of data for innovative product development
- No fit between new business models and existing regulation/obligations
- Missing flexibility in tariff structures
- Missing information and incentives for demand-side grid management

- Market structures do not incentivize novel products (missing perceived value)

1.1 Description of regulatory disincentivisation barriers in Germany: Price regulation

No barriers around price regulation were identified in Germany.

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

Obligation to collect special taxes and levies and tariffs on behalf of others. In the research this barrier was raised as an issue in Germany. The obligation to collect special taxes and levies and tariffs on behalf of others, 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.

National issue



Besides grid tariffs, suppliers are responsible for collecting several additional special taxes and levies on behalf of others. This includes Stromsteuer, EEG Umlage, Konzessionsabgabe, KWK Umlage, StromNEV-Umlage, Offshore-Haftungsumlage and Umlage für abschaltbare Lasten. Compared to a regulatory system where the supplier is only responsible for the collection of the core business components (energy components + VAT), in a system like this the supplier has to bear a substantially higher risk, as in case of a non-payment the supplier is still accountable for all outstanding charges. On top of that, the complexity in order to keep track of any changes and for collection is substantially higher.

Potential solutions

Charges unrelated to suppliers' core business should be, in case the supplier chooses this option, collected via different methods (e.g. the regulated segment, DSOs, could collect grid tariffs and all other special taxes and levies via a separate bill and bear the risk of non-payment)

European markets in which this barrier has also been indicated

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

1.3 Description of regulatory disincentivisation barriers in Germany: Regulatory unpredictability

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

National issue



Several respondents mentioned a high level of uncertainty regarding future regulatory developments. Besides the below mentioned uncertainty regarding Smart Meters and environmental regulation, a more general concern is the current level of existing regulation in the market, as it makes the framework susceptible for unexpected changes.

Potential solutions

Regarding Smart Meters, see „Uncertainty regarding future regulatory developments, especially in the field of digitalisation and new technology”

Regarding environmental regulation, see “Uncertainty regarding environmental obligations and non-renewable generation capacity”

Political decisions regarding regulatory changes need to allow for an adequate planning horizon for all market participants. Also, the introduction of additional regulation needs to be balanced carefully with the level of complexity in the existing frameworks

European markets in which this barrier has also been indicated

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

Uncertainty regarding future regulatory developments, especially in the field of digitalisation and new technology. In the research this barrier was identified as an issue in Germany. 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.

National issue



Several respondents raised the Smart Meter rollout in Germany as a main source of uncertainty. Issues around delays, dominant market positions of certain players, unclear business opportunities and data access, associated with the Smart Meter rollout haven been pointed out specifically

Potential solutions

After a substantial delay, the first Smart Meter gateways have recently been certified. This presents a major step in eliminating this barrier. Nonetheless, several other barriers, related to data availability can arise in the future and they should be addressed without any delay. Clear rules and monitoring activities around non-discriminatory data access and data protection compliance will become more and more important

European markets in which this barrier has also been indicated

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

Uncertainty regarding environmental obligations and non-renewable generation capacity. In the research this barrier was raised as an issue in Germany. 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 increases price risk.

National issue



The future of the EEG ("Erneuerbare Energien Gesetz") has been raised as main source of uncertainty by several respondents.

Potential solutions

Long-term regulatory planning will reduce the level of uncertainty in the market. Specific supplier obligations or schemes which are linked to obligations should be designed for a relatively long time period and the cornerstones of a subsequent regulation should be defined as soon as possible

European markets in which this barrier has also been indicated

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

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

Lack of incentivisation for novel pilot projects or post-pilot market rollout. In the research this barrier was raised as an issue in Germany. Lack of financial incentives as well as missing technical support can be a major barrier for conducting pilots in DR and other novel technologies. 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.

National issue



Although general willingness to demo novel pilot projects in the market exists, long lead times with more than 12 months and a missing post-pilot market rollout for most of the projects has been raised as issues by some market participants.

Potential solutions

In order to further increase the number of pilots, some participants pointed out, that dedicated testing environments could be very beneficial. Also, additional funding could help bridging the gap between successful pilot and market maturity. A general lack of information regarding the already existing regulatory opportunities can be addressed by setting up centralised information points (eg. help desk) which provide all the necessary information regarding new business models and the fit with the current regulatory framework

European markets in which this barrier has also been indicated

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

FINLAND BEST PRACTICE CASE: Incentivizing novel projects

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

Lack of data for innovative product development. In the research this barrier was indicated as an issue in Germany. 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.

National issue



Several respondents raised concerns about data availability for innovative product development, especially in the field of demand aggregation. This includes missing data due to the lack of Smart Meters in the residential and SME segment, threat of dominant position of certain suppliers with easy access to the data and missing processes and related systems.

Potential solutions

After a substantial delay, the first smart meter gateways have recently been certified. This presents a major step in eliminating this barrier. Nonetheless, several other barriers, related to data availability can arise in the future and they should be addressed without any delay.

European markets in which this barrier has also been indicated

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

No fit between new business models and existing regulation/obligations. In the research this barrier was raised as an issue in Germany. 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. Regulator 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.

National issue



Several respondents pointed out that “new business models and solutions don’t fit into existing regulatory and system frameworks”. Combined with missing role definitions or a lack of information around the new roles (such as independent aggregators), this presents a barrier in the market. Novel services such as DR and other distributed flexibilities are competing with fossil fuel generation capacity in the German market. Several respondents raised concerns that the existing fossil fuel generation capacity is still very high and regulation is still focusing on this capacity which leads to substantial disadvantages for novel services.

Potential solutions

All relevant markets need to be adjusted in order to allow for a level playing field for all market participants and therefore incentivise participation.

Creating a framework defining the participation of aggregation in the capacity markets and clearly communicating the rules, would substantially improve this area and lower the existing barrier.

European markets in which this barrier has also been indicated

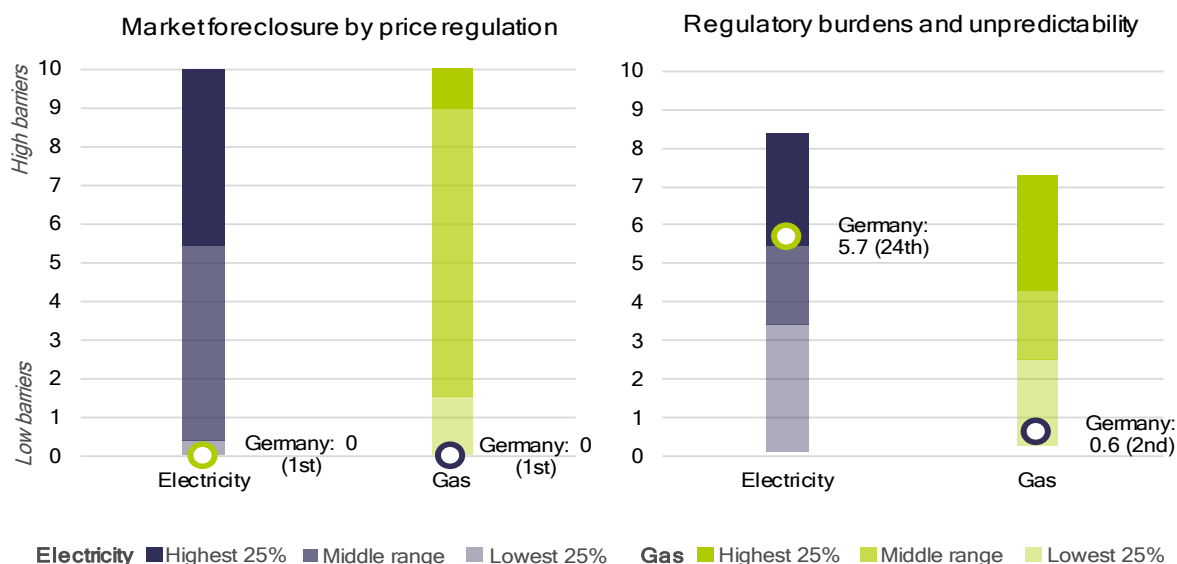
AT BE BG HR CY CZ DE DK EE FI FR EL HU IE IT LV LT LU NL NO PL PT RO SK SI ES SE UK

1.5 Germany’s performance in this barrier category

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

- **Market foreclosure by price regulation:** The index consists of sub-indicators, the penetration of price regulation (among residual customers), and the mark-up of the regulated offer. High score is attributed if the penetration is high, and the mark-up is significantly lower than the average mark-up on the competitive markets.
- **Regulatory burdens and unpredictability:** The index consists of two sub-indicators. Regulatory burdens reflects to the non-energy share of the energy bill in an average household, which are regulated (taxes, network fees). Regulatory unpredictability was measured with the related question in the supplier’s survey. High score is attributed if the share of the non-energy elements is high, and the survey respondents gave high score for the question.

Performance indicators



Germany does not have any price regulation in place. Regarding the regulatory burdens and unpredictability Germany's score is 5.7 for electricity (24th place) and 0.6 for gas (2nd place).

2) Market inequality

Within market inequality, barriers across Europe have been sub-categorised into two areas encompassing 8 specific barriers¹⁷:

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

¹⁷ Please note: these definitions are Europe focused, not Germany specific. Highlighted barriers have been identified as country specific.

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. Across Europe, the following specific barriers related to “unbundling and market power” were detected by this study. Those highlighted in blue have been raised, indicated or identified as barriers in Germany:

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

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

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

- Discriminatory market platform access
- Low liquidity in the wholesale market
- High price or volume risk in energy procurement

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

Discriminating, strategic behaviour of incumbent, and obstruction by other market players. In the research this barrier was raised as an issue in Germany. 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 very aggressive 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.

National issue



Some respondents specifically mentioned the high level of liquidity of large market players as a main strategic advantage. Especially in case this liquidity is used to offer 1 year discounted prices (with a sharp price increase afterwards), a barrier exists in the market. Additionally, some respondents mentioned a lack of interest by the vertically integrated parties in provisioning high quality data for non-standard customers.

Potential solutions

Increasing transparency on prices can help in eliminating the incentive to offer special 1-year discounts. Although there is no NRA hosted platform, in the German market, several price comparison platforms are available to the consumers. However, not all platforms are providing the critical functionality (comparison without discounts, different time horizons). A certification scheme for price comparison tools, as mentioned in "clean energy for all Europeans" could help establishing those functionalities. Strategic behaviour around high quality data provisioning needs to be monitored closely.

European markets in which this barrier has also been indicated

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

Strategic, unfair advantage of vertically integrated market players and lack of transparency. In the research this barrier was raised as an issue in Germany. 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.

National issue



Missing DSO unbundling due to the "De-Minimis" rule has been raised as an issue by some respondents. Furthermore, some respondents raised the threat of a dominant market position of certain market players when it comes to data access. This can be a major barrier for independent aggregators, trying to access the relevant customer data.

Potential solutions

Lowering the De-Minimis threshold can help in eliminating this barrier and should therefore be investigated thoroughly. As Germany is following a decentralized approach to data management (no data hub), ensuring a non-discriminatory data access will be a crucial success factor regarding Smart Meter rollout.

European markets in which this barrier has also been indicated

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

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

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

Discrimination against new and small market players in capacity and ancillary services markets. In the research this barrier was raised as an issue in Germany. 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.).

National issue



As also highlighted in „No fit between new business models and existing regulation/obligations“, regulation in the balancing market has been described by the respondents as favouring fossil fuel generation technology.

Potential solutions

See “No fit between new business models and existing regulation/obligations”

European markets in which this barrier has also been indicated

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

FINLAND BEST PRACTICE EXAMPLE: Consumption bids in balancing

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

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

Discriminatory market platform access. In the research this barrier was raised as an issue in Germany. 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.

National issue



Especially in balancing markets, some respondents raised the issue of discrimination of certain market participants such as loads and decentralised assets.

High costs, associated with directly becoming a BRP and high costs and a high level of dependency on service providers, have also been outlined by some respondents

Potential solutions

Without increasing the associated risks, the remaining barriers for equal access of DR to all relevant markets (prequalification criteria, ...) need to be addressed.

It must be ensured that service providers provide their offering in a non-discriminatory and proportionate way, taking the supplier size and the related risk into account.

European markets in which this barrier has also been indicated

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High price or volume risk in energy procurement. In the research this barrier was raised as an issue in Germany. 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.

National issue



Customers expecting price guarantees, special cancellation rights in case of price increases and difficulties in applying hedging strategies for small supplier have been specifically raised by some respondents. Furthermore, seasonal effects, especially when it comes to e-heating and e-mobility have been raised as issues as the billing cycle and level deviate strongly from the procurement side in this areas.

Potential solutions

Affordable hedging opportunities must be available for all market participants in order to provide the same contractual terms without being able to utilize economies of scale.

By introducing Smart Meters and allowing clearing based on the real consumption profile (as compared to SLPs), the season effects can be eliminated.

European markets in which this barrier has also been indicated

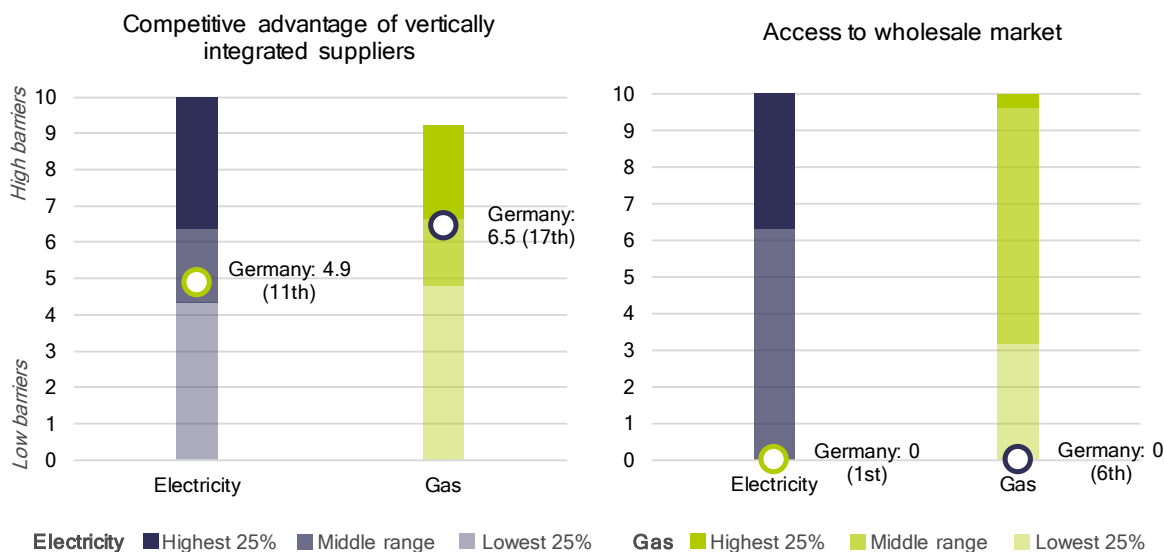
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2.3 Germany's performance in this barrier category

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

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

Performance indicators



Germany's score regarding competitive advantage of vertically integrated suppliers is 4.9 for the electricity market (11th place) and 6.5 for the gas market (17th place). Regarding access to wholesale market Germany is ranked 1st for electricity 6th for gas (score of 0.03, five countries with a lower score).

3) Operational and procedural hindrances

Within operational and procedural hindrances, barriers across Europe have been sub-categorised into two areas encompassing 13 specific barriers¹⁸:

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

¹⁸ Please note: these definitions are Europe focused, not Germany specific. Highlighted barriers have been identified as country specific.

markets, business processes to enter and operate in the retail market can be extremely detailed and burdensome. The lack of a functioning national wholesale market may also hinder the entrance of retail companies that are not vertically integrated.

Across Europe, the following specific barriers related to “sign-up & operations compliance” were detected by this study. Those highlighted in blue have been raised, indicated or identified as barriers in Germany:

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

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

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

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

High financial requirements (incl. long working capital cycles) and forced risk during operations. In the research this barrier was identified as an issue in Germany. 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.

National issue



As also highlighted in „Obligation to collect tariffs unrelated to energy on behalf of others“, several respondents raised concerns about the high financial guarantees for sourcing and debt collection for taxes and surcharges.

Potential solutions

See „Obligation to collect tariffs unrelated to energy on behalf of others“

European markets in which this barrier has also been indicated

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Highly complex or country-specific systems & processes. In the research this barrier was raised as an issue in Germany. 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.

National issue



The high level of complexity and the fact that systems and market processes are country-specific have been raised by several respondents. Special formats for communication between market players and the complexity of the process descriptions have been mentioned specifically.

Potential solutions

Need for standardization across Europe of systems and procedures required by the country retail market. When these systems are similar to those required in other markets, suppliers' investment can be capitalized when expanding to other markets.

European markets in which this barrier has also been indicated

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Regional differences or differences between DSOs within a country. In the research this barrier was raised as an issue in Germany. 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.

National issue



Some respondents raised the issue that individual contracts, with an individual interpretation of the regulatory framework, are required by the different DSOs. Especially for supplier, targeting specific customer, distributed throughout the country, this presents a main barrier.

Potential solutions

A countrywide standardisation of the processes and the unification of all relevant IT systems can help in reducing this barrier.

European markets in which this barrier has also been indicated

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

Complex, heterogenous IT infrastructure and/or low level of digitalisation. In the research this barrier was raised as an issue in Germany. 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.

National issue



As outlined in „Missing access or poor quality of operations-critical data“, it has been reported by some respondents that missing data or data gaps are caused by manual processes and a lack of automation in the supplier-DSO communication.

Potential solutions

Especially in the light of an increasing amount of data being generated by Smart Meters, all remaining manual processes need to be fully digitized and automated. See, also „Missing access or poor quality of operations-critical data“

European markets in which this barrier has also been indicated

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Missing access or poor quality of operations-critical data. In the research this barrier was raised as an issue in Germany. 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.

National issue

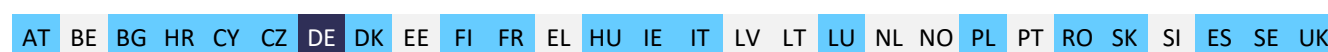


Missing data and data gaps in operations-critical data has been raised by several respondents as a main barrier. Specifically, missing operational data on grid status and demand response requirements and data reliability for electric heating (i.e. balancing and consumption information, grid fee information) and e-mobility, has been pointed out. Poor data quality for balancing RLM-customers has also been mentioned.

Potential solutions

As Germany is following a decentralized approach to data management (no data hub), ensuring a high level of data quality and non-discriminatory access will be a crucial success factor for the Smart Meter rollout. Besides ensuring fairness, monitoring those developments closely will also enable new service and product offerings on the market to mature.

European markets in which this barrier has also been indicated

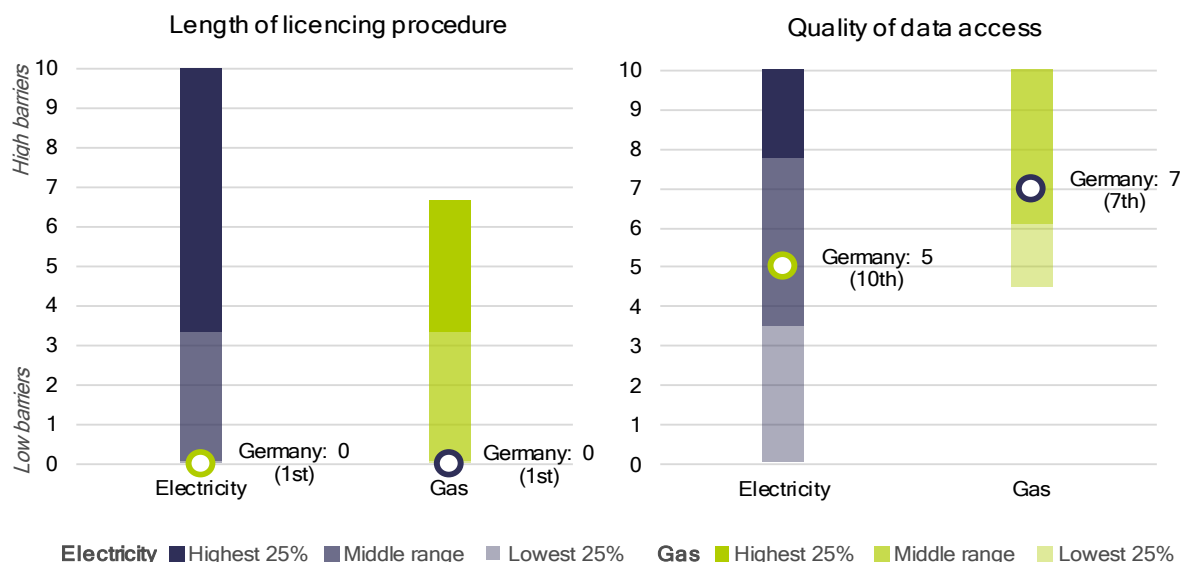


3.3 Germany's performance in this barrier category

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

- **Length of licensing procedure:** The complexity of the licensing procedure is quantified with the legal deadline of the licensing procedure. High score is attributed if the regulator has more months for authorization, while 0 score is attributed if there is no licensing obligation in the country,
- **Quality of data access:** 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. High score is attributed if the format of the data provision is not standardised, third party access is not available via website or data hub, and the smart meter rollout is small.

Performance indicators



There is no licensing procedure in place in Germany (only registration). Regarding quality of data access, the score is 5 for electricity (10th place) and 7 for gas (7th place).

4) Customer inertia

Within operational and procedural hindrances, barriers across Europe have been sub-categorised into one area encompassing 6 specific barriers¹⁹:

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

Across Europe, the following specific barriers related to “customer orientation” were detected by this study. Those highlighted in blue have been raised, indicated or identified as barriers in Germany:

- Lack of information regarding available offers and switching possibilities

¹⁹ Please note: these definitions are Europe focused, not Germany specific. Highlighted barriers have been identified as country specific.

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

4.1 Description of customer inertia barriers in Germany: Customer orientation

Low customer awareness or interest makes it difficult to attract customers. In the research this barrier was raised as an issue in Germany. 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.

National issue

Low customer awareness has been raised as an issue by several respondents. A general lack of information (including switching options) and information about potential savings have been mentioned specifically. Furthermore, some respondents raised that energy is still quite a small portion, compared to total costs of living.



Potential solutions

Advertising by switching platforms and by suppliers themselves are currently the only observable sources for raising awareness. Further analysis into the root causes of the low level of awareness and lack of information is recommended.

European markets in which this barrier has also been indicated

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Lack of trust in new or foreign suppliers and in new technology. In the research this barrier was raised as an issue in Germany. 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.

National issue



A lack of trust in new suppliers has been raised by several respondents. One reason, specifically pointed out, was the relatively high number of market exists (bankruptcies). Regarding technology, respondents also mentioned a lack of internet usage for the customer segment >60.

Potential solutions

As mentioned in „Discriminating, strategic behaviour of incumbent, and obstruction by other market players“ the functional footprint of price comparison platforms can have an impact on the overall level of price competition. Decreasing price competition can lead (among other aspects) to less bankruptcies and therefore increase the level of trust. Ongoing digitalisation throughout all customer segments will automatically decrease this barrier as well.

European markets in which this barrier has also been indicated

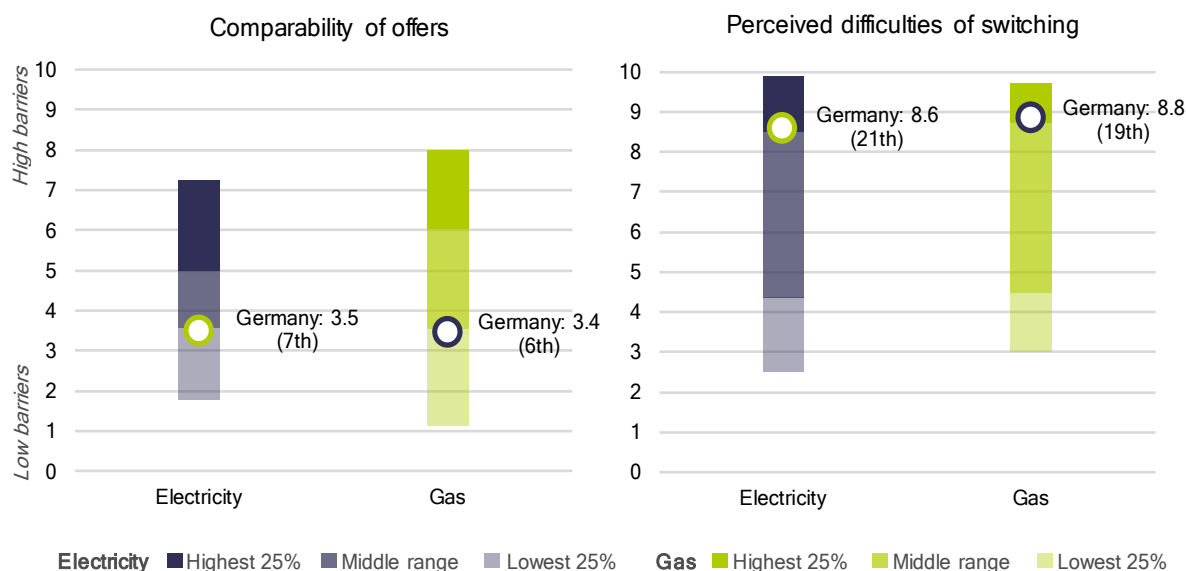
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4.2 Germany's performance in this barrier category

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

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

Performance indicators



Germany's score regarding comparability of offers is 3.5 for the electricity market (7th place) and 3.4 for the gas market (6th place). Regarding perceived difficulties of switching the score is 8.6 for electricity (21st place) and 8.8 for gas (19th place).

5) Other

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

5.1 Description of other barriers in Germany: Other

No other barriers were identified in Germany.

FINDINGS & RECOMMENDATIONS

This handbook provides a high-level framework of relevant barriers to entry and operate for energy suppliers into the **German** retail electricity and gas markets, as well as examples of actions that relevant institutions as NRAs, ministries, etc., have taken, are taking or could take in the future to remove them.

In particular, the handbook groups the barriers to entry and operate in the energy retail market into four different categories as listed below.

1. Regulatory disincentivisation.
2. Market inequality.
3. Operational and procedural hindrances.
4. Customer inertia.

In this section we report the main findings and recommendations for each category.

Under the first group, **regulatory disincentivisation**, suppliers did not raise any concerns regarding “price regulation” as there is no price regulation in place. The main concerns relate to “burden sharing”, “regulatory unpredictability” and “access to innovation”.

“Obligation to collect special taxes and levies and tariffs on behalf of others” has been identified as an issue. In order to lower this barrier, it is recommended that charges, unrelated to suppliers’ core business, should be collected via different methods (e.g. the regulated market segment, DSOs, could collect grid tariffs and all other special taxes and levies via a separate bill and bear the risk of non-payment).

Several causes for uncertainties have been raised, including the future development of the regulatory framework, regulatory developments in the field of digitalization and new technology and environmental obligations. Long term regulatory planning (especially for EEG), clear communication of proposed regulatory changes as well as full transparency on deviations from initially proposed plans (especially Smart Meter) can substantially reduce the level of uncertainty.

Raised barriers regarding access to innovation are mainly driven by “lack of incentivisation for novel pilot projects or post-pilot market rollout data availability”, “lack of data for innovative product development”. Also, a perceived missing fit between new business models and existing regulation has been indicated. Dedicated testing environments, additional funding and increasing the level of information available to market participants, can increase incentivization. The certification of the Smart Meter Gateways will help in eliminating the data gap barrier and market rule adjustments (eg. for independent aggregators) in all relevant markets will increase the fit between new business models and existing regulation.

Regarding **market inequality**, barriers have been identified arising from a perceived uneven playing field for different types of suppliers. Suppliers responding to the survey or interviewed reported barriers regarding “unbundling and market power” as well as “equal access to and maturity of wholesale market”.

The respondents raised that market power barriers arise from “discriminating, strategic behaviour of incumbent, and obstruction by other market players”, “strategic, unfair advantage of vertically integrated market players and

lack of transparency” and “discrimination against new and small market players in capacity and ancillary services markets. A certification scheme for price comparison tools, reducing the cap of the “de minimis rule” and ensuring non-discriminatory data access can help in eliminating those barriers.

“Discriminatory market platform access” and “high price or volume risk in energy procurement” have been raised as issues around equal access to and maturity of wholesale market. Redesigning prequalification criteria for balancing markets; ensuring that service providers provide their offering in a non-discriminatory and proportionate way; enable clearing based on real consumption profiles and ensuring affordable hedging opportunities can substantially reduce those barriers.

Operational and procedural hinderances are regarded as barriers by some of the suppliers responding to the survey or being interviewed. Barriers have been raised regarding “sign-up and operations compliance” and “data access & processes”.

“Highly complex or country-specific systems & processes” and “differences between DSOs within the country” are issues indicated with respect to operational compliance. In order to allow suppliers to reduce costs and capitalize on their investment when expanding, standardization of systems and processes not only within Germany but across Europe would certainly reduce this barrier.

“Complex, heterogenous IT infrastructure and/or low level of digitalisation” and “missing access or poor quality of operations-critical data” also present relevant barriers in the market. Especially in the light of an increasing amount of data being generated by Smart Meters, all remaining manual processes need to be fully digitized and automatized. As Germany is following a decentralized approach to data management (no data hub), ensuring a high level of data quality and non-discriminatory access will be another crucial success factor.

Customer inertia barriers category, groups all those issues related to customer behaviour and attitude within the retail energy market.

“Low customer awareness or interest makes it difficult to attract customers” and “lack of trust in new or foreign suppliers and in new technology” have been raised specifically in this category. Raising awareness and the overall information level will help in reducing those barriers. Introducing standards for switching platform is recommended as well.

APPENDIX 1: PROCESSES

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

1) Information gathering before market entrance

Gathering information prior to market entry			
Regulator	TSOs	DSOs	Associations
<ul style="list-style-type: none"> • Rules and standards for suppliers • Market information • Energy codes 	<ul style="list-style-type: none"> • Grid infrastructure • Grid service markets • Balancing regime 	<ul style="list-style-type: none"> • Distribution grid access • Grid tariffs • (Smart) Metering 	<ul style="list-style-type: none"> • Market process standards • Energy transition, market policy, news
Websites & Reports	Price Comparison Tools	Market Prices and Volumes	Consultants
<ul style="list-style-type: none"> • Retail strategy and trends 	<ul style="list-style-type: none"> • There are various commercial tools available, but no official one • Tariff and price information of market players 	<ul style="list-style-type: none"> • Exchanges (EEX, EPEX Spot) 	<ul style="list-style-type: none"> • Studies • Consultancies, specialised in various areas

Further comments

Shown are only the main information sources (not exhaustive)

National regulatory authority - Bundesnetzagentur (BNetzA)

- Monitoring report of the regulator provides a good overview of market structure, functioning and developments (also available in English)
- Bundesnetzagentur recommends rules across the energy value chain. BNetzA does not have legislative power but can adopt administrative acts and define rules.
 - Rate codes or rate structures - define rules with which network operators must calculate the tariffs for each service that they offer

- Technical codes - rights and obligations of network operators and network users (e.g. connection of customers, allocation of capacity, measurement of energy consumption, etc.)
- Information codes - describes how companies in the energy sector may and must exchange data

TSO (Tennet TSO, 50Hertz Transmission, Amprion and TransnetBW for electricity; 4 TSOs in the two market areas Gaspool and NetConnect Germany for gas)ener

- Balancing regime very well described on TSO websites

DSOs

- Grid costs are published by each DSO on their website but no central database available for free.
- Private providers offer such databases (around 10K EUR)

Associations

- Main Associations: BDEW, VKU, BNE

Websites & Reports

- Retail strategy and trend reports are published by consultancies and price comparison websites (fee-based and free versions)

Price Comparison Tools

- No central tariff register but price comparison websites (e.g. Check24, Verivox) as a private alternative

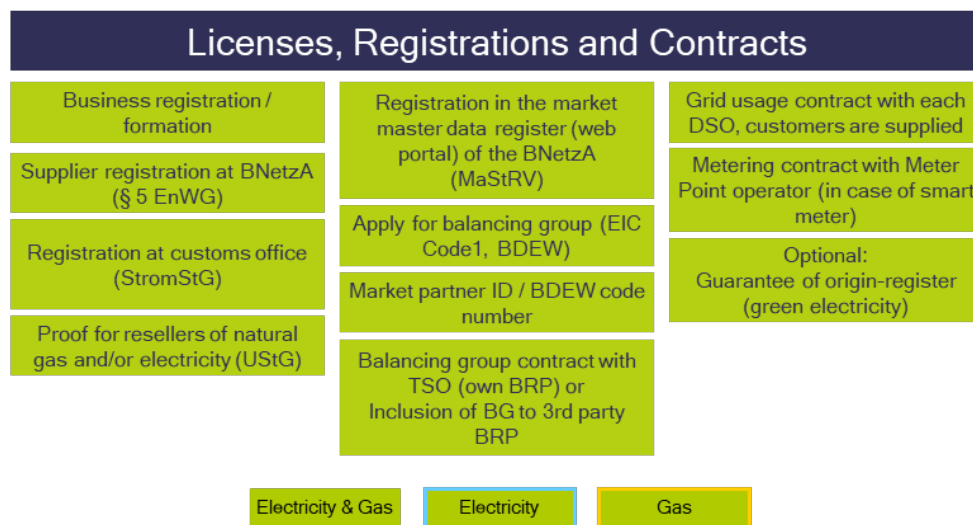
Consultants

- No central point of contact for all concerns (unless you pay for specialised consultants)
→ information needs to be gathered in different locations

General Comment

- Most of the information is presented in German, exceptions are: website of Bundesnetzagentur, TSOs and large DSOs (reports and legal texts are often provided in German only)
- Laws and standard contracts (e.g. with DSO) available in German only

2) Licenses, registration and contracts



Further comments

Registration:

- Foreign energy supply companies - regardless of their place of business - must also register at BNetzA if they supply household customers in Germany. In case the foreign supplier has been licenced in another EU member state, an easier registration process exists.
- Interaction is simplified with registration forms and online services. The following Documents are required for the registration in order to proof organisational, technical and financial capabilities:
 - Trade register excerpt (Handelsregistrauszug)
 - Organisation chart (including number of employees, outsourced services, details regarding the business model)
 - Excerpt from the central register of trade and industrial offences (Gewerbezentralregistrauszug)
 - Annual statement of accounts or opening balance sheet
 - Certificate of good conduct (Führungszeugnis) (which has to be sent to a federal, agency) of management
 - Credit report (Schufa Auskunft) of management
- The process of registration and market entry can run in parallel. It is not necessary to wait for the successful reporting obligation upon entering the market

Contracts with TSO

- Contracts to close with TSO are standardized (by BNetzA)

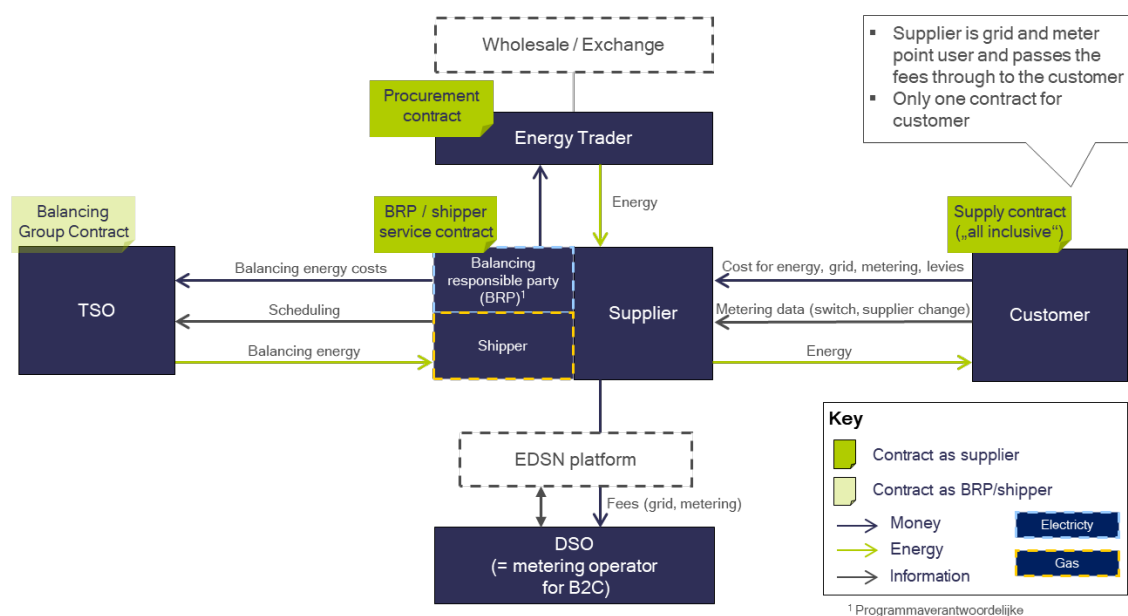
Contracts with DSO

- Contracts to close with DSO are standardized (by BNetzA)
- Grid usage contract must be concluded with each DSO (paper contracts); can be outsourced to BRP

Metering Contract with Meter Point operator

- Metering point contract must be concluded if smart meters are used; for analogue meters DSO is also metering point operator (included in grid usage contract)

Overview of contracts to be closed as electricity and gas supplier:



Balancing Group / Control Area Coordinator (BKK)

- The role of the balancing group coordinator is held by the TSO
- Gathers and merges all data from the BRPs (German: BKK)
- Calculates and settles any deviations
- A special contract ("Bilanzkreisvertrag") between the BKK and the BKKV is concluded

Gesetz zur Digitalisierung der Energiewende (GDEW)

- With the GDEW, the MsbG was established
- Contracts to close with DSO are standardized (by BNetzA)
- Grid usage contract must be concluded with each DSO (paper contracts); can be outsourced to BRP
- Regulates the roll out of smart Meter in Germany
- From 2017 onwards: Consumers > 10 MWh electricity consumption with obligations for smart meter
- From 2020 onwards: Consumers > 6 MWh electricity consumption or generators > 100 kW with obligation for smart meter
- These thresholds have to be in compliance with price caps according to the BMWI ²⁰

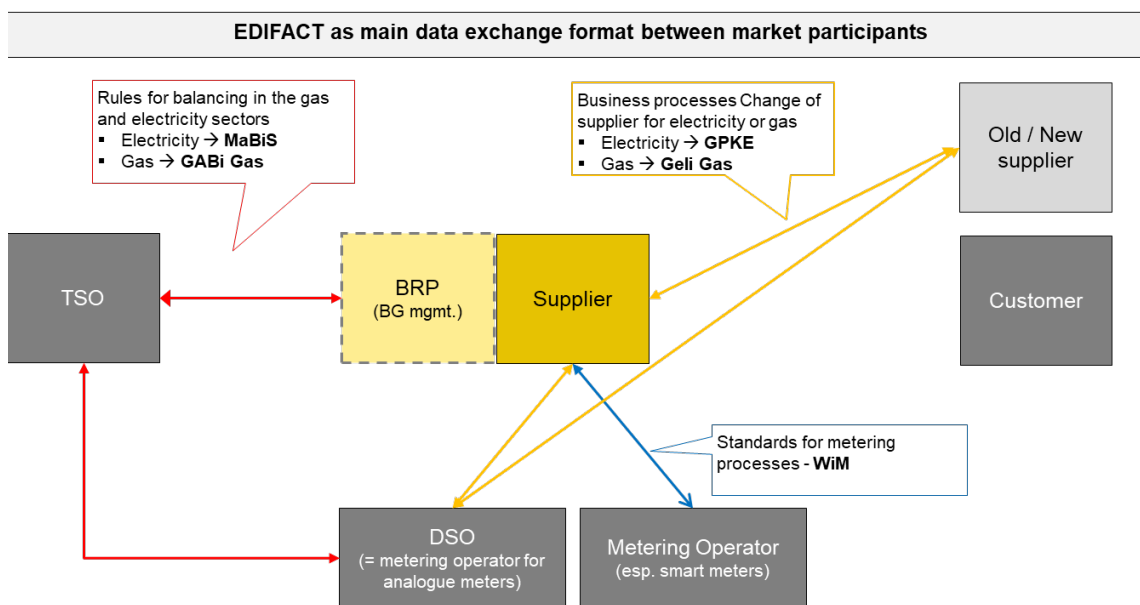
²⁰ <https://www.bmwi.de/Redaktion/EN/FAQ/Smart-Meters/faq-smart-meters.html>

- With the introduction of smart meters there will be a system change in market communication

Messstellenbetriebsgesetz (MsbG)

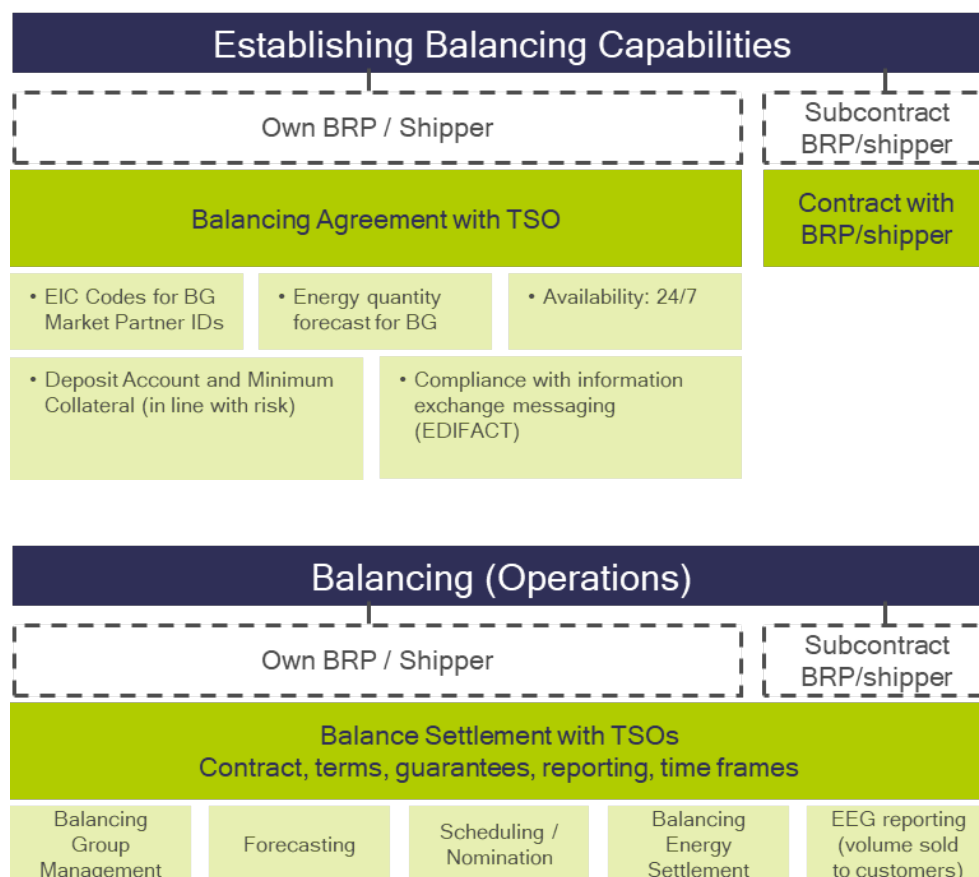
- Before 2016 the DSO was per default also the metering point operator (also responsible for the distribution of the determined meter readings)
- Since 2016 the metering market is liberalized according to the MsbG
- Customer have the right to choose their meter point operator
- If no choice is made by the customer, this task is performed by the so-called basic metering point operator (gMSB). In most cases this is the traditional DSO
- Also suppliers and third parties can act as metering point operator on the market (wettbewerblicher Messstellenbetreiber)

Overview of process standards and data exchange:



Dependencies/contracts for gas:

- Quelle: BDEW/VKU/GEODE Leitfaden



Further comments

BRP

- Most new entrants use the service offering of a third party
- BRP services are provided by multiple market players (trading specialists, Stadtwerke etc.)
- Level of services can be arranged in bilateral contracts (Stadtwerke for example offer beside balancing / energy procurement also complete settlement and customer interaction services)

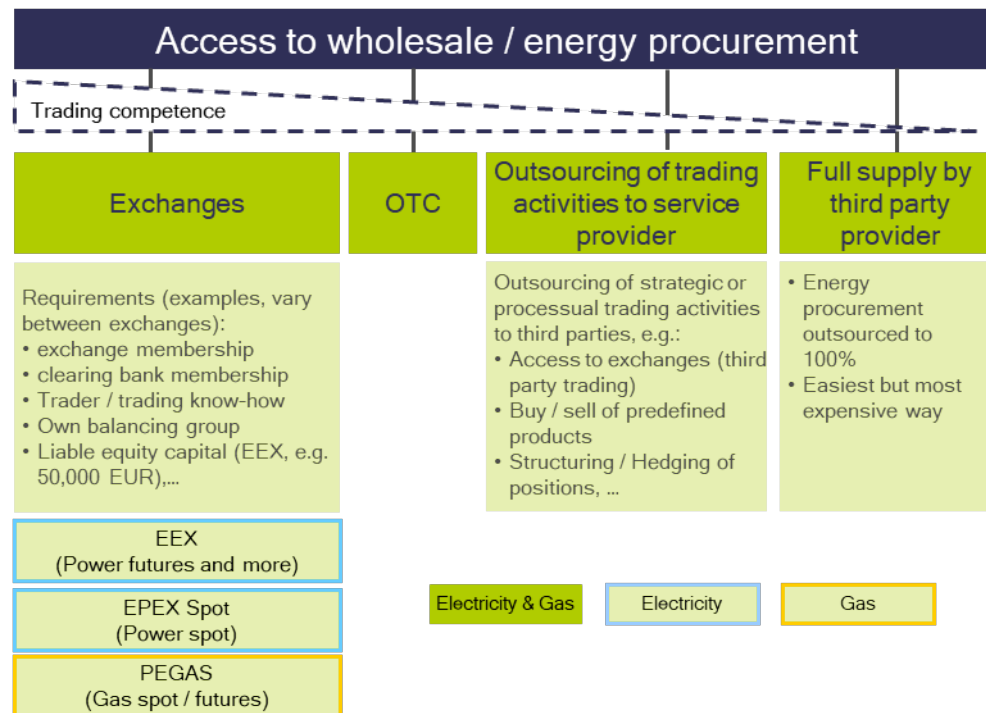
Forecasting

- DSO publishes “standard load profiles” for customer groups, also residentials (load profiles are easy to understand and handle)
- Forecasting of energy volumes is done on expected customers base and load profiles

EEG Reporting

- Suppliers have to report EEG relevant volumes sold to customer groups (web portal of TSO)

4) Acquiring wholesale / energy procurement



Further comments

- Energy procurement and related risks can be fully outsourced to external service provider (most expensive)
- Trading on behalf of supplier can be done by the BRP or other third parties (e.g. brokers, financial institutions, ...)
 - As third-party trading is permitted on EPEX SPOT's markets, several members also trade on behalf of smaller companies

Outsourcing

- Most new entrants outsource energy procurement to BRP or other third party service provider

Insourcing (Typical activities sourced internally)

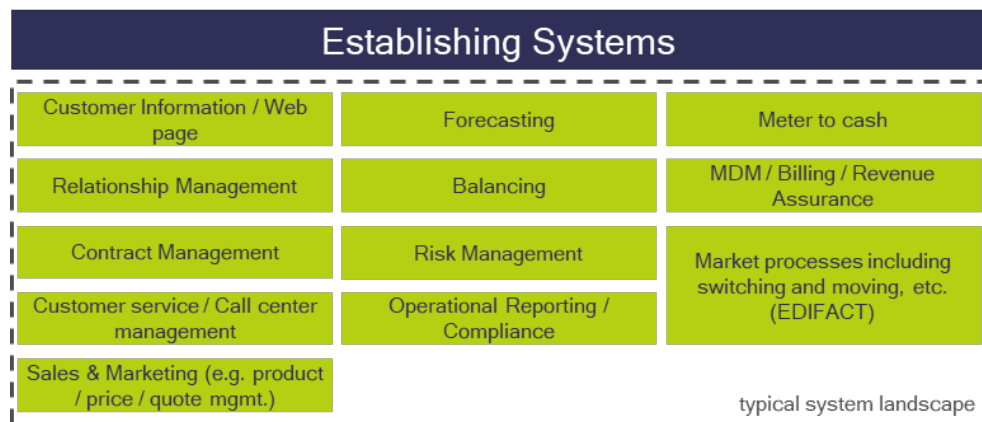
- Typical activities staying intern:
- Customer / Demand forecast
- Procurement strategy input (how often, what times, what products etc.)

Admission and Exams

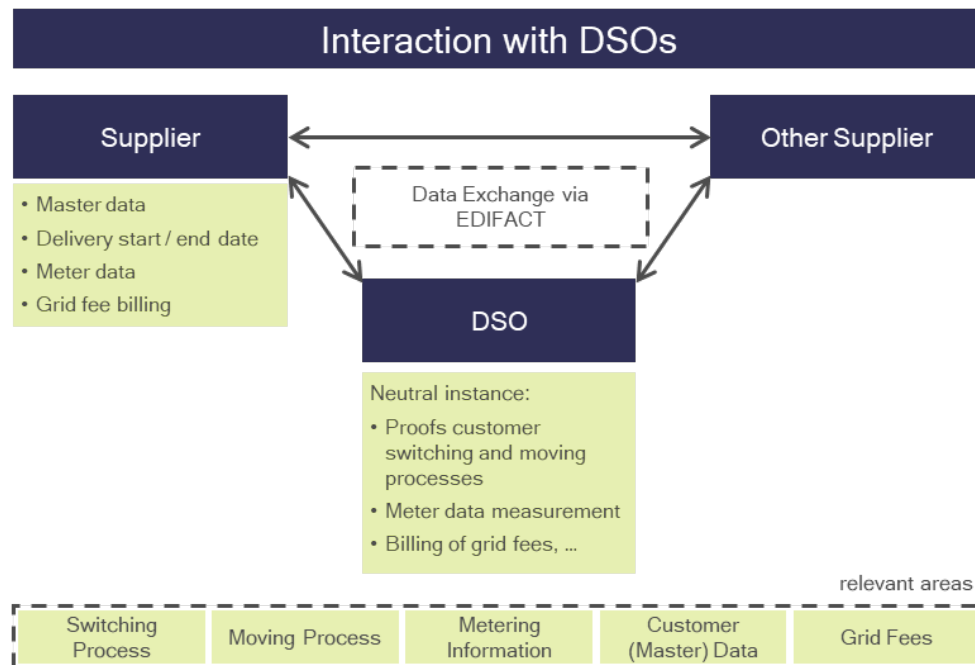
- EPEX Spot Power (Intraday, Day ahead) - Before trading on EPEX SPOT's markets, your company has to become a member of the exchange. Only companies can become members of EPEX SPOT.
 - Contact EPEX Spot

- Find a clearing bank
 - Become balancing responsible party
 - Follow admission process
 - Pass trader exam
- EEX: Futures / Derivates (Power, CO2, certificates etc.) → EEX Exam required for admission to trading
 - PEGAS (powernext) -> The admission process consists of three steps:
 - Membership with powernext (unclear what it is needed for)
 - Membership of EEC (clearing conditions)
 - No exam needed

5) Provision of system landscape



6) DSO related operations / market communication



Further comments

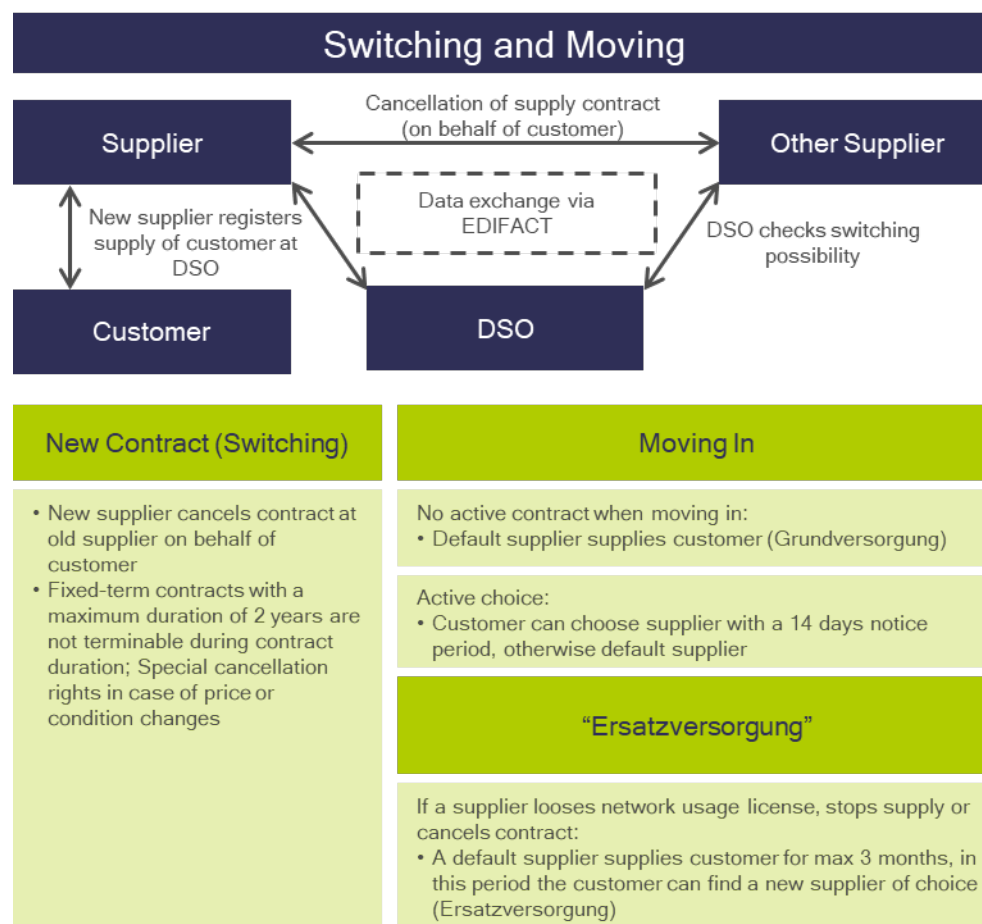
DSO - Supplier

- Each supplier needs to be in direct contact with each DSO for each customer that it wins from that distribution area
- In order to deliver energy to a customer, a contract with the relevant DSO needs to be concluded
- The supplier needs to be in touch primarily to facilitate the switch and for metering and master data information and for moving
- Data security and privacy regulations are covered in the EnWG itself, DSGVO (Datenschutz-Grundverordnung) and the BDSG (Bundesdatenschutzgesetz)
- DSO-supplier communication standards and protocols are regularly updated in order to correctly depict any regulatory changes
 - MAKO 2020 was defined in order to incorporate all necessary adaptations for Smart Meter data and the processes involved
 - Also for the gas sector, those adaptations have been performed

Standardisation

- Business processes for energy delivery, supplier change, Grid settlement etc. are standardized:
 - Electricity → GPKE
 - Gas → GeliGas
 - Available online at BDEW / Bundesnetzagentur
- Data is exchanged using the EDIFACT data standard (Submission via E-Mail attachment)

7) Customer switching and moving



Further comments

Switching

- Switching process are standardized, incl. deadlines for single activities
- It is possible to switch suppliers at any day of the week throughout the month

Contracts

- Contract lengths varies from unlimited up to max 2 years (standard is 1 year contract, automatic renewal by 1 year if not cancelled)
- Contracts are in general not breakable during contract period; Special cancellation opportunities in case of price changes (potential loss of one-off bonus in case of early contract end)

Process for Moving

- Moving in / no action: Energy supply by default supplier (who serves most household customers in the grid area); Default supplier and tariff very expensive but cancellable on short notice (2 weeks)

- If the supplier loses its license to use the grid or a contract change takes longer than expected, the default supplier ensures seamless supply of the customer through the “Ersatzversorgung”. This supply starts and ends automatically. No contract is necessary here. Maximum duration of the emergency supply is three months. Within this time the customer needs to sign a new contract with either the default supplier or an alternative one.
- Moving out within valid contract time; no cancellation right per se; old supplier might proceed existing contract at new address if it is possible (handled differently from supplier to supplier)

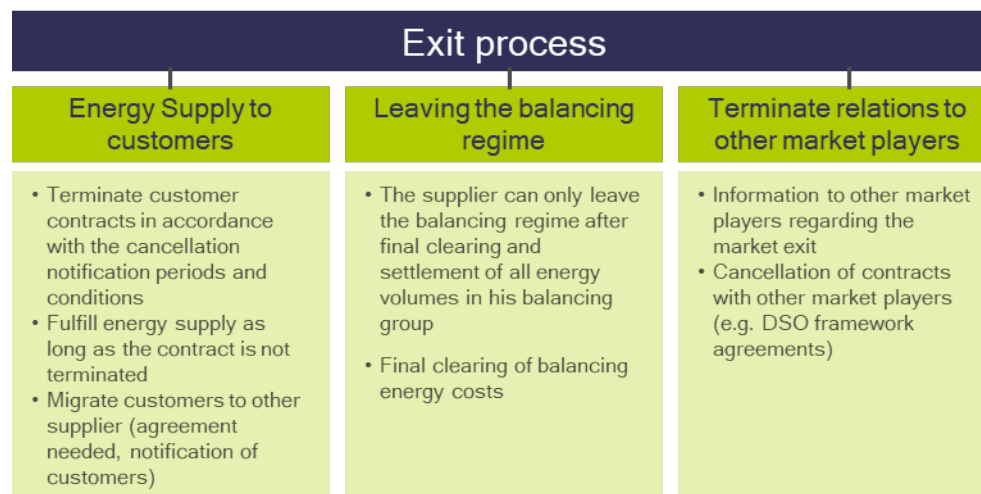
8) Operational obligations / duties

Duties during operations		
Data publication	Billing	Reporting obligations
<ul style="list-style-type: none"> • Tariff data 	<ul style="list-style-type: none"> • Detailed split and explanation of price components • Info on energy mix • Min 2 payment methods 	<ul style="list-style-type: none"> • Annual statistics (monitoring report BNetzA)

Further comments

none

9) Exit Process



Further comments

- The supplier has to fulfil his general legal as well as any specific contractual obligations
- In case of a bankruptcy, the insolvency law is applicable

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