

EUROPEAN BARRIERS IN RETAIL ENERGY MARKETS



CZECH REPUBLIC **Country Handbook**













EUROPEAN BARRIERS IN RETAIL ENERGY MARKETS PROJECT: Czech Republic 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 Poland Netherlands Czech Republic Hungary Cyprus

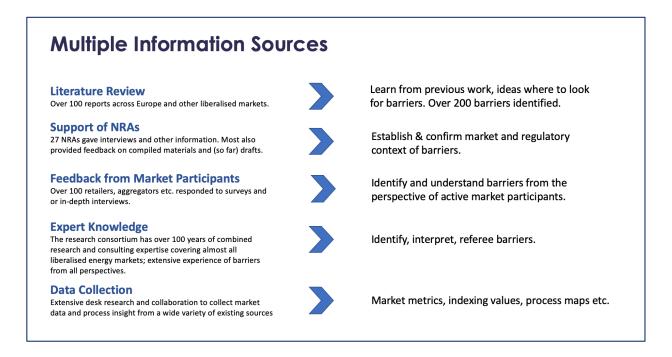
The project focuses on retail (supply), including also demand aggregation services, other additional offerings and new model retail, especially relating to the household segment customers (in some markets households and smaller SMEs may be difficult to distinguish). The project additionally concentrates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

Sources of Information

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

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

Figure 1 - Multiple Information Sources



Surveys & Interviews

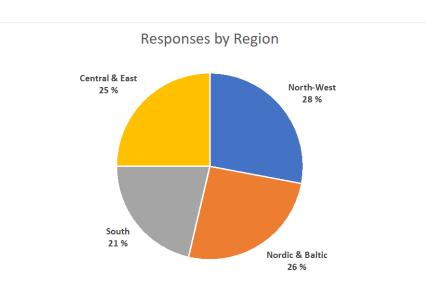
The primary research mediums used in the project were an extensive questionnaire and in-depth interviews. The purpose of the questionnaire, which contained separate questions depending on the type of respondent, was to provide a comprehensive and structured identification, weighting and magnitude of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

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

The Competitor Sample

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

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



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

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

Confidentiality

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

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

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

Deliverables

The project has three key deliverables:

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



The Barrier Index and Ranking

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

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

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

Key barriers in the Czech market

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

Importance of key Europe-wide barriers in Czech Republic				
Vide-reaching price Low margin of regulation regulated offer		Small market or customer value	Large penetration of old Ripple control design incompatible with smart meters	
atory regulate or its digitalisa	ainty around ory future for ation and new hnology	Low liquidity on wholesale market	Fixed-term contracts with suppliers with automatic extension	
ner news	ers do not trust suppliers or chnology	Poor or no access to operations-critical data	Saturated energy markets because of low entry requirements	
orice innova	of data for utive product elopment	Lack of data hub		
at still are present in the been enacted by the r and its awaited effects here suppliers suffer th	ntry ne country or are e regulator and effect	cts still awaited; reporting a the country being relatively a	lag between the regulatory advanced on this topic	
	at still are present in the been enacted by the and its awaited effects here suppliers suffer the EU countries, pilot projue in this country and is	been enacted by the regulator and effected its awaited effects here suppliers suffer the effects despite EU countries, pilot projects being in place in this country and is supported by fac	at still are present in the country or are experienced by suppliers events been enacted by the regulator and effects still awaited; reporting a	

Key recommendations

Czech Republic is performing relatively well in comparison to other European countries analysed in the project. The main identified barriers are the potential advantage of the incumbent suppliers without brand unbundling (dominantly in the electricity sector), the lack of proper regulation and large-scale penetration of innovative solutions and technologies, and difficulties associated with consumers' switching. We suggest the following main course of actions:

- Stricter regulation of unbundling, introduction requirements for brand unbundling
- Creation of detailed implementation plans and associated regulations for innovative technologies such as smart meters or demand response.
- Propagation of indefinite term contracts instead of definite one with penalty for switching and automatic prolongation
- Upgrade of the neutral price comparison site, to provide all necessary details for customers.

MARKET OVERVIEW

Market background

Before 1990 a vertically integrated company operated on the electricity and natural gas market, which was owned by the state. Separation, privatization started in 1990, which was followed by market liberalization according to the European legalization since 2002. In this section we provide a short timeline of the evolution of the Czech electricity and natural gas industries.

The foundations of the current electricity and natural gas sector were laid in the 1990s. In 1990 electricity distribution was separated form production by the creation of eight electricity distribution companies. These distribution companies were partly privatised; the government and CEZ remained the majority shareholders in five of them, while in the other three they owned more than 48% of the shares. In 1994 the same process started in the natural gas sector, however with clear differences. Similarly to the electricity sector eight regional distribution companies were created, but 6 remained in the ownership of Transgaz, one was bought by E.ON, while the last became the property of the municipality of Prague.

Privatisation of the energy sector continued in 2001. In this year there were two unsuccessful attempts to privatise CEZ, but Transgaz was successfully bought by RWE. Later the 6 regional DSO's of RWE were merged into one company RWE GasNet. In the electricity sector because of a decision of the Office for Protection and competition CEZ had to sell their shares in the 2 regional distribution companies where they were minority shareholders, and in one, where majority shareholders. In 2011 the legal separation between the TSO and DSO activities occured as the Ministry of Industry and Trade became the owner of CEPS, the electricity TSO. In 2013 a consortium of Borealis and Allianz bought Transgas the natural gas TSO from RWE and renamed it NET4GAS.

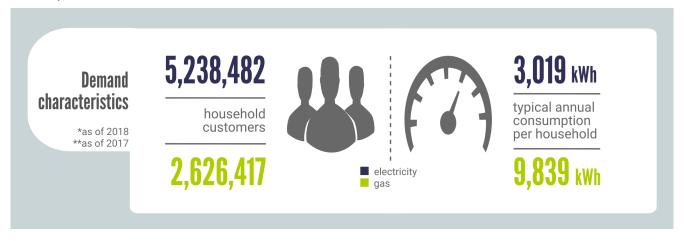
Parallel with these events the liberalisation of electricity and natural gas markets started. In the electricity sector first consumers with a yearly consumption of more than 40 GWh had to move to the free market in 2002, followed by consumers with a yearly consumption more than 9 GWh energy in 2003, by all consumers expect households with continuous metering in 2004, by all end-users except households in 2005, and by households in 2006. Similar stepwise liberalisation occurred in the natural gas sector. First consumers with a yearly consumption more than 15 million m^3 were liberalised in 2005, followed by all end users except households in 2006, and by households in 2007.

Market structure

In 2018 the gross consumption of electricity was 73.9 TWh, which was paired with a gross electricity generation of 88 TWh, so Czech Republic is a net exporter of electricity. The Czech electricity generation mix generally based on nuclear energy and coal power, which consist more than 80% of the country's electricity generation. With respect to renewables only biofuels and PV power plants have relevant shares in the electricity mix.

According to IEA most the electric energy is consumed by the industry (approximately 40%) followed by the commercial sector (around 30%) and households (around 25%). In 2017 there were more than 5 million household consumers in the country with an average consumption of 3 MWh/year.

The natural gas consumption of the country in 2018 was 8.183 bcm (87.306 TWh). Most of the country's natural gas needs are covered from imports as local production accounts only for 1.7% of total consumption. Czech Republic imports around 65% of their natural gas needs from Russia. Additional demand is covered by spot trades form other European countries. The largest gas consumer is industry (around 35%) followed by households (around 25%) and power generation and commercial sectors (around 15%). In 2018 the number of household consumers was more than 2.6 million, with an average consumption of 9.2 MWh/household/year. The total yearly consumption was more than 24 TWh with 6 % decrease to 2017.



The electricity TSO in the Czech electricity market is called CEPS and owned by the state. The Czech electricity system is connected with all of the neighboring countries Germany, Poland, Slovakia and Austria. CEPS operates a transmission system of 5728 km of which 3735 kms are 400 kV lines, 1909 km are 220 kV lines, and 84 km are 110 kV lines.

The natural gas TSO is NET4GAS, operating a transmission line of approximately 3800 km. The country relates to three of its neighbors, Germany, Poland (only export) and Slovakia. The owners of the company are Allianz Infrastructure Czech HoldCo II S.à r.l. and Borealis Novus Parent B.V. There are three gas storage operators in place in Czech Republic, Innogy Gas Storage, Moravia Gas Storage and MND Gas Storage, who operate 9 storages with a total capacity of 4 bcm. Also, there is a 4th storage operator SPP Storage which operates one storage located in the Czech Republic, but it is connected to Slovakian network.

Three major electricity distribution companies are in place in the country, CEZ distribution (3.6 million customers), E.ON distribution (1.4 million customers), PRE distribution (0.7 million customers) which is jointly owned by the city of Prague and Energie Baden-Württemberg. Additionally, there are 340 local distributors, which are not unbundled.

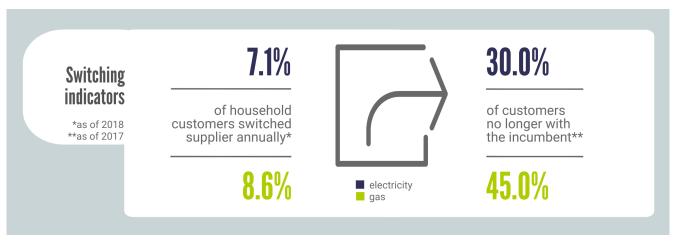
The largest DSO of the natural gas market is GasNet. Formerly its majority shares were owned by Innogy, however the company was sold at the end of 2019. The final owner of the DSO is unknown according to the country's regulator. Approximately 85% percent of gas sold is associated with GasNet's network. Two other DSOs operate in the system which are relevant; Pražská Plynárenská Distribuce with more than 10% and E.ON Distribuce with

less than 5% of gas running through their system. The total length of GasNet's system is 65 000 km, while E.ON and Pražská Plynárenská Distribuce operates 4600 km and 4450 km respectively.



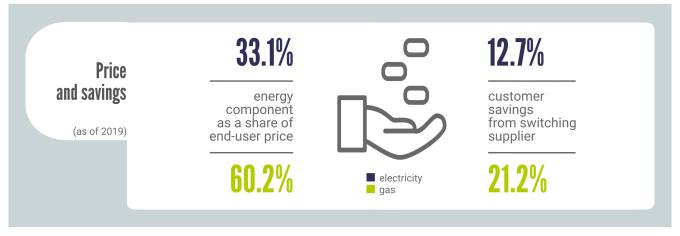
In the electricity supplier market, there are three major companies and more than 400 other smaller competitor (with license), of which 80 have a customer base of more than 100 consumers. The three major suppliers are associated with the three major DSOs, in the same company group, but legally unbundled; CEZ, E.ON and PRE. There are other market participants however, with significant number of customers such as Bohemia Energy (approximately 320 000 customers), Innogy Energy (approximately 300 000 customers) or Centropol Energy (approximately 280 000 customers). Data about exact market shares of the suppliers is not available. Based on 2016 data from IEA, CEZ supports around 40% of consumers, E.ON 20%, while PRE 10%.

Electricity prices are not regulated even for households which generates competition in the market. Only the energy component of the bill is not regulated, for the network usage customer must pay regulated tariff. Switching rate was 7.1% in 2018.



In the gas retail market, there are more than 100 suppliers of which currently Innogy Energie is the largest. It is important to add that Innogy Energie is now fully unbundled, from the DSO. In 2018 Innogy Energie had a market share of 31.3% followed by Pražská Plynárenská with a market share of 12.3 %, and E.ON Energie with 10.1%, the latter two are legally unbundled companies.

The energy component of the natural gas prices is not regulated, but similarly to the electricity markets, tariffs for the usage of the network are set by the regulator. Switching rate for the household category was 8.6%, while the overall average was 8.3% in 2018.



The most important legislations connected with energy industry of Czech Republic are the Energy Act, the Electricity Market Rules, the Gas Market Rules and relevant price decisions regulating the network usage.

Political and regulatory orientation

The future goals of the Czech Government are based on the final version of the National Energy and Climate plan of the country, submitted to the European Commission. According to the document the country's aim is to:

- Reduce GHG emissions relative to 2005 with 30% until 2030, which means 44 Mt CO2eq.
- Reach a renewable energy share of 22%
 - Wind power plant generation increase from 1867 TJ (2016) to 6460 TJ (2030)
 - PV electricity generation to increase from 7673 TJ (2016) to 15077 TJ (2030)
- Reduce the final energy consumption to 990 PJ, and primary energy consumption to 1735 PJ.
- Reduce energy intensity of GDP to 0.157 MJ/CZK

Based on the national TYNDP the country is planning the extension of the Czech-Polish interconnector and the construction/realization of a bidirectional pipeline between Austria and Czech Republic, in the natural gas sector. Additionally, a capacity extension in the Germany-Czech Republic-Slovakia direction is planned. In the electricity sector several within country constructions are planned.

Regulatory market characteristics

Commodity part of electricity and natural gas prices is not regulated in Czech Republic, neither for households nor for industrial customers. Suppliers are free to set the price for the energy content of the electricity and natural gas bills. On the other hand, the part for the network usage (system services - distribution, system operator fee) is regulated by the Czech regulator (Energy Regulatory Office). It is possible for consumers to enter bundled contract or separate contract with the DSO and the supplier, based on the volume of gas consumed.

Only retailers with trading license can sell electricity or natural gas to the final consumers. There is no separate license for retailers, licensing conditions are the same for every trader. Getting a license is relatively easy in the

Czech Republic, as the associated financial requirements are low, and the process itself is not complicated. Also, a license issued in any other European Union Member State is acceptable in Czech Republic, after registration. More detailed information on the registering process and the difference between registering in the gas- or electricity market can be found in the appendix under the chapter "Licenses, registrations and contracts". Substantial changes are not expected in the current Czech regulatory framework in the near future.

Other market characteristics

Generation market centralization

All the countries nuclear power generation capacities, and most of the coal-based electricity generation power plants are owned by the CEZ group. According to the latest IEA country report however there is no evidence of misuse of market power.

Wholesale market

For market participants it is possible to trade electricity on the EEX T7 platform, on the short-term organized market, the Czech-Moravian Commodity Exchange, or through OTC agreements. In 2018, 5737 baseload contracts for 58.6 TWh energy were made on EEX platform, of which 18.2 TWh were annual contract with a settlement date in 2019. The short-term electricity market of Czech Republic is coupled with Slovakia, Hungary and Romania. In 2018 the traded amount on the day ahead market was 22.89 TWh, on the block market 17 TWh, while on the intra-day market 0.5 TWh. Bilateral trades that were registered accounted for 95 TWh.

Natural gas is tradable within the country on the Power Exchange Central Europe (PXE), through OTC deals, on the organized spot market by OTE, and the Czech Moravian Commodity Exchange Kladno. Since 2017 the organized spot market only consists of an intraday market, as for the day-ahead were rarely used by the traders. In 2018 on PXE a total of 125 382 contracts were made for 7.69 TWh of Energy. Out of this amount 4.21 TWh were traded as futures and 3.48 TWh as spot market contract. At the organized intraday market, the total contracted amount was 3.06 TWh. Trading is possible in both the electricity and natural gas wholesale markets, with license.

Smart meters

Czech Republic has a National Energy Action Plan for Smart Grids since 2015. It defines three major period, the period of preparation (until 2019), while the other two period will focus on implementation until 2024 and 2029. Since 2010 PRE is cooperating with ADD group in Prague. This resulted in the installation of 2500 smart meters in the city until 2017.

Another smart grid project is called ACON (Again Connected Networks), which aims to deepen and facilitate the cross-border cooperation between the Czech Republic and the Slovak Republic at the Distribution system operator (DSO) level. The project promoters are the Slovak DSO Západoslovenská distribučná and the Czech DSO E.ON Distribuce.

At the end of the year 2018 a tender was announced by CEZ distribution aiming the delivery of technology for a pilot smart metering project under which smart meters will be installed in six new locations, based on PLC and BPL technologies with complementary CT communications. Obsolescent smart electricity meters in locations covered by previous pilot projects will be replaced at the same time. This will involve a total of almost 55,000 meters and appropriate data concentrators.

Currently there is no information available about the exact number of installed smart meters.

Taxation

On top of conventional taxes electricity and natural gas suppliers to end users must pay a special tax for the stabilization of public budgets, which in practice operates as an energy tax.

Context for aggregation/demand response

On the wholesale electricity market (intraday and day ahead), participation with aggregated generation is possible, aggregated load is also possible according to the regulation, however in practice it is currently not happening because of the lack of incentives and difficult technical criteria's.

With respect to demand response, Czech Republic is in a very interesting situation because of its Ripple control systems. These systems were installed in the 1960s so they can be considered as very underdeveloped technologies compared to modern demand side response requirements. Ripple control systems are the main tools for managing distribution grid constraints even nowadays and were used in the balancing market as well until 2005, when the ownership of the systems was transferred to the DSOs. The systems are very difficult to replace as 40% of the current consumers have a Ripple control device and it is incompatible with any smart-meter solutions as well. Demand side participation in the balancing market is also possible, however currently this legal possibility is not used.

BARRIERS

The European Barriers to Entry and Competition in Retail Energy Markets project has researched barriers across 30 European markets. From this research four over-arching pan-European categories of barriers have emerged:

Over-arching pan-European barrier blocks

	1	Regulatory disincentivisation
rier cks	2	Market inequality
Bar Blo	3	Operational and procedural hindrances
	4	Customer inertia

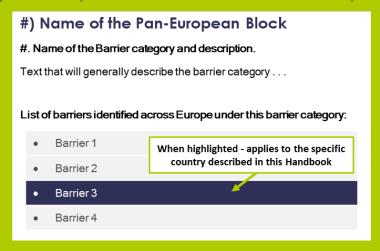
Description of the four-over-arching pan-European barrier blocks:

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

Within each of these high-level categories 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 Czech Republic case as reported in the following chapters of this handbook.

HOW TO READ AND INTERPRET THE FOLLOWING SECTIONS

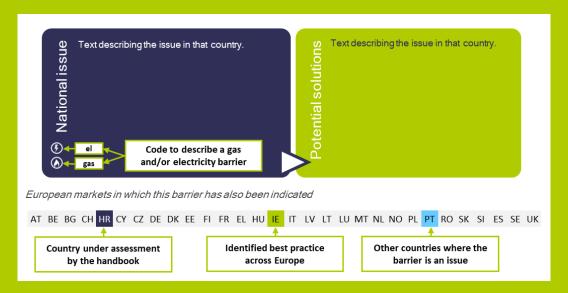
Each of the following four chapters explores one of the four pan-European blocks of barriers and report how each sub-category barrier apply to Czech Republic. When a barrier applies to Czech Republic, it will be highlighted in the table following a general description of the barrier itself as shown in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



As showed in the above figure, the table lists all the barriers we have identified in Europe within the specific barrier category. Only 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 Czech Republic.

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



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 barriers¹:

1. Price regulation. Regulated prices usually refer to regulation or control of end-user's prices by a public authority, usually the National Regulatory Authority (NRA). Price regulation can take different forms, such as setting or approval of prices, price caps or various elements of these. In Europe, there still exist Member States which have maintained end-user regulated prices during the market opening process and after, in the intention of protecting households or even non-household customers from significant increases in energy prices, especially in a context of limited competition. In some cases, this regulation has led to below cost prices and to low margin to cover the supplier activity risk, discouraging investments and the emergence of newcomers.

According to CEER², 14 European countries out of 27 answering a recent CEER survey have price intervention in electricity for household consumers. Where regulated prices remain, NRAs tend to consider them as a significant barrier to entry for alternative suppliers. All Member States, where NRAs consider regulated prices as a significant barrier, are planning to remove them, at least for non-household customers. Across Europe, the following specific barriers related to price regulation were detected by this study. Those highlighted in blue have been raised, indicated or identified as barriers in Czech Republic:

- 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. Barriers related to burden(-sharing) detected in this study are as follows:
 - Obligation to collect tariffs unrelated to energy on behalf of others.
 - Obligation to keep a minimum-security stock as a gas reserve
- 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

¹ Please note: these definitions are Europe focused, not Czech Republic specific. Highlighted barriers have been identified as country specific.

² Monitoring Report on the Performance of European Retail Markets in 2018. CEER Report 4 November 2019.

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. The following barriers related to unpredictability of regulatory framework were detected in this study:

- 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). European barriers relating to innovation-friendliness are as follows:
 - 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 Czech Republic: Price regulation

We found that none of the listed barriers is relevant in Czech Republic.

1.2 Description of regulatory disincentivisation barriers in Czech Republic: Burden sharing

We found that none of the listed barriers is relevant in Czech Republic.

1.3 Description of regulatory disincentivisation barriers in Czech Republic: Regulatory unpredictability

Uncertainty regarding future regulatory developments, especially in the field of digitalisation and new technology. From our studies of this market, it appears that this would pose a barrier in Czech Republic. 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.

The long-term strategy for smart meters were created in 2015, however the implementation of the systems is not fast paced. There are some pilot projects across the country, but the share of smart meters is low. Currently the implementation of natural gas smart meters hasn't started. Additional difficulty is the existence of Ripple control systems as they are incompatible with modern smart meters.

Grand scale strategy for Ripple control systems, and implementation of the strategy would enhance the penetration of innovative technologies.

European markets in which this barrier has also been indicated

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Uncertainty regarding environmental obligations and non-renewable generation capacity. From our studies of this market, it appears that this would pose a barrier in Czech Republic. Uncertainty around the future, coal and gas generation capacities may increases price risk.

National issue

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As the biggest portion of the Czech electricity power generation is based on coal power plants, according to the forecasts of IEA fossil power generation capacity between 2020 and 2030 will decrease significantly, which may increase price risk on the wholesale market and as a consequence at the retail market as well.

otential solutions

If Czech Republic execute a well-planned transition the country can avoid price increase or volatility increase arising as a possible result of decommissioning their coal-based power plants.

European markets in which this barrier has also been indicated

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1.4 Description of regulatory disincentivisation barriers in Czech Republic: Access to innovation

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

National issue

Although in Czech Republic there are several pilot projects for new technologies and new business models, it is not frequent that a country -wide rollout will follow the pilot phase.

Potential solutions

Additional funding, and regulatory incentives could help bridging the gap between a successful pilot and market introduction.

European markets in which this barrier has also been indicated

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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. From our studies of this market, it appears that this would pose a barrier in Czech Republic. 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.

In Czech Republic smart meter rollout is low which hinders the ability to collect close to real time data, thus making innovative product development more difficult.

In Czech Republic smart meter rollout is low which hinders the ability to collect close to real time data, thus making innovative product development more difficult.

Incentivization the greater penetration of smart meters would potentially reduce the effect of this barrier.

European markets in which this barrier has also been indicated

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No fit between new business models and existing regulation/obligations. From our studies of this market, it appears that this would pose a barrier in Czech Republic. 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. Regulatory 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

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The current legislation does not provide enough clarity regarding the introduction of new business models and technology. Aggregated demand response or smart metering are one of the most important fields where these problems occur.

otential solutions

If legislation focuses on innovative products and business models not just on the strategical level but considering implementation as well, it may reduce this entry barrier.

European markets in which this barrier has also been indicated

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

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In Czech Republic, for household customers, TOU tariffs can only be applied to the energy component as the grid component is regulated. The flexible energy component accounts for around 37% of the total bill, which makes TOU tariffing difficult.

tential solutions

It is a possibility to change grid tariff regulation in a direction that allows flexibility, by reducing the share of the grid component or other fixed price elements in the final tariff.

European markets in which this barrier has also been indicated

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LATVIAN BEST PRACTICE CASE: Grid tariff flexibility

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

Market structures does not incentivize novel products (missing perceived value). From our studies of this market, it appears that this would pose a barrier in Czech Republic. Without an existing demand and/or mindset for novel services such as DR, new entrants face the barrier of establishing the entire market before they can act in it. A low level of perceived value can due to a technology lag or customers' being unaware or not incentivized.

National issue

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Currently 40% of the household consumers using Ripple control systems, which hinders the possibility to introduce modern demand side response technologies or smart meters as Ripple controls are incompatible with smart meters.

ntial solutions

The future use of the Ripple control system or its potential disarmament should be considered by the government as an its effective replacement or usage can reduce entry barriers in Czech Republic.

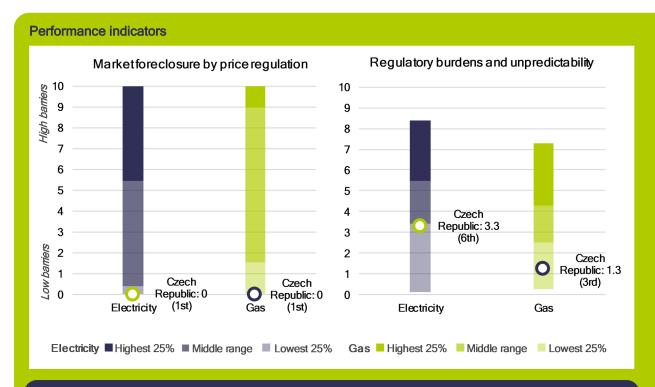
European markets in which this barrier has also been indicated

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1.5 Czech Republic'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 Czech Republic are shown against the range across all analyzed countries. These scores contribute to the performance index. The performance indicators of regulatory disincentivisation are the following:

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



In Czech Republic there is no price regulation even for household customers neither in the electricity nor in the natural gas sector. As a consequence, with respect to price regulation the country is the best in Europe similarly to other countries with unregulated prices. In the regulatory burdens and unpredictability indicator category Czech Republic is also in the best performing 25% in both sectors of the analysed countries. The energy share of the bill is relatively large compared to other countries in the natural gas sector while the regulatory environment seems to be stable.

2) Market inequality

Within market inequality, barriers across Europe have been sub-categorised into two areas encompassing 8 specific barriers³:

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

In order to avoid confusion among end customers between the separate parts of integrated energy businesses, brand unbundling has been a focus area for NRAs over the last years. Nevertheless, in several EU countries, the difference in the branding of the supplier and the DSO is perceived as insufficient. Strategic and unfair advantages for incumbent suppliers around transparency, pricing and access to information and data occur in most of the European countries studied. Access to production capacities can also be limited for small suppliers if market players with a large generation portfolio can withdraw production capacity from the accessible markets. Balancing and ancillary services markets can also be distorted as they are often still designed to mainly benefit large-scale generation, discriminating against smaller market participants. Below, we describe these barriers related to market power in more detail.

Across Europe, the following specific barriers around "unbundling and market power" were detected in this study:

- · Lack of brand unbundling
- Discriminating, strategic behaviour of incumbent, and obstruction by other market players.
- Strategic, unfair advantage of vertically integrated market players and lack of transparency.
- Limited or biased access to production.
- Discrimination against new and small market players in capacity and ancillary services markets.
- 2. Equal access to and maturity of wholesale market. The wholesale markets present one of the most important sources for energy procurement for all market participants. New and small suppliers tend to have weaker bargaining position in bilateral negotiations, which occurs higher sourcing costs, therefore leading to a competitive disadvantage. Access to a well-functioning wholesale market (an energy exchange) therefore enables smaller suppliers to buy energy for competitive prices.

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

Barriers related to the wholesale market can arise by discriminatory market platform access and the absence of any viable alternative. Furthermore, a lack of available products and low liquidity can both lead to an increase in risk, disadvantaging small market participants substantially more than large, established suppliers. Barriers related to "equal access to and maturity of wholesale market", detected in this study are as follows:

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

2.1 Description of market inequality barriers in Czech Republic: Unbundling and market power

Lack of brand unbundling. From our studies of this market, it appears that this would pose a barrier in Czech Republic. Similarities in the name and logo of the incumbent supplier and the DSO negatively impact the retail market in terms of competition, as customers are unaware that they are two separate entities and hence of their opportunity to choose supplier.

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The electricity market of Czech Republic is dominated by three legally unbundled companies where the DSOs have similar names (name of the retailer extended with the word distribution), then the supplier. So, the lack of brand unbundling is an important issue.

The problem is less relevant in the natural gas sector, as the most important DSO is fully unbundled, but there are two important DSOs of the natural gas market, which are legally unbundled, but there is no brand unbundling.

Potential solutions

Introducing stricter brand unbundling rules (requirement for different name and logo) may decrease the potential advantage of the incumbent suppliers.

European markets in which this barrier has also been indicated

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PORTUGUESE BEST PRACTICE CASE: Brand unbundling. Inefficient brand unbundling between distribution and supply companies, such as similarities in the name and logo of the incumbent supplier and the DSO had a negative impact on the Portuguese retail market, in terms of competition until early 2019. However, during the second half of 2019, ERSE approved a new image and name for *EDP Serviço Universal*, which is now called *SU Eletricidade*. The measure aims to avoid confusion with the other EDP group brands and implies the complete distinction of the graphic, chromatic, symbolic and communicational elements of that last resort supplier. Finally, the DSO image is also changing, for a new image (new designation, new logo and different color).

Notwithstanding the above measures, the level of consumer awareness and ability to distinguish between DSO and suppliers remains low, due to either the recent application of this legal binding decision by the regulator or due to the scarce level of information among customers. Keeping high the competition advantage of incumbent suppliers.

SPANISH BEST PRACTICE CASE: Brand unbundling. Inefficient brand unbundling between distribution and supply companies, such as similarities in the name and logo of the incumbent supplier and the DSO had a negative impact in terms of competition on the Spanish retail market, until 2018. In 2018, the CNMC approved a legally binding decision obliging several companies of the main integrated energy groups to change their DSOs corporate name, to change their brand image and to identify unequivocally the company when informing customers so that consumers can clearly identify the company. This measure has already been implemented by all Spanish DSOs, vertically integrated with supplying activity. However, the level of customer awareness regarding this point remains low due to either the recent application of this legal binding decision by the regulator or due to the scarce level of information and of knowledges among customers. As in other industries, companies operating in the sector for long time, always keep a competitive advantage over the others.

Strategic advantage of vertically integrated market players and lack of transparency. From our studies of this market, it appears that this would pose a barrier in Czech Republic. 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. Vertically integrated companies may 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.

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Both the electricity and the natural gas market is heavily concentrated in Czech Republic, with the incumbent players having significant market share. This potentially allows them to not enable smaller market players to earn larger market share, through pricing or other means.

Rased on the opinion of a market participant

Based on the opinion of a market participant, they determine prices from top, can afford better tailor-made offers, have consumers trust and have better financial background and a wider portfolio of services.

Potential solutions

It is difficult to identify a simple solution as this high concentration is probably a result of several market factors. Increase of transparency, enforcing fiercer competition could decrease the market power of the incumbents thus reduce potential strategic advantage.

European markets in which this barrier has also been indicated

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

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

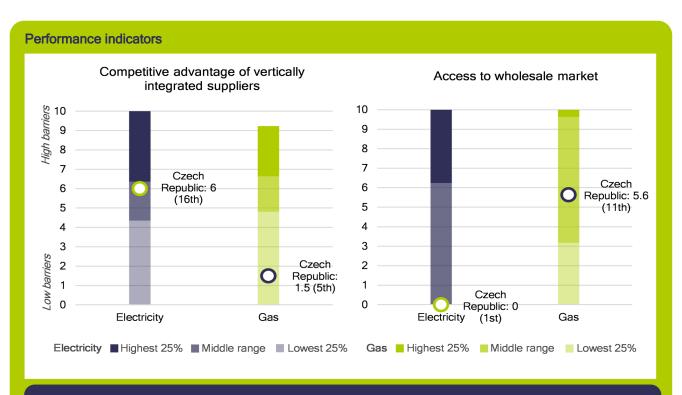
2.2 Description of market inequality barriers in Czech Republic: Equal access to & maturity of wholesale market

No substantial barriers relating to access to or maturity of the wholesale market were identified as being relevant in the Czech Republic.

2.3 Czech Republic'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 Czech Republic 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 two 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'.



In the natural gas market, Czech Republic is performing as 5th best from the investigated markets as since 2019 the largest DSO of the country is fully unbundled. In the electricity market however legally unbundled players, without brand unbundling are the major players. Based on our calculations the wholesale electricity market of Czech Republic is very liquid however there are some minor liquidity problems identifiably with respect to the natural gas market.

3) Operational and procedural hindrances

Within operational and procedural hindrances, barriers across Europe have been sub-categorised into two areas encompassing 13 specific barriers⁴:

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

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

Across Europe, the following specific barriers around "sign-up & operations compliance" were detected in this study:

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

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

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

European barriers relating to "data access & processes are as follows:

- 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 Czech Republic: Sign-up & operations compliance

Poor availability of information for market entrants & active participants. From our studies of this market, it appears that this would pose a barrier in Czech Republic. Detailed information about legislation, licensing requirements and procedures during operations etc. are not readily available, or only in the local language. This makes it difficult for potential new entrants to (1) understand the market and judge its suitability for their business; (2) efficiently go through the entry process to establish on the market; (3) operate effectively and efficiently.

National issue

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Many of the regulatory documents are only available on Czech language. There is more information available in Czech language in many of the websites (for example DSOs). There are some summary documents about the market (even in English language) but they lack significant amount of vital information.

Potential solutions

Translating all relevant documents and information in English and having wide scale information material about the markets may reduce this barrier.

European markets in which this barrier has also been indicated

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AUSTRIAN BEST PRACTICE CASE: Availability of information for market entrants & active participants.

The Austrian NRA, E-Control offers a comprehensive "starter kit" with all the necessary information for new market entrants in German and English language. Furthermore, statistical data, covering switching rates, price levels, smart metering rollout progress and others is frequently being published. Therefore, a barrier is not only non-existing, but even more, the situation in Austria can be regarded as a best practice.

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

Lack of data hub. From our studies of this market, it appears that this may pose a barrier in Czech Republic. There is no centralized data hub or a platform for switching and access to DSOs information. This increases the time and effort required by suppliers to access customer or network data, e.g. to enact a switch or target potential new customers. This tends to favour suppliers with a high market share (and hence access to large amounts of customer data, including historical usage data) or suppliers vertically integrated with a DSO.

Based on CEER's analysis in Czech Republic, technical data is collected by the TSO while business data is by the market operator OTE. The two datasets are interlinked at some extent, however currently there is no integrated data hub for these two features.

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Creation of a central data hub would enhance information sharing, which may result in easier entry to the market.

European markets in which this barrier has also been indicated

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

DENMARK BEST PRACTICE CASE: Denmark's DataHub

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

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

The Norwegian market is characterized by a large number of small, local, currently vertically integrated supplier-DSOs. Across Europe, this study has found vertical integration to cause issues around data access, where the integrated supplier (usually the incumbent) has an advantage in data access through its affiliation with the DSO, which collects and controls the information. However, such issues were not raised in Norway.

This favourable situation results from the existence since 2019 of a centralized data platform, Elhub, that is functioning near-perfectly according to suppliers to even out the playing field around data access (see section 3.2). Previously, independent suppliers faced delays and obstruction in obtaining customer data from DSOs. The impact on data exchange was so great that one supplier described their dealings with DSOs as "different pre- and post-Elhub worlds". The Elhub moreover allows the regulator to technologically control that actors are behaving appropriately.

Missing access or poor quality of operations-critical data. Some respondents in Czech Republic raised this as a barrier. 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.

Although data access is relatively good in Czech Republic, but because of the low shares of smart meters, close to real time data is not available for most of the households, which hinders operation.

Greater smart meter penetration may solve the problem at some extent, as market players than would have the theoretical possibility to access close to real time data.

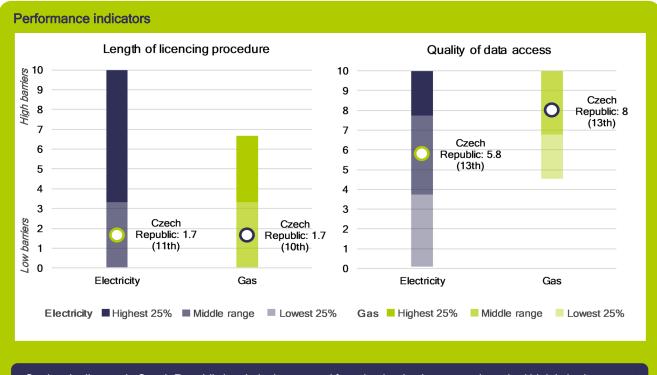
European markets in which this barrier has also been indicated



3.3 Czech Republic'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 Czech Republic 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 if attributed if the regulator has more moths 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.



Getting the licence in Czech Republic is relatively easy and fast, that is why the country is ranked high in both sectors. With respect to quality of data access the country is performing close to the median, which is the results of the low penetration of smart-meters, and only nationally standardised data format.

4) Customer inertia

Within operational and procedural hindrances, barriers across Europe have been sub-categorised into one area encompassing 6 specific barriers⁵:

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

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

liberalized relatively recently (last 20 years, some only a few years ago), so for a considerable portion of customers the potential for them to engage may still feel unfamiliar.

Across Europe, the following specific barriers around "customer orientation" were detected in this study:

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

4.1 Description of customer inertia barriers in Czech Republic: Customer orientation

Low customer awareness or interest makes it difficult to attract customers. Some respondents in Czech Republic raised this as a barrier. 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 issu

It was highlighted that despite the moderate switching rate of Czech Republic, many customers are generally not interested in switching. One reason can be, that only the energy part of the tariff is not regulated so possibility for suppliers to offer comfortable and competitive options are limited as its share within the bill is relatively low (especially in the electricity sector) so there are no great differences between available offers on the market.

otential solutions

Decreasing the share of additional network usage associated tariffs and taxes could help to enhance competition thus motivate consumers to look for competitive alternatives.

European markets in which this barrier has also been indicated

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Changing supplier is cumbersome or has little pay-off for the customer. From our studies of this market, it appears that this would pose a barrier in Czech Republic. Having to pay to switch or automatic prolongation of fixed term contracts, may discourage customers, which in turn lead to low customers engagement. Effective price

competition between suppliers requires rapid, effective, such that customers see the benefit to them in a short timeframe. Also, if there is little financial gain for customers to switch, it discourages participation.

Abolition of short-term contracts and In many cases consumers are in fixed-term penalties for switching is a possible way to contracts with suppliers with automatic eliminate this barrier. prolongation included. Changing before the extension of the contract is associated with penalties. which switching difficult. **(**

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

Lack of trust in new or foreign suppliers and in new technology. Some respondents in Czech Republic raised this as a barrier. 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.



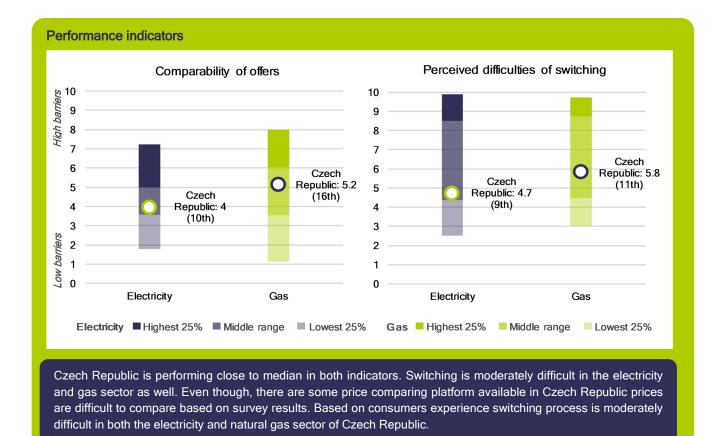
European markets in which this barrier has also been indicated

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4.2 Czech Republic'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 Czech Republic 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 two 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.



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.

No such barrier was identified in Czech Republic.

FINDINGS & RECOMMENDATIONS

This handbook provides a high-level framework of relevant barriers to entry and operate for energy suppliers entering the retail electricity and gas markets of Czech Republic, 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.

Our indicator-based assessment showed that Czech Republic is one of the best performing country in Europe, with respect to regulatory barriers. In the country, the energy price for end users is unregulated which potentially enhance market entry and competition in the retail markets. Also, retailers do not face significant regulatory burdens.

On the other hand, we were able to identify some market barriers with respect to innovative technologies and solutions. We found, that further regulatory steps which helps implementation are possibly needed in Czech Republic, in order to support the penetration of demand side response, smart-meters and other innovative solutions. Some pilot projects were introduced in the country, however because of the lack of proper regulation, and missing market value, these initiatives remained mostly at the pilot level. On top of these issues in Czech Republic ripple control systems are widespread, which are incompatible with modern smart-meter devices, so a clear strategy for the optimal usage or the disbarment of these systems would possibly decrease barriers to entry.

In the market inequality barrier category, the country is performing relatively good. In both the electricity and natural gas markets, legally unbundled DSOs without brand unbundling from the retailers are present, and in both sectors, there are few suppliers with relatively high market share who are possibly have strategic advantage over other competitors. There are clear differences however between the two markets. In the electricity sector the largest three suppliers are associated with the largest three DSO in the same company group, while at the natural gas market the dominant DSO, owning the largest part of the distribution infrastructure is fully unbundled since 2019, only two other major suppliers are associated with DSOs through ownership. As a result, based on our assessment the advantage of the vertically integrated entities is significantly larger in the electricity sector but also present at the natural gas market as well.

To allow easier market entry, we suggest the possibility of stricter separation rules for the DSOs and retailers in Czech Republic. We think the implementation of strict brand unbundling criteria may terminate entry barriers thus

increase the welfare of the consumers. Additionally, we were not able to identify any major market barriers associated with access and the liquidity of the wholesale markets, which may also result in inequal markets.

In association with operational barriers we did not find significant barriers also in the country as getting a licence is easy and fast, and operation is not hindered by vast number of additional requirements. On the other hand, some barriers are present in data management. Because of the low penetration of smart meters, suppliers are not able to have real time data about the customers. There are two separate data centres present with different information sets in Czech Republic and data formats are only standardised at national level. Additionally, it is relatively difficult to obtain information about the market, which can be problematic for a new entrant as well.

We think that barriers associated with data management may be reduced through several steps. First, by integrating technical data and business data into one central data hub may prove to be a more efficient information sharing tool, with internationally standardised data format. And second by helping the penetration of smart systems it would be easier for market players to access real time data.

Customer switching is hindered by the fact that some of the consumers have fixed-term contracts, which are associated with a penalty if the consumer changes its supplier, and in many cases also automatic prolongation is included. As a barrier we also found, the because of the relatively easy licencing procedure in Czech Republic, consumers have some bad experiences with new market entrants, and consequently they tend to trust more the incumbent suppliers of the energy markets.

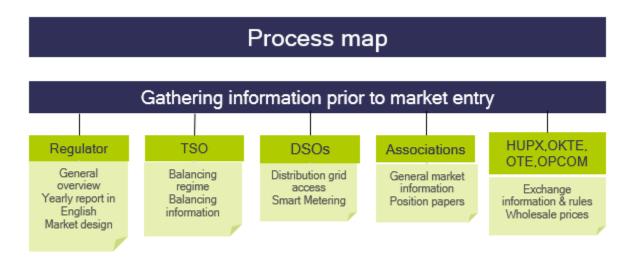
The implementation of a more detailed comparison tool for suppliers which may help them to compare every aspects of the available offers. Additionally, the termination of the fixed term contracts, with penalties and automatic prolongation can possibly reduce the entry barriers for small market participants. As a final point, it would be beneficial if the regulator would assess how they can monitor new entrants, to identify those suppliers early, who not entered the market in order to provide good service, without making the entry to energy retail markets administratively too burdensome.

To conclude, based on our evaluation in association with many of the retail entry barriers, Czech Republic is performing well. The main identified barriers are the potential strategic advantage of the incumbents which are suppliers without brand unbundling from their respective DSOs (dominantly in the electricity sector), the lack of proper regulation and large-scale penetration of innovative solutions and technologies, and difficulties associated with consumers' switching.

APPENDIX 1: PROCESSES

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

1) Information gathering before market entry



Relevant comments on information gathering

- Potential market participants can gather information mainly from the web page of the regulator, the TSO and the DSOs and market operator OTE.
- ERO (the regulator) provides a detailed general market overview in every year about the state of electricity and natural gas markets in English.
- Short-term electricity and natural gas market operator (OTE) also have a detailed report about the state
 of electricity and gas system, and about the balancing process of the transmission system in both sectors
 in English.
- On the TSOs website market information and data is available in English language as well. Operational rules are also archivable in English.
- The electricity and gas DSOs' website usually provide information in Czech language for suppliers. In some cases, login is required in order to achieve relevant legal and market information.
- Finding the DSOs website is often difficult because of the companies holding structure. The separate DSO website is often reachable through the "Group" central webpage.
- Several document and detailed regulation are only available in Czech language

2) Licenses, registrations and contracts⁶

Licences, Registrations and Contracts

Join the balance group system

- Own BRP
- Joining existing BRP

Framework contract with the balance group operator Licence for operation (EU licence is acceptable)

Complete an application form, extract from local register, no criminal background

Local establishment

Framework agreement with relevant DSOs Transmission contract with the TSO

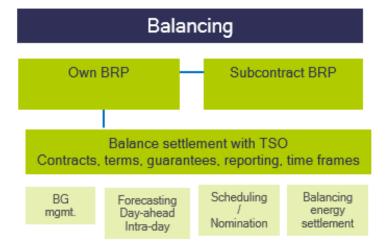
Financial requirements, appropriate IT system, quality requirements

Further comments

- For electricity and natural gas trading license is required for all retailers
- Licenses for suppliers are issued for a period of 5 years and can be renewed
- (25 years for producers and indefinitely for DSOs, TSO, gas storage operators, system operator),)
- EU licenses is acceptable in the Czech Republic
- Local establishment is required in order to get a license (local corporation or local branch office)
- · Requirements:
 - Application form
 - Extract from the Czech commercial or other similar domestic or foreign register
 - Statement of criminal records
 - o Evidence to fulfil financial and technical requirements
- Agreement with the balancing group operator
- Agreement with the DSOs affected by operation

⁶ Wolf Theiss (2018): The Wolf Theiss Guide to: Licencing of Electricity and Gas Wholesale Activities in Central, Eastern & Southeastern Europe; Martin Nedelka, Christoph Lindinger and Veronika Hocková (2012): Czech Republic: Wholesale Electricity Trading In Czech Republic: A Basic Primer To Electricity And Gas Wholesale Trading

3) Balancing⁷



Further comments

Electricity

- It is possible to settle own imbalances or join a balance group which is responsible for the balancing market activity.
- The settlement price of imbalances is calculated
 - If the system imbalance is negative or equals zero, the settlement price is the highest sale bid price of regulating energy supplied at the respective trading hour to offset the negative system imbalance and paid by the Market Operator to the regulating energy provider;
 - If the resulting price is lower than the price set by the ERO price decision, the ERO price shall apply,
 - If the system imbalance is positive, the settlement price is the highest sale bid price of regulating energy supplied at the respective trading hour to offset the positive system imbalance and paid by the Market Operator to the regulating energy provider; if the resulting price is lower than the price set by the ERO price decision, the ERO price shall apply,
 - If no electricity was provided at some of trading hours as regulating energy through activation of ancillary services, or on the balancing market with regulating energy, or from abroad under a contract, the settlement price set in the ERO price decision shall apply.
- Based on the settlement of imbalances performed for each balance responsible party for each trading hour, the Market Operator determines the balance responsible party's payment for the imbalance at each trading hour.
- Imbalance settlement
 - Daily

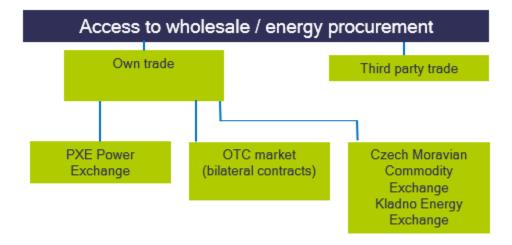
⁷ OTE (2018) - Year report on the electricity and natural gas markets in the Czech Republic for 2018

- Monthly
- After four months (final evaluation)

Natural gas

- The entire territory of the Czech Republic is one balancing zone, the so-called Virtual Trading Point (VTP), at which all gas transactions are registered
- Imbalance settlement
 - Daily
 - o Monthly
 - After four months (final evaluation)
- Unlike imbalance settlement in the electricity market, where all imbalances are subject to financial settlement at a price determined in accordance with the direction and quantity of the system imbalance, the gas market allows to evaluate and settle imbalances using a linepack flexibility service
 - Supports oscillations of trading positions within a flexibility limit without additional balancing costs,
 if the limits are not exceeded
 - o There is also an unused flexibility market for market participants (OTE, a.s.)
- For negative daily imbalance quantity, the higher of the two prices below shall be applied in EUR:
 - the highest price of the relevant purchase of the transmission system operator if such price exists,
 - weighted average daily price for the gas day according to the OTE Index for the relevant day, increased by a minor price adjustment that represents the function of a system imbalance (2% -5%).
- For positive daily imbalance quantity, the lower of the two prices below shall be applied in EUR:
 - the lowest price of the relevant sale of the transmission system operator if such price exists,
 - weighted average daily price for the gas day according to the OTE Index for the relevant day, reduced by a minor price adjustment that represents the function of a system imbalance (2-5%).

4) Wholesale⁸



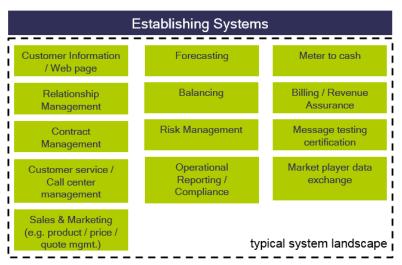
Further comments

- Participation in the wholesale market both electricity and gas requires license
 - It is granted for 5 years, for approx.. 4000 EUR/ 100 000 CZK
 - all traders who have obtained an electricity trading license are required to register with the market operator.
 - Local presence is required for trading
- · Electricity can be traded
 - o OTC trading
 - PXE exchange
 - Czech Moravian Commodity Exchange Kladno
- Natural gas can be traded
 - OTC trading
 - Short-term organized gas market (OTE, a.s.)
 - o Czech Moravian Commodity Exchange Kladno
- Electricity Traders must conclude the following agreements in order to execute direct electricity deliveries (OTC)
 - Sale and Purchase Agreement (concluded between an Electricity Trader and a purchaser (eg, producers, other traders);
 - Agreement on Settlement of Imbalances (concluded between CS OTE and an Electricity Trader);
 and
 - Electricity Transmission Agreement (concluded with ČEPS, a.s. the Czech TSO) or a Distribution
 Agreement (concluded with the respective distribution system operator (DSO)

8 Wolf Theiss (2018): The Wolf Theiss Guide to: Licencing of Electricity and Gas Wholesale Activities in Central, Eastern & Southeastern Europe; Martin Nedelka, Christoph Lindinger and Veronika Hocková (2012): Czech Republic: Wholesale Electricity Trading In Czech Republic: A Basic Primer To Electricity And Gas Wholesale Trading

- A Gas Trader typically needs to conclude the following agreements in order to execute direct gas deliveries:
 - Sale and Purchase Agreement (Gas Supply Agreement) between a trader and a customer; and Gas Transportation or Distribution Agreement between a trader and the TSO or respective DSO;
 OR
 - Agreement on united services of supply of gas between a trader and a customer;
 - o Agreement on Settlement of Imbalances between a trader and the market operator

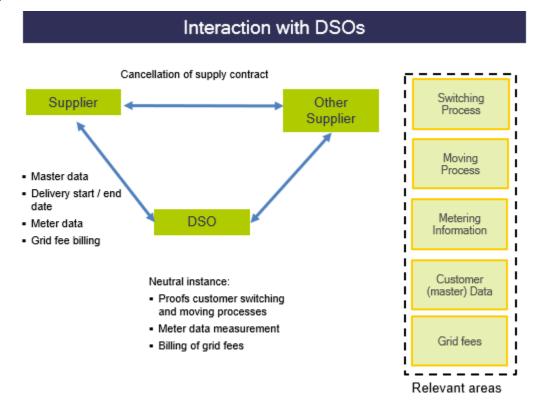
5) System landscape



Further comments

- The typical system landscape of a supplier includes,
 - Items related to communication and customer relations
 - Items related to technical operation
 - Items related to operation on the market
- Data exchange of market players is standardized by OTE

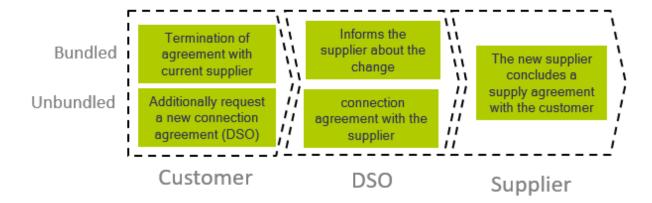
6) Supplier interaction with SII data hub and DSO



Further comments

- There are 3 major electricity and 3 natural gas DSOs in Czech Republic. Suppliers can use the grid of these DSOs without discrimination. There are small local DSOs in both sector, which are not unbundled.
- Uniform contract must be conducted between the suppliers and the DSO, however the exact requirements
 are only available in Czech language, in some cases only after login to the DSO's webpage.

7) Customer switching & moving

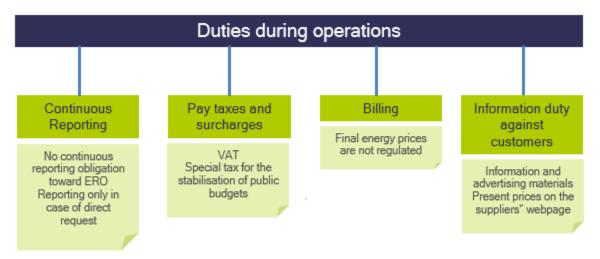


Further comments to switching process

- For customers there are two options possible
 - Enter a bundled natural gas or electricity supply contract

- Conclude a separate connection and distribution agreement with the DSO and make a separate supply contract with a retailer
- In the bundled case consumers can request a change of supply contract by the supplier
- In the unbundled case consumer apply for a new connection agreement with the DSO (if there are technical changes), and after that a new supply contract with a selected retailer
- Contracts with the customers are mostly fixed term contracts, which is not possible to terminate without
 penalty before the end of the supply period. Also there are indefinite contracts which can be terminated
 without penalty.

8) Operational obligations / duties



Further comments

Taxes

 On top of usual taxes like VAT, electricity and natural gas suppliers to end users must pay a special tax for the stabilization of public budgets.

Reporting

• There is no regular reporting obligation towards ERO. Reporting for wholesale market license holders are only necessary if it is directly required from the regulator.

Energy efficiency

• There is no mandatory energy efficiency obligation scheme in Czech Republic for retailers as the government introduced alternative energy saving policies, which focuses mainly on the building sector.

Protected consumers

• The regulation defines protected consumers as they must be supplied by the retailers

9) Market exit



Further comments

- Energy suppliers can leave the market, but they must fulfill their obligations in the role as energy supplier
- There are no penalties for leaving the market per se. Penalties might arise in case legal obligations are violated.
- Conditions for cancellation of bilateral contracts (e.g. with service providers or balancing responsible parties) are depending on the individual contracts

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