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EU EXAMPLES OF NATURAL GAS SUPPLY TO HOUSEHOLDS – LIBERALIZATION, SWITCHING AND BALANCING PRACTICES

BENCHMARK STUDY

Energy Security Project (ESP)

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CONTENTS

ABBREVIATIONS

ACER	Agency for the Cooperation of Energy Regulators
CNMC	Comisión Nacional de los Mercados y la Competencia
CUPS	Unified Code of the Supply Point (Código Unificado del Punto de Suministro)
DSO	Distribution System Operator
EU	European Union
GME	Gestore Mercati Energetici
GTG	Groupe de Travail Gaz
HH	Household
LST	Last Resort Tariff
MITECO	Ministry for the Ecological Transition and the Demographic Challenge
PVB	Punto Virtual de Balance
SCTD	Transmission-Distribution Communication System
SL-ATR	Logistics System for Third Party Access to Networks
SLR	Supplier of Last Resort
SII	Integrated Information System
TPA	Third Party Access
TSO	Transmission System Operator
TTF	Title Transfer Facility

EXECUTIVE SUMMARY

This paper examines specific aspects related to the supply of natural gas to households in gas retail markets of selected EU countries. The analysis focuses on six EU Member States, Czech Republic, France, Greece, Italy, Poland, Spain, examining particularly how the retail gas market evolved, the rights and obligations of suppliers and consumers for switching, the role of the supplier of last resort, and the handling / settlement of imbalances.

The key findings and conclusions that can be drawn from the analysis are described below.

RETAIL MARKET OVERVIEW

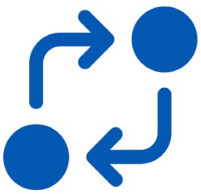
- In all the examined countries market opening was carried out gradually, within a period of no less than 3 years, initially liberalizing large consumers, then small non-residential ones, and finally households.

- The examined countries apply different market models for the supply of gas to households. In the Czech Republic and Greece gas prices are fully market-based. In France, Italy and Spain it is currently possible for households to opt for regulated end-user gas supply prices, while in Poland the Regulator approves a cap in household prices, however this regulated regime will be eliminated by 2022 – 2023 in all these countries, as it is hindering competition (e.g. in France the highest administrative court decided that regulated end-user prices obstruct competition and are non-compliant with the EU Acquis).

- The ratio of supplier switching in households is historically observed to be lower than that of other sectors. This could potentially be attributed on one hand to the fact that suppliers mainly target non-residential consumers that have higher gas consumption, and on the other hand to the fact that commercial consumers usually are more prone to switching to find better energy prices and reduce costs, whereas residential consumers may prefer convenience to price[1] .

- In most of the examined countries, the market rules allow supply contracts for households with a minimum duration of 1 year. In most cases contracts of indefinite duration are allowed, provided that they have clear rules for termination (e.g., termination without penalty). In practice, most suppliers offer a range of gas supply products (sometimes bundled with electricity), with different duration each (1,2, or 3 years or indefinite) and different pricing options (e.g. fixed monthly price, volume-based price, price linked to commodity market).

- In all examined countries the consumers need to pay a single invoice, to their supplier, that includes the cost of gas transportation services. The regulated costs are itemized in the invoice.



SUPPLIER SWITCHING

- All households have the right to request a supplier switch. However, in Greece the switching process is suspended until any outstanding debt with the old supplier is settled, while in France, Spain and Italy, the new supplier reserves the right to reject the new contract in case of an unsettled debt.

- In most countries, except for Greece, the old supplier does not have the possibility to object to the switching process in case of an outstanding debt.

[1] The exact reasons for the switching trends in each country require in-depth analysis of the market operation and were not examined within the frame of this study.

- The switching process is initiated with the signing of the supply contract with the new supplier. In all examined countries, the actions undertaken by the DSO to finalize the switching need to be concluded within 21 days or less (in line with Article 3 of Directive 2009/73/EC). A precondition for proceeding with switching is abiding to the provisions for contract termination with the old supplier (such as timely notification, penalties, etc.).

- In most examined countries (except for Czech Republic) suppliers offer to consumers the possibility to sign supply contracts electronically, via their website. Acceptance of the contract is carried out by confirming the offered supply product.

- All large gas retail suppliers provide publicly in their website all the documents necessary for the household to switch supplier. Some even offer the possibility to carry out the contract signing process virtually.

SUPPLIER OF LAST RESORT

- The supplier of last resort is either selected through a tender procedure (Italy, Greece) or designated by the State (Czech Republic, Poland, France, Spain).

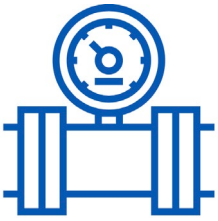
- The consumers eligible to receive the SLR service differ from country to country. In most cases households are eligible (with the exception of France), while other types of consumers can also receive the SLR service (e.g. all consumers below an annual consumption threshold in Czech Republic, Italy, and Spain; consumers offering public services, in France).

- Some of the examined countries apply additional mechanisms to safeguard supply of households. In Poland the consumer may indicate a "reserve supplier", to continue gas sales in case the primary supplier is not in position to do so. In Italy a "default distribution service" is provided, to continue supply in case a consumer does not have a supply contract but has the possibility of consuming gas.

- The gas price for the SLR service depends on how the SLR is defined. If the SLR is selected through a tendering process, then the gas pricing terms proposed by the supplier in its bid is used. If the SLR is designated by the State, then the gas price is approved by the Regulator.

- The SLR service is activated automatically, without the need of actions by the consumer, in case the consumer is left without supplier for reasons beyond its control. The activation is carried out by a stakeholder determined in the national legislation (e.g. DSO, Market Operator). Continuity of supply is always ensured, and the SLR is obliged to inform the affected consumers, within a predefined period, on the terms and conditions of the service.

- In most countries the SLR service is offered for up to a specific period of time (e.g., 6 months in the Czech Republic, 3 months in Greece). At any time, the consumer can terminate the SLR service and switch to a new supplier without cost. If the SLR service deadline expires, different rules apply in each country, e.g. in Czech Republic the consumer would be conducting unauthorized gas withdrawal, in Greece the supply continues at market prices, in Italy the consumer pays a premium at the gas price.



CONSUMPTION, METERING AND SETTLEMENT OF IMBALANCES

- Standard load profiles for different types of consumers are publicly available in all examined markets, allowing forecasts of daily consumption under different climatological conditions. To ensure that the standard load profiles are accepted by the market players, usually the profiling methodology and the estimation of the annual profiles undergo a review procedure, such as public consultation and/or approval by the Regulator.

- Supply contracts with households include the estimated annual consumption of the consumer. However, this information is not used for charging the consumer, or for applying penalties in case the consumption is exceeded.

- The market rules of each country usually set a minimum frequency of billing (e.g. once per year), in practice however, most suppliers issue invoices on a monthly basis. In case meter readings are not available for the period when an invoice is issued, then the supplier uses estimates, and settles them in the next invoice in which measurements are available.

- The DSOs are responsible for measuring consumption at exit points in their distribution networks. The frequency of meter reading is defined in the distribution code and/or the terms and conditions of the contract with network users. In most countries more frequent meter reading can be requested by the supplier or the consumer, at a cost defined in the price list of the DSO. The consumers can carry out self-readings of their meter and submit them on the website of either their supplier or DSO.

- In case meter readings are not available (e.g. due to faulty operation of a meter) the DSOs estimate consumption using available data (such as consumption of the same consumer for other periods, if available) or the standard load profiles.

- The TSOs and DSOs have to exchange information[2] to carry out activities related to daily balancing and allocation of volumes. These activities, in most cases, include (Figure 1):

    - Each day the TSO delivers to transmission users forecasts for their consumers' portfolio, to facilitate their decision making in undertaking balancing actions. The provided information takes into consideration daily data provided by the DSOs. Information may be transmitted several times day-ahead or within the day of gas flow, depending on the information model applied by the TSO.

    - The TSO provides an initial allocation of volumes to each transmission user, one day after gas flow.

    - The TSO and the DSO provide revised allocations to their users one month after the gas flow. These can be further revised on later periods, when measurement data for non-daily metered consumers become available (e.g. every 6 months or once per year)

[2] Depending on the market structure other stakeholders such as the Market Operator may also be involved.

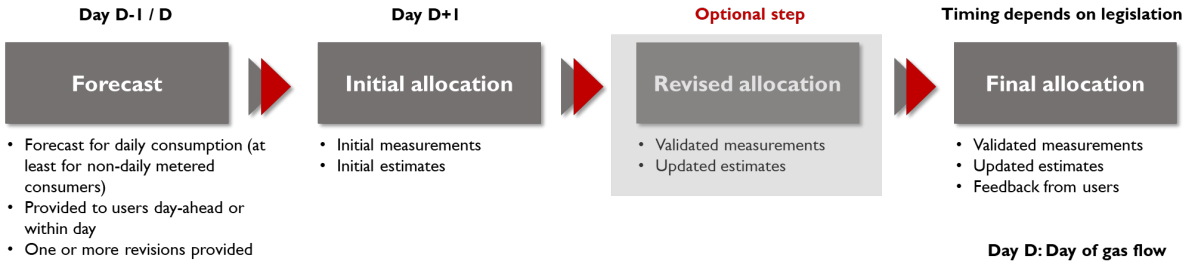


Figure 1: Overview of information provision from TSO to transmission users

- Settlement of the network users' imbalances is carried out on a monthly basis. The amounts charged / credited to the users for negative / positive imbalance are estimated for each day of the month separately.

- The daily imbalance charges are based on market prices (at the country's gas exchange or using reference spot prices if liquidity in the market is not sufficient). Penalties are applied to the network users in the form of small adjustments to the market prices. Tolerances for imbalances have been terminated in all the examined countries.

- Considering that for many consumers measurements are not available on a daily basis, allocation of volumes is carried out as follows:

    - For exit points of the transmission and distribution network with daily/hourly meters installed, the measurements are directly used to allocate volumes.

    - For exit points of the distribution system with non-daily meters (mainly concerning households and small commercial consumers) the standard load profiles are used to estimate the consumed volumes.

1 INTRODUCTION

This paper examines specific aspects and practices in the EU gas retail markets, in particular, issues pertaining to the supply of natural gas to households, such as:

- Experience towards market opening of the residential gas sector
- Rules and practices for supplier switching
- Provision of the supplier of last resort service
- Gas metering and settlement of imbalances

A cross section of EU countries were examined, focusing on market rules & regulations, and the practices of retail gas suppliers in 6 EU Member States: Czech Republic, France, Greece, Italy, Poland, and Spain.

Information was sourced from the public domain, including inter alia reports and websites of the Regulators, DSO and TSO, regulatory documents (supply code, distribution grid code, transmission code, etc.), the terms & conditions and model contracts between supplier & household end users and information available on the websites of the country's largest suppliers. The main sources of information used to perform the analysis is provided in Annex II.

Key findings and conclusions are drawn from the analysis across the various study areas, on a country-by-country basis, as well as across the countries.

Annex I provides a description of the EU balancing regime in accordance with the EC Network Code on Balancing (Regulation EC/312/2014).

2 CZECH REPUBLIC

2.1 RETAIL MARKET OVERVIEW

2.1.1 LIBERALIZATION OF THE RETAIL MARKET

Liberalization of the Czech gas market began in 2005, with the opening of the wholesale sector and large consumers. In 2006, the medium-sized and commercial consumers were liberalized, and in 2007, the market was fully open, with households allowed to switch suppliers.

2.1.2 MARKET MODEL FOR GAS SUPPLY TO HOUSEHOLDS

To take part in the Czech wholesale and retail market, companies have to receive a license for gas trading from the Regulator. Such a license has a 5-year validity.

The price of gas in the retail sector is fully market-based and offered freely by each supplier. The Regulator monitors, and reports on, the performance of the retail gas market (mainly number and share of suppliers, supplier switching, average prices).

Households pay a single invoice to their supplier, that includes the services for gas distribution and market operator. The amounts corresponding to these services are itemized in the invoice issued by the supplier. The supplier then pays the collected amounts to the DSO and market operator.

2.1.3 COMPETITION IN THE RETAIL MARKET

In 2019, the gas volumes distributed to the retail market was approx. 7.8 bcm, out of which 26 % was for households. The total number of active customers in 2019 amounted to around 2.8 mil., 92 % of which were households.

According to the Regulator, in 2019 105 retail suppliers (not including local distribution companies) were carrying out activities in the household sector, slightly increasing from 95 in 2018 and 99 in 2017. Innogy Energie s.r.o is the largest supplier, holding 29.3 % of delivered gas volumes in 2019, followed by Pražská plynárenská a.s. (13.3 % share) and E.ON Energie a.s. (9.6 %). Market shares were similar in 2018 (Innogy – 31.3 %, Pražská plynárenská – 12.3 %, E.ON – 10.1 %) and 2017 (innogy – 34.9 %, Pražská plynárenská – 11.3 %, E.ON – 10.9 %).

2.1.4 SUPPLIER SWITCHING RATES

As shown in the table below, in 2019, 7.6% of household consumers switched supplier, a switching ratio that is close to the average over the past 5 years. Switching in households was less frequent than in other consumer categories (e.g. for medium and large consumers, changes accounted for 17 % and 19 % respectively).

TABLE 1: CUSTOMERS SWITCHING THEIR GAS SUPPLIED FROM 2015 – 2019 IN CZECH REPUBLIC

	2015	2016	2017	2018	2019
No. of customers (mil.)	2.84	2.84	2.84	2.84	2.83
of which households	2.64	2.63	2.63	2.63	2.62
No. of customers switching supplier (mil.)	177,762	203,950	227,545	263,425	214,428
of which households	154,465	172,949	199,678	226,974	190,446

Switching ratio		6.2 %	7.2 %	8.0 %	9.3 %	7.6 %
	Households	5.9 %	6.6 %	7.6 %	8.6 %	7.3 %

Source: Regulator's annual reports

2.1.5 PRODUCTS OFFERED BY SUPPLIERS TO HOUSEHOLDS

Major retail suppliers offer various gas supply products with different contractual and price terms. Some suppliers provide bundled electricity & gas supply products.

According to the Energy Act, indefinite contracts for gas supply are allowed, with a possibility of a termination notice of no longer than 3 months. In practice, however, most of the supply contracts offered to households have a duration of 1 – 3 years, depending on the characteristics of the relevant product.

2.2 RIGHTS & OBLIGATIONS FOR SUPPLIER SWITCHING AND CONSUMER DISCONNECTION

2.2.1 RIGHTS OF HOUSEHOLDS AND SUPPLIERS IN SUPPLIER SWITCHING

According to the Energy Act and Gas Market Rules, consumers are allowed to proceed with supplier switching without fulfilling any specific criteria (such as settlement of debt with previous supplier). A supplier may reject the supply contract request if the documentation provided by the consumer is not complete or accurate (the process for such rejection could not be identified in the reviewed regulations).

The rules for supplier switching do not include provisions that stop the procedure, even in the case that the old supplier has requested by the DSO suspension of supply to the consumer.

In case of switching, the household must submit a contract termination notice to the old supplier within the timeframe foreseen (e.g. 3 months for indefinite duration contracts), otherwise the supplier has the right to reject the termination and stop the switching process. The fixed-term contracts may also include terms for penalties to the household in case of early termination.

2.2.2 RIGHTS OF SUPPLIERS TO TERMINATE SUPPLY OR DISCONNECT HOUSEHOLDS

A supplier has the right to request from the DSO termination of a household's supply in case of unauthorized gas consumption, that includes non-compliance with agreed payment obligations, gas theft, meter tampering.

2.2.3 PROCESS FOR SUPPLIER SWITCHING

The main steps of the process for switching supplier are the following:

- The household signs a supply contract with a new supplier and submits a contract termination notice to the old supplier.
- No earlier than 4 months and not later than 10 workdays before the foreseen date of switching the new supplier submits a switching request to the market operator.
- If the contract concerns bundled gas distribution and supply services, the new supplier also requests booking of capacity no earlier than 10 working days before requests the switching.

- On the day the switching request is received, the market operator notifies the old supplier and the DSO about the switching and its foreseen date of execution.

- Within 5 workdays from the market operator's notification, the DSO accepts or rejects the possibility to book capacity at the consumer's exit point (e.g. rejection due to lack of guarantee by the new supplier). Once the response is sent by the DSO to the market operator, the latter informs the old and new supplier accordingly. If the DSO's response is positive, the DSO must provide the operator with information about the household (customer category, annual consumption, owner and address, frequency of meter reading, etc.).

- Until the 5th workday from notification by the market operator about the switching, the old supplier has the right to object to the switching, in case the contract termination notice was not submitted in accordance with the supply contract provisions.

- Within 9 workdays from the market operator's notification, the operator must inform the old and new supplier and the DSO on the conclusion of the switching.

- The DSO must perform a meter reading and submit the measurements to the market operator on the foreseen date of the switching.

It appears that the retail suppliers in the Czech Republic do not provide the possibility of consumers to sign contracts via their websites.

The supply contract can be signed with either the owner of the property or the tenant. In both cases an active connection contract for the property is required. From the information reviewed, it appears that each supplier requests different information / documentation concerning the property from the consumer; innogy Energie requires proof of ownership (in case of owner) or the lease agreement (in case of tenant) to be submitted for the contract to be signed, whereas E.ON Energie requires a self-statement from the consumer that they have the consent of the owner of the property.

To proceed with the switching, the household must sign the supply contract and provide the new supplier with a power of attorney to undertake necessary actions for the switching (described above). Both are available in most suppliers' websites.

The old supplier does not have any obligation to provide information to the new supplier concerning the household (such as past consumption or payment track record).

2.3 SUPPLIER OF LAST RESORT

2.3.1 DEFINITION

The Energy Act sets as supplier of last resort of each gas distribution system the gas trade licensee that was/is part of the same vertically integrated company as the DSO of the corresponding region. Currently, the SLRs for the three DSOs of Czech Republic are E.ON Energie, innogy Energie and Pražská plynárenská.

The SLR services are provided only to consumers whose consumption does not exceed 60,000 m^3 over the previous 12 months.

2.3.2 PRICING

The prices for the SLR service are approved by the Regulator. It was, however, not possible to identify the Regulatory Decision for the approval of the SLR prices.

2.3.3 PROCESS FOR SLR ACTIVATION

The Market Operator activates the SLR service. Once a supplier is no longer able to supply gas to its customers, the Market Operator notifies the SLR of the corresponding distribution network. The date that the SLR supply service commences is the date that the Market Operator notifies the SLR, while the contract with the old supplier is terminated.

The SLR immediately notifies the affected consumers and the DSO of the commencement of the service, its price, and the contractual terms & conditions. The DSO provides the SLR with information for the affected consumers.

The SLR service is provided for a maximum of 6 months, during which the consumer is obliged to find a new supplier. After 6 months the supply service is concluded; if the consumer has not secured a new supply contract, and continues to consume gas, it will be considered to be making unauthorized gas withdrawals.

2.4 GAS CONSUMPTION, METERING AND SETTLEMENT OF IMBALANCES

2.4.1 AVAILABILITY OF CONSUMPTION INFORMATION

In the Czech Republic there are no databases with information on individual consumers that are accessible to all suppliers.

The Market Operator (OTE a.s.) publishes in its website, available for all interested parties, standard load profiles for different types of non-daily metered gas consumers and for different geographical areas.

2.4.2 CONTRACTING OF GAS VOLUMES BY HOUSEHOLDS

The gas supply contract includes the expected annual consumption of the household. This consumption estimate does not affect billing as the supplier charges the household for the actual consumption using different consumption bands.

The standard load profiles developed by the Market Operator are used by the suppliers to estimate consumption and bill consumption for the months where no meter reading data are available.

2.4.3 DEVELOPMENT OF STANDARD LOAD PROFILES FOR END-USERS

The Market Operator is responsible for estimating the standard load profiles for non-daily metered exit points of the distribution systems. The DSOs are responsible to provide data for their systems to the Market Operator, so that the latter can produce the load profiles.

The methodology to estimate the standard load profiles has been included by the Regulator in the Gas Market Rules it has issued. The standard load profiles are updated every year.

The daily gas consumption of non-daily metered consumers generated using the load profiles is published on a daily basis in the Market Operator's website, together with the temperature data applied for their calculation.

2.4.4 METERING OBLIGATIONS

The DSO is responsible for meter reading of consumer exit points in its distribution network. For consumers with an annual consumption below 55,000 m^3 (which includes most households), the DSO usually performs one meter reading per 12 months, while the maximum frequency is at least every 14 months. For consumers with annual consumption exceeding 55,000 m^3, the DSO measures on a monthly basis.

The suppliers and consumers have the right to request for more frequent meter readings, at a cost defined in the price list of the DSO.

The consumers are also able to submit self-readings of their meter, using a platform provided in their supplier's website.

In case of lack of metering data (e.g. due to faulty operation of a meter), the DSO uses historic measurement data to estimate gas consumption during the meter's faulty period.

2.4.5 SETTLEMENT OF IMBALANCES OF SUPPLIERS

The Market Operator is the entity responsible for maintaining imbalance accounts for the network users. The daily imbalance of each network user is estimated by the Market Operator and included in its account.

On a daily basis the Market Operator exchanges information with the DSOs and TSO to perform the gas volume allocations to network users and to estimate the imbalance position[3] of each user.

The TSO and DSOs are responsible for allocating volumes to their respective network users, and to provide this information to the Market Operator, that estimates the imbalances. For exit points equipped with daily/hourly meters the meter readings are used, while for non-daily metered exit points the standard load profiles developed by the Market Operator are applied.

Every day the Market Operator publishes information on the forecasted gas consumption for non-daily metered consumer categories, using the standard load profiles, so as to inform the transmission network users and facilitate their decision making for undertaking balancing actions. For each day of gas flow, the Market Operator publishes the forecasted consumption once the day before and twice during the day of gas flow.

To perform the initial allocation of volumes, the process below is followed daily:

- The TSO submits to the Market Operator the allocated volumes per transmission network user for the preceding day of gas flow.

[3] The imbalance position of the network user is calculated as the difference between the inputs allocated to the user at the entries into the system, and the volumes allocated to the user at the exit points, taking also into consideration losses and "Unaccounted For Gas" (UFG) in the system.

- The DSO submits to the Market Operator the allocated volumes per distribution network user for the preceding day of gas flow.
- The Market Operator submits the allocation information to the network users within 1 hour from receiving them.

To perform the final allocation of volumes, the process below is followed:

- Until the 6th workday of a month (M+1) the TSO sends to the Market Operator the allocated volumes per transmission network user for each day of the preceding month.
- Until the 6th workday of month M+1 the DSO sends to the Market Operator the allocated volumes per distribution network user for each day of the preceding month.
- The TSO and DSO may revise the submitted information within 3 calendar months.
- The Market Operator submits the allocation information to the network users within 1 hour from receiving them.

The Market Operator performs the financial settlement of the network users' daily imbalance quantities through the TSO. It provides the required information so that the TSO can charge or credit each user. The Market Operator then clears and settles with the TSO the difference between payments received from network users (for negative imbalances) and payments to network users (for positive imbalances). To manage the potential credit risk of imbalances settlement, as well as of any other transmission services, the TSO requires from network users to provide guarantee (in the form of bank guarantee or financial collateral) when the transmission contract is signed (the specific rules for the guarantee types, level and adjustment are defined in the transmission network code).

The settlement is carried out on a monthly basis, separately for each day of the settled month. The fees charged / credited to the users are estimated using the daily imbalance charge (as described in Section 2.4.6). The Market Operator performs the settlement of each month until the 13th calendar day of the subsequent month. In case the final allocation of volumes was revised (according to the 3rd bullet of the final allocation process), then the Market Operator can settle the revised volumes until the 16th calendar day of the fourth month after the month which the settlement concerns.

2.4.6 IMBALANCE CHARGES

The daily imbalance charges are estimated on the basis of the daily OTE market prices published by the Market Operator, as follows:

- For positive imbalances, the daily imbalance charge is the lower of the following values:
    - The lowest market price for the TSO's balancing actions for the day to which the imbalance refers to, or
    - The index OTE price, adjusted by a coefficient equal to 0.95 – 0.98, where, the index OTE price is defined as described below:

SITUATION FOR THE DAY WHICH THE IMBALANCE CONCERNS	INDEX OTE PRICE
More than one executed trade exists, and the quantity of traded gas totals more than approx. 8,500 m³ (100 MWh)	Weighted average of all trades on the within day gas market
Just one trade exists or the quantity of traded gas totals up to approx. 8,500 m³ (100 MWh), or Not a single executed trade exists	A value estimated using the same day or previous day prices, depending on the volumes traded and the price spread of the offer (detailed formulas are provided in the Gas Market Rules)

and the coefficient is defined as described below:

For values of the system imbalance equal to 0 m³	0.98
For values of the system imbalance greater than or equal to approx. 6.5 mcm (74,470 MWh)	0.95
For in-between values	$0.98 - 0.03 * \frac{so}{74{,}470}$ where so: value of the system imbalance for the relevant gas day, in MWh

- For negative imbalances, the daily imbalance charge is the higher of the following values:
    - The highest market price for the TSO's balancing actions for the day to which the imbalance refers to, or
    - The index OTE price (as described above), adjusted by a coefficient equal to 1.02 – 1.05, where the coefficient is defined as described below:

For values of the system imbalance equal to 0 m³	1.02
For values of the system imbalance greater than or equal to approx. -6.5 mcm (-74,470 MWh)	1.05
For in-between values	$1.02 + 0.03 * \frac{so}{74{,}470}$ where so: value of the system imbalance for the relevant gas day, in MWh

No tolerance levels are applied in the estimation of the imbalance charges for the Czech market.

According to ACER (2018)[4], in the Gas Year 2016/17 (October 1, 2016 – September 30, 2017) the aggregate daily imbalances of the year in the transmission system (estimated based on the daily injections, net trades of balancing positions and offtakes) represented around 8% of total demand, which is considered as high. However, the network users' imbalances that were cashed out (the part of the imbalances that was actually charged or credited to the network users) corresponds to just

[4] 3rd Edition of ACER's Report on the implementation of the Balancing Network Code (Regulation EC/312/2014), August 6, 2018. It is noted that subsequent versions of this report did not provide figures on the actual performance of the balancing regime, and for this reason the 2018 edition is used.

0.6% of demand, i.e. 92% of daily imbalances were not cashed out. This is attributed primarily to a linepack flexibility mechanism[5] provided by to the network users, and to a lesser extent to the network users' possibility to trade their imbalances at the VTP.

2.4.7 SETTLEMENT OF VOLUMES BETWEEN SUPPLIERS AND HOUSEHOLDS

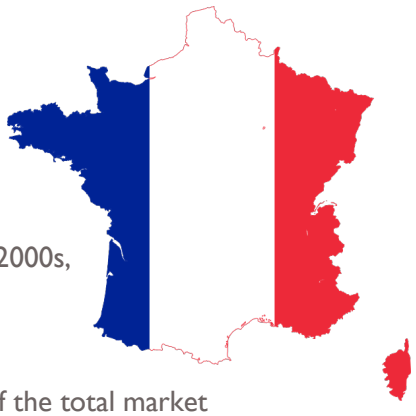
As the DSO does not provide frequent meter reading data for households, suppliers invoice the consumers using advance payments, usually on a monthly basis, that are settled once the meter reading is available. To estimate consumed gas for periods without meter readings, suppliers (e.g. innogy Energie) usually apply the standard load profiles of the corresponding consumer category.

Billing of consumers is based on gas consumption in energy units (kWh). Conversion of measurements of consumption in cubic meters to kWh is carried out using a GCV defined by the supplier (e.g. for the case of innogy 10.62 kWh/m^3).

The amounts charged by a supplier to the household for the gas consumed do not include any charges or penalties due to imbalances.

[5] Network users are each given flexibility quantities on a daily basis, commensurate to their portfolio of entries and exits, free of charge. This flexibility allows the users to reduce their exposure to imbalance cash-out, similar to how a tolerance level would (but with different distribution among users). It is noted that ACER, in its 2018 Report on the implementation of the Balancing Network Code, considers that the impact of this flexibility mechanism "… needs a very careful assessment and comparison against the implementation of a strict full daily balancing regime implementation".

3 FRANCE



3.1 RETAIL MARKET OVERVIEW

3.1.1 LIBERALIZATION OF THE RETAIL MARKET

The French gas market was liberalized gradually, starting in early 2000s, with a stage by stage opening of market segments:

- As of August 2000, consumers with demand over approx. 20 mcm/yr. were allowed to choose their supplier (around 20% of the total market liberalized)
- As of August 2003, consumers with demand over approx. 7 mcm/yr. were allowed to choose their supplier (around 37% of the total market liberalized)
- As of July 2004, the small commercial segment was liberalized, corresponding to 640,000 customers (around 70% of the total market liberalized)
- In July 2007 the French retail market was fully liberalized, with opening of the household segment, corresponding to 11 mil. customers.

Until 2014 all consumers were allowed to choose either gas supply from the open market, at market-based prices, or supply from the incumbents at regulated prices. However, to facilitate market opening, regulated end-user supply prices for non-residential consumers were gradually eliminated up to the end of 2015. As of January 1, 2016, only small-scale gas consumers are eligible to opt for regulated gas supply prices, including domestic and small commercial consumers whose annual gas consumption is less than 2,600 m^3/yr. and co-owned properties or apartment blocks with annual consumption of less than 13,000 m^3/yr. The regulated supply prices will be eliminated for all consumers on July 1, 2023[6], and consequently the consumers that opted for free market prices will no longer be able to revert to regulated prices.

3.1.2 MARKET MODEL FOR GAS SUPPLY TO HOUSEHOLDS

To take part in the retail gas market, companies have to receive an authorization for gas supply from the Ministry of Ecology, Sustainable Development and Energy.

Currently two types of gas sale offers are provided in the French retail market:

- All consumers have access to gas supply products that are offered at prices set freely by the suppliers.
- Particularly small consumers (as described below) may choose, instead of market-based gas prices, to apply regulated gas supply prices, that are set by the government and offered by suppliers historically considered as incumbents (ENGIE that holds the majority share in the gas

[6] Termination of regulated end-user prices is due to a 2018 decision by France's highest administrative court that these tariffs hurt competition and are non-compliant with EU regulations.

retail market of France, and the 22 local distribution companies). As mentioned above, use of regulated end-user supply prices will be eliminated in 2023.

As a way to support low-income households, as of January 1, 2018 the French Government is offering to households with an annual taxable income per capita of less than € 7,700, an energy voucher, which can be used to pay energy bills, home care charge or to cover the costs of home energy renovation. This replaced "social rates" that were applied in the past to gas bills.

Households pay a single invoice to their supplier, that includes the services for gas transmission and distribution. The amounts corresponding to these services are itemized in the invoice issued by the supplier. The supplier then pays the collected amounts to the TSO and DSO.

3.1.3 COMPETITION IN THE RETAIL MARKET

In 2018 gas volumes distributed to the retail market were around 25 bcm, out of which 24 % for households. The total number of active customers in 2018 amounted to 11.5 million, the vast majority of which (94 %) were households.

In 2018 36 gas suppliers were active in the retail market, of which 13 supplying gas to households and 32 to non-residential customers. In 2017 the situation was similar, with 34 retail suppliers active, of which 11 supplying households and 31 non-residential customers.

The market share of alternative suppliers for the household sector in particular increased in 2018 to 29 %, from 26 % in 2017 and 23 % in 2016. In 2018 the incumbent suppliers (Engie at the GRDF distribution system and the 22 local distribution companies) supplied 6,392,000 households (71 %), while alternative suppliers sold gas to the remaining 3,150,000 (29 %) residential customers.

Around 60 % of household customers (6,392,000) selected to be supplied at market prices in 2018, increasing from 54 % of households in 2017 and 48 % in 2016.

3.1.4 SUPPLIER SWITCHING RATES

According to the Regulator, in 2018 the annual switching rate for non-residential consumers was 15.4 %, compared to 13.8 % in 2017, 15.2 % in 2016 and 18.3 % in 2015[7].

In the residential sector, switching rate in 2018 was 12.9 %, increasing from 11.4 % in 2017, 10.4 % in 2016 and 9.4 % in 2015.

3.1.5 PRODUCTS OFFERED BY SUPPLIERS TO HOUSEHOLDS

Retail suppliers selling gas to households offer products for supply of gas or bundled supply of gas and electricity.

According to the Energy Code, the supply contracts should have a minimum duration of 1 year. In practice, suppliers offer products, at the open market, with 1 or 2 years of fixed duration, or annually renewed indefinite contracts.

[7] The high switching rate in 2015 is attributed to the gradual elimination of regulated tariffs for non-residential consumers, that started in 2014 and concluded in 2015.

3.2 RIGHTS & OBLIGATIONS FOR SUPPLIER SWITCHING AND CONSUMER DISCONNECTION

3.2.1 RIGHTS OF HOUSEHOLDS AND SUPPLIERS IN SUPPLIER SWITCHING

All household consumers have the right to change their supplier. However, if the household has an outstanding debt with the old supplier, the new supplier has the right to object signing the supply contract, until the debt is settled. A supplier may also reject the supply contract request if the documentation provided by the consumer is not complete or accurate. There appears to be no specific process defined in the regulatory framework that has to be followed by the supplier to reject a contract application.

Termination of the supply contract for purpose of supplier switching can be done at any time, free of charge.

There do not appear to be provisions that allow the old supplier to terminate the switching process due to debt. The supplier has the right to request termination of supply in case of an overdue invoice, however this is not linked with switching.

3.2.2 RIGHTS OF SUPPLIERS TO TERMINATE SUPPLY OR DISCONNECT HOUSEHOLDS

A supplier may request from the DSO termination of supply for a household, in case there are outstanding debts pending, following a 15-day notice to settle the debt.

Other cases for which the supplier may ask the DSO to interrupt gas supply include:

- Serious and immediate danger at the consumer's internal installation or incompliance with technical regulations, brought to the attention of the supplier
- Planned interruptions due to network interventions
- Meter tampering or gas theft by the consumer.

3.2.3 PROCESS FOR SUPPLIER SWITCHING

To initiate the switching process, the household signs a contract with a new supplier and agrees a switching date. The new supplier undertakes to notify the old supplier, and the old supply contract is terminated automatically, from the date when the new contract enters into force.

The new supplier also notifies the DSO about the switching. The DSO then proceeds to estimate the gas consumption at the time of switching (using self-reading by the consumer, meter reading by the new supplier or its own estimation) and submits it to both the old and new supplier.

The switching process is completed, with activation of the new supplier, within 7 days from the signing of the contract by the household.

French retail suppliers provide the possibility of concluding supply contracts electronically, via their website. To confirm the contract, the customer can use to "double click process" (the first click to place the order of a supply product and the second one to confirm it).

To proceed with the signing of the new contract the household has to provide information concerning its exit point (ID code, contact information etc.) and, to facilitate the process, may also provide a self-

reading of the meter. It is possible to carry out the contracting process electronically via the suppliers' websites. It should be noted that the documentation required to sign a supply contract could not be identified in the suppliers' websites (a quote for supply has to be requested via the website or the phone to receive further information).

The old supplier does not have any obligation to provide information to the new supplier concerning the household (such as past consumption or payment track record).

3.3 SUPPLIER OF LAST RESORT

3.3.1 DEFINITION

In France the concept of supplier of last resort in the gas sector is only applied to some public services (health facilities, schools, police, army, penitentiaries, fire stations), the operation of which should not be affected by any change of supplier. A list of suppliers eligible to be SLRs of these consumers is defined every 3 years by the French State.

There is no SLR service provided to households. Although the DSO is responsible, according to the Energy Code, for ensuring continuity of supply to all consumers, no specific provisions could be identified in the regulatory framework that address the issue of potential default of a consumer's supplier[8].

3.3.2 PRICING

In France it is not applicable for households.

3.3.3 PROCESS FOR SLR ACTIVATION

In France it is not applicable for households.

3.4 GAS CONSUMPTION, METERING AND SETTLEMENT OF IMBALANCES

3.4.1 AVAILABILITY OF CONSUMPTION INFORMATION

In France there are no databases with information on individual consumers that are accessible to all suppliers.

The Regulator, as part of its market monitoring activities, publishes a quarterly market observatory, that provides an overview of the market competition and defines the active suppliers in the gas retail market and a comparison of their offers.

Standard load profiles for different consumer categories are developed to allow estimation of consumption. These profiles, that are applied by the DSO, are publicly available by the Groupe de Travail Gaz (GTG) in its website.

[8] The Groupe de Travail Gaz (GTG) process "Supplier Failure Procedure" (version 26th June 2020) notes that "It does not cover the case of non-mission of general interest clients, whose treatment in the event of a supplier's default is not provided for by law, and remains to be specified"

3.4.2 CONTRACTING OF GAS VOLUMES BY HOUSEHOLDS

The gas supply contract includes the expected annual consumption of the household. Nevertheless, billing is based on the actual meter readings of the household's consumption.

It is noted that in the case of a supply product that has a fixed price per month, the monthly instalments are based on the estimated annual consumption included in the contract. However, at the end of each year the final amount to be paid is settled on the basis of the measured, actual annual consumption.

3.4.3 DEVELOPMENT OF STANDARD LOAD PROFILES FOR END-USERS

The standard load profiles for gas consumers in France were established using a methodology defined by the Groupe de Travail Gaz (GTG), a working group comprising members from the Regulator, TSO, DSO, gas suppliers and large consumers. The DSO provides necessary data for the estimation of these profiles.

The profiles are revised on an annual basis and published in the GTG website.

3.4.4 METERING OBLIGATIONS

The DSO is responsible for meter readings at each exit point of its network and for transmitting the measurements of each point to the corresponding supplier. Meter reading at the sites of consumers with annual consumption below 26,000 m^3 (including households) is carried out with semi-annual frequency.

Suppliers may request increased frequency for meter reading of their customers, as a paid supplementary service offered by the DSO.

The consumers are also able to submit self-readings of their meter, either by communicating them to the DSO via phone, or using a platform provided in their supplier's website. The DSO checks the self-readings for consistency, based on past actual readings. Self-reading is encouraged in case of supplier switching, as a means of speeding up the process.

In case meter readings for a consumer are not available for a certain period, due to faulty operation of the meter or tampering of its operation, the DSO uses historic data for the consumer, or data provided by the supplier, to cover the lack of metering data.

3.4.5 SETTLEMENT OF IMBALANCES OF SUPPLIERS

The French TSOs (GRTGaz and Terega) are responsible for settling the imbalances in their transmission systems. The TSOs and the DSOs exchange information on a daily basis, so that the TSOs can estimate the imbalance positions of the transmission network users.

For exit points of the transmission and distribution network with daily/hourly meters installed, the measurements are directly used to allocate volumes. For exit points of the distribution system with non-daily meters the standard load profiles developed by the GTG are used to estimate consumed volumes.

The TSOs provide information to the transmission network users, day ahead and within day, to facilitate their decision making in exchanging their imbalance positions. Each day the DSOs provide to the TSOs the customer portfolios of the network users, and actual meter readings for consumers with hourly meters. The TSOs provide to each network user, based on its customer portfolio:

- Actual meter readings for large customers connected to the transmission system (on an hourly basis)

- Actual meter readings of hourly metered customers connected to the distribution system (twice a day after receipt of this information from the DSOs)

- Estimated consumption of the non-daily metered customers connected to the distribution system using the GTG standard load profiles (once on the day before and twice within day).

Each day the TSOs perform and submit to their transmission network users an initial allocation of volumes. For this allocation, the DSOs provide daily to the TSOs the gas volumes allocated to each supplier operating in their distribution system.

The same approach is followed in the beginning of each month, so that the TSOs can provide the network users with an update of the gas volumes allocated to them for each day of the preceding month. This allocation uses updated information provided by the DSOs.

To perform a reconciliation of allocated volumes after measurements become available, particularly for non-daily metered consumers, the DSOs maintain a separate account that is used for monitoring the imbalance of each exit point and supplier. These accounts are updated after each meter reading at the corresponding point is performed. The accounts are cleared on a monthly basis, with the DSOs charging or crediting to each supplier the amounts corresponding to their allocated volumes. To manage the potential credit risk of imbalances settlement, as well as of any other distribution services, the distribution network users must provide to the DSO requires a bank guarantee, commensurate to the exit points they are serving (the specific rules for the guarantee are defined in the general conditions of the distribution service contract).

The TSOs settle imbalances with the network users on a monthly basis, for each individual day of the settled month. On each daily imbalance, the TSOs apply a daily imbalance charge, estimated as described in Section 3.4.6 below. The TSOs issue each month an invoice to each network user with imbalances during the previous month, for the corresponding the aggregate amounts to be charged or credited to the network user. To provide transmission services (including balancing), the TSO requires from network users to provide a guarantee (in the form of first demand guarantee or security deposit) based on the capacity they have booked (the specific rules for the guarantee such as its type, level and adjustment are defined in the general terms and conditions of the transmission contract).

3.4.6 IMBALANCE CHARGES

The daily imbalance charges are estimated on the basis of the daily market prices at PEG (virtual trading point of France). The same daily imbalance charge applies for both French TSOs, GRTGaz and Terega, estimated as follows:

- For positive imbalances, a marginal sale price applies, that is the lower of the following values:

    - the lowest sale price at the market, if the TSO intervened on the day to which the imbalance corresponds to, or

    - the average price of the day, decreased by a discount of -2.5 %

- For negative imbalances, a marginal purchase price applies, that is the higher of the following values:

- the highest purchase price at the market, if the TSO intervened on the day to which the imbalance corresponds to, or

- the average price of the day, increased by a premium of 2.5 %

Imbalance charges are being applied from the 1st unit volume of imbalance of each day, i.e. no tolerance levels are in place, so that network users aim to be as balanced as possible.

3.4.7 SETTLEMENT OF VOLUMES BETWEEN SUPPLIERS AND HOUSEHOLDS

Billing by the supplier of the gas sold to a household depends on the product that the household has selected (usually payments are carried out on a monthly or bi-monthly basis).

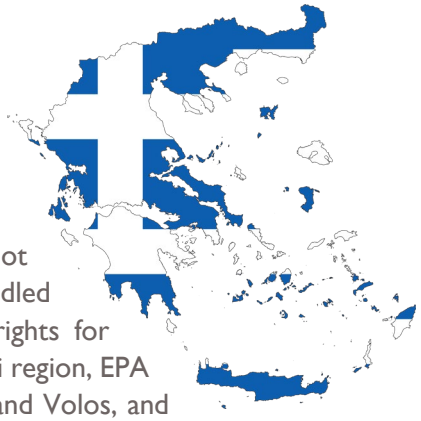
In case meter readings are not available for the period for which an invoice is issued, then the supplier estimates consumption on the basis of past volumes, if available, or information communicated by the DSO or consumer (e.g. estimated consumption included in the contract). The estimated consumption is settled when meter reading data for the household are available. Particularly for the case of supply products with fixed monthly gas prices, the bill is settled with actual measurements once every 12 months.

Billing of consumers is based on gas consumption in energy units (kWh). According to the gas supply contracts, measurements of consumption in cubic meters are converted to kWh using the average GCV for the billing period, based on the GCV values published by the DSO[9].

The amounts charged by a supplier to the household for the gas consumed do not include any charges or penalties due to imbalances.

[9] According to the DSO GCV may range from 10.7 to 12.8 kWh/m^3

4 GREECE



4.1 RETAIL MARKET OVERVIEW

4.1.1 LIBERALIZATION OF THE RETAIL MARKET

Until the end of 2016 the Greek retail gas supply market was not open. Supply of gas to retail consumers was carried out by 4 bundled gas supply and distribution companies, each having exclusive rights for selling gas at a different geographical area (EPA Attikis in the Attiki region, EPA Thessaloniki in the Thessaloniki region, EPA Thessaly in Larissa and Volos, and DEPA in the rest of mainland Greece).

Liberalization of the retail gas market commenced on January 1, 2017, with market opening of non-household customers having annual consumption over 190,000 m^3. As of January 1, 2018, the whole retail market has been liberalized, including households and all non-household customers.

4.1.2 MARKET MODEL FOR GAS SUPPLY TO HOUSEHOLDS

To take part in the Greek wholesale and retail market, companies have to receive a license for gas supply from the Regulator.

The price of gas in the retail sector is fully market-based and offered freely by each supplier. The Regulator monitors and reports on the performance of the retail gas market (mainly market concentration and supplier switching).

Households pay a single invoice to their supplier, that includes the services for gas transmission and distribution. The amounts corresponding to these services are itemized in the invoice issued by the supplier. The supplier then pays the collected amounts to the TSO and DSO.

4.1.3 COMPETITION IN THE RETAIL MARKET

In 2019 gas volumes distributed to the retail market were around 1 bcm, out of which 45 % for households. The total number of active customers in 2019 amounted to 465,000, 450,000 (97 %) of which were households (using gas for central heating, individual heating and/or cooking and hot water).

In the first year of the retail market's full liberalization, 2018, the active retail suppliers were 21. The supply companies that were carved out (ownership unbundling) from the formerly bundled distribution companies, Zenith S.A. and Attiki Natural Gas Distribution Company S.A., continued to prevail the retail market, representing 97 % of total connections (71 % for Zenith and 26 % for Attiki) and 83 % of consumption (47 % for Zenith and 35 % for Attiki). To enter the market, the other suppliers targeted large retail consumers (industrial and large commercial), which justifies the fact that they obtained 3 % of connections but 17 % of total consumption. In 2019 the incumbents continued to hold the vast majority of connections, 88 % (62 % for Zenith and 26 % for Attiki), however their share in consumption decreased to 63 % (33 % for Zenith and 30 % for Attiki).

4.1.4 SUPPLIER SWITCHING RATES

As shown in the Table below, in 2018 switching of household customers was very limited, only 7,200 consumers (1.7 % of total), due to suppliers' focus to acquire larger consumers. The households deciding to switch concerned mainly apartments with individual heating, instead of buildings with

central heating. The low switching rate can be attributed to the fact that 2018 was the first year of the retail market's opening, and as a result, households were still not fully aware of their switching possibilities, while the advertising campaigns by new suppliers were still limited.

TABLE 2: CUSTOMERS SWITCHING THEIR GAS SUPPLIED IN 2018 IN GREECE

CUSTOMER CATEGORY	ACTIVE CUSTOMERS	NO. OF CUSTOMERS SWITCHING SUPPLIER	% OF CUSTOMERS SWITCHING	CONSUMPTION	CONSUMPTION OF CUSTOMERS SWITCHING SUPPLIER	% OF CUSTOMERS SWITCHING
Household	425,025	7,197	1.7 %	394.8	4.4	1.1 %
Commercial	15,986	386	2.4 %	137.0	4.1	3.0 %
Industrial	319	28	8.8 %	359.4	32.6	9.1 %
TOTAL	**441,330**	**7,611**	**1.7 %**	**891.2**	**41.1**	**4.6 %**

4.1.5 PRODUCTS OFFERED BY SUPPLIERS TO HOUSEHOLDS

Retail suppliers selling gas to households offer products for supply of gas or bundled supply of gas and electricity. Most of the products offered by suppliers to households have 2 years' duration, but there are some suppliers also providing the option of 1-year contracts (according to the Gas Supply Code for products offered to households the minimum contract duration is 1 year and the maximum 2 years).

4.2 RIGHTS & OBLIGATIONS FOR SUPPLIER SWITCHING AND CONSUMER DISCONNECTION

4.2.1 RIGHTS OF HOUSEHOLDS AND SUPPLIERS IN SUPPLIER SWITCHING

All household consumers have the right to request switching of supplier, provided that they have signed a contract with a new supplier and have settled any outstanding debt with the old supplier (or the new supplier has agreed to undertake the debt).

The consumers requesting switching and therefore terminating the contract with the old supplier may be required to pay a penalty, as the Gas Supply Code allows supply contracts to include termination penalties. Such penalties however have to be reasonable, justified by the supplier to the Regulator and cannot concern gas consumption beyond the first 6 months from entry into force of the contract.

The new supplier has the right to reject a household's application for signing a supply contract in case any of the following reasons apply:

- The household has an outstanding debt with any supplier (together with the application for a supply contract the consumer submits to the supplier the latest invoice from their old supplier),
- There at least two supply termination applications for the household have been submitted to the DSO during the past 12 months, or
- The household is not able to provide the supporting documentation information necessary for contract signing (including proof that there are no unsettled invoices with the old supplier).

There is no specific process defined in the regulatory framework that has to be followed by the supplier to reject a contract application.

The old supplier has the right to intervene in the switching process in the following cases:

- If prior to the initiation of the switching process the old supplier has terminated the supply contract and requested termination of supply due to outstanding debt, the old supplier may request from the DSO postponement of the switching process until the debt has been settled, by providing to the DSO supporting documentation that proves the outstanding debt. After the debt has been settled, the old supplier must inform the DSO within 1 day, so that the DSO can proceed with the switching process.

- If the household and the old supplier have agreed a payment schedule to settle an outstanding debt and the household has delayed payments, the old supplier may request a termination of the household's supply. The termination request can be submitted to the DSO at least 10 days after relevant notification of the household and the new supplier.

4.2.2 RIGHTS OF SUPPLIERS TO TERMINATE SUPPLY OR DISCONNECT HOUSEHOLDS

A supplier can request from the DSO termination of supply (i.e. sealing of the meter) to any type of consumer, including households, if:

- The termination has been requested by the consumer

- The consumer has damaged or tampered the meter or service line, or the consumer has attempted theft of gas from the distribution system

- The consumer has supplied gas to third parties or is using gas for a different purpose than the one stipulated in the supply contract

- The consumer has an outstanding debt in two consecutive invoices

- The consumer is violating the terms & conditions of the supply contract

If the DSO is not successful in terminating supply (e.g. due to failure to access the meter), it proceeds to disconnection of the consumer's external installation.

4.2.3 PROCESS FOR SUPPLIER SWITCHING

The process for switching supplier is the following (Figure 2):

- The household signs a supply contract with a new supplier. Either the household or the new supplier (if authorized by the household), requests termination of the contract with the old supplier.

- Within 5 workdays from contract signing, the new supplier submits an application to the DSO (switching application), requesting from the DSO to change the supplier representing the network exit point of the household.

- The DSO informs the new supplier if supply at the exit point of the household has been terminated, or an application for supply termination has been submitted.

- Within 3 days from receipt of the switching application, the DSO enquires the old supplier on any outstanding debt of the household. The old supplier must respond within 3 days.

- If there are no outstanding debts, the DSO proceeds with a meter reading within 10 days from the response of the old supplier in step 4 and informs the old and new supplier accordingly.
- The date of the meter reading by the DSO is considered the date of supply switching.

Figure 2: Process of supplier switching in Greece

The largest gas retail supplier in Greece (Zenith S.A.) allows electronic contract signing via its website. The consumer needs to provide personal data (ID, address and VAT number), data on the internal installation (e.g. exit point identification code) and submit the latest invoice from the previous supplier. No signature of the contract is required.

The supply contract can be signed with either the owner of the property or the tenant. In both cases an active connection contract for the property is required. In the application, the consumer must declare the ownership status of the property that will be supplied with gas. In case of a building owned by several persons using gas (e.g. apartment building with central heating), the administrator of the building signs the contract, provided that they have attained a majority agreement by the owners to proceed with supplier switching.

The documents that need to be submitted by a household to proceed with supplier switching are available online, at the suppliers' websites. These documents include the application for the supply contract, the application for termination of the existing contract with the old supply and the authorization of the new supplier to proceed with supplier switching actions.

The old supplier does not have any obligation to provide information to the new supplier concerning the household (such as past consumption or payment track record).

4.3 SUPPLIER OF LAST RESORT

4.3.1 DEFINITION

The Supplier of Last Resort undertakes to supply consumers that are not being supplied with gas due to reasons beyond their control (e.g. due to default of the current supplier). The SLR can supply gas to a consumer for a maximum of 3 months, to provide sufficient time to the consumer to sign a contract with a new supplier.

The Regulator carries out an open tender procedure to select a licensed supplier to provide the SLR service for 2 years. The criteria for selecting the SLR include the share of the supplier in the Greek market and each geographical area, the types of customers supplied, and the cost of the offered SLR service.

4.3.2 PRICING

The cost of the SLR service is defined in the bid submitted to the Regulatory in the open tender procedure selecting the supplier of last resort. The tendering rules defined by the Regulator do not set any limitations in the cost or mark-up of the SLR service.

4.3.3 PROCESS FOR SLR ACTIVATION

In case a supplier cannot provide gas supply services to its customers, the affected consumers are automatically switched to the SLR, without any actions required from their side.

The parties involved in the SLR mechanism undertake the following activities:

- Within 1 day from the activation of the SLR mechanism the SLR announces publicly that it is ready to provide supply service to the affected consumers, and the terms & conditions for the SLR service.
- Within 3 workdays from the activation of the SLR mechanism, the DSOs provide to the SLR information (address of installation and contact information) on the consumers to which the service will be provided.
- Within 3 days from the activation of the SLR mechanism, the previous supplier provides to the SLR information on the applied gas prices, outstanding invoices and payments and amounts not yet invoiced for supplied gas.
- Within 5 days from receiving the information from the DSOs, the SLR informs each affected consumer individually about activation of the SLR service and its main conditions

Once the consumer has identified a new supplier, the new supplier informs the SLR on the switching, and the SLR service is terminated without any penalty.

In case the 3-month maximum period for the SLR service has passed, and the consumer has not identified a new supplier, the SLR continues to supply the consumer, applying the supplier's price list that corresponds to the consumer's category.

4.4 GAS CONSUMPTION, METERING AND SETTLEMENT OF IMBALANCES

4.4.1 AVAILABILITY OF CONSUMPTION INFORMATION

In Greece there are no databases with information on individual consumers that are accessible to all suppliers.

Each DSO publishes standard load profiles for different categories of consumers applicable in their geographical area, that are accessible to all interested parties. Additionally, the DSOs publish monthly information on each active supplier's number of consumers and gas volumes distributed.

4.4.2 CONTRACTING OF GAS VOLUMES BY HOUSEHOLDS

Contracting of gas supply for households is based on the intended use of gas (heating, cooking, hot water) and/or type of consumer (individual or central heating), depending on the consumer categories set by each retail supplier. None of the suppliers introduces, in their contracts with households, any provisions regarding maximum consumption thresholds or profiles.

4.4.3 DEVELOPMENT OF STANDARD LOAD PROFILES FOR END-USERS

The Regulator has approved the proposal of the DSOs for a methodology for establishment of standard load profiles for non-daily metered consumers. Each DSO applied the methodology to develop the standard load profiles for different non-daily metered consumer categories within its

geographical area, which were then approved by the Regulator. The approved profiles are published at the website of each DSO.

The profiles are reviewed annually, and in case of significant (over 3 %) difference from actual measurements, they are revised.

4.4.4 METERING OBLIGATIONS

The DSOs are responsible for meter readings at each exit point of their network and for transmitting the measurements of each point to the corresponding supplier. According to the metering code, the minimum frequency for meter reading at households is every two months, including physical measurements at least three times during the winter season (November – April). In practice, during the winter season, the DSOs measure households with central heating monthly and households with individual heating bimonthly.

As a supplementary service offered by the DSO, the suppliers may request more frequent meter readings, on their own initiative, or following request from their customer. The price for this service is published at the DSO's website.

The consumers are also able to submit self-readings of their meter, using a platform provided in the DSO at which their internal installation is connected. The platform can be accessed directly at the DSOs' website, or via the websites of the suppliers.

In case meter readings are not available at an exit point for a certain period, due to faulty operation of the meter or tampering of its operation, the DSOs use the corresponding standard load profile to cover the lack of metering data.

4.4.5 SETTLEMENT OF IMBALANCES OF SUPPLIERS

The TSO is the entity responsible for defining the imbalance positions of network users and for settling their imbalances.

The TSO and the DSOs cooperate to perform daily allocation of volumes on the transmission and distribution system, that is used to estimate the imbalance positions of the transmission network users.

For exit points of the transmission and distribution network with daily/hourly meters installed, the measurements are directly used to allocate volumes. For exit points of the distribution system with non-daily meters (mainly concerning households and small commercial consumers) the standard load profiles are used to estimate consumed volumes.

The process for allocating volumes to network users is the following:

- Until the 5th workday of a month (M+1) the TSO sends to the transmission network users an initial allocation of volumes for each day of the previous month, using actual measurements at the exit points for transmission consumers and pro-rata allocation according to the network users' nominations for exit points to distribution networks.

- Until the 5th workday of M+1 the TSO sends to the DSOs, for each day of the previous month, the meter readings for all exit points to distribution systems, the transmission users active at these exists and their nominations.

- Until the 7th workday of M+1 the DSO estimates the volumes allocated to each distribution network used for each day of the previous month, according to measurements (for daily/hourly metered exit points) and standard load profiles (for non-daily metered exit points).

- Until the 9th day of M+1 the DSOs send to the TSO, for each day of the previous month, the volumes allocated to each transmission network user, based on the distribution network users they supply and the allocated volumes to the latter.

- Until the 10th day of M+1 the TSO sends to the transmission network users the final volume allocations for the transmission system, that will be used to estimate the imbalances.

- Until the 12th day of every January and June the DSOs perform the final volume allocations for the distribution system, using meter readings for the previous months for all non-daily metered exit points. The final allocation for distribution network users is used for settling the distribution charges of the corresponding months.

The TSO settles imbalances with the network users on a monthly basis. The settlement is carried out for each day of the month separately, applying a daily imbalance charge, that is estimated as described in Section 4.4.6 below. The TSO issues each month an invoice or credit note to each user, for their net imbalance charges of the preceding month. To manage the potential credit risk of imbalances settlement, as well as of any other transmission services, the TSO requires from network users to provide guarantee (in the form of bank guarantee or financial collateral) when the transmission contract is signed (the specific rules for the guarantee types, level and adjustment are defined in the transmission contract).

4.4.6 IMBALANCE CHARGES

As a gas exchange has not been established in Greece yet, the daily imbalance charges are estimated on the basis of the prices at a balancing platform, operated by the TSO, at which the TSO exchanges imbalances with network users[10]. The charges are estimated as follows:

- For positive imbalances, a marginal sale price applies, that is the lower of the following values:
    - the lowest unit price of the completed transactions carried out by the TSO in the balancing platform on the day to which the imbalance corresponds to, or
    - a reference price corresponding to the price of TTF (according to the European Gas Spot Index published at the Powernext website[11]) for the day to which the balance corresponds to, decreased by a discount of -10 % (the maximum allowed adjustment according to the EC Gas Balancing Code Regulation EC/312/2014)

- For negative imbalances, a marginal purchase price applies, that is the higher of the following values:

[10] The balancing platform is an interim step for developing a virtual trading platform, in case there is not sufficient liquidity or traded gas volumes in the market. At the balancing platform the TSO is always the counterpart in all transactions, whereas in the virtual trading platform a network user may perform transactions with another user or the TSO.
[11] https://www.powernext.com/spot-market-data

- the highest unit price of the completed transactions carried out by the TSO in the balancing platform on the day to which the imbalance corresponds to, or
- a reference price corresponding to the price at the European Gas Spot Index for the day to which the balance corresponds to, increased by a premium of 10 %

The tolerance levels for imbalances were gradually phased out, from 5% in 2017, to 3% in 2018 and zero from 2019 onwards.

Greece is still in the process of reforming its balancing regime in line with the EU daily balancing requirements yet (Greece implemented the interim measures for progressively developing the balancing regime, in line with Regulation EC/312/2014). Imbalances are currently traded only between the TSO and network users at a booking platform, instead of all counterparts being able to trade with each other at a virtual trading platform. Therefore, for the time being, the network users' capability to reduce their imbalance position is limited to their trading with the TSO.

4.4.7 SETTLEMENT OF VOLUMES BETWEEN SUPPLIERS AND HOUSEHOLDS

All suppliers issue invoices to their household customers on a monthly basis (according to the Gas Supply Code the maximum frequency of invoicing is every 4 months). Each month the gas volumes charged in these invoices are based on either actual measurements or estimations by the supplier.

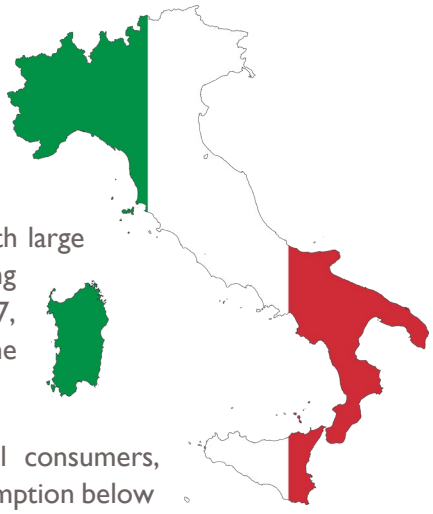
The supplier settles any estimated gas consumption included in the invoices with actual gas consumed according to the terms and conditions of the supply product selected by the household. For most products the settlement is carried out in the month when meter reading data for the household is provided by the DSO. However, there are products with less frequent settlements (e.g. once every year).

Billing of consumers is based on gas consumption in energy units (kWh). According to the gas supply contracts, measurements of consumption in cubic meters are converted to kWh using the average GCV for the billing period, based on the GCV values provided to the supplier by the TSO[12].

In all cases the amount charged by a supplier to the household for the gas consumed does not include any charges or penalties due to imbalances.

[12] On average around 11 kWh/m^3

5 ITALY



5.1 RETAIL MARKET OVERVIEW

5.1.1 LIBERALIZATION OF THE RETAIL MARKET

Liberalization of the Italian gas market commenced in 1999, with large industries being allowed to choose their supplier. Market opening progressed gradually, extending to smaller consumers, until 2007, when the market was fully liberalized, as even households became eligible customers.

Despite market opening, as a form of protection for small consumers, households, and small commercial consumers with annual consumption below 200,000 m³/yr. can opt for a free market price (free market) or a regulated price from their supplier (protected market)[13]. The regulated price will be eliminated on January 1, 2022 (initial deadline was set for July 1, 2019, then postponed for July 1, 2020 and then for January 1, 2022).

5.1.2 MARKET MODEL FOR GAS SUPPLY TO HOUSEHOLDS

To take part in supply of the gas market, companies have to be enrolled in a registry maintained by the Regulator.

According to the current regulatory framework, retail gas suppliers offer to small consumers (households and commercial consumers with annual consumption below 200,000 m³/yr.) the following options:

- Supply of gas at a regulated gas supply price (all suppliers must offer such a product). As mentioned above this will be eliminated in 2022.
- Provision of a "standard offer" (called PLACET offers - Free Price with Equal Protection Conditions). As of March 1, 2018, all suppliers must offer to small consumers at least one supply product at a fixed price (gas price is kept fixed for a certain period of time) and at least a variable price proposal (gas price changes automatically based on changes in a reference index). The price is defined by the supplier, but the price structure (indexing with TTF prices) and the contractual conditions are set by the Regulator. The duration of the product is 1 year, renewed every 12 months.
- Provision of any other gas supply products are under free market prices.

Households pay a single invoice to their supplier, that includes the services for gas transmission, distribution, and metering. The amounts corresponding to these services are itemized in the invoice issued by the supplier. The supplier then pays the collected amounts to the TSO and DSO.

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[13] Offering of regulated prices for end-users, which are approved by the Regulator, is carried out as a means to safeguard consumers, as an interpretation of Article 3.3 of the Gas Directive 2009/73/EC. There have been, however disputes in Italy as to whether the long-term use of regulated end-user prices for all small consumers is in compliance with Directive 2009/73/EC.
It is also noted that termination of the protected market is underway, as from a commercial perspective it is considered that the allowance only of free prices would be beneficial for the final consumers.

5.1.3 COMPETITION IN THE RETAIL MARKET

In 2018 the total gas volumes supplied to the Italian market were around 56.7 bcm, out of which 31 % were for households. The total number of active customers in 2018 amounted to 21.6 million, the vast majority of which (93 %) were households.

In total 412 suppliers were active in the Italian gas market in 2018, of which 52 operated in the whole country (in all 19 regions of Italy), 166 suppliers were active in 6 – 18 regions and 194 suppliers in 1 – 5 regions. The number of suppliers is similar to that of 2017 (420 suppliers, of which 49 operating country-wide).

Three suppliers delivered in 2018 43.5 % of gas volumes to the Italian gas market[14], ENI (19.3 %), Edison (13.2 %) and Enel (11 %). The aggregate market share of these three companies was 45 % in 2017 and 47.4 % in 2016.

The number of households choosing to be supplied with free market prices increased to 50 % (10 mil.) of the total residential consumers, from 45 % (8.8 mil.) in 2017 and 32 % (6.4 mil.) in 2016.

5.1.4 SUPPLIER SWITCHING RATES

As shown in the table below, according to a survey carried out by the Regulator, the customer switching rate in 2018 for households (in terms of number of customers) was 6.6 %, increasing from 5.2 % in 2017.

TABLE 3: CUSTOMERS SWITCHING THEIR GAS SUPPLIED FROM 2015 – 2018 IN ITALY

CUSTOMER CATEGORY	CUSTOMER SWITCHING RATE			
	2015	**2016**	**2017**	**2018**
Households	6.1 %	6.1 %	5.2 %	6.6 %
Central heating	9.1 %	11.1 %	8.4 %	9.5 %
Public services	19.0 %	19.3 %	17.2 %	17.1 %
Other uses	12.2 %	12.7 %	12.1 %	11.5 %
TOTAL	**6.5 %**	**6.6 %**	**5.7 %**	**7.0 %**

Source: Regulator's Annual Reports

5.1.5 PRODUCTS OFFERED BY SUPPLIERS TO HOUSEHOLDS

Retail suppliers selling gas to households offer products for supply of gas or bundled supply of gas and electricity.

As mentioned above, according to the national legislation, retail suppliers must provide at least one gas supply product to small consumers (PLACET offer) the contractual terms of which are set by the Regulator, and its duration is indefinite (extended on an annual basis). Other products offered by suppliers have a duration of 1 – 2 years.

[14] Market shares concern supply to all customer types, as the corresponding volumes for retail and/or households are not available.

5.2 RIGHTS & OBLIGATIONS FOR SUPPLIER SWITCHING AND CONSUMER DISCONNECTION

5.2.1 RIGHTS OF HOUSEHOLDS AND SUPPLIERS IN SUPPLIER SWITCHING

All household consumers have the right to change their supplier, without fulfilling any specific criteria (such as settlement of debt with the previous supplier).

The household's supplier has the right to ask for termination of supply, in case of overdue invoices, however the rules for supplier switching do not include provisions that allow the old supplier to stop the procedure in such a case.

On the other hand, the new supplier is informed by the DSO if supply to the consumer has been suspended, due to overdue payment of invoices, and the new supplier reserves the right of terminating the switching process. Furthermore, before signing the supply contract, the new supplier has the right to check the creditworthiness of the consumer (e.g. ENI includes such provisions in its terms & conditions).

The consumer can request termination of the existing contact, for purpose of switching at any time, provided that it provides a termination notification in accordance with the contract and is not subject to any penalties or contact termination charges.

5.2.2 RIGHTS OF SUPPLIERS TO TERMINATE SUPPLY OR DISCONNECT HOUSEHOLDS

A supplier can request supply suspension / disconnection of a consumer's meter in case payment of an invoice is overdue and the supplier has provided an advance disconnection notice to the consumer of at least 40 days.

Additionally, the supplier may request from the DSO to suspend supply or disconnect the consumer's meter, without prior notice to the consumer, in case there is confirmed theft of gas by the consumer, tampering of the meter or use of the gas facilities in a way not compliant with the supply contract.

5.2.3 PROCESS FOR SUPPLIER SWITCHING

The supplier switching process is initiated once the household signs a contract with a new supplier. Together with the contract the household grants to the new supplier a power of attorney to terminate the existing supply contract.

The new supplier must submit in the Integrated Information System (SII - a system used by market players for data exchange) a switching request that includes information on the consumer and the foreseen date of switching. The contract with the new supplier can be effective at the beginning of each month. For this reason, the request must be submitted by the supplier no later than the 10th day of the month preceding the month of switching, so as to allow 3 weeks for completing the switching. The SII reviews the request within 1 day from its submission and informs the new supplier accordingly.

The supplier, in its switching request, can reserve the right to revoke the application. In this case, the SII informs the supplier (following provision of information from the DSO), within 4 workdays of any suspension of supply to the consumer over the past 12 months. The supplier can then withdraw from switching within 2 workdays.

The DSO proceeds with meter reading between 5 workdays before and 3 workdays after the switching date and uploads them in the SII within 6 workdays from the switching date. The SII then notifies the old and new supplier on the measurement within 1 day.

Italian suppliers (e.g. ENI, ENEL) offer the possibility of concluding supply contracts electronically via their websites. Documents requested include the customer's ID, VAT number and invoice from the previous supplier. It appears that a signature is not required to proceed (although this is not explicitly clarified in the suppliers' websites).

The supply contract can be signed with persons other than the owner of the property. In this case however, an authorization and proof of ownership must be provided by the owner (it is not clear if this also applies in case of property ownership by 2 or more persons).

The documents required to proceed with supplier switching include the supply contract, its terms and conditions and power of attorney for the supplier to proceed with the switching (the latter can be part of the supply contract). These documents are available by suppliers in their websites.

The old supplier is not obliged to provide any data to the new supplier, however, together with the meter reading data, the SII provides the new supplier with the progressive annual gas consumption for the consumer.

5.3 SUPPLIER OF LAST RESORT

5.3.1 DEFINITION

In the Italian market, the supplier of last resort service is activated in case a final consumer is without supplier for reasons beyond its control (e.g. due to bankruptcy of the supplier). Consumers eligible to receive the SLR service include all households with individual heating, central heating residential consumers with consumption up to 200,000 m^3/yr. and other uses with consumption up to 50,000 m^3/yr. The SLR service is also provided to customers that according to the legislation cannot be disconnected (consumers performing public service such as hospitals, nursing homes and rest homes, prisons and schools) and have defaulted payments to their suppliers.

In addition to the SLR service, a default distribution service is also provided, in case a consumer does not have a supply contract but has the possibility of consuming gas. This service is offered as a temporary solution, for up to 6 months, after which either the consumer signs a supply contract or is disconnected.

The role of SLR and provider of the default distribution service is assigned every two thermal years, through an open tender conducted by the Single Buyer (Acquirente Unico), based on rules and criteria set by the Regulator. The selection criteria set by the Regulator concern the offered gas volumes and gas price. The SLR service is procured separately for 8 geographical areas defined by the Regulator, and suppliers can bid for one or more of these areas.

For the period of October 1, 2019 - September 30, 2020 the role of SLR has been assigned to Hera Comm SLR and Enel Energia SpA.

5.3.2 PRICING

The price for the SLR service is based on the standard regulated gas supply price, approved by the Regulator, and depends on the period that the SLR service is offered:

- For the first 3 months since activation of the SLR, the consumer pays the regulated gas supply price.
- After the 3 months from activation of the SLR, the consumer pays the regulated gas supply price plus a premium (parameter β), that the supplier defined in its bid, during the SLR tendering procedure.

5.3.3 PROCESS FOR SLR ACTIVATION

The SLR service is activated by the SII. The SII notifies, within 8 workdays, the DSO and the SLR of the geographical area in which the consumer is located, on the activation of the SLR service, and provides information on the cause of activation, consumer data, the date of activation of the service and the lack of any supply termination requests for the consumer.

Within 15 days from the activation of the service, the SLR must inform the consumer on the activation, the terms & conditions and contractual terms of the service.

The consumer withdraws from the SLR service immediately after signing a contract with a new supplier.

5.4 GAS CONSUMPTION, METERING AND SETTLEMENT OF IMBALANCES

5.4.1 AVAILABILITY OF CONSUMPTION INFORMATION

In Italy there are no databases with information on individual consumers that are accessible to all suppliers.

The Single Buyer provides a portal to final consumers, allowing them to view their consumption and contractual obligations.

Standard load profiles for different consumer categories are developed, to allow estimation of consumption. These profiles are publicly available in the Regulator's website.

5.4.2 CONTRACTING OF GAS VOLUMES BY HOUSEHOLDS

The gas supply contract includes the expected annual consumption of the household. This consumption estimate does not affect billing as the supplies charges the household for the actual consumption. The declared annual consumption affects the meter reading frequency, the invoicing period of the consumer and the guarantee requested from the consumer.

5.4.3 DEVELOPMENT OF STANDARD LOAD PROFILES FOR END-USERS

The Regulator has established and is updating a methodology for the development of standard load profiles of gas consumers. The updates of the methodology are put in public consultation before finalization. The Regulator applies this methodology to estimate the standard load profiles on an annual basis. The annual standard load profiles are published by the Regulator, together with the relevant approval decision, in its website.

The DSOs have the possibility to use additional standard load profiles for their geographical areas, provided that they submit a justified request to the Regulator. These profiles must be published in the DSOs' websites.

5.4.4 METERING OBLIGATIONS

The DSOs are responsible for meter readings at each exit point of their network and for uploading the measurements to the SII, where they are available to the corresponding supplier. The frequency of measurements depends on the size of the consumer's annual demand:

- Consumption up to 500 m^3/yr.: One measurement per year
- Consumption between 500 – 1,500 m^3/yr.: Two measurements per year (once April-October and once November-March)
- Consumption between 1,500 – 5,000 m^3/yr.: Every four months (periods November-January, February-April, May-October)
- Consumption over 5,000 m^3/yr.: Every month

It appears that the DSOs do not offer, as supplementary service, more frequent meter readings. However, self-measurements from the consumers can be submitted in their supplier's website.

In case meter readings for a consumer are not available for a certain period, due to faulty operation of the meter or tampering of its operation, the DSO uses historic data for the consumer to cover the lack of metering data.

5.4.5 SETTLEMENT OF IMBALANCES OF SUPPLIERS

The TSO is the entity responsible for settling the imbalances with the network users. The TSO and the DSOs exchange information on a daily basis, for allocating volumes to the transmission and distribution users, so that the TSO can estimate the imbalance positions of the transmission network users.

For exit points of the transmission and distribution network with daily/hourly meters installed, the measurements are directly used to allocate volumes. For exit points of the distribution system with non-daily meters the standard load profiles developed by the Regulator are used to estimate the consumed volumes.

The TSO provides information to the transmission network users, day ahead and within day, to facilitate their decision making in exchanging their imbalance positions. For each daily gas flow, the TSO submits to each user, once on the day before and twice within day, an estimation of the non-daily metered consumers they are indirectly supplying , based on the standard load profiles, and the actual meter data available until that time.

Each day, the TSO estimates and sends to the transmission network users the gas volumes allocated to them for the previous day. The allocation is based on a mix of measurement data and estimations where measurement data are not available.

The final allocations of the transmission network users are defined according to the following process:

- Until the 19th day of a month (M+1), the DSO provides to the TSO the volumes allocated to network users at the distribution system, for the preceding month.
- Until the 28th day of M+1, the TSO notifies the users on their final allocated volumes for the preceding month.

- The transmission network users have 2 workdays to submit any objections or corrections to the allocations.

- The TSO then issues the corrected final allocations 2 workdays after the users' request.

In addition to the above, the TSO performs two adjustments to the allocated volumes, once additional measurement data become available, as follows:

- An annual adjustment session is carried out by October 31st of each year, using measurements provided by the DSOs and other operators by July 31st of the same year, concerning the gas volumes of the preceding year.

- A multi-annual adjustment session is carried out by May 31st of each year, using measurements provided by the DSOs and other operators by July 31st of the same year, concerning the gas volumes of the preceding 2 – 5 years.

The TSO settles imbalances with the network users on a monthly basis. The settlement is carried out for each day of the month separately, applying a daily imbalance charge, that is estimated as described in Section 5.4.6 below.

Each month the TSO issues an invoice to each network user that had net negative imbalance charges the preceding month. To manage the potential credit risk of imbalances settlement, as well as of any other transmission services, the TSO requires from network users to provide guarantee to receive the transmission services (specific rules are defined in the transmission network code). For network users with net positive imbalance charges the preceding month, the TSO pays the users by drawing funds from the Energy and Environmental Services Fund (CSEA)[15].

In case the volumes allocated to a network user are revised, following the annual and multi-annual adjustment sessions described above, the TSO issues supplementary invoices or credit notes, corresponding to the revisions of the gas volumes, by the end of the month subsequent to the month that the adjustment took place.

5.4.6 IMBALANCE CHARGES

The daily imbalance charges are estimated on the basis of the daily market prices at the organized Italian gas market (MGAS platform) that is managed by the market operator GME. The charges are set each day as follows:

- For positive imbalances, a sale imbalance price applies, that is the lowest of the following values:

    - the lowest sale offer by the TSO (Snam Rete Gas) at the MGAS platform, with delivery on the day to which the imbalance corresponds to, or

    - the average market price of the day, communicated by GME to the TSO, decreased by a small adjustment of 0.108 €/MWh

[15] An economic public body that operates in the electricity, gas and water sectors of Italy that collects part of tariff components through the operators and undertakes the financial management of the collected funds.

- For negative imbalances, a purchase imbalance price applies, that is the highest of the following values:
    - the highest purchase offer by the TSO (Snam Rete Gas) at the MGAS platform, with delivery on the day to which the imbalance corresponds to, or
    - the average market price of the day, communicated by GME to the TSO, increased by a small adjustment of 0.108 €/MWh

If on a day the traded products at the MGAS platform, with delivery on the same day, are lower than approx. 175,000 m³ (2,000 MWh), the average market price used for the estimation of the purchase / sale imbalance prices is set by the average price of the past 30 days.

No tolerance levels apply for the estimation of imbalance charges in the Italian market.

According to ACER (2018)[16], in the Gas Year 2016/17 the aggregate daily imbalances of the year in the transmission system (estimated based on the daily injections, net trades of balancing positions and offtakes) represented around 9.7% of total demand, which is considered as high. It is noted that the year of analysis was the first year of the balancing regime's operation, and therefore the regime's performance may be affected by the learning and familiarity of all stakeholders with the regime's mechanisms. To improve the accuracy of information provided to network users on their daily imbalances (thus affecting their actions in trading their imbalance positions), the Regulator started an extensive reform with respect to forecast and allocation of non-daily metered offtakes, set to be completed in January 2020[17].

5.4.7 SETTLEMENT OF VOLUMES BETWEEN SUPPLIERS AND HOUSEHOLDS

Billing by suppliers is carried out in accordance with the invoicing rules defined by the Regulator:

- Consumption up to 500 m³/yr.: invoices issued every 4 months
- Consumption between 500 – 5,000 m³/yr.: invoices issued every 2 months
- Consumption over 5,000 m³/yr.: invoices issued every month

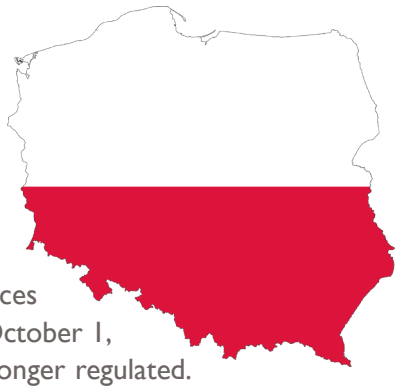
Invoiced gas volumes are defined according to the following merit order: (1) actual measurements, (2) self-reading submitted by the consumer, and (3) estimations by the supplier. Estimated gas consumption is settled by the supplier once measurements are available.

Billing of consumers is based on gas consumption in energy units (kWh). Conversion of measurements of consumption in cubic meters to kWh is carried out using a GCV defined by the supplier (e.g. for the case of ENEL and ENI 10.7 kWh/Sm³).

[16] 3rd Edition of ACER's Report on the implementation of the Balancing Network Code (Regulation EC/312/2014), August 6, 2018. It is noted that subsequent versions of this report did not provide figures on the actual performance of the balancing regime, and for this reason the 2018 edition is used.
[17] The TSO's transmission network code was revised in December 2019 to reflect the changes in daily forecasting and allocation, however the performance of these changes has not been assessed by ACER in subsequent reports on the implementation of the Balancing Network Code

The amounts charged by a supplier to the household for the gas consumed do not include any charges or penalties due to imbalances.

6 POLAND



6.1 RETAIL MARKET OVERVIEW

6.1.1 LIBERALIZATION OF THE RETAIL MARKET

The Polish legal framework for gas allowed gas consumers to freely choose their supplier as of July 1, 2007. In practice however, gas prices for all consumer categories remained regulated until 2017. As of October 1, 2017, the price of gas sales to non-household consumers was no longer regulated. On the other hand, the maximum allowed gas price of each retail supplier for households is still subject to approval by the Regulator. According to the Regulator, supervision over household gas prices is expected to be maintained at least until the end of 2023.

6.1.2 MARKET MODEL FOR GAS SUPPLY TO HOUSEHOLDS

To perform gas retail supply activities, enterprises have to receive a relevant license from the Regulator. Retail gas suppliers submit annually to the Regulator for approval a maximum allowed gas price. These submitted prices must ensure recovery of the supplier's operating expenses, set a justified rate of return and protect the consumer interests from unjustified price levels.

Suppliers are allowed to offer to consumers lower prices than the ceiling approved by the Regulator, provided that all consumers within the same tariff group are treated equally.

Households pay a single invoice to their supplier, that includes the services for gas distribution. The amounts corresponding to these services are itemized in the invoice issued by the supplier. The supplier then pays the collected amounts to the DSO.

6.1.3 COMPETITION IN THE RETAIL MARKET

In 2019 gas volumes supplied to household consumers amounted to approximately 4.2 bcm, remaining at the same levels as in 2017. The number of suppliers having access to the distribution system in 2019 were 81, and 82 in 2018. Despite the large number of suppliers active on distribution level, the sale of gas to end-users remains dominated by PGNiG Group (PGNiG Obrót Detaliczny Sp. z o. o.). PGNiG supplied 95.5 % of gas volumes to households in 2019 and 96.5 % in 2018.

6.1.4 SUPPLIER SWITCHING RATES

As shown in the Table below, supplier switching has been gradually increasing in Poland the last few years. However, considering the large size of the retail market, the share of customers deciding to change supplier is limited.

TABLE 4: CUSTOMERS SWITCHING THEIR GAS SUPPLIED IN POLAND, 2015 – 2019

	2013	2014	2015	2016	2017	2018	2019
No. of customers switching supplier	219	6,578	23,742	47,688	57,982	53,898	53,926
of which households	N/A*	N/A	N/A	45,401	56,175	52,298	51,793

Source: Regulator's Annual Reports

* N/A: Only aggregate data for all customer types is provided by the Regulator

6.1.5 PRODUCTS OFFERED BY SUPPLIERS TO HOUSEHOLDS

Most retail suppliers offer separate products for electricity and gas, and do not provide bundled products.

In most cases the supply contracts offered to households have a duration of 1 – 3 years. However, the incumbent retail supplier, PGNiG, provides the possibility of signing contracts with indefinite duration.

6.2 RIGHTS & OBLIGATIONS FOR SUPPLIER SWITCHING AND CONSUMER DISCONNECTION

6.2.1 RIGHTS OF HOUSEHOLDS AND SUPPLIERS IN SUPPLIER SWITCHING

According to the supplier switching rules, included in the Regulator's rights for consumers and the distribution network code, the household consumers are allowed to proceed with supplier switching without fulfilling any specific criteria (such as settlement of debt with previous supplier).

The supplier of a household has the right to request from the DSO suspension of supply in case payment of an invoice is at least 30 days overdue and the supplier has informed the consumer accordingly. However, the rules for supplier switching do not include provisions that stop the procedure in case suspension of supply has been requested by the old supplier.

Consumers requesting switching and therefore termination of the contract with the old supplier may be required to pay a penalty, in case of fixed-term supply contracts, as the Regulator's rights for consumers allows suppliers to claim damages. On the other hand, in case of indefinite-period contracts, the consumers may request termination without any penalties.

6.2.2 RIGHTS OF SUPPLIERS TO TERMINATE SUPPLY OR DISCONNECT HOUSEHOLDS

A supplier has the right to request suspension of a consumer's supply, including households, in case:

- Payment of an invoice is at least 30 days overdue. The supplier may proceed with the suspension request within 14 days from notifying the consumer accordingly
- If following inspection of the consumer's internal installation, illegal consumption of gas was identified
- Following inspection of the consumer's internal installation, it is found that continuation of supply is a direct risk to life, health, or the environment.

If a household files a complaint concerning the suspension of supply, then the supplier is obliged to resume the supply within 3 days from receipt of the complaint and continue until it has been reviewed by the Regulator.

6.2.3 PROCESS FOR SUPPLIER SWITCHING

To switch suppliers, a consumer initially selects a new supplier and signs a supply contract with it. Either the consumer or the new supplier (if authorized by the consumer), requests termination of the contract with the old supplier. The contract is terminated on the last day of the month following the month at which the termination request was submitted.

Either the consumer or the new supplier (if authorized by the household), notifies the old supplier and the DSO on the date of completion of the current contract and the entry into force of the new contract. Following this notification, the DSO initiates the supplier switching process, that must be completed within 21 days. The new supplier must ensure that the DSO is allowed sufficient time to perform the switching, i.e. submit the notification at least 21 days before the planned date of commencing gas sales to the consumer.

The DSO's process of supplier switching includes two stages:

- Review of the documentation submitted by the applicant (consumer or new supplier). In case of omissions or errors, the DSO requests their correction within 5 days.
- Assessment and verification that the conditions for the supplier are met (e.g. a distribution contract with the DSO is in place and the financial guarantee that the supplier provided to the DSO in accordance with the distribution contract is sufficient).

Within 7 days from receipt of a duly completed application, the DSO informs the old and new supplier about acceptance or rejection of the switching, and the date that sales from the new supplier will commence.

The DSO performs a meter reading within 5 workdays from the termination of the current contract and informs the old and new supplier accordingly within 5 workdays from the measurement.

The old supplier must settle invoices with the consumer within 42 days from the change of supplier, using the final meter reading carried out by the DSO.

The supply contract can be signed with either the owner of the property or the tenant. A declaration has to be signed, indicating the legal right (ownership title, lease agreement) under which the person can sign the contract. In case of co-ownership of the property, the customer has to declare whether they have the consent of all property owners (it is not clear if it is possible to proceed in case not all owners give their consent).

Some suppliers have the necessary documentation for signing a supplier agreement (contract application, authorization for supplier to represent the consumer to the DSO, terms & conditions and contract template) available on their websites, while others provide them upon request by the consumer. The supplier switching application to be submitted to the DSO by the consumer or the new supplier is available in its website.

PNGiG provides the possibility of contracting via a web portal. It appears (from the information provided on the website) that the contract can concluded without signatures, by registering in the portal and provided in the customer's ID.

The old supplier does not have any obligation to provide information to the new supplier concerning the household (such as past consumption or payment track record).

6.3 SUPPLIER OF LAST RESORT

6.3.1 DEFINITION

A consumer has the right to indicate in their gas supply contract a "reserve supplier" that will continue supply of gas in case the current supply contract expires and is not renewed, or the existing supplier

ceases gas sales. The consumer selects the reserve supplier from a list provided by the DSO in its website.

In addition to the reserve suppliers, the Energy Law assigns the role of emergency supplier (Supplier of Last Resort), to ensure continuity of gas supply in case a consumer has not designated a reserve supplier, or this supplier has ceased its operations. The Ministry of Energy designated PGNiG Obrót Detaliczny as the SLR for the largest Polska Spółka Gazownictwa, the main DSO of Poland.

6.3.2 PRICING

The gas price for the SLR service is the same with the commercial gas supply price offered by the SLR as a retail supplier. This gas supply price is approved by the Regulator.

6.3.3 PROCESS FOR SLR ACTIVATION

A supplier is obliged to inform the consumer, the DSO and the reserve supplier of any case of discontinuation of gas sales to the consumer, at least 2 days before termination of supply. The DSO proceeds with concluding, on behalf of the consumer[18], a supply contract with the designated reserve supplier, and informs the consumer accordingly within 5 days. The reserve supplier must provide a copy of the contract to the consumer within 30 days from the agreement with the DSO. The contract with the reserve supplier has an indefinite duration and can be terminated by the consumer with a month's notice without any penalty.

In case the consumer has not designated a reserve supplier, or the reserve supplier is no longer in operation, the DSO activates the SLR service, by concluding, on behalf of the consumer, a contract with the SLR. The SLR must provide a copy of the contract to the consumer within 30 days from the agreement with the DSO. The terms & conditions of the contract with the SLR are available in its website. The contract has an indefinite duration and can be terminated by the consumer with a month's notice without any penalty.

6.4 GAS CONSUMPTION, METERING AND SETTLEMENT OF IMBALANCES

6.4.1 AVAILABILITY OF CONSUMPTION INFORMATION

In Poland there are no databases with information on individual consumers that are accessible to all suppliers.

Standard load profiles, for different consumer categories that are not metered on a daily basis, are publicly available at the website of the largest DSO, Polska Spółka Gazownictwa sp. z.o.o.

6.4.2 CONTRACTING OF GAS VOLUMES BY HOUSEHOLDS

The gas supply contract of PNGiG defines the DSO tariff group to which the household is assigned, and its annual gas consumption. In case the household consumer changes the use of gas to other than heating and/or increases the capacity of the internal installation, resulting in a change of its DSO tariff group, the household must inform the supplier accordingly within 5 workdays, so as to sign a new supply contract.

[18] The consumer provides an ex-ante authorization to the DSO when designating the reserve supplier.

The household does not pay any penalties in case the consumed volumes exceed the contractual ones, provided that the increase of consumption does not change the tariff group of the household. In case of the latter, the household needs to change its tariff group and be charged accordingly by the supplier.

6.4.3 DEVELOPMENT OF STANDARD LOAD PROFILES FOR END-USERS

The Regulator assigned to Polska Spółka Gazownictwa sp. z.o.o., the biggest DSO owning over 90 % of the distribution network, to prepare a methodology for daily forecasting of volumes at non-daily metered exit points.

The methodology for estimation of forecasts was published in 2016 and was not subject to approval by the Regulator. Every 2 years the DSO publishes a report comparing forecasting results with actual volumes consumed by non-daily metered consumers, to assess the accuracy of the methodology.

The standard load profiles developed by the DSO to implement the forecasting methodology, and all underlying factors and coefficients, are published in its website.

6.4.4 METERING OBLIGATIONS

The DSO is responsible for meter reading at the exit points of the distribution system. The frequency of measurements depends on the tariff group to which the consumer belongs, and for households it can range from once per year (for small consumption) to monthly meter readings.

The suppliers have the right to request for additional meter readings, at a cost defined in the price list of the DSO.

The consumers supplied by the incumbent supplier (PGNiG Obrót Detaliczny) are also able to submit self-readings of their meter, using a platform provided in the supplier's website. Some supply products offered by the supplier are based on self-readings, with only one actual meter reading per year.

In case of lack of metering data (particularly due to faulty operation of a meter), in order to charge the consumer, the supplier estimates the unmetered period using historic average daily consumption data for the consumer, for the period where the meter operated correctly.

6.4.5 SETTLEMENT OF IMBALANCES OF SUPPLIERS

The TSO is the entity for settling imbalances of network users. For this purpose, the TSO maintains balancing accounts for the network users.

For the purposes of daily commercial balancing, the DSO and TSO cooperate on a daily basis, so that the TSO has the necessary information to allocate gas volumes to the transmission network users and estimate their imbalance positions.

Every day the TSO uses actual measurements at the exit points to transmission consumers, which are equipped with daily/hourly meters, to allocate volumes to the network users supplying these points. The TSO also receives from the DSO an allocation of the daily volumes delivered at the entries of its distribution system to the transmission network users. To perform this allocation, the DSO uses actual daily data meter readings for the distribution exit points equipped with daily/hourly meters and estimates the consumption of non-daily metered exit points using the standard load profiles.

For each day of gas flow, an initial daily allocation of volumes is performed, to be used for commercial balancing, following the procedure below:

- The DSO provides to the TSO an estimation of the allocation of volumes to the transmission network users active at the entry points of the distribution system. This information is provided three times during the day of gas flow (within day).

- The TSO uses the information provided by the DSO, measurements for transmission consumers and information provided by other adjacent operators (such as storage operators), to allocate the daily volumes to the transmission network users. The TSO submits the allocated volumes to the network users three times during the day of gas flow.

To perform a final allocation of volumes at the transmission system, used for billing purposes, the TSO and DSO exchange information one month after the gas flow. In particular, until the 5th workday of a month (M+1) the TSO sends to the DSO meter reading data for each day of the previous month at the entry points of the distribution system, and until the 7th workday of month M+1 the DSO sends to the TSO the final allocations at the distribution network for each day of the previous month. The TSO uses the information provided by the DSO, measurements for transmission consumers and information provided by other adjacent operators to issue the monthly invoice for the transmission network users.

At distribution level, the DSO invoices the distribution network users on a monthly basis, using a combination of actual meter readings, for daily/hourly metered exit points, and estimated volumes based on standard load profiles for non-daily metered consumers. The estimated volumes of each non-daily metered exit point are settled with actual consumption at the subsequent invoice for which the corresponding meter readings are available.

The TSO settles the imbalances of the network users on a monthly basis. The fees charged / credited to the users for their imbalances are defined separately for each day of the settled month, by applying a marginal sell / purchase price for positive / negative imbalances respectively (as described in Section 6.4.6). In case when the settled imbalances are subject to adjustment, the imbalance charge applied is based on the average market price for the respective month. To manage the potential credit risk of imbalances settlement, as well as of any other transmission services, the TSO requires from network users to provide guarantee (in the form of first demand guarantee or security deposit).

6.4.6 IMBALANCE CHARGES

The daily imbalance charges are estimated on the basis of the daily market prices at the Polish gas exchange (Towarowa Giełda Energii), as follows:

- For positive imbalances, a marginal sale price applies, that is the lowest of the following values:
    - the lowest price of any sales of title products, in which the TSO was involved on the day to which the imbalance corresponds to, or
    - the average balancing settlement price of the day, that is the volume-weighted average price from all transactions in the intraday market of the gas exchange, decreased by a discount of 10 % (the maximum allowed adjustment according to the EC Gas Balancing Code Regulation EC/312/2014).

- For negative imbalances, a marginal buy price applies, that is the highest of the following values:

- the highest price of any sales of title products, in which the TSO was involved on the day to which the imbalance corresponds to, or

- the average balancing settlement price of the day, that is the volume-weighted average price from all transactions in the intraday market of the gas exchange, increased by a premium of 10 %.

Tolerances in the estimation of imbalances in the Polish market were reduced from 5 % to 2.5 % in April 2018, and then fully terminated in April 2019.

According to ACER (2018)[19], in the Gas Year 2016/17 the aggregate daily imbalances of the year in the transmission system represented around 2% of total gas volumes entering the system. It is noted that the analysis was carried out when tolerance levels of 5% were still in place. The existence of tolerances allowed network users to limit their cash-out (the part of the imbalances that was actually charged or credited to the users) to only 22% of the annual imbalance. The changes in the performance of the balancing regime due to elimination of tolerance levels have not been assessed by ACER in subsequent reports.

6.4.7 SETTLEMENT OF VOLUMES BETWEEN SUPPLIERS AND HOUSEHOLDS

Suppliers must issue at least one invoice per year to their consumers. In practice, the frequency of billing of consumers by their suppliers depends on their DSO tariff group. In the case of households, billing ranges from once a year for very small consumptions to once every month for large household consumers. If the meter reading period does not match with the invoicing period of a consumer, the supplier can use estimates for the period without measurements. The estimates are settled at the subsequent invoice for which actual meter readings are available.

Billing of consumers is based on gas consumption in energy units (kWh). According to the gas supply contracts, measurements of consumption in cubic meters are converted to kWh using the average GCV for the billing period, based on the GCV values published by the DSO[20].

The amounts charged by a supplier to the household for the gas consumed do not include any charges or penalties due to imbalances.

[19] 3rd Edition of ACER's Report on the implementation of the Balancing Network Code (Regulation EC/312/2014), August 6, 2018. It is noted that subsequent versions of this report did not provide figures on the actual performance of the balancing regime, and for this reason the 2018 edition is used.
[20] Indicatively 11.1 kWh/m^3 average GCV in all distribution systems in December 2020.

7 SPAIN

7.1 RETAIL MARKET OVERVIEW

7.1.1 LIBERALIZATION OF THE RETAIL MARKET

The retail natural gas market in Spain is growing year after year and has added 22,000 new customers in the first quarter of 2020. It is a highly fragmented market, after a liberalization process that started in 1998 and was carried out during 10 years until the final suppression of full regulated prices in July 2008, in line with the general deregulation process of the energy markets in the EU.

Spanish regulations were among the pioneers in Europe in promoting the liberalization of the natural gas market. On January 1, 2003, Spain had achieved full liberalization of the retail electricity and natural gas markets, exceeding the deadlines imposed on the Member States by the 2nd EC Energy Package at that time (Directive 2003/55/EC). The achievement of full eligibility for all consumers in the gas sector followed a gradual process:

TABLE 5: ELIGIBILITY CALENDAR FOR GAS CONSUMERS

RULE	DATE	MARKET LIBERALIZATION (% OF CONSUMPTION)
Law 34/1998	01/01/1999	45 %
RDL 6/1999	01/04/1999	60 %
RDL 6/1999	01/01/2000	68 %
RDL 6/2000	25/06/2000	73 %
RDL 6/2000	01/01/2002	79 %
RDL 6/2000	01/01/2003	100 %

Source: Comisión Nacional de Energía

Although 2003 was the first year of full liberalization in the gas sector (meaning that all customers could choose their supplier), the transfer of customers from the regulated to the liberalized market was gradual. In July 2007 Order ITC/2309/2007 was published, establishing the mechanism for the transfer of customers from the regulated prices to the Supply of Last Resort for natural gas.

On July 1, 2008, the regulated market system was terminated, as well as regulated price contracts signed between consumers and DSOs. Those gas consumers who had a regulated contract in force with a DSO were transferred to SLR from that date on. Consumers who had not contracted with a supplier of their choice before July 1, 2008 were automatically transferred to the SLR belonging to the business group of the distribution company in the area.

The SLRs had to formalize and adapt the contracts to the new legal framework before July 1, 2009. They had the obligation to supply with the same technical parameters of the previous contract the consumer had with the DSO. The SLRs began to invoice consumers from July 1, 2008, having to include in their invoice the consumptions pending to be invoiced by the DSO, to which the SLRs had to subsequently settle the amounts that were applicable to them. By July 1, 2008, 89% of the market had already been switched to the free market suppliers. By that time, gas-fired power plants were buying 100% of their gas in the free market, the rest of the industries at 90%, and 42% of the gas consumed by the commercial-residential segment was supplied by the liberalized market.

In the year 2003 there were 9 active suppliers and by 2008 this number had risen to 17. Nowadays, 12 years after the termination of regulated markets, there are 94 suppliers active in the gas retail market in Spain.

7.1.2 MARKET MODEL FOR GAS SUPPLY TO HOUSEHOLDS

In order for suppliers to be allowed to operate, they need to apply in written form before the beginning of their activity to the Directorate General for Energy Policy and Mining within the Ministry for the Ecological Transition and the Demographic Challenge (MITECO). The Directorate General will then transfer the communication of application to the Regulator, CNMC (Comisión Nacional de los Mercados y la Competencia). Suppliers need to fulfill various technical, economic, and legal requirements defined in the Royal Decree 1434/2002, of December 27, 2002 (updated by Royal Decree 197/2010). The authorization for activity is then granted by the Directorate General for Energy Policy and Mining and the Regulator keeps public an updated list of all authorized suppliers in Spain. Once approved, suppliers' activities are exclusively to sell and bill the gas. They acquire the gas in the open market (MIBGAS/Imports) and supply it to their customers in exchange for a price. In order to get the gas to the end consumers, transmission and distribution networks have to be used and remunerated.

Natural gas consumers in Spain can choose whether they want to be supplied by an open market supplier or by the regulated SLR. The only conditions that need to be met in order for a consumer to be eligible for the SLR are that the supply point is served at a pressure of 4 bar maximum (which applies to residential or small commercial sector) and that annual consumption does not exceed 4300 m^3 (50,000 kWh).

Households pay a single invoice to their supplier, including the regulated payments to cover for gas transmission, distribution and metering costs. These amounts are itemized in the invoice issued by the supplier. The supplier then pays the collected amounts to the TSO and DSO.

7.1.3 COMPETITION IN THE RETAIL MARKET

The gas retail market in Spain had in 2019 7.941.955 customers, 94 suppliers at the national level (15 more than in 2018) and 125 offers in the liberalized market (according to the Regulator's online comparison tool).

Suppliers can never have any kind of affiliation with the TSO or the Market Operator (MIBGAS). More specifically, Law 12/2007 of the Hydrocarbons sector states that the regulated activities (transport, storage, regasification and distribution), are incompatible with production and customer supply. What´s more, companies carrying out any of the regulated activities, not only cannot accomplish production or supply activities, but they also cannot take shares in companies that produce or supply natural gas.

However, a group of associated enterprises may carry out incompatible activities according to the Law, provided that they are exercised by different companies, and that the following independence criteria are met:

a) Responsible people for the management of companies that carry out regulated activities may not participate in the organizational structures of the group of associated companies that are responsible, directly or indirectly, for the day-to-day management of production or supply activities.

b) The group of associated companies will guarantee the independence of the managers responsible for the companies that carry out regulated activities by protecting their professional interests. In particular, they will establish guarantees regarding their remuneration and termination of activity. Companies carrying out regulated activities and responsible managers may not own shares of companies that carry out production or supply activities. In addition, companies that carry out regulated activities, as well as their workers, may not share commercially sensitive information with companies within the group of associated companies to which they belong in the event that these carry out liberalized activities.

c) Companies that carry out regulated activities will have the capacity to effective decision, independently of the group of associated companies (if they belong to one), with respect to necessary assets to operate, maintain, or develop LNG regasification facilities, gas transportation, storage, and distribution. However, the business group will have the right to economic supervision and management of the aforementioned companies and may submit for approval the annual financial plan or equivalent, as well as establish limits to indebtedness levels. In no case may the business group give instructions to the companies that carry out regulated activities with respect to day-to-day management, nor with respect to particular decisions regarding the construction or improvement of regasification, transportation, storage, and distribution assets of natural gas, provided that the provisions of the financial plan are not exceeded.

d) Companies that carry out regulated activities will establish a code of conduct in which the measures adopted to guarantee the compliance with the provisions of paragraphs a), b) and c) above are exposed. This code of conduct will establish specific obligations for the employees and their compliance will be subject to adequate supervision and evaluation by the group. Annually, a report will be presented to the Ministry for the Ecological Transition and the Demographic Challenge and the CNMC, which will be published, indicating the measures adopted to comply with the provisions of previous paragraphs a), b) and c).

Apart from the aforementioned previsions in paragraphs a), b), c) and d) the tools "Information Exchange Files Between Distributors and Suppliers" and the communication software system called SCTD, referred to both in Section 7.2.3, are systems that contribute to facilitating the flow of information between suppliers and DSOs. This way it is ensured that information is the same for all participants in the market, increasing transparency and avoiding situations of abuse of dominant market position.

After having clarified these independence obligations and systems, regarding now sales and customers volumes of gas suppliers in Spain, five of these suppliers held each a sales volume of over 5 % of the total (Naturgy, Endesa, Repsol, Iberdrola and Cepsa) with an HHI value of 1,241, and 4 suppliers (Naturgy, Endesa, Iberdrola and EDP) have each more than 5% of the total customers, with an HHI of 3,235 (there is therefore more market concentration in client volume than in sales volume). Clients under the Last Resort Supply price, outside the liberalized market, are 19.89% (1.58 million customers).

The suppliers' breakdown by sales volume in 2019 is shown in the following Figure.

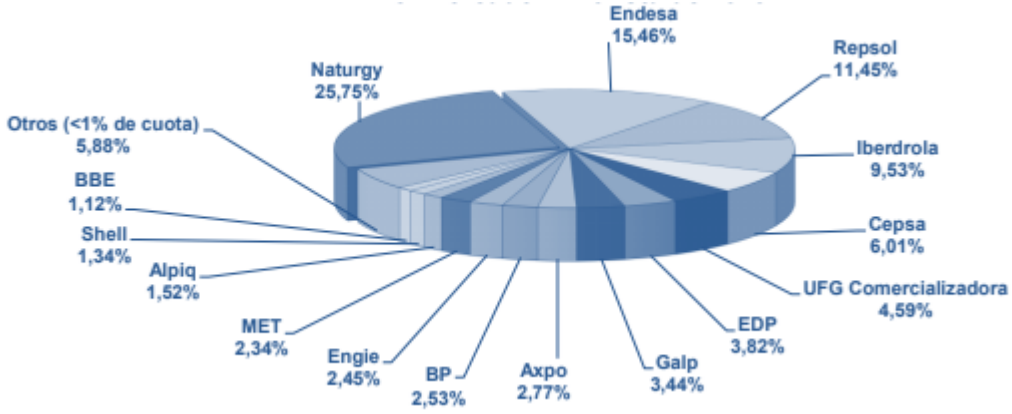


Figure 3: Gas suppliers and sales volumes (Source: Regulator)

The suppliers' breakdown by number of clients in 2019 is shown in the Figure below.

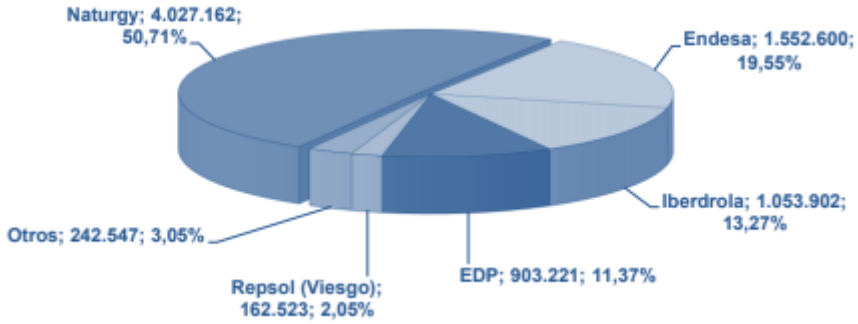


Figure 4: Gas suppliers and client volumes (Source: Regulator)

From the above figures it can be concluded that small and middle-sized suppliers tend to work with the commercial and industrial consumers segments, whereas large supplier still retain most of the household segment.

There are two interesting cases to be raised here, looking at the previous pie charts:

- On the one hand, it is interesting to look at the case of Naturgy, since, having 50.71% of all retail clients in Spain, they only have 25.75% of the sales volume. This means the majority of Naturgy's clients are in the household / small commercial segment.

- On the other hand, Repsol and Cepsa show exactly the opposite situation; by having a small share of all retail clients, (Repsol 2.05%, Cepsa less than that) their sales volumes are quite considerable with Repsol having 11.45% and Cepsa 6.01% of all natural gas sales in the retail segment in Spain. This means that these two suppliers' marketing strategy is more focused towards the large industrial segment of consumers.

7.1.4 SUPPLIER SWITCHING RATES

In 2019 there were a total of 619,000 supplier switches in Spain, with a switch rate of 7.8% (8.9% in 2018). 7.7% of the switch rate corresponded to switches in the household segment.

Average time for carrying out the supplier switch was 8 days. The ratio of denied supplier switch requests was 18.1% in 2019.

Among all supplier switches in the household segment in 2019, 80.6% switched from a company in the open market to another company also in the open market; 10.5% switched from a regulated price to the open market and 8.8% switched from the open market to a regulated price.

The switching rate in 2019 was the lowest in 5 years, and it has been decreasing in an average of one percentual point per year. However, in comparison with other EU countries, Spain´s switching rate in 2018 (8.9%) was a bit higher than the European average (7.6%), being the 7th country with the highest switching rate, just after Germany and before the Czech Republic, Italy and Austria, among others.

7.1.5 PRODUCTS OFFERED BY SUPPLIERS TO HOUSEHOLDS

Several suppliers offer bundled gas and electricity products for household customers. Offers can be selected with or without additional services; possible additional services to be contracted are: maintenance of gas installation without heating, maintenance of electricity installation, maintenance of gas installation with heating, and payment of bills covered in situations such as unemployment, temporary disability, absolute or permanent hospitalization and death by accident.

Most suppliers offer only gas to the household or commercial consumers. Offers can be selected with or without additional services, these being: maintenance of gas installation with heating, technical assistance for urgent matters in less than 48 hours, annual technical checks. The usual contract duration with a gas supplier is of one year, renewed with annual periodicity

7.2 RIGHTS & OBLIGATIONS FOR SUPPLIER SWITCHING AND CONSUMER DISCONNECTION

7.2.1 RIGHTS OF HOUSEHOLDS AND SUPPLIERS IN SUPPLIER SWITCHING

The process of natural gas supplier switching is available for anybody who has a gas supply contract, it is free of charge and it has to be effectively completed in no more than 21 days. The new supplier will be in charge of managing the whole switching process with the DSO, and this one will communicate with the previous supplier about the termination of the supply. Administrative and technical procedures must not pose any barrier to the switch.

The supplier switch requests must include following data:

- Date of the request
- Identification of the consumer
- Identification of the supply point
- Consent of the client for the supplier switch
- Name of the current supplier
- Name of the new supplier
- Responsible company for meter reading

- Characteristics and property of the metering equipment
- Conditions of the new contract (price, tolls, ...)
- Duration and type of contract.

The maximum period for the validation of the switching request will be 6 business days from reception.

In case a customer has an outstanding debt with a supplier and their gas supply is suspended, the customer will be included in bad-payers lists for non-payment (there are many of them, ASNEF, RAI, CCI…). These lists are available for gas suppliers to check before signing up a supply contract with any customer, and the suppliers can decide not to provide supply for customers in these lists. In case the customer receives the supply approval from another supplier, he/she will have to pay the reconnection costs to the gas network, that has been dismissed. In terms of debts, due payments will be claimed by the previous supplier to the non-paying customer.

7.2.2 RIGHTS OF SUPPLIERS TO TERMINATE SUPPLY OR DISCONNECT HOUSEHOLDS

Suppliers can have, in exceptional occasions, the right to terminate supply or disconnect a household from the gas supply system. Suspension of supply can happen for the following reasons:

- When gas is derived to an installation not foreseen in the contract.
- When the gas receiving facilities or gas consuming appliances do not have the necessary authorizations.
- When the measurement equipment is manipulated, or its correct operation distorted.
- In case of poor conservation of the gas installations when this poses a danger to the safety of people or the property (in this case supply suspension will be made immediately by the distribution company).
- When the consumer does not allow the personnel authorized by the distribution company to enter the premises or dwelling affected by the contracted service during business hours to inspect the facilities or perform the meter reading.
- Non-payment causes. In this case, the distribution company may suspend the supply of the consumer after 2 months have passed since the payment has been recurrently required, without it having been made effective. Once supply has been suspended, it will be replaced, at most, in the 48 hours following the payment of the amount owed and the amount for reconnection of the supply.

7.2.3 PROCESS FOR SUPPLIER SWITCHING

When a consumer wants to switch their gas supplier there are many online offer comparison tools they can use. It does not matter if the consumer is supplied by the SLR or with a free-market supplier, the switches can be made from i) the free market to another supplier in the free market, ii) from the free market to the SLR and iii) from the SLR to a supplier in the free market. There are no constraints in the amount of times a consumer can switch suppliers, and the maximum time allowed for the effective completion of the supplier switching process is 21 days. The validation of the switching request must be realized in a maximum period of 6 days upon receipt of the request.

The supply contract can be carried out by either the owner of the property or the tenant, and it can be made through phone call, in person (in the supplier's customer care offices) or via website. As long as there are no pending payments, the contract's holder can be switched with no constraint. There are no specific rules about the coownership of a property; a person living in the household can change ownership of the contract by providing the Unified Code of the Supply Point (Código Unificado del Punto de Suministro - CUPS), address, bank account number and personal ID number.

Once a consumer signs the supplier switch consent and the new supplier has it, the switching process begins with a switch request sent from the new supplier to the DSO. The DSO must evaluate whether to accept or reject the request under certain criteria and inform both the new and previous suppliers in case the switch request is accepted. Upon acceptance of the application, it is the DSO's task to activate the switch. The following scheme summarizes the switching process:

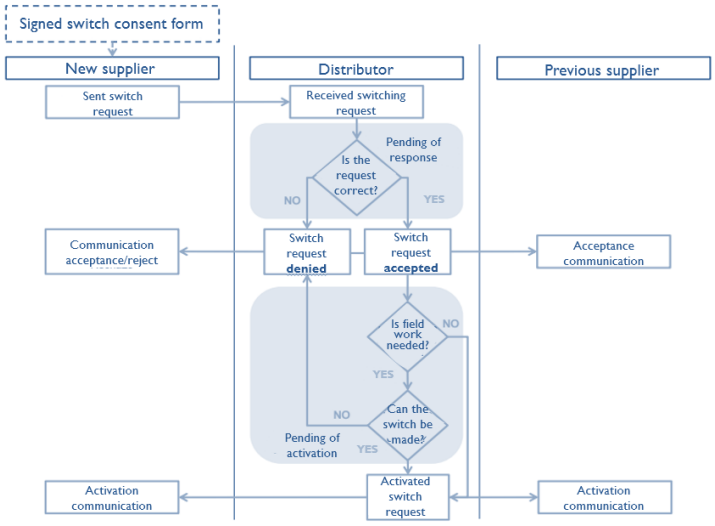


Figure 5: Switching process and its steps (Source: Regulator)

In case a customer wants to terminate their contract with a supplier, the process can be made in person, online or via phone. For the termination to be effective, the customer needs to have no ongoing changes in the contract's nature (like a tariff change). The files needed are the customer's personal ID number, a termination form, address of the supply point, bank account number, contract number and the CUPS code, which identifies the natural gas supply point, its format being "ES XXXX 123456781234 AB OF" (XXXX is the DSO's identification number, 12 numbers freely assigned, AB is for control and error detection and OF for border points). There is no need for a signature of the customer.

There are in this process, among suppliers and DSOs, some documents called Information Exchange Files Between Distributors and Suppliers. In these files information about supplier switching and other processes which are managed between DSOs and suppliers is introduced and shared among both. These documents' formats must be approved by the Regulator and they establish the flow of communication between the stakeholders to execute a process. This way, the document contains the object, stakeholders, the messages to exchange, the terms for the exchange and the flowcharts that constitute the scheme of the exchange format. The result is a document describing the fields contained in the exchange files, as well as the structure of the exchange files themselves and a document of master tables.

There is also a communication software system called SCTD, Transmission-Distribution Communication System, which is a common and homogeneous software system for all natural gas

DSOs and suppliers operating in Spain, developed by the Spanish Gas Association (SEDIGAS) whose aim is to meet the communication needs between agents.

Through the SCTD, consultations on data related to supply points, measurements, distributions, schedules and nominations, etc. can be carried out, among other procedures related to gas contracting.

The development of a common communication software for all gas DSOs and suppliers in the Spanish market allows the simplification of procedures, the standardization of communications and the reduction of expenses for all the agents involved.

In terms of communication among suppliers, the old supplier does not have any obligation to provide information to the new supplier concerning the household (such as past consumption or payment track record).

7.3 SUPPLIER OF LAST RESORT

7.3.1 DEFINITION

The supplier of Last Resort was created in 2008. Currently 4 suppliers in Spain can provide the service of Supply of Last Resort:

- Baser Comercializadora de Referencia, S.A.
- Comercializadora Regulada, Gas & Power, S.A.
- Curenergía Comercialización de Último Recurso, S.A.U.
- Energía XXI Comercializadora de Referencia, S.L.

Royal Decree 1068/2007, which regulated the natural gas Last Resort Supply, established the companies that initially assumed the obligation of the SLR. It stated that these suppliers had to have sufficient means to assume the risk of free activity and the additional obligations to submit to the conditions established for the SLR.

Subsequently, Royal Decree 485/2009, regulating the SLR in electricity, modified RD1068/2007 and included the possibility that business groups, with SLR obligations in both electricity and gas, could be unified in the same SLR, offering simultaneous services. It also established the Last Resort Tariff as the single possible price.

Last Resort Suppliers have the following obligations according to Royal Decree 104/2010:

- In addition to the rights and obligations established in Law 34/1998 of the Hydrocarbons Sector, the Last Resort Supplier will have the obligation to meet the gas supply requests of those consumers who are eligible for the Last Resort Tariff.
- The Last Resort Supplier will have the obligation to supply under The Last Resort Tariff, which will be the maximum and minimum price that the Last Resort Suppliers will charge consumers. To benefit of the Last Resort Tariff may in no case be conditioned to contracting any services other than the supply of natural gas offered by the Last Resort Supplier.

- The Last Resort Supplier belonging to the business group that owns the network in a distribution area or the Last Resort Supplier with the highest market share in the region must supply those consumers that, not being eligible for the Last Resort Tariff, temporarily lack a supply contract in force with a free-market supplier and continue to consume gas. This obligation extends only for a period of one month from the end of the consumer's contract. The Last Resort Suppliers will be exempted from the obligation to meet supply requests when the previous supply contract has been terminated due to non-payment.

- Last Resort Suppliers will keep separate accounts in their accounting, differentiating income and expenses strictly associated to supplying to consumers under the Last Resort Tariff.

- A transitional adaptation regime will be regulated for consumers who, due to changes in the maximum consumption threshold of the Last Resort Supply, are no longer eligible for the Last Resort Tariff.

- In the event that a consumer connected to service networks of less than or equal to 4 bars and covered by the Last Resort Tariff exceeds the maximum limit established to benefit from the LST without having formalized a new supply contract with a free-market supplier, the Last Resort Supplier must continue the service for a maximum period of three months.

- As a measure to promote competition, it is established that if a consumer supplied by a SLR chooses to switch supplier, neither the original SLR nor any other supplying company of the same business group may counter offer or contract the supply with that consumer until one year later.

The current legislation establishes that only consumers connected to networks with pressure below or equal to 4 bar and consumption of less than 4300 m^3/year (50,000 kWh / year) will be eligible for the Last Resort Tariff. Consumers who temporarily do not have a contract with a free-market gas supplier will have the right to be supplied by the SLR belonging to the business group that owns the network to which the supply is connected, for a maximum period of one month.

7.3.2 PRICING

The fees of the Supply of Last Resort regime are regulated by the Regulator, they are unique in the whole Spanish territory and, in the household segment, are divided in two groups:

- Pressure =< 4 bar and a consumption < 430 m^3 (5,000 kWh/year) (typically, household with gas-fired water boiler and/or kitchen)

- Pressure =< 4 bar and a consumption of 430 m^3 – 4300 m^3/year (5,000 – 50,000 kWh/year) (typically, household with gas-fired water boiler, heating, and kitchen)

The fees will be updated in the following cases:

- The variable term will be updated on a quarterly basis, from the 1st of January, April, July, and October of each year, provided that the cost of natural gas experiences an upward or downward variation of more than 2%.

- When there is any modification in the fixed and variable terms of the TPAs for access to the gas networks or in the loss coefficients in force.

The calculation for the last resort tariff will result from the addition of the raw material cost, the tolls and access charges in force, the marketing costs and the costs derived from security of supply. In particular, the components of the tariff are calculated as follows:

- The **fixed term** of the tariff will be determined as the sum of the following terms:

a) Fixed term of the applicable local network toll depending on consumption level.
b) Fixed term of the entrance toll to the main transport network.
c) Fixed term of the exit toll of the main transport network.
d) Fixed term of the regasification toll.
e) Fixed term of the LNG storage toll.
f) Fixed term of other regasification costs.
g) Fixed cost of marketing.

- The **variable term** of the tariff will be determined as the sum of the following terms:

a) Variable term of the applicable local network toll depending on consumption level.
b) Variable term of the entrance toll to the main transport network.
c) Variable term of the exit toll of the main transport network.
d) Variable term of the regasification toll.
e) Variable term of the LNG storage toll.
f) Variable term of other regasification costs.
g) Cost of the vessel unloading toll.
h) Cost of the underground storage fee.
i) Variable marketing cost.
j) Cost of raw material, which will include the cost associated with wastage and quantity risk.

Order ITC/1660/2009 from the Ministry of Industry, Tourism and Commerce establishes the methodology and exact formulas for the calculation for all these terms mentioned here above.

Apart from the conventional Last Resort Tariff, the government introduced in 2018 the "thermal social bond" for vulnerable consumers. It consists of a single annual payment determined according to the degree of vulnerability of the beneficiaries as defined in the regulations of the Electricity Social Bond (vulnerable, severe vulnerable, risk of social exclusion), as well as the climatic zone in which the beneficiaries live. In 2019 this subsidy amounted between 25 euros and 123.94 euros, but in the case of a severe vulnerable consumer or at risk of social exclusion, the subsidy got increased by 60 %. The payment is made by the Autonomous Communities during the first quarter of the year and beneficiaries do not need to apply for it; it is transferred to their accounts automatically.

Requirements for getting the thermal bond are:

- The household must be supplied by the Last Resort Tariff in the electricity supply.

- The household must be beneficiary of the Electricity Social Bond.

To be eligible for the Electricity Social Bond, the household needs to fulfill at least one of the following requirements:

- Low-income level, between € 7,520 and € 18,799 per year, depending on the number of children in the household.
- Being retired and receiving the minimum pension, between € 8,386 and € 11,701 per year.
- Numerous families.

The Electricity Social Bond (required for getting the thermal social bond) represents a 25 % discount in electricity tariffs for vulnerable consumers, a 40 % discount for severe vulnerable consumers, the elimination of electricity payments for consumers at risk of social exclusion, who are getting 50 % of the tariff covered by Social Services, and 25 % discount in electricity tariffs for households that have been particularly hit economically by the COVID-19 crisis.

7.3.3 PROCESS FOR SLR ACTIVATION

The Supplier of Last Resort is a type of tariff that can be contracted in the same way as offers are contracted in the free market. All gas consumers who have a connection equal to or below 4 bar and a consumption of less than 4300 m^3/year (50,000 kWh/year) are eligible for the SLR. There is no activation process needed to get the SLR.

In the event that a supplier is bankrupt or, for other reasons, no longer authorized to operate as gas supplier, its customers will automatically be transferred to the SLR. The main reason why a supplier will be unauthorized for operation is if they have a debt amounting to at least 500,000 € during 10 days after the debt has been claimed.

7.4 GAS CONSUMPTION, METERING AND SETTLEMENT OF IMBALANCES

7.4.1 AVAILABILITY OF CONSUMPTION INFORMATION

For the purpose of settlements of imbalances there are two sources of information: meters (section *Metering*) and load profiles.

Each DSO has standard load profiles available for different categories of consumers applicable in their geographical area, that are accessible to all suppliers within its area of distribution.

As in public availability of natural gas consumption data in Spanish households, IDAE, the Institute for Diversification and Saving of Energy, published in 2019 a study called "Statistical Analysis of Natural Gas Consumption in Dwellings with Individual Heating". The Regulator also publishes periodical reports about the natural gas retail segment quarterly and annually.

7.4.2 CONTRACTING OF GAS VOLUMES BY HOUSEHOLDS

There is no contractual obligation for households to declare and consume a minimum amount of gas volume. Customers are put by their supplier into load profiles depending on their age, number of people in the household, geography, climatic zone, etc. and then their consumption is metered by the DSO and billed by the supplier. None of the suppliers introduces in their contracts with households any provisions regarding maximum or minimum consumption thresholds.

7.4.3 DEVELOPMENT OF STANDARD LOAD PROFILES FOR END-USERS

The DSOs are responsible of building standard load profiles in which each of their customers are classified. This way, if real readings of gas meters are not available when the billing time arrives (by law the reading must be done at least once per year, although it is recommended to do it more often), DSOs can send an estimated consumption value to the suppliers, who will then bill the final customers depending on the load profile they are in.

The methodology for the forecast of a network user's non-daily metered off-takes shall be based on a statistical demand model, with each non-daily metered off-take assigned with a load profile, consisting of a formula of the variation in gas demand versus variables such as temperature, day of week, customer type and holiday seasons. This formula is developed by the Directorate General of Energy Policy and Mining, within the MITECO.

7.4.4 METERING OBLIGATIONS

The reading of household gas meters will be the responsibility of DSOs, which will make it available to the consumers and suppliers. The recommended frequency of meter reading for households is bimonthly (the consumers can also provide themselves the reading to the DSO through phone or online). By law, the reading of gas meters must be done at least once a year.

If it has not been possible to read the meter due to reasons beyond the control of the DSO and the consumer has not provided the reading, the DSO can make an estimate reading of consumption based on the load profile of the specific point of supply, with an annual settlement based on the real reading. Suppliers will include, in all invoices issued with estimated readings by the DSO, the information on the procedure for the communication of the real reading from the meter to the DSO.

7.4.5 SETTLEMENT OF IMBALANCES OF SUPPLIERS

In Spain the TSO (Enagás) is in charge of providing users with the best available information that exists regarding balances before, during and after the gas day, so as to support the network users in performing balancing actions. All information regarding the balance of users will be provided through the Logistics System for Third Party Access to Networks (SL-ATR) of the TSO. DSOs and the TSO will be responsible for making the daily and intraday forecast of the gas system outflows of transport and distribution by supplier and point of connection.

To allocate gas volumes to the users of the transmission network, physical balances as well as individual balances of the gas system users need to be calculated in the different measurement points in the network.

For estimating the physical balances, there is a defined schedule stating when these data must be sent to the SL-ATR system of the TSO. Concerning household consumers, the type of connection points where these measurements are taken are the Transport-Distribution Connection Points (TDCP) and the Distribution-Distribution Connection Points (DDCP). For sending the balancing information to the SL-ATR system, the following deadlines need to be complied:

- Before the end of the 25th day of month M + 1 (M being the current month), those responsible for the measurement will send the SL-ATR the daily measurement of each day of the month m.
- Before the end of the 28th of each month M + 1 the SL-ATR will publish the provisional final daily measurements.

- Before the end of the 22nd of each month M + 3, operators and the Technical Manager of the System (Enagás) may request the review of aforementioned measures.

The TSO carries out individual balances for each transmission network user, to define its imbalance position. These balances will contain all the information related to the distribution and level of stocks and will be made available through the SL-ATR. These individual balances will be done for each of the regasification plants, for the Spanish gas hub (PVB), for storage in the PVB and for all underground storages.

At hub level, the following balances are done for users with a balance portfolio:

- Provisional daily balance of the gas day (balance d + 1): made the day after the gas day, with the information of the d + 1 deliveries contained in the SL-ATR.

- Provisional final daily balance of the gas day (balance m + 3): carried out before the end of month m + 3, with the information of the m + 3 deliveries contained in the SL-ATR.

- Definitive final daily balance of the gas day (balance m + 15): carried out before the end of month m + 15, with the information of the deliveries m + 15 contained in the SL-ATR.

In terms of schedule, (d + 1) balances need to be published in the SL-ATR at least 9.5 hours after the finalization of the gas day, (m + 3) balances (that correspond to current month m) must be published in SL-ATR the first day of month (m + 4), and (m + 15) balances must be published in SL-ATR the first day of month (m + 16). These are the definitive final daily balances of the particular gas day.

For the purpose of charging of imbalances to users, a purchase imbalance rate (marginal purchase price) and a sales imbalance rate (marginal sales price) are determined for each gas day, which are used to calculate the different imbalance charges to be applied. For each month the 3 aforementioned balances are calculated (provisional, provisional final and definitive), the provisional balance with a daily frequency and the provisional final and definitive with a monthly frequency. If imbalances are negative it is assumed that the user has bought gas from the TSO and a purchase imbalance rate is calculated. If imbalances are positive, it is assumed that gas has been sold to the TSO and a sales imbalance rate is determined. A guarantee system is in place in order to respond to possible non-payment situations; users who make their payment for imbalances after the stipulated deadline will be applied the non-payment regime, with said payment being held until the completion of the guarantee execution process.

7.4.6 IMBALANCE CHARGES

The daily imbalance charges are estimated based on the daily market prices at the Spanish natural gas hub PVB (Punto Virtual de Balance), operated by the Spanish natural gas market operator, MIBGAS. In case of positive imbalance, that is, that gas inputs in the PVB are higher than outputs from the PVB, the rate will be calculated as the lowest price between:

- The lowest price of the sales of title products of gas ownership in PVB for the gas day.

- The weighted average gas price of the gas day decreased by a sales adjustment of 3%.

On the other hand, in case of negative imbalance, that is, that gas outputs from the PVB are higher than inputs to the PVB, the rate will be calculated as the highest price between:

- The highest price of purchases of title products of gas ownership in PVB for the gas day.
- The weighted average price of the gas day plus a purchase adjustment of 3 %.

If for gas day "d" the marginal purchase price could not be calculated according to these provisions, the marginal purchase price will be used for the last day it was calculated.

According to ENEGAS[21], in the Gas Year 2016/17 the aggregate daily imbalances cashed-out in the year represented less than 2% of total gas volumes entering the system. The low imbalance quantities indicate that the balancing regime provides sufficient signals to network users to perform balancing actions, and possibilities to trade their imbalances at the VTP.

7.4.7 SETTLEMENT OF VOLUMES BETWEEN SUPPLIERS AND HOUSEHOLDS

Linked to metering and invoicing from suppliers to their customers there is the issue of settlements, that is, paying / receiving the difference between the actual readings and the estimated ones which were invoiced. Usually, gas supply bills are issued by suppliers bimonthly, there are however also consumers that are invoiced on a monthly basis.

Settlements between suppliers and households are carried out in the basis of consumption (the meter reads volumes in m^3, which are automatically translated to kWh)[22]. A yearly settlement is made for each consumer and the difference between paid amounts and the real reading of the meter is either refunded or charged to the consumer in future invoices. There is no settlement between committed and real consumption, since there is no contractual consumption commitment, as seen before in Section 7.4.3.

If, as a consequence of an annual settlement, based on the real reading, the supplier has invoiced amounts lower than due, the difference to be paid by the customer will be spread in as many invoices as months have elapsed since the last actual reading. If, because of administrative errors from the distribution company, lower amounts than those due have been invoiced, the difference to be paid will be prorated in as many invoices as months have elapsed from the error. The period to be rectified will be a maximum of six months, except when the reading provided by the consumer has been lower than the real one.

If amounts higher than due have been invoiced by the supplier to the customer, the refund will be done on the first invoice issued from the actual reading, without the possibility of splitting the amounts to be refunded. In this case, interest rates at the time of rebilling will be applied to the amounts that were advanced by the customer. If the reading provided by the consumer has been higher than the real one, interests will not apply. Failure to bill on time and delays in taking real readings by the DSO will have the same treatment as administrative errors, except in cases in which the consumer has not allowed access to the meter or provided the reading of it.

The amounts charged by a supplier to the household for the gas consumed do not include any charges or penalties due to imbalances.

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[21] South Gas Regional Initiative: Balancing regime in the Region, October 2015 to September 2017. Reports for subsequent gas years have not been published.

[22] An approximation of the GCV used for the Spanish gas market is 11.70 kWh/Nm^3, according to the TSO; this value might vary slightly depending on gas origin, quality, etc., and it is daily updated in the SL-ATR by the TSO.

8 KEY FINDINGS

The key findings and conclusions that can be drawn from the analysis of the selected EU gas retail markets (Czech Republic, France, Greece, Italy, Poland, Spain), in relation to the supply of gas to households, are summarized in the Table below.

TOPICS	CZECH REPUBLIC	FRANCE	GREECE	ITALY	POLAND	SPAIN
PRICING OF GAS SUPPLY TO HOUSEHOLDS	Full market based	Option for HHs to select market-based or regulated price (regulated prices to be fully eliminated in 2023)	Full market based	Option for HHs to select market-based or regulated price (regulated prices to be fully eliminated in 2022)	Cap on prices set by Regulator (may be eliminated in 2023)	Option for HHs to select market-based or regulated price
LARGEST RETAIL SUPPLIER AND SHARE (VOLUMES DELIVERED)	Innogy – 29.3% in 2019	Engie – 71% in 2018	Zenith – 47% in 2019	ENI – 19.3% in 2018	PGNiG – 95.5% in 2019	Naturgy – 25.75% in 2019
SWITCHING RATE FOR HOUSEHOLDS	7.6% in 2019	12.9% in 2018	1.7% in 2018	6.6% in 2018	N/A	7.7% in 2019
GAS PRODUCTS OFFERED	Various products for solely gas supply, or bundled with electricity supply	Various products for solely gas supply, or bundled with electricity supply	Various products for solely gas supply, or bundled with electricity supply	Various products for solely gas supply, or bundled with electricity supply	Various products for solely gas supply	Various products for solely gas supply, or bundled with electricity supply
DURATION OF OFFERED CONTRACTS	1 – 3 years	1 – 2 years of fixed duration, or annually renewed indefinite contracts	1 – 2 years	1 – 2 years Each supplier must also provide a contract with indefinite duration (annually renewed) the terms of which are set by the Regulator	1 – 3 years of fixed duration, or indefinite duration (offered by the incumbent)	Annually renewed
INVOICING	Consumers pay a single invoice covering gas supply and regulated activities (itemized separately)	Consumers pay a single invoice covering gas supply & regulated activities (itemized separately)	Consumers pay a single invoice covering gas supply & regulated activities (itemized separately)	Consumers pay a single invoice covering gas supply & regulated activities (itemized separately)	Consumers pay a single invoice covering gas supply & regulated activities (itemized separately)	Consumers pay a single invoice covering gas supply & regulated activities (itemized separately)
SUPPLIER SWITCHING WITHIN 21 DAYS	Yes	Yes	Yes	Yes	Yes	Yes
PROVISIONS FOR SWITCHING OF CONSUMERS IN DEFAULT	N/A	New supplier has the right to object contract application in case of outstanding debt	Old supplier has the right to stop switching process in case of outstanding debt New supplier has the right to object contract application in case of outstanding debt	New supplier has the right to object contract application in case of outstanding debt	N/A	New supplier has the right to object contract application in case of outstanding debt

TERMINATION OF SUPPLY TO HH, UPON REQUEST OF SUPPLIER, DUE TO NON-PAYMENT	Yes	Yes	Yes	Yes	Yes	Yes
AVAILABILITY OF CONTRACT APPLICATION AND INFORMATION IN SUPPLIERS' WEBSITE	Yes	Yes	Yes	Yes	Yes	Yes
ELECTRONIC SIGNING OF CONTRACTS	No	Yes	Yes	Yes	Yes	Yes
PERSON ELIGIBLE TO SIGN SUPPLY CONTRACT	Owner / tenant	Not clear	Owner / tenant	Owner / tenant	Owner / tenant	Owner / tenant
OBLIGATION OF OLD SUPPLIER TO SHARE INFORMATION WITH NEW SUPPLIER	No	No	No	No	No	No
SELECTION OF SLR	Set by the State (one per distribution system)	Set by the State (renewed every 3 years)	Open tender procedure for each region (every two years)	Open tender procedure for each region (every two years)	Set by the State	Set by the State
CONSUMERS ELIGIBLE FOR SLR	All consumers with consumption below 60,000 m3 for the previous year	Only some public services (not households)	Not clear	All households with individual heating, central heating residential consumers with consumption up to 200,000 m3/yr. and other uses with consumption up to 50,000 m3/yr.	Not clear	All consumers connected to networks with pressure below 4 bar and consumption below 4,300 m3/year
OTHER MEASURES FOR CONTINUITY OF SUPPLY	N/A	N/A	N/A	Default distribution service is offered to consumers without supply contracts, for a period up to 6 months	Consumers may appoint a reserve supplier in their contract	N/A
SLR PRICES	Approved by Regulator	N/A	Defined by the tender procedure	Approved by Regulator	Approved by Regulator (same as the gas supply price of the retail supplier)	Approved by Regulator
ACTIVATION OF SLR	Market Operator (no action by consumer required)	N/A	DSO (no action by consumer required)	Integrated Information System – SII (no action by consumer required)	DSO (no action by consumer required)	No activation process (service offered the

						same way as contracts in the free market)
MAXIMUM DURATION OF SLR	6 months (after which consumer either signs supply contract of is considered to be conducting unauthorized withdrawal of gas)	N/A	3 months (after 3 months' supply by the SLR may continue at market prices)	3 months (after 3 months the consumer pays SLR price plus premium)	N/A (SLR supply is carried out using market price of supplier)	N/A
STANDARD LOAD PROFILES PUBLICLY AVAILABLE	Yes	Yes	Yes	Yes	Yes	Yes
ENTITY RESPONSIBLE FOR ESTIMATING STANDARD LOAD PROFILES	Market Operator (with inputs from DSOs)	Groupe de Travail Gaz (working group of Regulator, TSO, DSO, suppliers, consumers)	DSO	Regulator	DSO	DSO
REVISION OF STANDARD LOAD PROFILES	Annually	Annually	Annually	Annually	Reviewed every 2 years	Not clear
ENTITY RESPONSIBLE FOR METER READING	DSO	DSO	DSO	DSO	DSO	DSO
FREQUENCY OF METER READINGS	For small consumers (including HHs) 1 reading per 12 – 14 months. For large consumers monthly measurements	For small consumers (including HHs) on semi-annual basis	In winter period HHs with central heating monthly and HHs with individual heating bimonthly	Depends on consumption: < 500 m3/yr.: 1 per year 500 – 1,500 m3/yr.: 2 per year 1,500 – 5,000 m3/yr.: Every 4 months >5,000 m3/yr.: monthly	For HHs can ranges from once per year to monthly, depending on consumption	Bimonthly
POSSIBILITY TO REQUEST MORE FREQUENT METER READINGS	Yes (price in DSO price list)	Yes (price in DSO price list)	Yes (price in DSO price list)	No	Yes (price in DSO price list)	No
POSSIBILITY OF SELF-READING	Yes	Yes	Yes	Yes	Yes	Yes
ESTIMATION OF CONSUMPTION IF METERING IS NOT AVAILABLE	Use of standard load profiles	Use of historic data by DSO	Use of standard load profiles	Use of historic data by DSO	Use of historic data by DSO	Use of standard load profiles

DAILY INFORMATION TO NETWORK USERS FOR ALLOCATION OF VOLUMES (ESTIMATION OF IMBALANCES)	Yes (in line with Regulation EC/312/2014)	Yes (in line with Regulation EC/312/2014)	Ex-post (not in line with Regulation EC/312/2014)	Yes (in line with Regulation EC/312/2014)	Yes (in line with Regulation EC/312/2014)	Yes (in line with Regulation EC/312/2014)
DEFINITION OF FINAL ALLOCATION OF VOLUMES	Within 4 months after the month of gas flow	When measurements become available	On transmission level 1 month after the month of gas flow On distribution level every January and June	Annual adjustment for the preceding year Multi-annual adjustments for the part 2-5 years	Monthly	Within 15 months after the month of gas flow
TIMING OF SETTLEMENT OF IMBALANCES	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly
MARKET-BASED IMBALANCE CHARGES	Yes	Yes	Yes	Yes	Yes	Yes
ISSUING OF INVOICES BY SUPPLIERS TO HHS	Monthly (standard load profiles used if measurements not available)	Monthly or bi-monthly basis, depending on supply product (estimates used if measurements not available)	Monthly (estimates by supplier used if measurements not available)	Depends on consumption: < 500 m3/yr.: every 4 months 500 – 5,000 m3/yr.: every 2 months >5,000 m3/yr.: monthly	Ranges from once a year for very small HHs to once every month for large HHs	Monthly or bi-monthly basis, depending on consumer (estimates used if measurements not available)
BILLING IN ENERGY UNITS	Yes	Yes	Yes	Yes	Yes	Yes
INCLUSION OF CHARGES OR PENALTIES FOR IMBALANCES IN SUPPLIERS' INVOICES TO HHS	No	No	No	No	No	No

ANNEX I: OVERVIEW OF EU BALANCING REGIME

INTRODUCTION

The European Commission with its Regulation EC/312/2014 (EC Network Code on Balancing –BAL-NC) established in 2014 a framework for a common gas market balancing regime, that should be applied by all EU Member States. This balancing framework sets the rules and market mechanisms for carrying out daily / within day balancing, while as the same time takes into consideration the fact that the EU gas markets are at a different level of development and thus provides some flexibility on how and when these rules should be applied.

The main objective of the balancing framework is for all EU gas markets to shift the focus from the physical balancing performed by the TSO to commercial balancing performed by the network users. With the provisions of BAL-NC the network users are given the responsibility to remain balanced, and the appropriate mechanisms to achieve this.

In this Annex we describe the key principles of the EU balancing and key mechanisms that are applied for its operation.

KEY PRINCIPLES OF THE BALANCING REGIME

The key principles for a balancing regime in line with the EC regulatory framework, and in particular BAL-NC, are the following:

- With BAL-NC the network users have the primary responsibility to balance their portfolio. This is achieved by means of incentives/disincentives and not obligations.

- Appropriate mechanisms should be in place that allow the network users to take actions and maintain their portfolio balanced. Network users should be informed about their imbalances at a timely manner, that allows them to act, and should be allowed to exchange their imbalances in an organized market with sufficient liquidity:

    - BAL-NC allows market participants to choose and apply one out of three alternative information models, that define the process according to which the network user is informed day-ahead and within-day for their imbalances.

    - The network users should have access to a trading platform (virtual trading platform – VTP) that allows them to trade with other network users and with the TSO their imbalances, so that they are as balanced as possible. For the balancing regime to function properly, there should be sufficient liquidity in the trading platform.

- The TSO retains the overall responsibility for the safe, secure, economic, and efficient operation of its system and therefore should retain a residual role to maintain physical balance of the system. To keep the system within its technical limits, the TSO must perform balancing actions, i.e. buy and sell gas as required. These balancing actions are performed in the natural gas exchange. If a natural gas exchange is not operational, has low liquidity and/or not sufficient volumes to cover the TSO's needs, then the TSO may procure/sell gas through balancing contracts, provided that they are awarded in a transparent and non-discriminatory manner, and have duration up to one year.

- The imbalance charges, that the network users are called to pay in case they are imbalanced, must be market based and cost reflective. They also must provide sufficient incentives to users to maintain their portfolios balanced.

- Tolerance levels must be phased out once the balancing regime is sufficiently developed, i.e. there is adequate liquidity in the market to allow network users to exchange their imbalances, and forecasting tools are appropriately developed and provide accurate signals to the users for their imbalance positions.

- The TSO must not gain or lose from the balancing activities (principle of neutrality). For this reason, an appropriate mechanism should be put in place, so that any revenues from the balancing actions are returned users, and any costs are claimed from the users, in a fair and transparent way.

BALANCING CYCLE

A typical balancing cycle is depicted in the Figure below. Network users submit day-ahead nominations to the TSO based on forecasts for their customer portfolio. During the day of gas flow, the network users exchange imbalances and have the possibility to renominate volumes for the remainder of the day. The TSO may also perform balancing actions if there is a risk of the system going outside its technical limits. After the day of gas flow, the imbalance position of each network user is determined, the imbalance fees are estimated (cash-out) and settled.

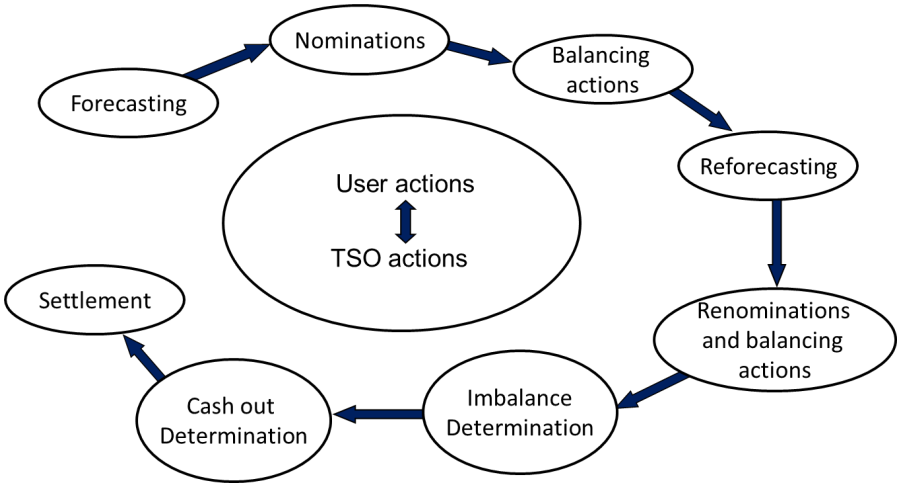

Figure 6: Typical balancing cycle

INFORMATION MODELS & FORECASTING

To take informed decisions on exchanging their imbalances during a day of gas flow, the network users have to be appropriately informed about the volumes of gas to be allocated to them for that day. The allocation of volumes has to be based on a combination of measurements, at off-takes where information during the day can be available, and forecasts at off-takes where meter readings cannot be carried out daily. The former applies to customers with hourly / daily meters installed, while the latter concerns customers that are not metered on an hourly / daily basis, such as households and small commercial consumers.

BAL-NC allows 3 alternative Information Models for providing to the network users sufficient information regarding the gas quantities that will be allocated to them each day. On the basis of this information, the network users can decide if and when to proceed with exchanging their expected imbalance positions. BAL-NC also includes specific provisions on the responsibilities and main principles for forecasting of volumes, so as to ensure a common, non-discriminatory and transparent framework for allocation of volumes of all network users.

The Information Models focus on the Daily Metered (DM) and Non-Daily Metered (NDM) off-takes. For DM off-takes actual measurements are provided, whereas for NDM off-takes forecasts are estimated. The Models differ in how allocation data is calculated and how / whether NDM forecasts are provided. Entry or exit points where intraday measurements take place are not affected by the Information Model applied.

The Regulator has the mandate to decide on the Information Model that will be applied. In its decision, the Regulator must take into consideration the views of the TSO, DSOs and potentially market stakeholders. The 3 Information Models and their differences are presented in the Table below.

TABLE 6: INFORMATION MODELS ACCORDING TO BAL-NC

MODEL	DESCRIPTION	INFORMATION OBLIGATION			COMMENTS
		DAY-AHEAD	WITHIN-DAY		
		NDM FORECASTS	*DM MEASUREMENTS*	*NDM FORECASTS*	
Base Case	The model for information provision, where the information on NDM off-takes consists of day ahead and within day forecasts	✓		✓	Within-day updated forecasts to users at least 2 times Some TSOs provide 4-5 forecasts
Variant 1	The model for information provision where the information on NDM and DM off-takes is based on apportionment of measured flows within-day		✓	✓	Within-day updated info to shippers at least 2 times Some TSOs provide hourly information
Variant 2	The model for information provision where the information on NDM off-takes is a day ahead forecast	✓			Simplest model for information provision Affected by seasonality and can lead to increase of balancing actions by the TSO

One market entity (TSO, DSO or a third party) undertakes the role of the forecasting party, that shall be responsible for forecasting all network users' NDM off-takes and where appropriate their subsequent allocation of volumes. The Regulator shall designate the forecasting party, after prior consultation with the TSO and the DSOs.

The forecasting methodology must be based on a statistical demand model and must assign to each off-take a load profile, consisting of a formula of the variation in gas demand versus variables such as temperature, day of week, customer type and holiday seasons. The forecasting methodology is usually developed by the forecasting party, the Regulator, or a group of market stakeholders (e.g. TSO, DSOs, large suppliers and consumers). Regardless of the entity responsible for its development, the

forecasting methodology should undergo consultation before its adoption, so as to ensure its acceptance by the market participants.

At least every 2 years the forecasting party must publish a report on the accuracy of the forecasts, so as to identify any changes/revisions required in the load profiles, and to ensure the market participants that the forecasts are accurate enough to provide volume allocations for non-daily metered consumers close to the actual meter readings.

DETERMINATION OF IMBALANCES

The daily imbalance quantity estimated for each network user is the difference between the volumes allocated to the user at the entry points (inputs) and the volumes allocated at the exit points (off-takes):

daily imbalance quantity = inputs – off-takes

The allocated volumes at the off-takes are based on measurements for daily and intraday metered consumers, and on forecasts, using information from the forecasting party, for non-daily metered consumers.

The calculation of the daily imbalances should be net of any gas losses on the transmission and distribution system, as well as of any estimates for Unaccounted for Gas (UfG). Additionally, any linepack flexibility services offered to the network users should be taken into consideration (i.e. the volumes corresponding to this flexibility subtracted from the imbalance).

IMBALANCE CHARGES

The aim of applying imbalance charges is to provide incentives to network users to exchange their imbalance positions, so as to be as balanced as possible at the end of a gas day and limit their individual exposure to the daily imbalance charges. The imbalance charges have to be market based and cost reflective, instead of administratively set, thus they are defined in accordance with the prices in the natural gas exchange, or a proxy, in case the natural gas exchange is not in operational or is not liquid enough. The charges should also include appropriate adjustments so that network users always seek to exchange their imbalances in the market, instead of waiting to cash-out at the end of each day. The methodology to be applied for calculating the imbalance charges (market at which prices are defined, adjustments, etc.) is proposed by the TSO and approved by the Regulator.

In case a network user is positively imbalances for a day of gas flow, it is considered to have "sold" gas to the system, and thus a marginal sell price applies. On the other hand, if a network user is negatively imbalanced for a day of gas flow, it is considered to have "purchased" gas from the system, and thus needs to compensate the TSO with a marginal buy price. These prices are estimated using as reference the gas prices at the market are estimated as follows:

- The marginal sell price is the minimum of the following values:
    - The lowest price of any sales of title products at the market, in which the TSO was involved for the specific day; or
    - The weighted average price of gas in the market, for the specific day, minus a small adjustment
- The marginal sell price is the maximum of the following values:

- The highest price of any sales of title products at the market, in which the TSO was involved for the specific day; or
- The weighted average price of gas in the market, for the specific day, plus a small adjustment

The small adjustment added / subtracted to the gas price cannot exceed 10 % of the price.

As an additional measure for incentivizing network users to be balanced, the tolerance levels are be phased out once the balancing regime is effectively in place. Thus, network users must settle all their imbalances regardless of their daily imbalance level.

NEUTRALITY PRINCIPLE OF THE TSO

According to the neutrality principle foreseen in the BAL-NC, the TSO should not gain or lose by any actions related to balancing. To follow this principle, on a monthly basis, any residual revenues or costs resulting from the balancing activities of the TSO should be returned to / collected from the network users, proportionally to their utilization of the transmission system.

The costs and revenues of the TSO are related to the collection of imbalance charges from the network users, the costs for undertaking balancing actions (procurement or sale of gas by the TSO for balancing of the system), as well as other costs arising from the TSOs activities in balancing (e.g. costs for operating a balancing platform).

The Regulator publishes or approves (following a proposal by the TSO) a methodology for estimating the neutrality charge, that will settle any remaining revenues or costs once per month.

ANNEX II: SOURCES USED FOR THE COUNTRY ANALYSIS

In the Table below we present the sources reviewed to perform the country-by-country analysis.

COUNTRY	SOURCES REVIEWED
CZECH REPUBLIC	1. Website of Energy Regulatory Office (ERO): www.eru.cz 2. National Reports of the Energy Regulatory Office 2016 – 2020 3. Gas Market Rules (Regulator Decision 349/2015, amended by Decision 416/2016) 4. Current version of Czech Republic Energy Act (458/2000) 5. Website of Gas Market Operator (www.ote-cr.cz) 6. Websites of gas retail suppliers: E.ON Energie (www.eon.cz/en), innogy Energie (www.innogy.cz), Pražská plynárenská (www.ppas.cz/) 7. Gas Distribution Network Code of Gasnet s.r.o.
FRANCE	1. Website of Energy Regulatory Commission (CRE): www.cre.fr 2. Website of ENI-France: https://www.eni.com/en_FR/products-services/natural-gas/natural-gas-market-france/natural-gas-market-france.shtml 3. National Reports of the Energy Regulatory Commission 2017 – 2019 4. Current version of French Energy Code 5. Website of Groupe de Travail Gaz: www.gtg2007.com 6. Websites of gas retail suppliers: Engie (https://particuliers.engie.fr/), Total Direct Energy (https://total.direct-energie.com/) 7. Current version of GDRF gas distribution contract and distribution conditions 8. Official website with gas consumer info: https://www.energie-info.fr/ 9. Current version of gas supply general terms & conditions for Engie 10. Ministerial Order of May 19, 2008 relating to the last resort supply of natural gas to non-domestic customers 11. CRE Deliberations on Gas Balancing Rules (5 February 2013) 12. GTG - Procedure for the allocation of quantities at transport - distribution interfaces applicable from April 1, 2019
GREECE	1. Website of Regulatory Authority for Energy (RAE): www.rae.gr 2. Supply contract / general terms & conditions for Zenith S.A. and Attiki Natural Gas Distribution Company S.A. 3. National Report of the Regulatory Authority 2019 4. Current version of Gas Supply Code 5. Current version of Gas Distribution Network Code of EDA Attiki S.A. 6. Current version of Gas Transmission Network Code of DESFA S.A. 7. Current version of Gas Distribution Metering Code EDA Attiki S.A. 8. Current version of Energy Law (4001/2011) 9. Websites of DSOs: EDA Attiki (https://edaattikis.gr/), EDATHESS (www.edathess.gr), DEDA (www.deda.gr) 10. Websites of retail gas suppliers: Zenith S.A. (www.zenith.gr), Attiki Natural Gas Distribution Company S.A. (www.fysikoaerioellados.gr), Protergia S.A. (www.protergia.gr)
ITALY	1. Website of Regulatory Authority for Energy, Networks and the Environment (ARERA): https://arera.it/ 2. National Reports of the Regulator 2017 – 2019 3. ARERA Report on Monitoring of Retail Markets of Electricity and Gas, 2017 4. Current version of Italgas Distribution Network Code 5. Current version of ARERA Deliberation on "Adoption of guarantees for free access to the natural gas distribution service and of rules for the preparation of network codes" (138/04) 6. Current version of ARERA Deliberation on "Reform of the switching process in the natural gas retail market" (77/2018) 7. Current version of ARERA Deliberation on "Public procedures for the identification of suppliers of last resort and suppliers of the default distribution service" (283/2020) 8. Current version of ARERA Deliberation on "Provisions for the regulation of physical and economic parts of the natural gas balancing service (TISG)" (229/2012) 9. Current version of ARERA Deliberation on "Retail sales activities of natural gas and gas other than natural gas distributed via urban networks (TIVG)" (64/09) 10. Current version of Snam Rete transmission grid code 11. Websites of retail gas suppliers: ENI Gas e Luce (https://enigaseluce.com/), Enel (www.enel.it), Edison Energia (https://edisonenergia.it/)
POLAND	1. Website of the Energy Regulatory Office (ERO): www.ure.gov.pl 2. Current version of Energy Law of 10 April 1997 3. National Reports of the President of the Energy Regulatory Office 2017 – 2020

	4. Current version of the consumer rights for gaseous fuels, issued by the Energy Regulatory Office 5. Procedure for changing supplier, issued by Polska Spółka Gazownictwa Sp. z o. o. 6. Current version of the Gas Distribution Network Code of DSO Polska Spółka Gazownictwa Sp. z o. o. 7. Current version of the Gas Transmission Network Code of Gaz System S.A. 8. Current version of the Tariff of Polska Spółka Gazownictwa Sp. z o. o. 9. Website of gas supplier PGNiG: http://pgnig.pl/ 10. Current version of the Supply contract and general terms & conditions of PGNiG 11. Website of gas DSO Polska Spółka Gazownictwa sp. z.o.o.: www.psgaz.pl
SPAIN	1. Annual report Sedigás 2019: https://www.sedigas.es/informeanual/2019/wp-content/uploads/2020/04/INFORME-ANUAL-2019.pdf 2. CNMC document on information exchange between suppliers and DSOs https://www.cnmc.es/sites/default/files/editor_contenidos/Energia/Consulta%20Publica/1_INF_DE_011_19_Propuesta%20Resolucion%20intercambio%20ficheros.pdf 3. CNMC supplier switching report 2019 https://climatizacion-y-confort.cdecomunicacion.es/images/informe-cambios-comercializador-CNMC.pdf 4. CNMC gas market review of the year 2019 https://www.cnmc.es/sites/default/files/3085923.pdf 5. Official communication on gas balancing and deliveries https://www.boe.es/boe/dias/2016/09/27/pdfs/BOE-A-2016-8803.pdf 6. Commission Regulation (EU) No 312/2014 of 26 March 2014 establishing a Network Code on Gas Balancing of Transmission Networks Text with EEA relevance https://op.europa.eu/es/publication-detail/-/publication/9168fa76-b589-11e3-86f9-01aa75ed71a1 7. CNMC report on gas retail, Q1 2020: https://www.cnmc.es/sites/default/files/3071668.pdf 8. Enagás website: https://enagas.es/enagas/es/Transporte_de_gas 9. Diverse gas supplier websites: https://www.naturgy.es/hogar (and more) 10. Official communication on procedures for the settlement of remuneration for activities 11. regulated in the natural gas sector: https://www.boe.es/buscar/pdf/2002/BOE-A-2002-21185-consolidado.pdf 12. Official communication on requirements for licensed gas suppliers https://www.boe.es/buscar/pdf/2010/BOE-A-2010-7657-consolidado.pdf 13. Diverse DSO websites: https://www.nortegas.es/ (and more) 14. Official communication on the regulation of transport, distribution, commercialization, supply and authorization procedures for gas installations: https://www.boe.es/buscar/pdf/2002/BOE-A-2002-25421-consolidado.pdf