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Annual Report on the Results of Monitoring the Internal Electricity and Gas Markets in 2015

Key Insights and Recommendations

November 2016

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1 Foreword by the ACER Director, and the Chair of ACER's Board of Regulators and President of CEER

We are pleased to present the fifth annual Market Monitoring Report produced by the Agency for the Cooperation of Energy Regulators ("the Agency") and the Council of European Energy Regulators (CEER). This year, the look of the Report has changed somewhat compared to the past. In all previous years, the Report was one single document, whereas this year's edition includes this document, presenting the key insights and recommendations, as well as four thematic volumes on: (i) the Electricity and Gas Retail Markets; (ii) Consumer Protection and Empowerment; (iii) the Electricity Wholesale Market; and (iv) the Gas Wholesale Market. These volumes provide a comprehensive assessment of developments in the electricity and gas sectors and on the progress towards the implementation of the Third Energy Legislative Package ('3rd Package') and the completion of the internal energy market (IEM).

The Communication from the Commission of 25 February 2015 on "A Framework Strategy for a Resilient Energy Union with a Forward-Looking Climate Change Policy" set out the Commission's strategy to achieve such an Energy Union. Moreover, the European Commission's vision is intended to deliver a "new deal for energy consumers", as set out in the Energy Union Strategy. An important aim is to use Europe's electricity and gas infrastructure better so that energy flows from low- to high-price areas and EU consumers fully benefit from market integration. In addition, the European Commission is soon expected to present a legislative initiative on an improved energy market design. This Report provides factual insights that could be useful for the definition and implementation of such a design.

The Report shows that, in many jurisdictions, wholesale energy prices have been declining since 2008 as a result of improved gas-to-gas competition, underpinned by the hub-to-hub model that has been established in many parts of Europe, but not everywhere yet. Market fundamentals – including weak gas demand and declining oil prices - also play a key role. Overall, gas wholesale markets in all Member States perform better and better, and are becoming more integrated, even though a range of barriers persists. Moreover, the Report points to an increasing performance gap between the more advanced markets and the less performing ones, often located on the fringes of the Union. For the first time the assessment of wholesale gas markets has also benefitted from the use of aggregated REMIT data, further enhancing the analytical rigour.

In electricity, low wholesale prices in 2015, compared to 2008, are mainly the result of generation overcapacity in several jurisdictions and of the increased penetration of renewable energy sources with zero or very low marginal/variable costs. Low prices, and their negative impact on the economic viability of conventional generation capacity, exacerbated adequacy concerns and, in response, some Member States have introduced or are considering the introduction of capacity mechanisms (CMs). The Agency is tracking this trend in this Report and is concerned that national, uncoordinated approaches to system adequacy might have a detrimental impact on the functioning of the IEM.

Moreover, the Report concludes that there are significant potentials to address adequacy concerns by removing existing barriers to the functioning of the electricity wholesale markets and improve the way in which they work. For example, the level of capacities made available to the market for cross-border trade could be increased already by enhancing the methodologies used to calculate these capacities. After the successful development of day-ahead market coupling, the improved use of existing infrastructure will enhance cross-border competition rendering better prices for EU consumers.

The Report shows that the declining wholesale prices for gas and electricity have finally resulted in lower energy costs for EU consumers. This is an important benefit of a well-functioning IEM. In electricity, however, the total price EU consumers pay has, on average, not decreased, due to the increase of a number of non-contestable charges in the consumers' energy bill. These charges relate, for example to the funding of capacity mechanisms, of the support for renewable resources or other services. The continued increase of these non-energy related charges in consumer's invoices do not promote consumers' active participation in the energy market and can prevent them from taking advantage of greater choice and better prices.

For the first time, this Report also assesses the state of play in the implementation of dynamic pricing. Dynamic prices reflect to a varying degree the marginal generation and/or network costs and could in theory deliver energy efficiency benefits. A closer relation between wholesale and retail prices could further engage consumers. However, today, the penetration of dynamic pricing for households is limited, partly due to the fact that its implementation requires the deployment of enabling technology, which is still limited across the EU.

Consumer protection should ensure that all consumers benefit from a competitive market. This entails swift switching procedures, adequate and transparent information on offers and bills and sufficient protection for vulnerable consumers, merely to name a few aspects covered in this Report. In this context, the Report shows that Member States advanced somewhat in the areas of Customer Protection and Empowerment albeit selectively in terms of jurisdiction or legal requirement. However, overall progress in implementing and promoting Customer Protection legislation seems to stall.

The data used for compiling this Report have been collected internally or provided by the European Commission, National Regulatory Authorities, and the European Networks of Transmission System Operators for electricity and gas. We are grateful for their contribution and cooperation, and in particular to colleagues in National Regulatory Authorities who have played a key role in assessing national developments. Above all, our sincere appreciation goes to our colleagues in the market monitoring team at the Agency for their sustained effort in continuously monitoring market developments and in producing this Report.

The Agency and National Regulatory Authorities stand committed to continue their work to promote the establishment of a well-functioning, competitive, secure and sustainable internal market in energy to the benefit of Europe's consumers, and to support the implementation of the Energy Union Strategy.

Alberto Pototschnig
ACER Director

Lord Mogg
Chair of ACER's Board of Regulators
and president of CEER

2 Executive summary and recommendations

2.1 Introduction

Structure of the report

1 This document presents the key insights and recommendations[1] of the fifth annual Market Monitoring Report (MMR) by the Agency for the Cooperation of Energy Regulators ("the Agency") and the Council of European Energy Regulators (CEER), covering developments in the electricity and gas markets of EU Member States (MSs) in 2015. Building and expanding on the analysis performed last year, this Report focuses on retail markets and consumer issues, on the main developments in the integration of gas and electricity wholesale markets and on network access issues with a view to identify any remaining barriers to the completion of a well-functioning Internal Energy Market. Moreover, and new to this edition, it provides an impact analysis of the market performance of implemented network code provisions.

2 This Report also comprises four in-depth thematic volumes: (i) the Electricity and Gas Retail Markets; (ii) the Consumer Protection and Empowerment; (iii) the Electricity Wholesale Markets; and (iv) the Gas Wholesale Markets. These volumes are available on the website of the Agency[2]. In what follows, the main insights for each volume are presented, as well as the recommendation that the Agency formulates on the basis of these insights.

2.2 Retail electricity and gas markets

Key developments in demand and prices

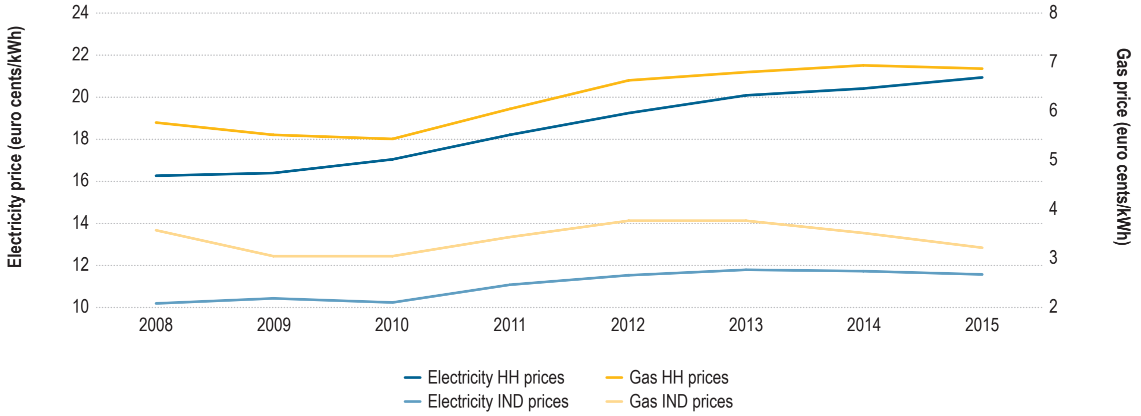
3 Prompted by economic recovery, decreasing wholesale prices and a colder winter, total electricity consumption in Europe and electricity consumption by the household segment increased in 2015 by 2.1% and 4.2%, respectively, compared to the previous year, while total gas consumption and gas consumption by the household segment increased by 4.2% and 4.7%, respectively. Despite these increases, the 2015 total electricity and gas consumption levels are still below the pre-economic crisis levels of 2008.

4 In 2015, electricity and gas prices fell on average, compared to the previous year, for all consumers, except for household electricity consumers, who saw prices rise on average across the EU by 2.3% (Figure 1). The 2015 prices for electricity industrial consumers fell by 1.2%, while gas household and industrial prices decreased by 1.1% and 9.1%, respectively.

1 According to Article 11 (3) of Regulation (EC) 713/2009 'When making public its annual report, the Agency may submit to the European Parliament and to the Commission an opinion on measures that could be taken to remove barriers' to completion in the internal markets in electricity and gas.

2 See: http://www.acer.europa.eu/en/Electricity/Market%20monitoring/Pages/Current-edition.aspx.

Figure 1: Electricity and gas post-tax price trends for household and industrial consumers in Europe – 2008–2015 (euro cents/kWh)

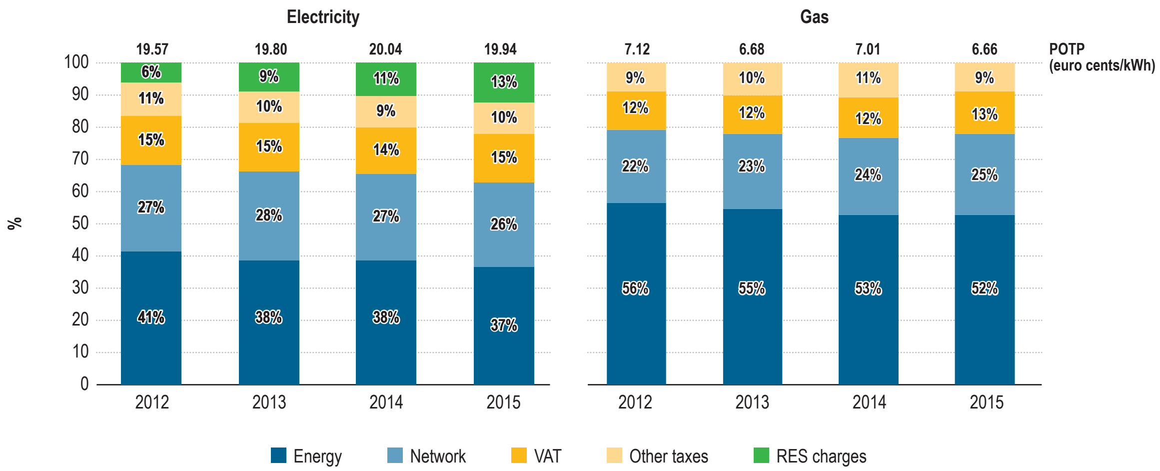


Source: Eurostat (March 2017) and ACER calculations.

Note: The figure is based on bi-annual data provided by Eurostat for consumption bands DC: 2,500–5,000 kWh (household electricity consumption – HH), IE: 20,000 MWh–70,000 MWh (industrial electricity consumption – IND), D2: 20 GJ–200 GJ (household gas consumption) and I5: 1,000,000 GJ–4,000,000 GJ (industrial gas consumption). The post-tax total price (POTP) is defined as the sum of the commodity price, regulated transmission and distribution charges, and retail components (billing, metering, consumer services and margin) plus VAT, levies (as applicable: local, national, environmental) and any surcharges (as applicable).

5 Moreover, 2015 recorded a further decrease in the share of the energy component in the end price charged to electricity and gas consumers. Over the 2012 – 2015 period, this share fell from 41% to 37% in the case of the final electricity bill, and from 56% to 52% in the case of the final gas bill (Figure 2). The decrease in final end-user prices was a result of falling wholesale prices (Figure 18). For electricity consumers, this decrease was offset by the increasing level of non-contestable charges, among which the charges relating to support schemes for renewable energy sources (RES) increased from 6% to 13% of the end-user price during the same period.

Figure 2: Electricity and gas POTP trends for household consumers in Europe – 2012–2015 (euro cents/kWh)



Source: ACER Retail Database and information from NRAs (2015).

Note: Based on averages, weighted with the number of electricity and gas household consumers.

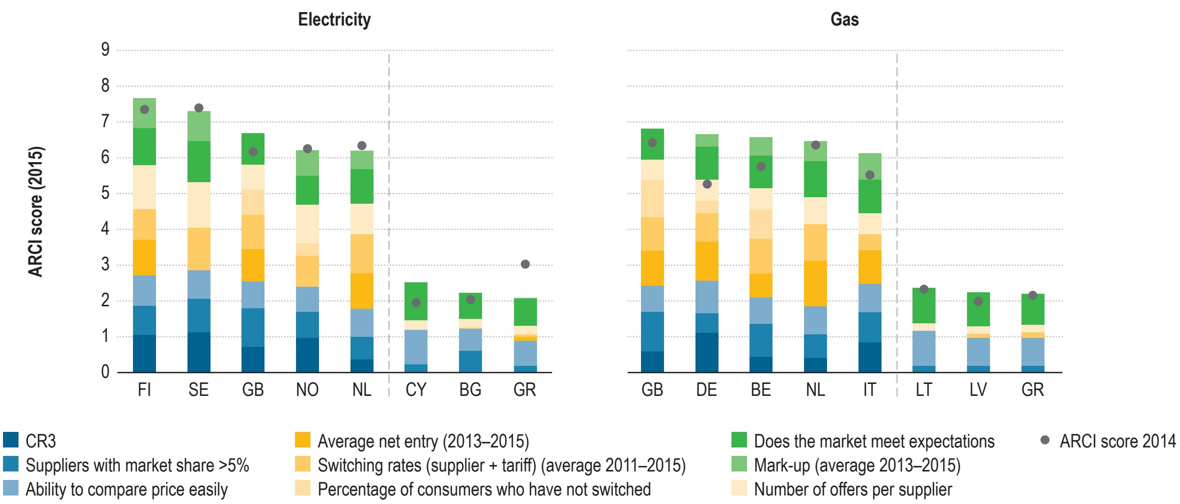
Relative level of competition

6 Effective competition in retail energy markets requires, among other things, a sufficient number of suppliers, rivalry between suppliers, rewards – in the form of monetary gains and/or better services – for consumers active in the market, and simple, low-cost and timely switching processes. Based on a relative competition analysis (using the ACER Retail Competition Indicator – ARCI), the most competitive[3] markets for household customers in 2015 were the electricity markets in Finland, Sweden, Great Britain, Norway and the Netherlands, and the gas markets in Great Britain, Germany, Belgium, the Netherlands and Italy. Weak retail market competition was observed in household electricity markets in Greece, Bulgaria and Cyprus, and in household gas markets in Greece, Latvia and Lithuania (Figure 3).

7 The main improvements in the relative level of competition between 2014 and 2015 were observed in the electricity markets of Latvia, Malta, Denmark, the Czech Republic and Germany, and in the gas markets of Germany, Portugal, Belgium, Ireland and Italy. The relative level of competition worsened in the electricity markets of Greece, Slovakia and Hungary and in the gas markets of Slovenia, Denmark, Spain and the Czech Republic.

8 In comparison to 2014, the changes in the ARCI score for retail electricity markets were driven for most of the countries by dynamics in four sub-indicators: i) number of suppliers with market share above 5%; ii) average annual net entry; iii) numbers of offers per supplier and iv) average annual mark-ups. The changes in the score for retail gas markets were impacted mainly by dynamics in two sub-indicators: i) average annual net entry and ii) average annual mark-ups. However, developments at national level vary significantly across MSs.

Figure 3: ARCI indicator for retail electricity and gas markets for household consumers in a selection of EU MSs – 2015



Source: ACER Retail Database (2016), CEER National Indicators Database (2016), DG Justice and Consumers (2014 and 2016) and ACER calculations.

3 These results are based on an examination of the ACER Retail Competition Index (ARCI), a composite index that assesses a range of key competition indicators of market structure, conduct and performance, i.e. market concentration, number of main suppliers (with a market share above 5%), average annual net entry, switching rates, percentage of consumers who have not switched from the incumbent supplier, ability to compare prices easily, number of offers per supplier, perceived satisfaction of customer expectations and average annual mark-ups.

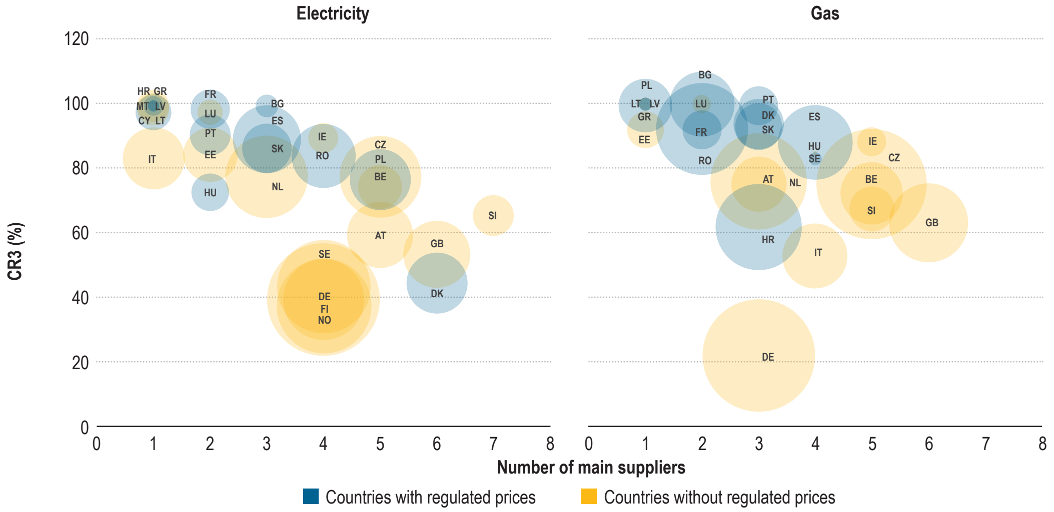
Relationship between the wholesale price and the retail energy component

9 The degree of alignment over time, between wholesale prices and the energy component of retail prices (i.e. mark-ups), could be used as an additional indicator for the effectiveness of competition in retail energy markets. The highest positive mark-ups in 2015, expressed in euros, were observed in the household segment of the electricity markets in Great Britain, Ireland and Greece, and in the gas markets in Great Britain, Greece and the Czech Republic, while the lowest positive mark-ups were observed in electricity markets in the Czech Republic, Romania, Denmark and Hungary, and in gas markets in Estonia, Croatia and Romania.

10 In some countries with regulated prices, average mark-ups for the monitored period (2008–2015 for electricity and 2012–2015 for gas) were negative because the energy component of the retail prices was set at a level that seems to be below wholesale energy costs. This is the case in Latvia, Romania and Lithuania for electricity and in Hungary, Latvia, Bulgaria and Lithuania for gas. Negative average mark-ups for electricity were also observed in the Czech Republic, which does not apply regulated prices.

11 In general, a high number of suppliers and low market concentration are considered as indicators of competitive markets. The market monitoring results show that many markets remain highly concentrated, with the market share of the three largest suppliers (CR3) on average in the EU exceeding 78% in electricity markets and 83% in gas markets (Figure 4).

Figure 4: Market share of the three largest suppliers (CR3), number of main suppliers and number of nationwide active suppliers in retail electricity and gas markets for households – 2015

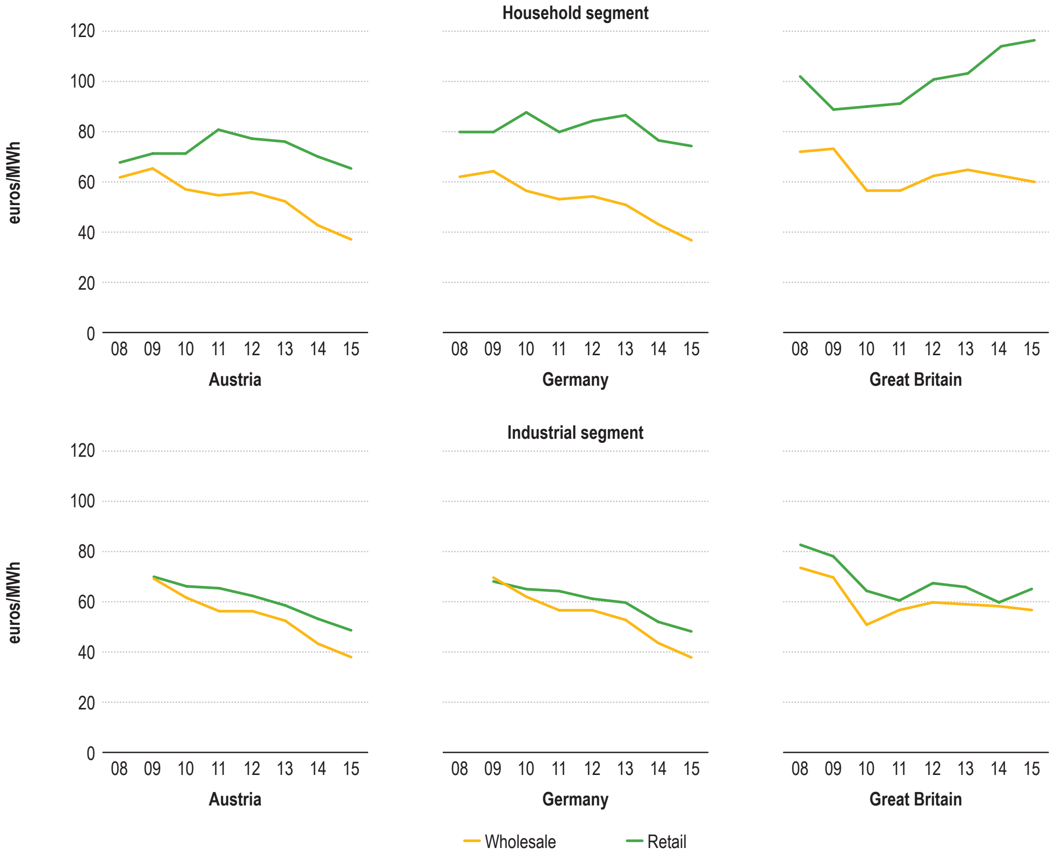


Source: CEER National Indicators Database (2016).

Note: The size of the bubble represents the overall number of nationwide active suppliers in the household segment, i.e. all nationwide active suppliers offering contracts to household customers throughout the country and having at least one customer. CR4 is used for the electricity assessment in Germany.

12 In addition, even in markets that have a relatively low level of market concentration and perform well on other measures of market competition, the link between electricity wholesale prices and the energy component of retail prices is often still weak and points to potential competition problems. This may be the case, for example, of household electricity markets in Austria, Germany and Great Britain. However, the stronger link between wholesale prices and the energy component of retail prices for industrial consumers in the EU implies that this segment is benefiting more from stronger retail competition than household consumers do (Figure 5).

Figure 5: Relationship between the wholesale price and the energy component of the retail electricity price for household and industrial consumers in a selection of countries – 2008–2015 (euros/MWh)



Source: ACER Retail Database (2016), Eurostat (26 August 2016), NRAs, European power exchanges data (2016) and ACER calculations.

Note: The increase in the electricity mark-up for the household segment between 2014 and 2015 in Great Britain is partially explained by the effect of the exchange rate (pound sterling/euro). For example, if expressed in pounds, by using the annual reference exchange rate of the European Central Bank, the mark-ups for Great Britain would be 18%, 17%, 22% and 27% lower in 2012, 2013, 2014 and 2015, respectively, i.e. the electricity mark-up would be 31.8 pounds, 32.6 pounds, 39.3 pounds and 40.4 pounds, respectively.

Interventions in retail price-setting mechanisms

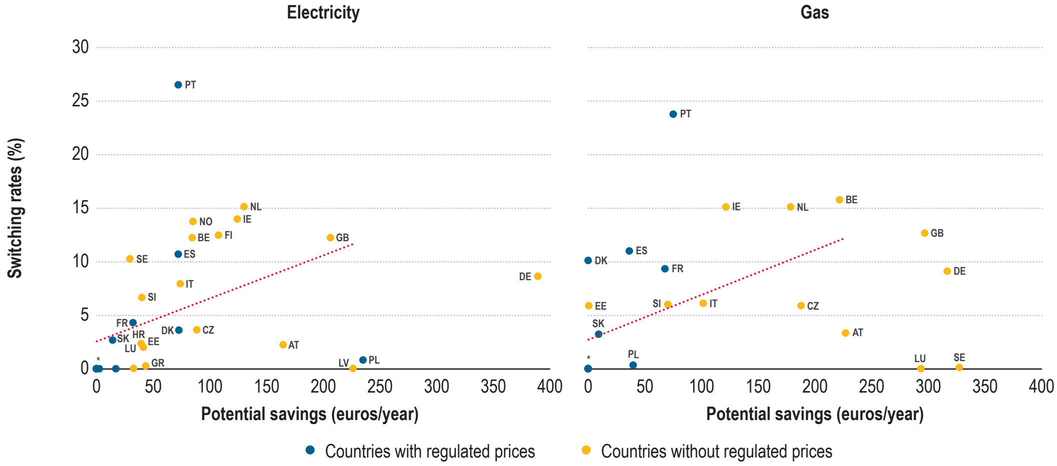
13 Price regulation for household consumers was widely applied across the EU in 2015, and the process of moving away from regulated retail prices is progressing very slowly. After eight years of full market opening, regulated electricity and gas household prices still existed in 12 and 13 countries, respectively, while regulated electricity and gas prices for industrial consumers existed in 9 and 8 countries, respectively.

14 Artificially low regulated end-user prices, although set above energy costs, discourage market entry and innovation, increase suppliers' uncertainty regarding their return on investment in the long term and, consequently, hinder competition in retail energy markets. More generally, the monitoring results show that countries with regulated end-user prices for household consumers score lower in terms of relative competition performance, as measured by the ARCI, than countries with a fully liberalised retail energy market for both electricity and gas.

Switching rates and potential savings

15 In some capitals, such as Amsterdam, Brussels and Dublin for both electricity and gas, and Oslo and London for electricity, high switching rates seem to be positively correlated with significant price differentials between the standard incumbent offer and the cheapest offer available on the market (Figure 6). The perceived insufficient monetary gain from switching, together with the lack of trust in new suppliers and the perceived complexity of the switching process were identified in previous studies[4] as the three main factors preventing retail energy consumer from switching.

Figure 6: Relationship between 'external' switching rates and annual savings available in capital cities of MSs – 2015 (%, euros)



Source: ACER Retail Database (2016) and CEER National Indicators Database (2016).

*Note: The observations deviating from the mean by more than two and a half times the standard deviation were excluded from the calculation of the trend line, i.e. the outliers are Germany, Poland and Portugal for electricity and Germany, Great Britain and Sweden for gas. In this figure, only 'external' switching rates are considered, i.e. switching supplier. 'Internal' switching is not included, i.e. switching tariff/contract with the existing supplier. *Countries for which the data points overlap are Bulgaria, Cyprus, Hungary, Malta and Romania for electricity, and Bulgaria, Croatia, Greece, Hungary, Latvia, Lithuania and Romania for gas.*

Offers available to household consumers

16 The market monitoring results indicate that consumers in countries with a longer liberalisation path (Group III) tend to benefit from more diverse offers than those in countries which liberalised their retail markets up to five (Group I) or five to ten years ago (Group II in Figure 7). Moreover, between 2014 and 2015, the number of spot-based offers[5] to electricity and gas consumers remained low in the EU, while the fixed-price contract offers to consumers increased. Furthermore, electricity consumers benefitted from a considerable increase in the number of 'green' offers.

4 For more details, see chapter '2.4.2.1 Key drivers and factors preventing consumers from switching' in the MMR 2014 (page 96).

5 Spot-based offers are offers which are – at least in parts – linked to the price changes at the spot market and have been labelled as such on price comparison websites tools.

Figure 7: Overview of the selection of differentiating elements in electricity and gas offers depending on the number of years since market liberalisation – Europe – 2013–2015

Electricity

MS	Number of countries	Years since liberalisation	Year	Average number of offers	Average number of offers per supplier	Percentage of spot-based offers	Percentage of green offers	Percentage of offers with additional services	Average switching rates
Group I	3	≤5	2015	1	1	0%	0%	0%	0.0%
			2013	1	1	0%	0%	0%	0.0%
Group II	17	5≤10	2015	↑ 33	↑ 2.7	↑ 3%	↓ 15%	↑ 9%	↑ 4.6%
			2014	23		0%	20%	7%	5.3%
			2013	20	2	0%	17%	2%	4.4%
Group III	9	>10	2015	↑ 191	↑ 3.4	↑ 10%	↑ 46%	↓ 7%	↑ 9.9%
			2014	181		8%	37%	8%	9.6%
			2013	127	2.8	7%	33%	10%	9.8%

Gas

MS	Number of countries	Years since liberalisation	Year	Average number of offers	Average number of offers per supplier	Percentage of spot-based offers	Percentage of green offers	Percentage of offers with additional services	Average switching rates
Group I	4	≤5	2015	↑ 4	↑ 1.4	0%	0%	↑ 5%	↑ 6.0%
			2013	3	1.3	0%	0%	0%	0.0%
Group II	15	5≤10	2015	↑ 21	↑ 1.9	↑ 1%	↑ 7%	↑ 7%	↑ 5.2%
			2014	14	1.7	1%	3%	2%	4.4%
			2013	10	1.6	0%	5%	0%	4.9%
Group III	7	>10	2015	↑ 73	↑ 2.9	↑ 4%	↑ 19%	↑ 21%	↑ 9.5%
			2014	63	2.6	2%	20%	20%	10.4%
			2013	59	2.7	0%	6%	11%	8.8%

Source: ACER Database (November–December 2015) and ACER calculations.

Note: Average values are presented for each indicator for the three groups shown. For electricity, the following MSs are included in Group I: Bulgaria, Cyprus and Romania; Group II: Belgium, Croatia, the Czech Republic, Estonia, France, Greece, Hungary, Italy, Latvia, Lithuania, Luxembourg, Poland, Portugal, Romania, Slovakia, Slovenia; Group III: Austria, Denmark, Finland, Germany, Great Britain, Ireland, the Netherlands, Norway, Spain and Sweden. For gas, Group I consists of Bulgaria, Greece, Latvia and Portugal; Group II: Belgium, Croatia, the Czech Republic, Estonia, France, Hungary, Ireland, Lithuania, Luxembourg, Poland, Romania, Slovakia, Slovenia and Sweden; Group III consists of Austria, Denmark, Germany, Great Britain, Italy, the Netherlands and Spain.

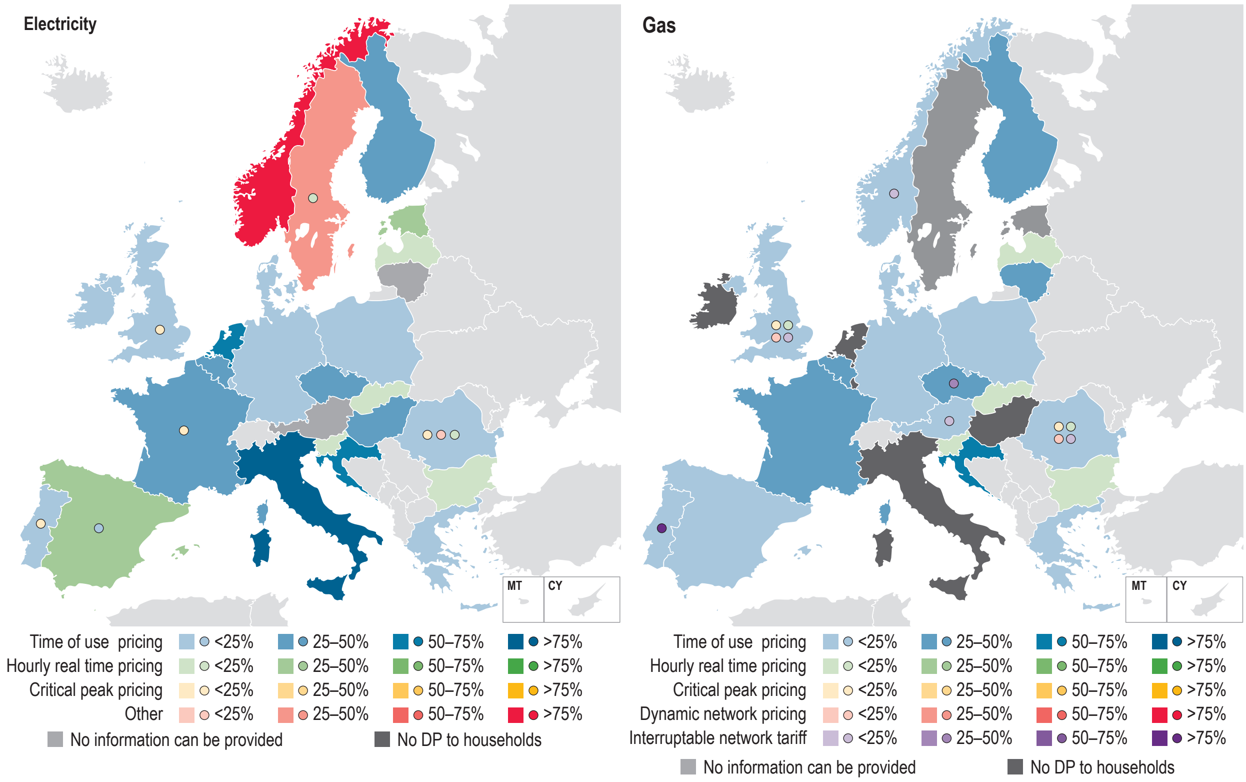
17 Overall, the market monitoring results show that many markets remain highly concentrated, with low switching activity by consumers. Moreover, in retail electricity markets, the results show increasing retail prices for household consumers, despite falling wholesale prices since 2008 (Figure 18).

State of play in dynamic pricing

18 There is a significant variation in the penetration of dynamic pricing[6] among household electricity consumers in Europe (Figure 8). Dynamic pricing is more frequently applied in the supply of energy than in network charges. As for gas, dynamic pricing is virtually non-existent, due to the storability of gas and, compared to electricity, the lower likelihood of peak prices.

6 Dynamic pricing refers to end-user prices that are, to a varying degree, reflective of the marginal network costs and/or generation costs of energy which is normally purchased in the wholesale market. Dynamic prices facilitate implicit (which is the focus of the MMR this year) and explicit demand response, as, to varying degrees, they reflect the marginal generation costs of energy and/or network costs. As such, consumers have an incentive to change their consumption in response to time-based price signals.

Figure 8: Share of standard household consumers supplied under dynamic pricing (DP) for the supply and network charges of electricity in EU MSs – 2015 (%)



Source: ACER Questionnaire on dynamic pricing (2016).

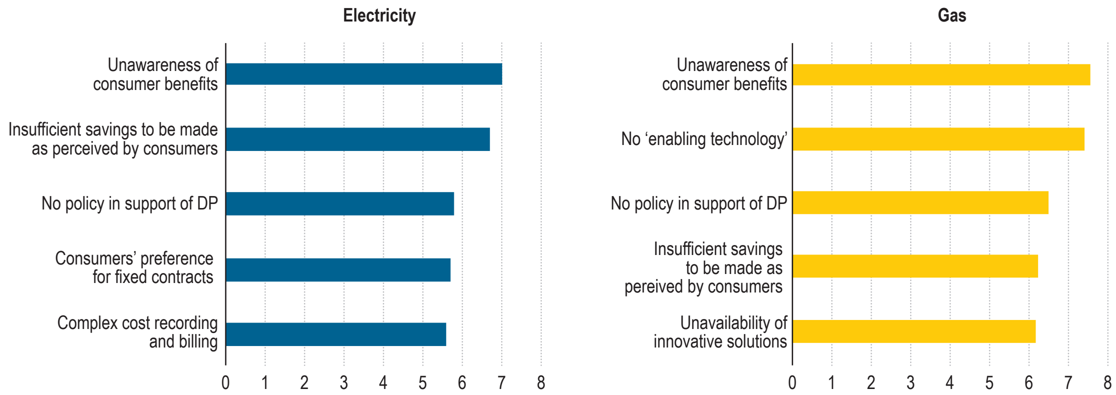
Note: Countries are coloured according to the dynamic pricing method which is the most representative. The coloured dots represent additional dynamic pricing methods which also appear in a country. For example, in Spain, 25 to 50% of households incur hourly real-time pricing. However, time of use (ToU) also applies in supply to less than 25% of electricity households. The Figure does not list pilot projects which are currently ongoing in the MSs. For Belgium, information has been aggregated and may differ for the three regions (Flanders, Wallonia and Brussels). 'Other' in Denmark and Norway refers to spot-based pricing to consumers on the basis of monthly spot-exchange prices.

19 Several reasons hamper the penetration of dynamic pricing. Consumer's weak motivation is an important one and explains why investments in, and use of, devices that are needed to have an automatic response to dynamic pricing are limited. The underlying reasons for the weak motivation include consumer's limited awareness about possible benefits (Figure 9) from dynamic pricing, the perception of insufficient savings to be made and the actual low savings to be made today from demand response, which are due to the currently low volatility of electricity and gas wholesale prices. Furthermore, the increasing presence and popularity of fixed contracts among household consumers in several European countries suggests that consumers might prefer stability in pricing (fixed-price contracts) over a financial reward for adjusting their consumption at times of system scarcity, when prices peak (i.e. dynamics in the pricing options available to them).

20 Moreover, the experience of the MSs in which the deployed smart meters are owned by Distribution System Operators (DSOs) shows that the cost of enabling technologies required to send correct price signals and to assist automated demand response (DR) for household consumers is a further barrier[7]. In addition, concerns have been expressed, including by some NRAs, regarding the adverse social redistribution effects that dynamic pricing could have on certain consumer categories in the household segment (e.g. large families or vulnerable consumers). For example, a large family with young children cannot afford to switch electric heating off in their home in winter, at least not as much as an adult-only household can. As such, large families would be carrying a large part of the cost of the electricity delivered at peak price and, due to this, may be forced to opt out of a dynamic price to avoid the risk of being stranded with a peak price.

21 These factors are considered to have influenced the results of the cost-benefit analyses (CBAs) on smart meter deployment in many MSs, which showed DR to be insufficiently valuable to justify the cost of smart meter deployment. On the basis of the CBA results in these countries, the deployment of smart meters, which are a necessary technology for DR, albeit not a sufficient one, was put on hold.

Figure 9: Underlying barriers to dynamic pricing in electricity supply tariffs to household consumers in a selection of EU MSs, ranked by average of all respondents – 2015 (1 = not at all important, 10 = very important)



Source: ACER Questionnaire (2015).

7 For instance, distribution dynamics (related to network) are different from system dynamics (related to supply), but they can interact, which makes it challenging to expose consumers to the correct costs. Under some specific conditions, market and network signals might even be contradictory, sending mixed messages to consumers to reduce their consumption based on the local distribution network congestion, but to increase consumption due to low supply prices. Coordination challenges can arise as a result of this.

2.3 Recommendations on retail electricity and gas markets

22 It is essential that all MSs fully transpose and implement the 3rd Package, and the European Commission should continue to monitor this closely and pursue cases of infringement where necessary.

23 MSs can further enhance competition in their energy retail markets, especially in concentrated markets and in markets with a low number of active suppliers by:

a) Facilitating the entry of new suppliers into the market and ensuring broader choice for consumers by removing entry barriers[8];

b) Facilitating cross-border entry, such as by developing common standards to supply electricity and gas at regional level – e.g. initiatives aimed at the cross-border integration of retail markets have been agreed on in the Common Nordic End-User Market[9] and implemented in the Iberian initiative to develop a single licence to supply electricity and gas at regional level;

c) Phasing-out end-user price regulation in the retail energy markets as soon as markets meet an appropriate level of competition, while ensuring effective and targeted protection of vulnerable consumers; and

d) Where regulated, end-user prices are not yet phased out, making sure that they are set consistently with the provision of the 3rd Package and subsequent case law at levels that do not hamper the development of competitive retail energy markets, i.e. above energy sourcing costs.

24 MSs should also promote greater consumer engagement in the retail energy market, in order for consumers to take full advantage of the retail energy market liberalisation by:

a) Reducing the incidence, in end-user prices, of charges not related to supply costs. In particular, MSs may wish to consider whether the costs of funding RES support and other similar schemes could be covered in ways other than through charges on electricity prices. A lower incidence of the non-contestable part of end-user prices may promote consumer's interest to switch supplier;

b) Ensuring that consumers can have access to their own consumption data and are able to make informed decisions on the basis of price signals from the market (i.e. are equipped with smart meters and enabling technology – provided that CBAs for smart meters are positive – to adapt their consumption according to market price signals) to enhance competition (see also Section 2.5);

c) Ensuring the proper implementation of switching[10] prerequisites by:

- ensuring that switching procedures are simple and free of charge for consumers; and
- assessing and monitoring that information provided by the market is transparent, accurate, simple and clear about the offers available on the market;

d) Facilitating switching, for example through platforms for collective switching, particularly for dysfunctional retail markets;

e) Ensuring that suppliers have the opportunity to offer wholesale market-based offers to consumers, provided that there is a well-functioning wholesale market; and

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8 See also "CEER Benchmarking report on removing barriers to entry for energy suppliers in EU retail energy markets" available here: http://www.ceer.eu/portal/page/portal/EER_HOME/EER_PUBLICATIONS/CEER_PAPERS/Customers/tab6/C15-RMF-70-03_BR_barriers_to_entry_for_suppliers_1-Apr-2016.pdf.

9 Through NordREG, the Nordic NRAs have agreed to a common set of recommendations for key market processes i.e., moving and switching customers.

10 It is worth mentioning this does not relate to switching of contacts between suppliers.

f) Monitoring offers which include additional services and products, as they may be subject to terms and conditions imposed by their providers (other than electricity and gas suppliers). The terms and conditions of these services should be presented in a clear and transparent way to consumers.

25 MSs should promote the efficient use of energy and network infrastructure by further exploring the possibilities of introducing dynamic pricing, which facilitates demand response by:

a) Assessing the status quo of dynamic pricing and the prerequisites for its development within the household (and industrial) consumer segment, including performing research to assess how further to engage the demand side more actively in energy retail markets; and

b) Performing a CBAs of smart meters and other enabling technology and sharing the results with other MSs. If there is a value for society, MSs should encourage the development of enabling technologies which can support demand response. To assess whether there is a value to society, two further research avenues can be distinguished in particular:

- first, it should be further assessed to what extent consumers can become responsive and what is needed to make them (fully) responsive; and
- second, if consumers were fully responsive, whether benefits would be sufficiently high to cover the cost of implementing demand response, in which case there would be a net added value of demand response for society.

2.4 Consumer protection and empowerment

Consumer protection

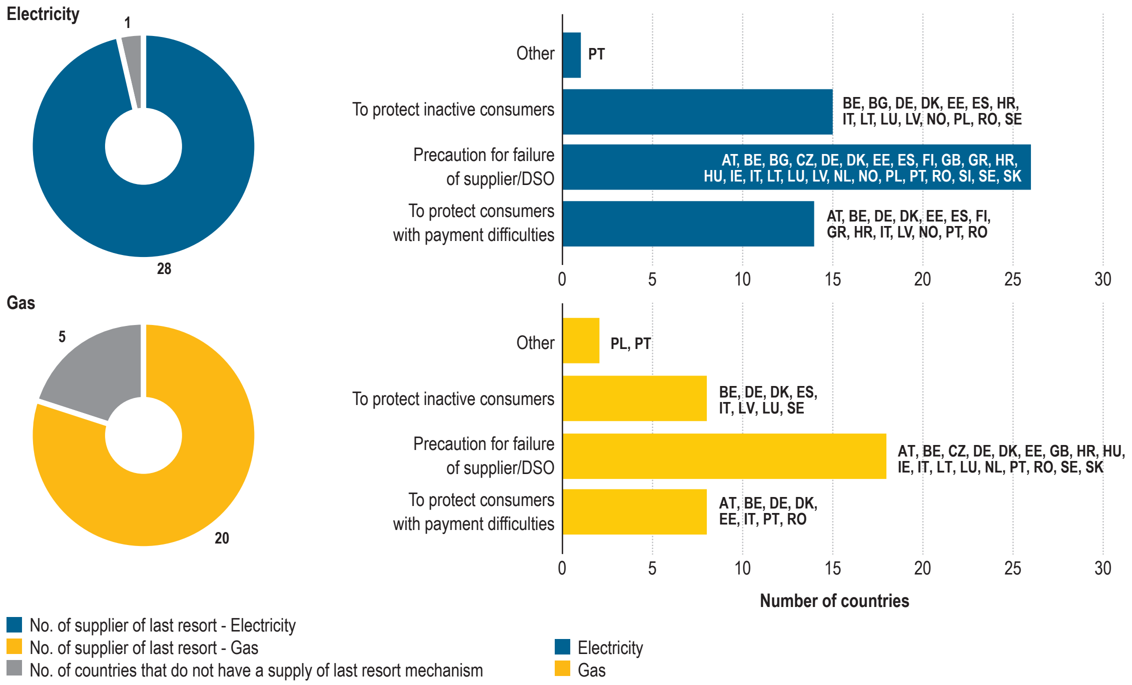
26 Public service obligations from the 3rd Package foresee the right for consumers to be connected to the electricity grid, as well as the right to be supplied with electricity at an affordable price, which is termed universal service in the Electricity Directive. The same Directive states that suppliers of last resort (SOLR) might be appointed by MSs to ensure the provision of universal service. While the Gas Directive does not foresee universal service, it nonetheless promotes a supply of last resort mechanism for gas consumers.

27 Figure 10 gives an overview of the functions of SOLRs for gas in EU MSs. It shows that the SOLR is not only used as a mechanism to replace failing suppliers, but often performs other functions, like protecting consumers with payment difficulties or those that are inactive[11]. The situation for electricity on the functions of SOLRs mimics the one in gas. It should be noted, however, that all MSs apart from France have a SOLR mechanism[12].

11 Inactive consumers are those that: 1) do not chose a supplier in the event of moving home; 2) do not chose a supplier at market opening or 3) do not chose a supplier when their fixed-term contract expires.

12 However, in practice, French local energy companies fulfil similar functions without being called SOLR.

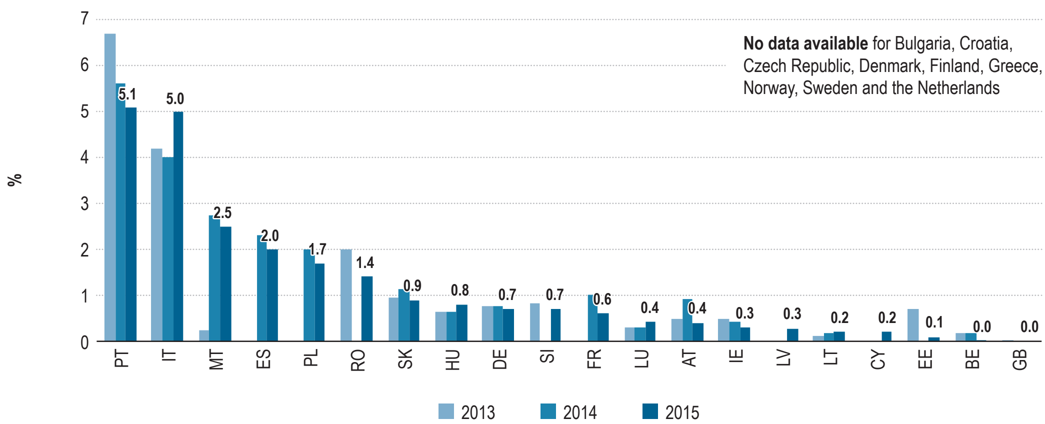
Figure 10: Functions of supplier of last resort in the EU MSs by number of MSs – 2015[13]



Source: CEER Database, National Indicators (2016).

28 As may be observed in the graph above, a SOLR is also often in place to protect consumers with payment difficulties. Energy consumers usually have several weeks to settle their due amounts before they are disconnected. This time certainly helps a large number of households to deal with financial issues. However, as Figure 11 shows, some households do get disconnected. Disconnection rates of up to 5% are reported for households in a few MSs. On the other hand, MSs – such as the UK – which have almost zero disconnection rates have a system of pre-payment meters which prevents consumers from accumulating arrears.

Figure 11: Share of electricity disconnections due to non-payment – 2013–2015 (%)



Source: CEER Database, National Indicators (2016).

13 No gas network in Cyprus, Malta and Norway. Data lacking for Switzerland.

29 Most MSs have introduced definitions of the concept of vulnerable consumers, as required by the 3rd Package, providing them special protection. Some MSs have introduced an explicit definition whereby legal acts clearly identify specific sections of the population considered vulnerable due to their living conditions. The variety of national approaches makes it difficult to collect and compare data on the occurrence of vulnerability across Europe. The available figures suggest that as many as 20% of households are considered vulnerable consumers in Latvia, but there are also countries reporting negligible numbers of vulnerable consumers despite an existing explicit definition. These discrepancies show that statistics must be seen in close connection with their national meanings.

Consumer empowerment

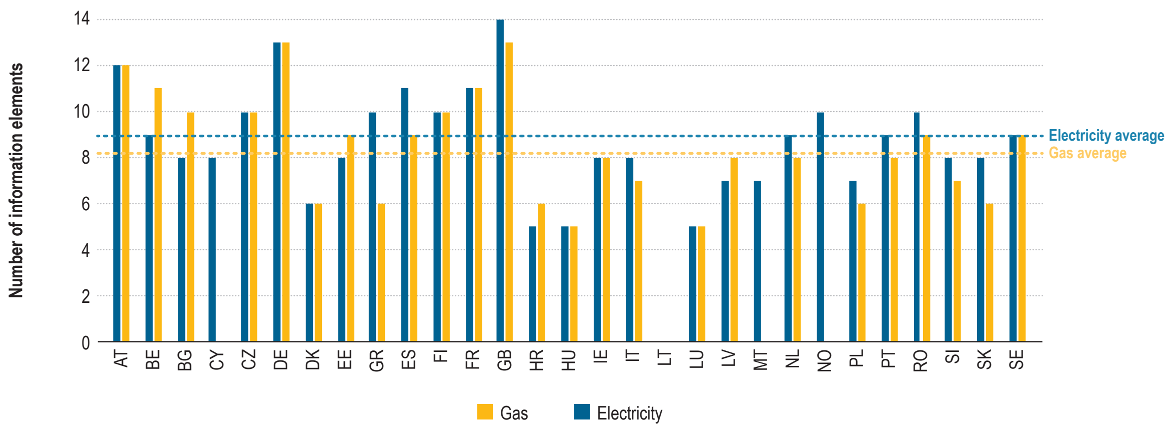
a. Information and choice for consumers

30 Consumer empowerment is, in addition to consumer protection, the second pillar of the 3rd Package. Access to relevant information is an important tool for consumer engagement in the electricity and gas market. MSs have various rules that deal with the provision of information to consumers, such as notifications on changes in prices, information on the bill, and single point of contact. Overall, the analysis shows that there was no major change in 2015 in either the legal or practical provision of information to consumers or in the availability of consumer choice options.

31 As Figure 12 indicates, the number of information elements on the bill required by national law varies widely among MSs, from six in Hungary and Luxembourg to 14 in Great Britain. On average, there are almost ten distinct information categories on an energy bill, many more than what article 10 of the Energy Efficiency Directive prescribes[14]. This Directive states that energy bills should contain information on actual prices and energy consumption, as well as comparisons of current and previous consumption and contact information of organisations where consumers can find information on energy efficiency.

32 There seems to be a fine balance to thread between informing consumers adequately and having an overload of information on energy bills that may lead to consumers losing oversight. Multiple NRAs believe indeed that too much information on bills can compromise the beneficial role of information to consumers.

Figure 12: Number of information elements on household bills in MSs – 2015



Source: CEER Databases, National Indicators (2016).

14 However, other non-energy specific regulations also applies regarding what should be included in the bills.

33 Almost all MSs comply with the rule that billing information based on actual consumption should be available to consumers without smart meters at least once a year. To those consumers that have smart meter access to billing, information should be provided on a monthly basis.

34 The 3rd Package also highlights that MSs must establish a single point of contact where consumers can obtain independent information about energy markets and their rights. In more than 20 MSs this role is reserved for the NRA. In the remainder, an ombudsman or a consumer organisation is usually charged with this role. Interestingly, in eight MSs there is more than one point of contact; in the exceptional case of Bulgaria, there are four points of contact for gas and three for electricity.

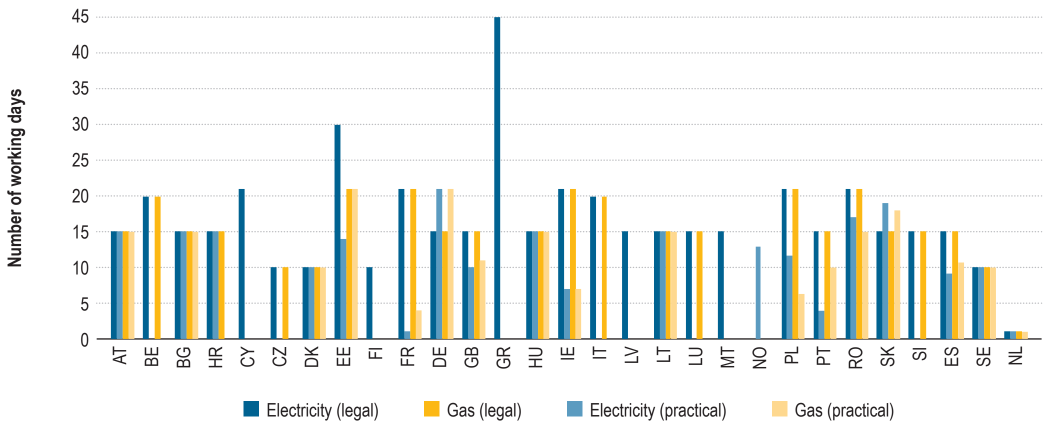
35 In most MSs, suppliers are required to provide a variety of payment methods (e.g. direct debit, bank transfer, credit card, prepayment, SEPA, cash) to their consumers. Data reveals that consumers in most MSs have a choice between two or more different payment methods, and in a significant number of these MSs, suppliers also offer discounts depending on the method of payment. Suppliers also offer a variety of contract options (e.g. prepaid, advanced payment/instalment, online) tailored to the needs of their consumers.

b. Supplier switching processes

36 In order for consumers to exercise their right to switch supplier, they must be able to rely on a smooth switching process. The Electricity and Gas Directives impose targets on MSs to ensure this. A switch should take no longer than three weeks, and consumers should receive their final bill within six weeks.

37 It would appear from Figure 13 that quite a few MSs have legal targets exceeding the three- week limit, usually in the range of 20 working days. On average, it takes around 14 working days to execute a switch both for electricity and gas. In practise, almost all MSs fulfil the EU requirement regarding the time allowed to perform a switch.

Figure 13: Legal and actual time to switch – in working days for 2015



Source: CEER Databases, National Indicators (2016).

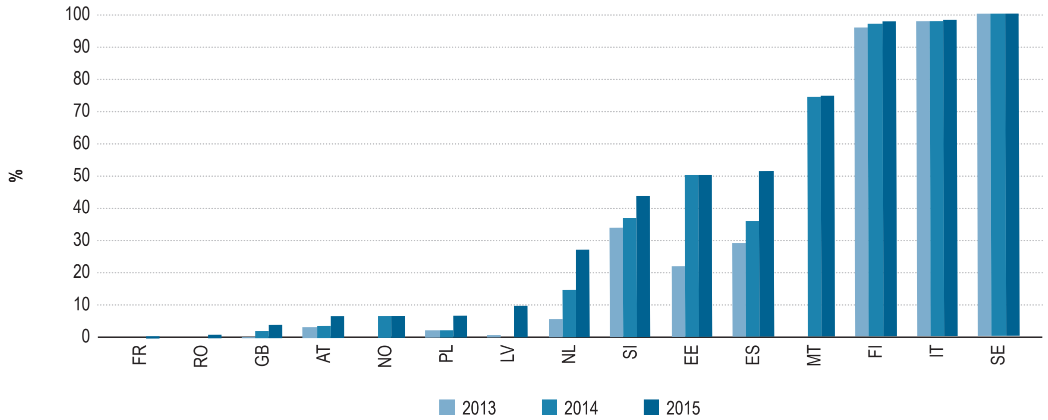
38 In addition, it should be taken into consideration that the Directives do not define the exact moment when a switch starts; hence there is a lot of diversity on how MSs have interpreted the switching time. In almost all MSs, the national time limit for consumers to receive their final bill after switching supplier is six weeks. A few countries have shorter periods. In practice, the average time to receive the final bill in the EU is around five weeks, both for electricity and for gas.

c. Smart metering

39 Figure 14 presents the number of final household consumers that have been equipped with electricity smart meters in the different MSs. Compared to 2014, three more countries (Malta, Norway and Romania) commenced their roll-out in 2015. Overall, in countries that had already started their roll-out, a larger proportion of households are now equipped. Smart meters for gas, however, remain a negligible phenomenon.

40 The European Commission recommends that smart meters meet a set of common functional requirements, so that roll-out is facilitated. Seventeen MSs set these minimal technical requirements. Although diversity across MSs is extremely large, most of these functionalities include smart meters to provide information on actual consumption, facilitate billing based on actual consumption and ensure easy access to information for households.

Figure 14: Share of households with electricity smart meters – 2015 (%)

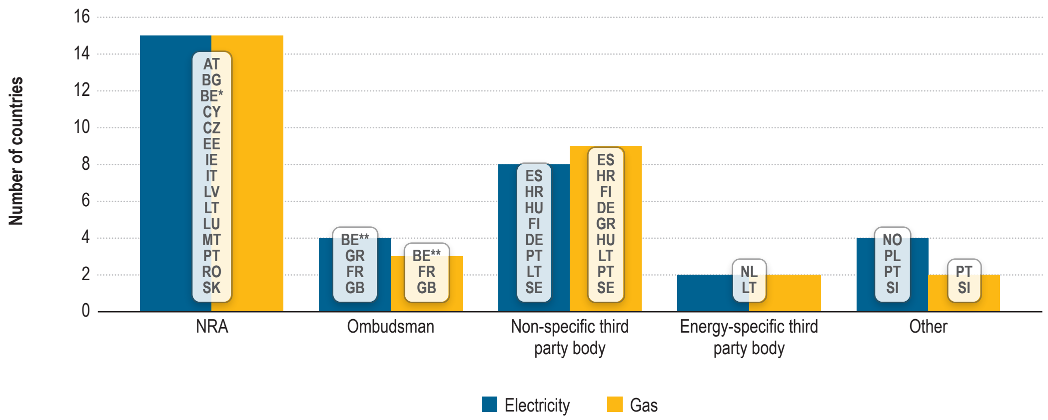


Source: CEER Databases, National Indicators (2016).

Alternative Dispute Resolution (ADR)

41 Almost all MSs implemented an independent mechanism for out-of-court dispute settlement, known as Alternative Dispute Resolution (ADR) mechanisms, as required by the 3rd Package. In most MSs, the NRA is responsible for this service. Where this is not the case, this role is entrusted to an ombudsman or a (non)-energy specific third-party body (see Figure 15).

Figure 15: Entities responsible for ADR – 2015 (number of countries)



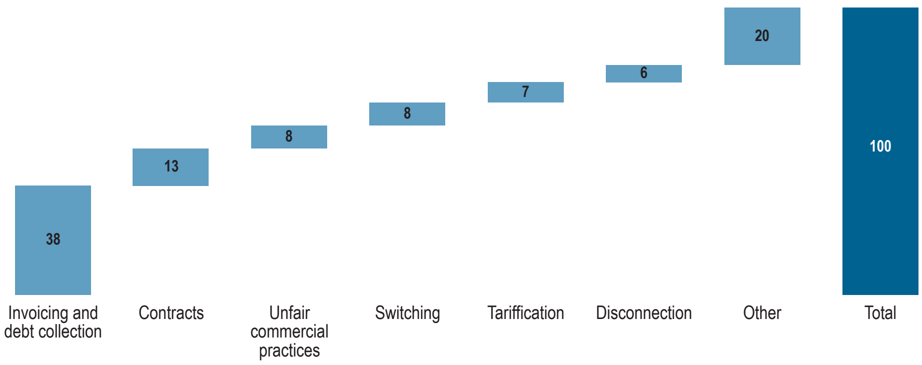
Source: CEER Databases, National Indicators (2016).

Note: BE – ADR at the federal level and two out of three regions; BE** – for one of the regions, the regional regulatory authority performs the ADR action.*

Consumer complaints

42 Almost all MSs provide figures on consumer complaints, and in most MSs the NRA is responsible for handling complaints. Similarly to the results of 2014, the main share of consumer complaints received by NRAs[15] for both electricity and gas relates to prices, contracts or billing issues. Figure 16 gives a more detailed picture for electricity. Aspects related to billing and debt collection are by far those which consumers complain most about. Contracts, unfair commercial practices and switching issues also capture the attention of consumers. The situation for gas mimics that for electricity, except for connection to the grid, about which there seem to be more complaints than in electricity.

Figure 16: Consumer complaints addressed to NRAs by households for electricity – 2015 (%)



Source: CEER Databases, National Indicators (2016).

43 The contact details of a complaint service are given on bills or in supply contracts in most MSs. A large number of MSs use at least two methods to inform consumers about the contact details of the complaint service. The large majority of MSs also use statutory complaint handling standards which concern the time required to deal with a complaint, the registration of all consumer complaints and a prompt first answer or acknowledgement within one day, the first two being the most frequent requirements.

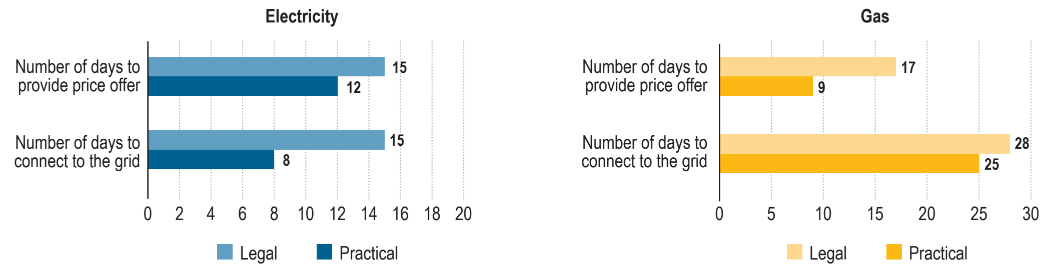
Quality of DSO services

44 Final consumers depend on the services of their grid companies in order to enjoy uninterrupted supplies of electricity and gas from their supplier. Many MSs set minimum standards to which distributors need to adhere to so as to ensure an uninterrupted supply. Typical metrics include the number of days within which a distributor needs to submit a price offer for a consumer wishing to connect to the grid or the number of days required to connect a consumer to the network.

45 Figure 17 gives an overview of the two above-mentioned metrics. From a regulatory point of view, the majority of MSs have standards for these metrics, and from the available data it would appear that distributors respect the set targets when performing these activities. However, it is to be remarked that further monitoring is required to have a full picture, as data from NRAs are missing for many MSs.

15 While the NRAs collect the bulk of complaints, it should be mentioned that complaints received by institutions other than NRAs are not covered here. However, as NRAs collect the bulk, the coverage here is representative. For more, see the Consumer Protection Volume of the MMR.

Figure 17: Selected indicators of DSO services quality related to connection – 2015[16]



Source: CEER Database, National Indicators (2016).

2.5 Recommendations on consumer protection and empowerment

46 The SOLR function should at least cover the protection of consumers against supplier failure. Any system of SOLR or default supplier should not lead to consumers remaining inactive on a permanent basis.

47 Consumers are sufficiently protected from disconnection throughout Europe, as indicated by disconnection rates of 2% or lower in most MSs. The figures available suggest that higher disconnection rates in some MSs may be due to various reasons: economic hardship, increased vulnerability, the availability of advanced technology to speed up the disconnection process remotely and cultural patterns.

48 Raising awareness of consumers by ensuring transparent, accurate, simple and clear energy invoices should be further facilitated. Bills should also not be the sole source of information for consumers. Rather than adding information to the bill, there should be other ways to inform consumers on a regular basis. Therefore, to add more information elements to bills as a legal requirement, either at the European and or national level would be counter-productive for the consumer. In addition, the trend of ongoing digitisation may offer opportunities to suppliers for more frequent and richer information sharing with their clients.

49 Consumers should be well aware of which authority or third party is the single point of contact in their country. Access to a single point of contact should be arranged in a simple and straightforward manner for a consumer through a unique website and one telephone number.

50 The creation of reliable online price comparison tools should be facilitated. As also mentioned in the 'New Deal for Consumers' Communication by the European Commission, it is highly recommended that there be at least one reliable price comparison tool per MS. A standardised fact sheet should be published for every retail offer, presenting easily compared prices. The transparency of offered prices and non-price elements should be guaranteed, by enabling consumers to filter additional services out of offers on price comparison tools[17].

51 In addition to the three-week maximum duration of the switching period, MSs should clearly inform consumers about when the switching period starts in order to secure energy supplier switching within the intended timeframe.

52 While more MSs have introduced functional requirements for smart meters compared to last year, it is recommended that in those MSs where smart metering is commercially feasible these requirements be worked out and introduced[18]. Preferably, smart meters should be equipped with functionalities which enable consumers to easily benefit from and participate in energy efficiency and demand response/flexibility schemes.

16 For insights into more metrics related to this topic, see the section on Quality of DSO services in the Consumer Protection volume of the MMR.

17 Guidelines of Good Practice on Price Comparison Tools (2012): http://www.ceer.eu/portal/page/portal/EER_HOME/EER_PUBLICATIONS/CEER_PAPERS/Customers/Tab3/C12-CEM-54-03_GGP-PCT_09Jul2012.pdf.

18 See also, Guidelines of Good Practice on Regulatory Aspects of Smart Metring for Electricity and Gas: http://www.ceer.eu/portal/page/portal/EER_HOME/EER_CONSULT/CLOSED%20PUBLIC%20CONSULTATIONS/CUSTOMERS/Smart%20metering/CD/E10-RMF-29-05a_GGP_SM_EoC_8-Feb-2011.pdf.

53 All MSs should have an ADR mechanism. In the MSs where the ADR is not provided by the NRA, the latter should have access to statistical data on complaints[19]. Complaint handling must be kept straightforward, fast and efficient to ensure consumer uptake and improved market functioning.

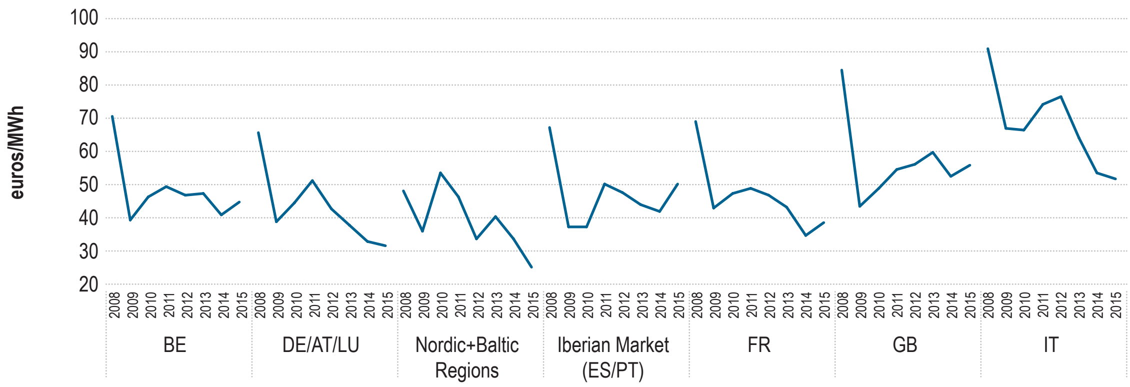
54 A common understanding of, and approach to, metrics used to monitor commercial quality of the DSO services would enhance monitoring and the comparison of monitoring data at the European level[20].

2.6 Wholesale electricity market integration and network access

Key developments in perspective

55 The downward trend in electricity wholesale prices continued in several European markets in 2015, due to, among other factors, increasing electricity production from RES, whereas in other markets (e.g. Belgium and Spain) prices increased in 2015, after some years of decline (Figure 18).

Figure 18: Evolution of day-ahead (DA) European wholesale electricity prices at different European electricity exchanges – 2008–2015 (euros/MWh)



Source: EMOS, Platts and PXs (2016).

56 The analysis of the evolution of wholesale prices in a selection of European electricity markets over the last decade shows that the increasing frequency of low-price periods (when prices are often zero or negative) is not accompanied by the occurrence of price spikes (reflecting situations of generation scarcity), that are crucial for 'compensating' for the decreased load factors of conventional generation plants. The analysis suggests that the implementation of capacity markets (CMs) hinders the occurrence of scarcity situations, hence reducing the frequency of high-price periods (e.g. in Spain). However, when markets are allowed to rebalance supply and demand (through some combination of retirement of surplus capacity and growth in demand), high-price periods re-emerge (e.g. in Belgium in 2015).

57 There is evidence of a situation of generation overcapacity (Figure 19) in a range of markets where high-price periods have decreased significantly or disappeared. While this result is not a feature of all MSs, it remains true that the capacity margin for Europe as a whole today exceeds two to three times the most commonly used generation adequacy standards[21]. This indicates an overall situation of overcapacity in Europe, in spite of the recently observed decline in conventional generation capacity.

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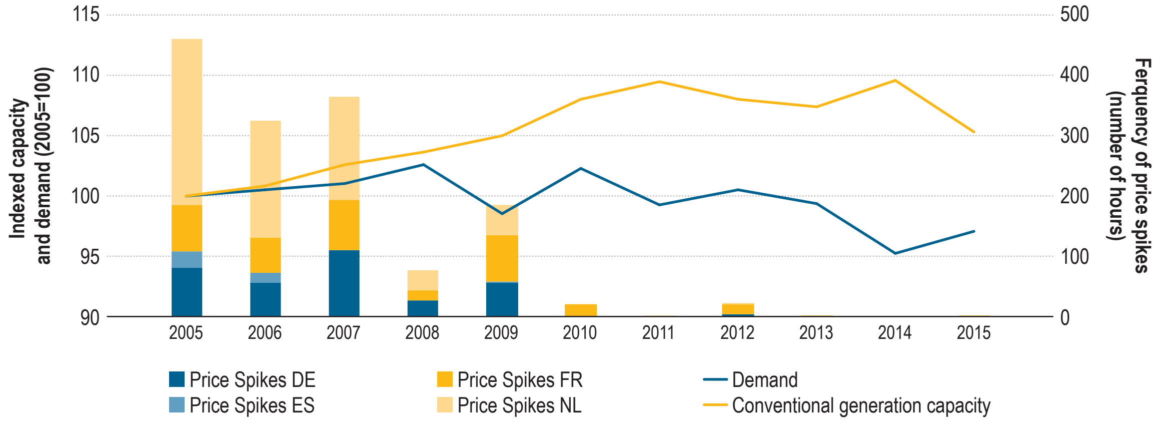
19 CEER Guidelines of Good Practice on Customer Complaint handling, reporting and classification: http://www.energy-regulators.eu/portal/page/portal/EER_HOME/EER_PUBLICATIONS/CEER_PAPERS/Customers/Tab1/E10-CEM-33-05_GGP-ComplaintHandling_10-Jun-2010.pdf.

20 CEER advice on the quality of electricity and gas distribution services: http://www.ceer.eu/portal/page/portal/EER_HOME/EER_CONSULT/CLOSED%20PUBLIC%20CONSULTATIONS/CUSTOMERS/Quality_of_DSO_services/CD/C14-RMF-62-04%20Advice%20on%20the%20quality%20of%20electricity%20and%20gas%20distribution%20-%2016%20Sept%202014.pdf.

21 The ENTSO-E's 2015 adequacy forecast shows a 2016 "de-rated reserve margin", i.e. margin of reliable available installed capacity over peak load, of 13% for Europe as a whole, and the most frequently reported reliability standard is a loss of load expectation (LOLE) of 3 hours/year, which can be considered equivalent to a de-rated capacity margin of at most 3-4%.

Figure 19: Aggregate installed conventional generation capacity and energy demand (indexed to 2005 = 100, left axis), and the frequency of price spikes (number of hours per year, right axis) in France, Germany, the Netherlands and Spain – 2005–2015



Source: Eurostat, ENTSO-E (2016).

58 Low wholesale prices and the declining occurrence of high-price periods[22] (e.g. in the Netherlands, they decreased from 275 in 2005 to 0 hours in 2015) have affected the financial viability of conventional generation in recent years. The combination of continued relatively cheap coal and low carbon prices has especially affected the competitiveness of gas-fired generation plants, some of which have been closed as a result.

59 The monitoring results further show that in recent years the costs associated with CMs, redispatching actions and other system services, such as the procurement of balancing reserves, are on the rise. These mechanisms are less market based, and their costs tend to increase the non-contestable share of the electricity bill for final consumers, reducing the scope for competition in electricity retail markets.

Amount of cross-zonal capacities made available to the market

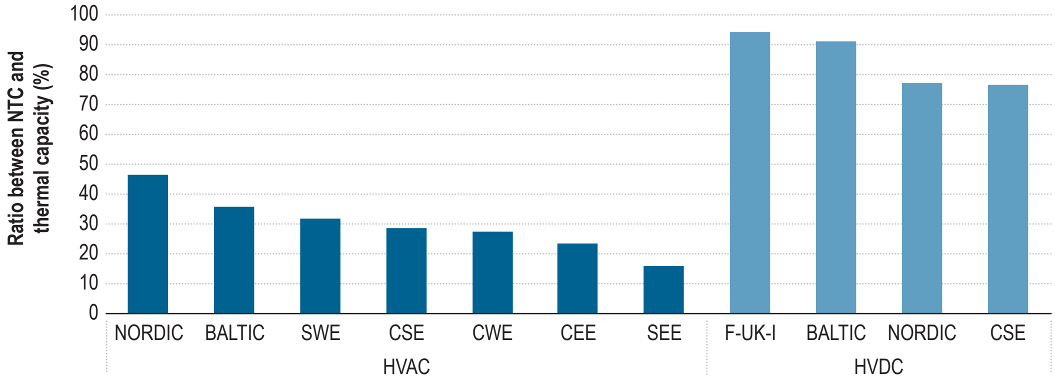
60 In recent years, despite investments in transmission networks and some improvements in capacity calculation methods, the increase in tradable cross-zonal capacities in Europe has remained limited. In an attempt to shed light on this feature, the relation between the physical capacity of interconnectors and the commercial capacity made available to the market is assessed. The results of this assessment show that, on a range of EU borders, only a small part of the physical capacity is actually offered to the market and that there are important variations between borders and regions (Figure 20). The low ratios suggest that either the physical infrastructure was not operational for longer periods (e.g. due to maintenance work) or its capacity was regularly limited to relieve internal congestions or to accommodate unscheduled flows[23] from the connected zones. In general, on average, 28% of high-voltage alternating current (HVAC) interconnector's physical capacity is made available for trading in 2015 (against 84% for high-voltage direct current (HVDC)).[24]

22 High-prices are assessed as DA prices which are higher than a factor three of the variable costs of a gas-fired generation plant based on the Title Transfer Facility (TTF) gas DA prices.

23 UF is defined as the difference between the physical flow and commercial exchange (schedule) on the bidding zone borders resulting from capacity allocation. It has two components: (i) loop flow (LF) which results from exchanges inside all bidding zones (flows not resulting from any capacity allocation); and (ii) unscheduled allocated flow (UAF), which results from capacity allocation on other bidding zone borders.

24 Available capacities on high-voltage alternating current (HVAC) interconnectors are affected by additional factors including unscheduled flows (UFs), operational security criteria and the higher values of reliability margins (RMs), which limit their direct comparison with HVDC interconnectors.

Figure 20: Ratio between available net transport capacity (NTC) and aggregated thermal capacity of interconnectors per region – 2015 (%)



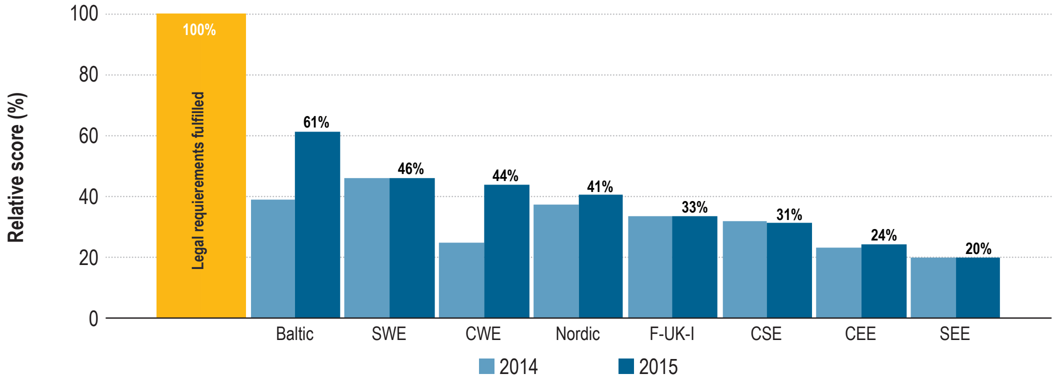
Source: Vulcanus, ENTSO-E YS&AR (2014), NRAs (2016), Nord Pool Spot, and ACER calculations.

Note: The regional ratio is calculated as a ratio between average NTC values per border in both directions and the sum of thermal capacity of interconnectors on the borders, where both are first added togetherfor each region.

Congestion management methods and distortive flows

61 In general, the fact that only a small part of the physical capacities is offered to the market is due to two key reasons. First, the process applied by Transmission System Operators (TSOs) to calculate the capacity made available for cross-zonal trade is insufficiently coordinated (Figure 21)[25]. Second, and as already mentioned in the previous paragraph, within the capacity calculation, TSOs tend to treat internal and cross-zonal flows unequally. This is partly due to the lack of correct and adequate incentives for TSOs which prefer, during the capacity calculation process, to limit ex-ante cross-zonal capacities in order to limit the costs of redispatching and countertrading required to accommodate internal and unscheduled flows (UFs). By doing so, the loss of social welfare associated with reduced cross-zonal capacities is not properly accounted for.

Figure 21: Regional performance based on fulfilment of capacity calculations requirements – 2014–2015 (%)

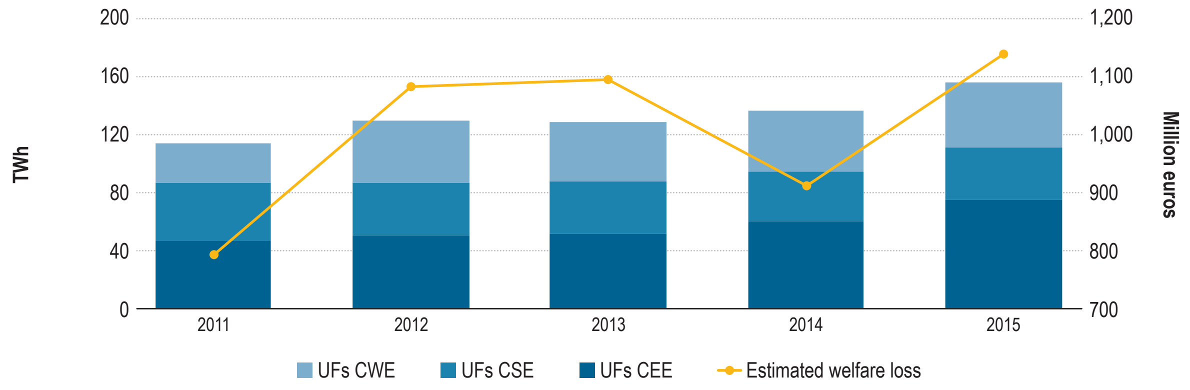


Source: Data provided by NRAs through the EW template (2016) and ACER calculations.

62 As shown in previous Reports, UF present a challenge to the further integration of the Internal Energy Market (IEM). Their persistence reduces tradable cross-zonal capacity, market efficiency and network security. In 2015, social welfare losses due to UF (Figure 22) increased to around 1.1 billion euros. Loop flows (LFs) and unscheduled allocated flows (UAFs) are responsible for 40% and 60% of the total social welfare losses due to UFs, respectively.

25 The Capacity Allocation and Congestion Management (CACM) Regulation (Commission Regulation (EU) 2015/1222, see OJ L 197, 25/7/2015) requires coordination in the capacity calculation process within and between capacity calculation regions. Against these requirements, the Agency has assessed the level of coordination based on a range of scoring criteria, with 100% being the maximum if all requirements were met.

Figure 22: Level of unscheduled flows and total social welfare loss in the CWE, CSE and CEE between 2011 and 2015



Source: Vulcanus, EMOS, ENTSO-E (2015) and ACER calculations.

Forward markets

63 In general, the liquidity of forward markets in Europe remained low in 2015, with the main exceptions being Germany, the Nordic area, France and Great Britain. The highest growth in the same period was recorded in the French forward market.

64 The persistence of high absolute values of assessed risk premia[26] in the valuation of transmission rights and of Electricity Price Area Differentials point to different problems in the markets for these products, which are crucial for efficient cross-border trading. For instance, transmission right prices reflect inefficiencies, such as the lack of market coupling, the presence of curtailments in combination with weak firmness regimes, and periods of maintenance reducing the offered capacity, which dampen the value of transmission rights. Some other aspects, such as uncoordinated national energy policies (e.g. on the application of environmental levies to energy consumed in Great Britain, which do not apply in France and the Netherlands) distorting the price formation of transmission rights are also highlighted. In the case of Electricity Price Area Differentials, the analysis identified potential cases of limited liquidity and reduced competition in the supply of these products, due to a lower number of producers that can 'safely' sell Electricity Price Area Differentials in some bidding zones.

Intraday and balancing markets

65 In well-functioning intra-day (ID) markets, prices should be able to reflect the value of flexibility at moments when capacity in the system is scarce. With the increasing penetration of intermitted renewable electricity generation, an increasing demand for flexible resources to accommodate the variability of RES generation and forecasting errors, resulting in high-price periods in short-term markets (including ID markets), was anticipated. However, high-price periods are currently not very frequent in European ID markets.

66 Moreover, sufficient ID liquidity should be considered as a prerequisite to achieving more efficient balancing of electricity systems. However, ID liquidity is currently relatively low in all major national markets, and increases recorded between 2014 and 2015 were modest.

67 An exception to this is the DE/AT/LU market, which recorded a 42% increase in liquidity between 2014 and 2015. This is likely to be attributed to the regulatory measures introduced in 2014 further to increase ID liquidity in Germany. For example, measures were introduced to reduce the share of renewable electricity generation exempt from balancing responsibility (48% of installed German renewable capacity by the end of 2015) and to avoid imbalance prices being set below incurred cost.

26 This is defined as the difference between the price of a hedging product (such as physical or financial transmission right or an Electricity Price Area Differentials) and the realised delivery-dated spot price differentials, i.e. the expected value or cash flow which a product can deliver to a buyer of the product.

68 Between 2014 and 2015, the French and Swiss ID markets also recorded increases in volumes of 14% and 35% respectively. These increases were probably the result of their integration with the DE/AT/LU market through the implicit continuous allocation of ID cross-border capacity.

69 An important barrier to developing ID liquidity exists when ID and balancing market prices do not fully reflect the value of flexibility. Currently, the value of flexibility is conditioned by several aspects of market design in MSs. First, the large share of balancing capacity procurement costs in the overall costs of balancing and some inefficiencies of national balancing markets continued to dampen balancing energy prices (and imbalance charges). As a result, there is no guarantee that the value of flexibility in real time is adequately reflected in the price, particularly during (rare) moments of scarcity. Second, the introduction of CMs (see below) smoothens energy prices (including balancing energy prices), and third, imbalance charges often do not fully reflect the costs of balancing the system.

70 These constrained imbalance charges do not provide the appropriate incentives to market participants, who may prefer not to balance their portfolio in ID markets, where the underlying marginal costs are typically lower than in the balancing timeframe. A move in the direction of more cost-reflective imbalance prices would promote more efficient national and cross-border ID markets.

71 Furthermore, an integrated cross-border balancing market will maximise the efficient use of balancing resources, while safeguarding operational security. The presence of large disparities in balancing energy and balancing capacity prices, together with a significant amount of unused cross-border capacities (see Figure 25 below), suggests a considerable potential for further cross-border exchanges of balancing services in Europe. Moreover, the overall cross-border exchange of balancing services continued to be limited in 2015 (Figure 23 and Figure 24).

Figure 23: EU balancing energy activated abroad as a percentage of the amount of total balancing energy activated (upward) in national balancing markets – 2015 (%)

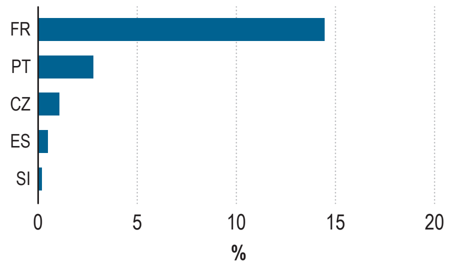
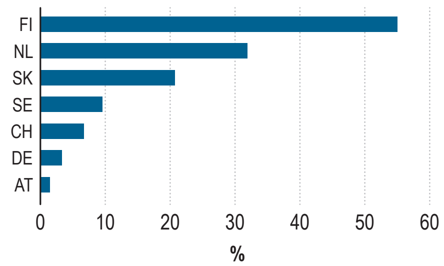


Figure 24: EU balancing capacity contracted abroad as a percentage of the system requirements of reserve capacity (upward FCR) – 2015 (%)



Source: Data provided by NRAs through the EW template (2016) and ACER calculations.

Note: These figures include only those countries that reported some level of cross-border exchange. The actual exchange of balancing energy across borders within the Nordic region is not included in Figure 24, because the Nordic electricity systems are integrated and balanced as a single responsibility area. Therefore, the cross-border exchange of balancing energy cannot be disentangled from imbalance netting across borders or from system imbalance at the (national) TSO level. In the Baltic region, cross-border exchanges of various balancing services were reported; however, these are not included in Figure 24 or Figure 25 due to discrepancies in the values reported by the relevant NRAs.

72 In 2015, the most successfully applied tool to exchange balancing services continued to be the utilisation of imbalance netting across borders. Imbalance netting covers an important share of the needs of balancing energy in several European markets. In the Netherlands, for example, imbalance netting avoided almost 50% of the electricity system's balancing energy needs in 2015.

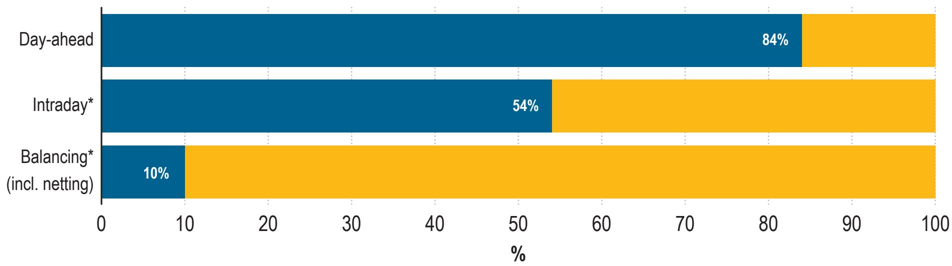
Efficient use of allocated cross-border capacities

73 The implementation of market coupling on the French-Spanish border in May 2014 led to an increase in the level of price convergence recorded in the South-Western Europe region in 2015. Moreover, the go-live of the Flow Based Market Coupling (FBMC)[27] project in May 2015 contributed to further price convergence in the Central-West Europe region. With FBMC, the remaining margins available on critical branches (CBs) of the network are allocated to where they are most valuable and rendered more tradable capacities (i.e. minimum and maximum net positions) compared to the available transmission capacity (ATC) method.

74 The Electricity Target Model (ETM) for the DA market envisages a single European price-based market coupling applied throughout the EU and Norway. This eliminates the remaining 'wrong-way flows'[28] and hence improves the use of cross-border capacities for trade. In 2015, observed wrong-way flows further decreased compared to previous years, due to the extension of market coupling to the Austrian-Italian and French-Italian borders, and on the Spanish-French and Hungarian-Romanian borders in 2014.

75 Moreover, thanks to market coupling on 31 out of 40 borders, the use of allocated cross-border capacity is more efficiently used in the DA timeframe. The efficient use[29] of European electricity interconnections increased from around 60% in 2010 to 84% in 2015. The overall level of efficiency in the use of the interconnectors slightly decreased in 2015 (Figure 25) due to reduced efficiency in the utilisation of cross-border capacity on the nine borders that remained with explicit auctions by the end of 2015. Furthermore, implementing market coupling on the remaining borders would render a social welfare benefit of more than 250 million euros per year for EU consumers.

Figure 25: Level of efficiency (% use of commercial capacity available in the 'economic' direction) in the use of interconnectors in Europe – 2015



Source: ENTSO-E, NRAs, EMOS and Vulcanus (2016).

*Note: *Intraday and Balancing values are based on a selection of EU borders.*

76 Whereas the efficient use of allocated cross-border capacity has reached in the DA timeframe a significant level, the results (Figure 25) show that there is significant scope for better use of cross-border capacities in the ID and balancing timeframe.

27 FBMC is a capacity calculation and allocation method which, by considering the network, accounts for the impacts of cross-border exchanges on network security constraints. The FB capacity calculation method is an improvement on the ('traditional') available transmission capacity (ATC) method, as the FB method usually increases the capacity offered to the market. Furthermore, the FB method optimises social welfare by allocating capacity where it is most valuable.

28 A 'wrong-way flow' hour is considered as such when the final net nomination on a given border takes place from the higher to the lower price zone, with a price difference of at least one euro/MWh.

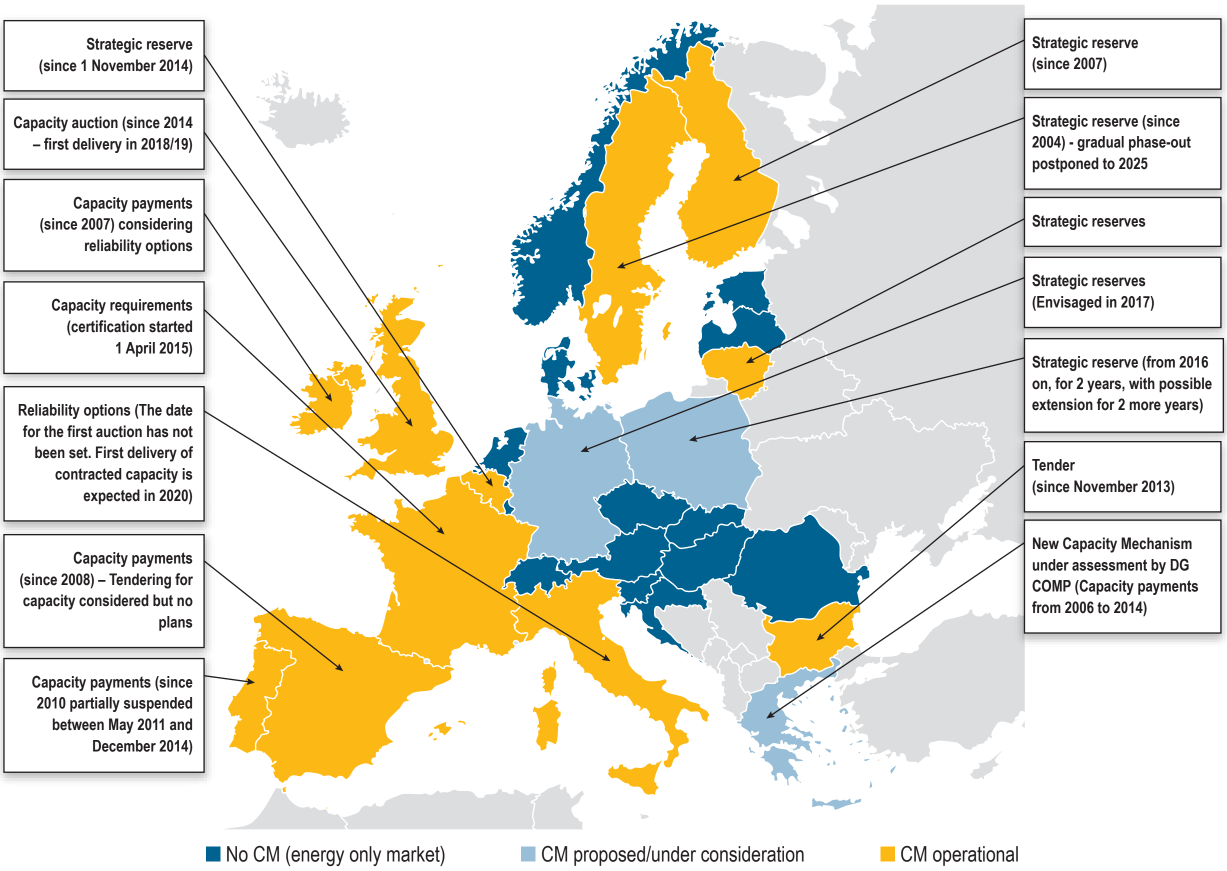
29 The available tradable capacity used in the "right direction" in the presence of a significant price differential in all EU interconnectors.

Situation in capacity mechanisms

77 At present, a patchwork of different CMs based on uncoordinated national adequacy assessment methodologies is applied across the EU (Figure 26). This hinders efficient price discovery and investments in generation adequacy.

78 The key changes compared to last year's Report are that Lithuania is now shown as having a CM operational since 2010 which resembles features of Strategic Reserves and has a national scope[30] and that Denmark's intention to introduce a 200 MW Strategic Reserve mechanism in East-Denmark in 2016 as a transitional measure (until interconnection capacity between East-Denmark and Germany has increased) has been put on hold. A cost-benefit analysis of the Danish mechanism is pending, and is aimed at supporting further decision making regarding a potential notification of the European Commission. Furthermore, in Sweden, the planned gradual removal of Strategic Reserves has been postponed to 2025.

Figure 26: CMs in Europe – 2015



Source: NRAs (2016) and European Commission's report on the sector inquiry into CMs (2016).

Note: In Germany, there are three (envisaged) schemes: Climate Reserve, Network Reserve and a Strategic Capacity Reserve. The first is not considered to be a CM; the second could be, and the third is a CM. The Strategic Capacity Reserve is envisaged to be implemented in 2017, if the necessity is demonstrated. The envisaged CM in Poland for after 2016 includes generation units tendered by the TSO, which would definitely have been decommissioned by the end of 2015. This scheme has the characteristic of a Strategic Reserve CM.

79 National adequacy assessments and reliability standards are different across the EU (Table 1). As a result, countries cannot simply rely on the assessment of a neighbouring country and use that as input to their own assessment. Moreover, there is a risk that the contribution to national adequacy from (cross-zonal) interconnectors is reduced.

30 Pursuant to Article 7.4 and 7.5 of a public service obligation (available here https://www.e-tar.lt/portal/lt/legalAct/TAR.DECA89CB22A0) the government instructs the TSO to contract long-term capacity in order to secure the country's energy security, reliability and energy independency. The TSO pays each year one power plant – only this plant pre-qualifies though, DR and all technologies can participate in the scheme – to remain (partly) outside of the market and stay available for the TSO. This power plant was funded in 2015 with a variable payment which is related to the variable costs of the power plant and hence unrelated to the DA market price. The electricity production of the mentioned power plant totalled 1.07 TWh in 2015, but not for the purpose of the public service obligation.

Table 1: Situation of metrics used in EU MSs to assess generation adequacy at national level – 2015

Country	AT	BE	BG	CH	CY	CZ	DE	DK	EE	ES	FI	FR	GR	HR	HU	IE	IT	LT	LU	LV	MA	NL	NO	PL	PT	RO	SE	SI	SK	UK
Reliability Standard	No	Yes	NS	No	NS	No	No	No	No	Yes	No	NS[a]	Yes	NS	Yes	NS2	No	No	NS	NS	No	No	No	No	Yes	NS	No	NS	No	Yes
RMM																														
CM										10%														9%						
EENS																														
EIR																														
LOLE (h/y)		3										3	2.4			8						4			8					3
LOLP (h/y)			13												8															
F&D of expected outages																														
Other	None					NS			NS											NS	NS[c]					NS				
Reliability problems reported in the last five years	No	No	No	No	No	NS	No	No	No	No	No	NS	NS	No	No	No	Yes[b]	No	No	No	No	No	No	Yes[d]	No	NS	No	No	No	No

Sources: ACER, CEER, Assessment of electricity generation adequacy in European countries, Staff Working Document accompanying the Interim Report of the Sector Inquiry on CMs and Pentalateral generation adequacy probabilistic assessment[31].

Note: a – Binding reliability standards may either already be in place or implemented in the future; b – Reliability problems have arisen on the Islands of Sardinia and Sicily, which are not well connected to mainland Italy; c – Generation adequacy assessment is based on a deterministic approach; and d – A heat wave during August 2015 caused emergency measures to be taken to meet demand. The figures in the table present the reliability standards within the metrics. NS: Not specified. RMM: Reserve Margin Method, CM: Capacity Margin, EENS: Expected Energy Not Supplied, EIR: Energy Index of Reliability, LOLE: Loss of Load Expectation, LOLP: Loss of Load Probability, F&D: frequency and duration of expected outages: a probabilistic risk measure, in terms of the tangible effects on electricity.

2.7 Recommendations on wholesale electricity markets

80 The Agency strongly believes that the top priority should be to finalise and rapidly implement all the Network Codes and Guidelines which have been developed over the last five years. If properly implemented, all these Network Codes and Guidelines will indeed improve the functioning of the wholesale markets and therefore the quality of investment signals. They will also make national electricity markets, in all timeframes, so integrated and interdependent from each other that any national administrative interventions will become ineffective, making the need for MSs to move towards a more coordinated EU, or at least, regional, energy policy even more obvious.

81 Despite the many achievements in the framework of the early implementation process, there is still a long way to go in order to have all these Network Codes fully implemented.

82 For instance, there is still significant scope to improve cross-zonal capacity calculations and as a result to use interconnectors much more efficiently. The forthcoming development and implementation of more efficient, coordinated and transparent cross-zonal capacity calculations methods, as required by the CACM Regulation, should help to create a more interconnected market, whereby, for example, the contribution of cross-zonal flows to national security of supply will be better taken into consideration. When developing these methods, the Agency recommends paying particular attention to the fact that cross-zonal exchanges are not unduly discriminated against internal exchanges.

83 Monitoring the way cross-zonal capacities are currently calculated by TSOs will also enhance the trust of market participants in the price formation. The Agency is dedicated to perform the required monitoring and has for this purpose identified the required data and indicators. In this respect, TSOs who are tasked to generate these data in order to perform their duties defined under the CACM Regulation are invited to share these data with the Agency in a coordinated and timely manner using an appropriate and standardised format. To the extent that these data are non-confidential, they should be made publicly available, for instance through the Transparency Platform.

31 See http://www.benelux.int/files/4914/2554/1545/Penta_generation_adequacy_assessment_REPORT.pdf.

84 An increasing trend in the costs associated with CMs, redispatching actions and other system services, such as the procurement of balancing capacity, has emerged in recent years[32]. These costs arise less from market-based mechanisms than electricity wholesale prices, and tend to increase the non-contestable share of the electricity bill for final consumers, as they are often passed on to end-users through network (or other ad-hoc) charges.

85 In the Agency's view, this trend inhibits the market to render a price that reflects the true value of the electricity supplied, which in turn distorts the quality of the investment signals and, ultimately, justify administrative, usually uncoordinated, interventions to ensure security of supply at national level. The Agency therefore recommends putting an end to this vicious circle.

86 Therefore, the use of non-market based support and other mechanisms that inhibit the market to render a price that reflects the true value of the electricity supplied should be limited, especially if national in scope and uncoordinated, and redispatching costs are optimised (e.g. through a better bidding zone configuration which provides local price signals). This would internalise the underlying costs of the supply of electricity in the wholesale energy price and hence enlarge the contestable share of the electricity bill.

87 In particular, the Agency considers that MSs should refrain from unilateral administrative interventions in their electricity markets, or at least make sure that these interventions are coordinated within the EU and do not impact the functioning of the IEM.

88 An example of unilateral interventions is the development of CMs through which MSs aim to address adequacy concerns. In this respect, the Agency recommends that, before implementing a CM, all possible no-regret measures should be exhausted including addressing existing market design failures which are partly the root of MSs' adequacy concerns in the first place and are a barrier to the well-functioning of the their energy markets. These barriers include price caps, the lack of (sufficient) demand side participation and undue limitations on cross-zonal trade.

89 The Agency also recommends that, when MSs consider implementing a CM, they present a credible action plan, which includes the following elements:

a) an assessment of remaining barriers and regulatory failures;

b) an assessment of the reasons why these failures have not yet been addressed; and

c) a roadmap.

90 The latter should list the steps to address these remaining barriers and regulatory failures, when they will be taken and by whom. A solid and credible action plan will contribute to preventing the introduction of CMs that distort the functioning of the IEM.

91 Furthermore, the Agency believes that the cross-border participation of foreign adequacy suppliers should be allowed in all CMs, except for well-defined, targeted mechanisms such as Strategic Reserves. However, in order to enable interconnectors to contribute to generation adequacy within MSs, a number of important prerequisites need to be fulfilled (see page 31 and 32 of the ACER-CEER's contribution[33] to the European Commission's Public Consultation on a new Energy Market Design).

32 Possible distortions include the following. In the short term, a capacity mechanism may lead to distortions if its design affects natural price formation in the energy market (e.g. bids for energy). Furthermore, in the long term, a capacity mechanism may, if contributions from cross-border capacity are not appropriately taken into account, lead to over-procurement of capacity in countries implementing capacity mechanisms, with a detrimental impact on consumers.

33 Available here: http://www.ceer.eu/portal/page/portal/EER_HOME/EER_PUBLICATIONS/CEER_PAPERS/Electricity/2016/ACER%20CEER%20response%20to%20European%20Commission%20CM%20inquiry_0.pdf.

92 The Agency notes that national adequacy assessments and reliability standards are different across the EU. As a result, countries cannot simply rely on the assessment of a neighbouring country and use that as input to their own assessment. Moreover, there is a risk that the contribution to national adequacy from (cross-zonal) interconnectors is reduced. On this subject, the Agency recommends that the standards for harmonisation of adequacy assessments such as performed by ENTSO-E should be further developed, and replace national security of supply approaches by regional adequacy assessments based on a pan-European harmonised assessment methodology.

93 For the fifth year in a row, UFs – including LFs and UAFs – have been shown to continue distorting the functioning of the IEM, as they reduce the welfare benefits EU consumers can reap from market integration. The impact of unscheduled allocated flows can be mitigated by further improving cross-zonal capacity calculations, and LFs can be mitigated through a comprehensive review of bidding zones. The Agency recommends continued monitoring and further improving the transparency of data on distortive flows, such as LFs, so that their impact on the IEM can be tracked in more detail.

94 The monitoring results for forward markets show that the various cross-border hedging tools occasionally display large risk premia, which can be considered as an inefficient market outcome. The Agency recommends ensuring efficient price formation of cross-border hedging tools in forward markets.

95 In areas where cross-border hedging tools rely on TRs, this requires, first, the extension of DA market coupling to all borders and the implementation of stronger firmness regimes as envisaged in the draft Guideline on Forward Capacity Allocation[34] (FCA Guideline); and, second, the identification of all local inefficiencies which reduce the value of TRs (e.g. the recurrence of 'maintenance' periods), so that they can be addressed on a border-by-border basis. Where the auction price of TRs remains significantly below its value (based on DA price differentials), the possibility of leaving some of the offered capacity for the subsequent timeframes should not be excluded.

96 In market areas where cross-border hedging tools rely on financial markets, the need for additional measures to support liquidity should be assessed. The assessment should take account of market participants' needs for hedging, and in particular ensure that access to hedging tools do not constitute a barrier to new suppliers entering or competing on equal footing with established players in retail markets. The potential measures to be assessed include the assignment of new roles to TSOs, such as acting as (or supporting for) market makers or auctioning financial or other more sophisticated products.

97 Although DA market coupling has progressed successfully in recent years, the persistence of significant social welfare losses due to inefficient DA allocation methods illustrates the urgent need to finalise the implementation of market coupling, which is required by the CACM Regulation.

98 Correctly designed and well-integrated electricity intraday and balancing markets are the only way to guarantee that the system is balanced in the most efficient manner at all times. The further growing penetration of intermittent generation reinforces the need for this and should, for instance, encourage market participants to 'self-balance', for which adequate intraday liquidity is essential. The Agency recommends implementing measures that support and foster intraday liquidity, such as full balancing responsibility for all technologies and balancing charges that are cost-reflective – i.e. reflect the real-time conditions of the system – to correctly expose and hence incentivise market participants to balance in the intraday markets.

99 Once approved, the implementation of the Network Code on Electricity Balancing will contribute to ensuring that systems are balanced more efficiently and to increasing the level of competition and integration of balancing markets in Europe. In this regard, a better use of existing balancing resources by increasing cross-border exchanges of balancing energy (including imbalance netting) will render further welfare benefits for end-users.

34 Adopted by MSs on 30 October 2015 and available for download at: https://ec.europa.eu/energy/sites/ener/files/documents/FCA_301015_Final_Provisional_Voted.pdf.

100 The Agency underlines further the importance of measures which optimise the procurement of balancing capacity (i.e. reduce the costs). The concern is that a sub-optimal procurement of capacity can reduce the real-time value of providing balancing energy. Measures to reduce the total amount of procured capacity and to improve the level of competition in the provision of balancing capacity include an increase in the sharing and/or exchange of cross-border balancing capacity and the implementation of adequate prequalification rules, which do not discriminate among technologies. As regards adequate prequalification, this includes demand-side participation, separate procurement of upward and downward balancing capacity and shorter procurement timeframes. Furthermore, measures to ensure that balancing energy prices reflect real-time conditions include the application of marginal pricing for balancing energy and avoiding the fixing of the level of balancing energy prices as part of the tender to procure balancing capacity.

2.8 Wholesale gas market integration and network access

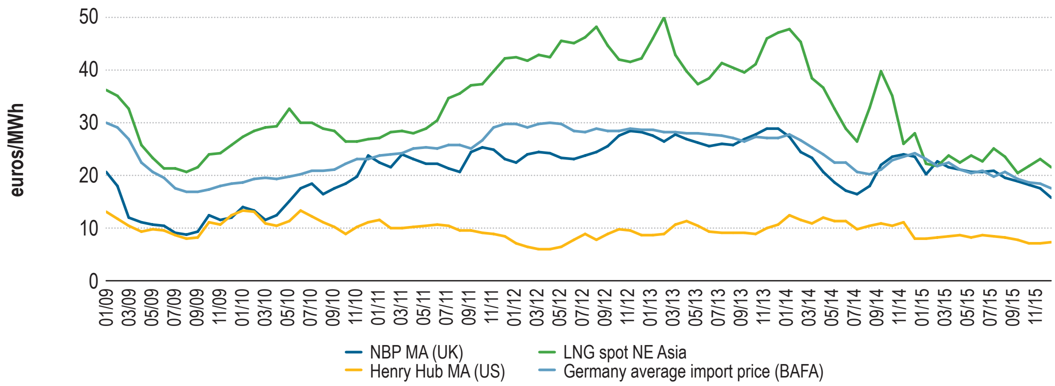
Key developments in perspective

101 EU gas consumption showed a 4.2% recovery in 2015 compared to 2014, the first increase following four consecutive years of decline. Nevertheless, consumption is fragile with no structural recovery in sight. Sluggish economic growth, improvements in energy efficiency and modest demand for gas-fired power generation are among the root causes.

102 In 2015, external imports accounted for 72% of total EU gas supply, with Russia being the main supplier, followed by Norway and Algeria. As the importance of gas imports continues to increase, the EU is heavily exposed to global gas market dynamics. Imports from Liquefied Natural Gas facilities (LNG) totalled more than 12% of supplies in 2015, Qatar being the main supplier, followed by Algeria. Domestic conventional EU production continued to decline (-8% in 2015 vs 2014) and it is expected that domestic production could drop to below 20% by 2030[35].

103 In 2015, there was a partial recovery of Russian gas transit volumes passing through the Ukraine. Steady flows through Nord Stream, the pipeline connecting Russia with Germany via the Baltic Sea also confirm the rising role of this artery for EU supply. Reverse flows capabilities, either physical or backhaul[36], facilitate the redistribution of gas from Nord Stream into markets adjacent to Germany. Norwegian gas exports also increased in 2015.

Figure 27: Evolution of international wholesale gas prices during 2009 – 2015



Source: Platts, Thomson Reuters, BAFA and ACER calculations.

35 http://www.eurogas.org/uploads/media/Eurogas_Workshop_Long-Term_Outlook_for_gas_to_2035_221013.pdf.

36 At an interconnection point, reverse flow can be enabled in two ways: i) via the availability of technical capacity or ii) via the offer of virtual (or backhaul) capacity. In case i) the interconnection point is bi-directional and gas can physically flow in both directions, while in ii) the interconnection point is uni-directional: gas can physically flow in one direction only and the counter 'commercial-only' flow is enabled via an inter-TSO coordination process of netting of capacity nominations; as such, virtual capacity is offered as interruptible.

104 Gas wholesale prices in one of the benchmark EU hubs, the UK's NBP, declined in 2015 as shown in Figure 27, further reducing the European gas price-spread with the US market. However, the US market-specific situation, with domestic shale gas, keeps US wholesale prices on average 40% lower than in Europe. The international reduction in gas prices was also influenced by the drop in oil prices, which affects those long-term gas contracts that are linked to the evolution of oil prices, and by (global) gas oversupply.

105 Some 17% of EU MSs gas demand was covered by storage withdrawals during the winter of 2015/16. While in some MSs, storage facilities are mostly considered as commercial tools, in other MSs storage facilities are mainly security of supply tools with decisions on their use taken at government level. In a context of negative summer/winter spreads, the cost competitiveness of storage facilities also seems more and more influenced by volatility in gas spot prices. During winter, traders withdrew lower volumes from storage facilities and, where possible, used them more as flexible and quick demand response tools for portfolio optimisation and to maximise arbitrage opportunities from short-term prices fluctuations.

The interplay with global gas market dynamics

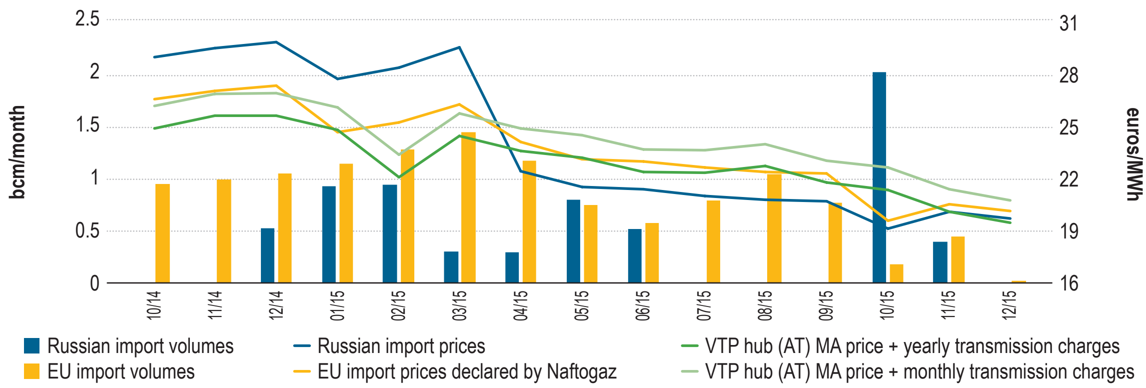
106 The EU is heavily exposed to global gas dynamics, given its dependence on gas imports, but in turn also exerts an influence on prices, thanks to the size of its market and its competitive market model. Lower gas needs, for example, in East Asia resulted in excess gas in that part of the world lowering global LNG prices. This LNG was diverted to the EU, decreasing EU gas hub prices. These so-called spot-priced LNG vessels are important in determining marginal hub prices.

107 It should also be noted that with LNG exports from the US becoming a reality, US Henry-Hub prices, adjusted for liquefaction, shipment and regasification costs, provide an extra signal for EU gas price formation, putting a cap on EU prices. Global LNG markets are increasingly becoming more flexible and shorter-term price oriented. In this regard, EU markets, given their size, are important in setting global LNG spot prices.

108 The EU wholesale gas market model is resulting in higher levels of competition, thanks to the rising role of gas hubs in price formation, the deployment of new interconnection infrastructure and the adoption of harmonised – and more competition-driven – cross-border access regulation.

109 This model is slowly being copied by neighbouring countries in the East, in particular Energy Community Contracting Parties like the Ukraine. The Ukraine is now also importing hub-sourced gas from the EU, which is a result of the implementation of the 3rd Package, which encourages EU MSs to enable reverse flows on their outer borders, a move taken by EU MSs bordering Ukraine. Improving liquidity at EU hubs also created more favourable conditions to increase Ukraine's import diversification, as Figure 28 shows.

Figure 28: Estimated monthly Ukrainian gas import prices during 2015 (euros/MWh)



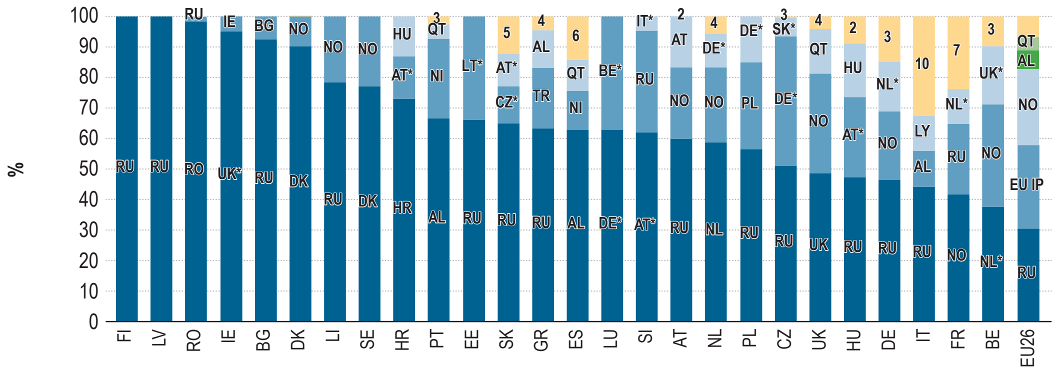
Source: for volumes Naftogaz and IEA, for import prices: ACER calculations based on Naftogaz quarterly prices, Platts and ENTSOG TP.

The importance of gas sourcing diversity and upstream competition

110 Balanced diversity in gas import sources is an important building block of a well-functioning wholesale gas market. Figure 29 shows that significant disparity still exists among MSs in this respect, although overall sourcing diversity has improved over the years. The Central-East Europe (CEE) and Baltic regions are examples of this development. They took advantage of hub development, cross-border capacity enhancements via reverse flows and/or via new interconnectors and the commissioning of new LNG terminals (e.g. Klaipeda).

111 However, quite a few MSs are still *de facto* dependent on less than three distinct sources[37] and even if some of these MSs have access to more than three sources, one source often accounts for the bulk of total imports. This situation will persist for some time, as some infrastructure investments are still needed to address this, especially in South-South East Europe (SSE).

Figure 29: Estimated number and diversity of supply sources in 2015 by geographical origin of the gas



Source: ACER calculations following the Gas Target Model approach using Eurostat Comext and BP Statistical report (2016) data. The asterisk refers to MSs featuring liquid organised markets where the gas has been purchased.

112 Figure 30 shows concentration levels for upstream gas sale companies by EU MS[38]. More than a third of the MSs are below or close to the 2000 points threshold, hence exhibiting low concentration levels. In contrast, mostly smaller gas markets score poorly. MSs that have well-functioning hubs and those that benefit from LNG exhibit the lowest values.

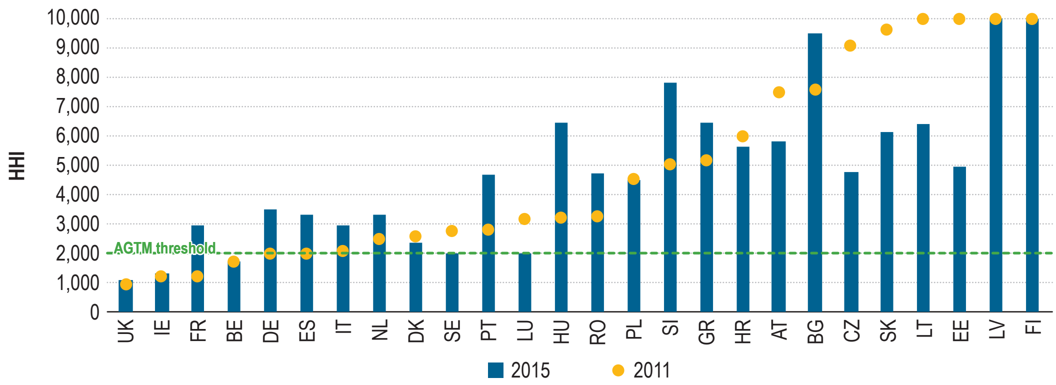
113 In comparison to 2014, 2015 reveals positive evolutions. Lithuania improved dramatically, thanks to the commissioning of the Klaipeda LNG terminal. Unlike Latvia, Estonia seems to be taking advantage of the diversity of supply that Klaipeda offers. In the CEE region, MSs like the Czech Republic, Slovakia and, to a lesser extent, Poland show improved HHI levels. They achieved this by progressively diversifying their supplies away from the historical incumbent. The role of reverse-flow capability is not to be under-estimated when assessing the diversity of gas supply and upstream concentration levels[39].

37 The Gas Target Model 2014 recommends all EU MSs have at least three different geographical supply source origins, as this enables market competitiveness.

38 The Herfindahl-Hirschmann Index (HHI) is used to assess concentration levels and is calculated as the sum of squared market shares for each firm supplying gas at the import level. A level of 2000 or below is considered to be a good level of concentration.

39 MSs are legally required to enable reverse flow capabilities on uni-directional gas pipelines.

Figure 30: Estimated HHI index per EU MS at upstream sourcing companies' level 2011–2015

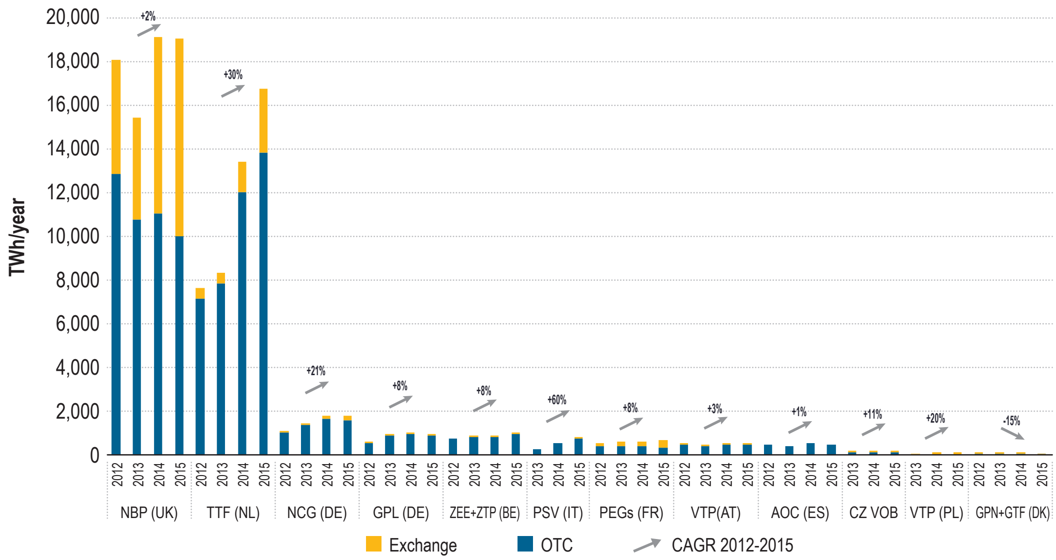


Source: ACER calculations following the Gas Target Model approach (annex 1 of Gas Wholesale 2015 MMR) using Eurostat (Comext), BP Statistical Report, Frontier Consultancy research for GTM 2014 and NRA data.

Status of gas hubs

114 Functioning hubs are essential for wholesale gas markets to work properly. Figure 31 compares traded gas volumes for selected EU hubs. In 2015, these saw an increase of approximately 9% compared to 2014, reaching record highs. To put it in perspective, traded volumes were approximately nine times the total EU physical gas consumption. NBP (British hub) and TTF (Dutch hub) clearly outperform the other hubs. TTF's growth was spectacular between 2012 and 2015. NCG, one of the German hubs, and PSV, the Italian hub, are showing significant growth levels. In many other MSs, however, the gas hub still plays a minor role.

Figure 31: Traded volumes at EU hubs and CAGR – 2012–2015 (TWh/year and %)

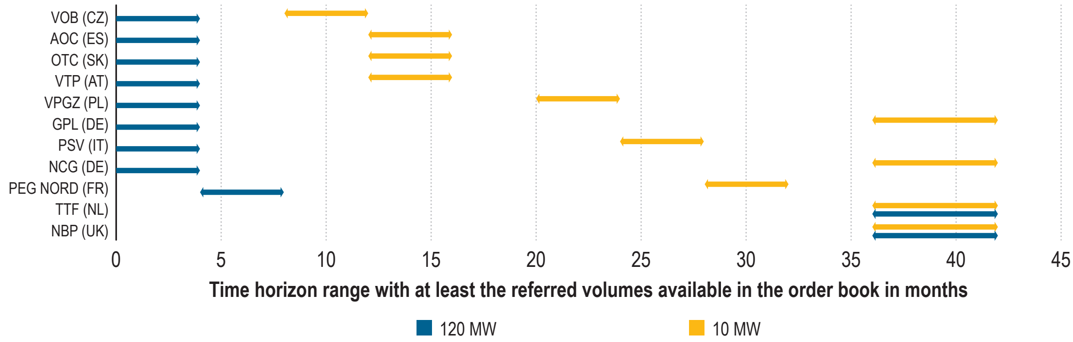


Source: Trayport, Hub operators and NRAs 2015.

115 The lead of NBP and TTF is also visible when measuring other metrics. As such, they continue to be the EU's best functioning hubs. The key defining factor that sets them apart from other hubs is their well-developed forward markets. An example illustrates this. Figure 32 indicates that NBP and TTF are in a position to offer in the market sizeable blocks of gas volumes, as shown by the example of 120 MW, for more than 3 years ahead[40].

40 For a more in-depth review of other Gas Target Model metrics, see the MMR volume on Gas Wholesale.

Figure 32: Order book horizon in months for bids for forward products for different blocks of MWs – November 2015 – April 2016



Source: ACER calculations following the Gas Target Model approach (annex 1 of Gas Wholesale 2015 MMR) using REMIT data.

116 These metrics' values concur in accord with the leading role for forward risk management and financial trades that NBP and TTF play in Europe[41]. NBP and TTF also attract substantial market interest from participants from neighbouring countries, which seems to cement their position. The liquidity of the British and the Dutch hubs is also benefiting from indigenous production traded on these hubs.

117 TTF and NBP's lead is followed by a group of hubs which include the German, Belgian[42], French, Italian, and Austrian hubs, whose value for the considered metrics confirm that they improved their position year on year. Market participants rely increasingly on these hubs for hedging activities. For these hubs, values for spot products are comparatively closer to those of NBP and TTF. However, the values of their prompt and short-term curve products are lower vis-à-vis the British and Dutch hubs. And their performance with respect to the forward long-curve products metrics indicates that liquidity seems to be limited for longer-dated products.

118 A third group, which includes the Czech, Spanish, Polish and Danish hubs, is showing improving performance, although their liquidity is lower. In other markets, like Hungary, Slovakia, Finland or Lithuania, organised trading still attracts very limited volumes. Finally a number of markets, i.e. Croatia, Estonia, Ireland, Latvia and Slovenia, despite having single virtual trading points (VTPs), do not feature active transparent trading venues. Bulgaria and Greece are still preparing the process of implementing a VTP.

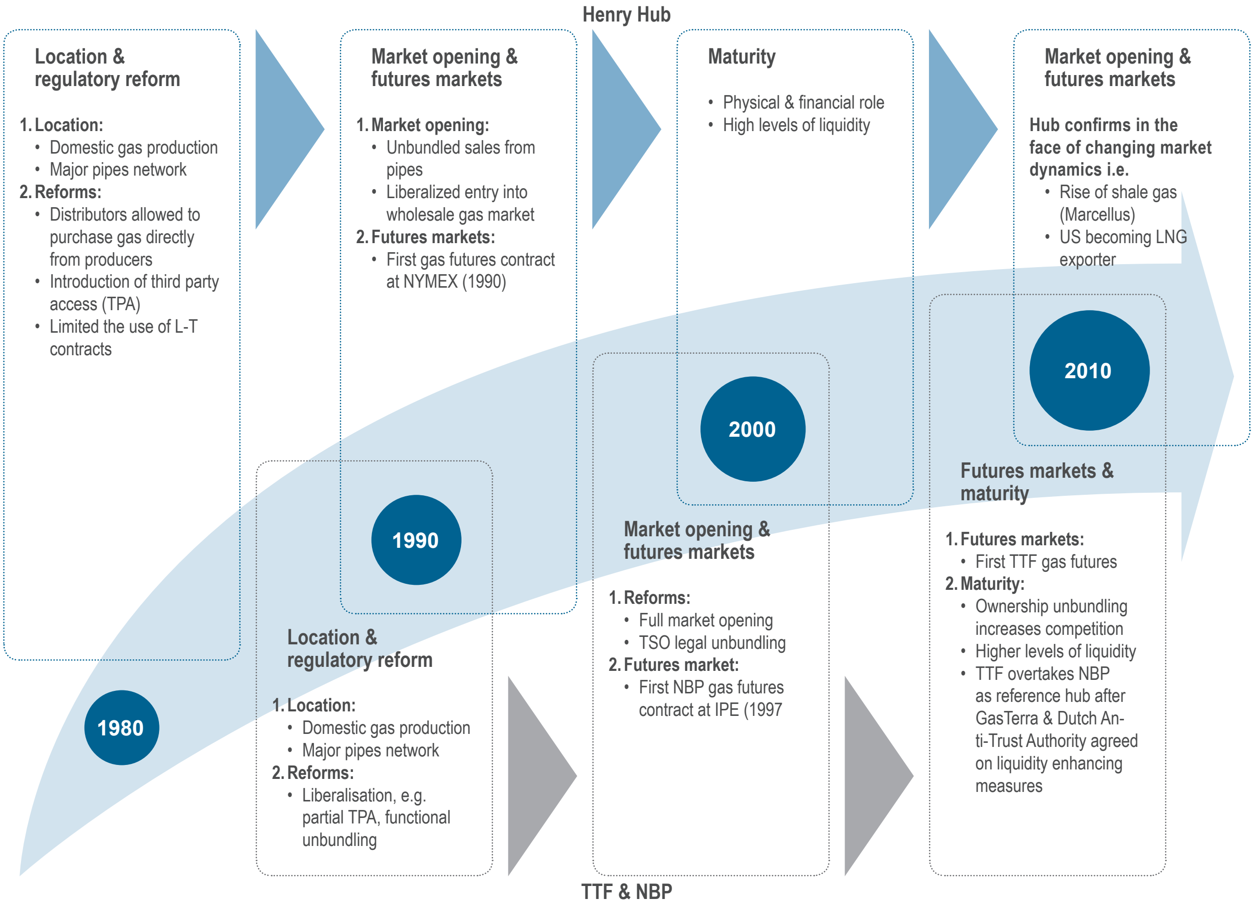
119 The key pre-requisite for a well-functioning hub is the implementation of an entry-exit system per market area built on a VTP configuration, which is used as a unique location for the title transfer of gas and for balancing gas accounts. Moreover, the availability of transparent trading venues – either via brokers or exchanges – will facilitate market entry and competition. Furthermore, hub performance is favoured by the standardisation of trading terms and the harmonisation of balancing and capacity access provisions across hubs – i.e. full implementation of the Network Codes (NCs).

120 While NBP and TTF are the leading hubs in the EU, it is worth comparing them with the most advanced gas hub in the world, i.e. Henry Hub (see Figure 33). This gas hub has a long-standing position as a price setter in North America. Henry Hub gas futures are the most traded gas futures contracts in the world and are used for hedging and speculative purposes. Henry Hub is characterised by high liquidity levels, with a tight bid-ask spread, lower than in its EU counterparts. Over time, it has gone through various phases of development which, interestingly, seem to overlap with the evolution of NBP and TTF. This could also give an indication as to where NBP and TTF might be heading. It can be observed that even when faced with declining local production, TTF and NBP, just like Henry Hub, tend to keep their forward price-setting role.

41 According to market analysts, the role of financial players is more prominent in NBP; meanwhile TTF is used comparatively more by the trading arms of the big European energy suppliers.

42 ZTP hub has served the virtual trading point resulting from Belgian and Luxembourgian market zones integration since October 2015.

Figure 33: Comparison of NBP/TTF versus Henry Hub of the US



Source: ACER; FERC.

Level of market integration

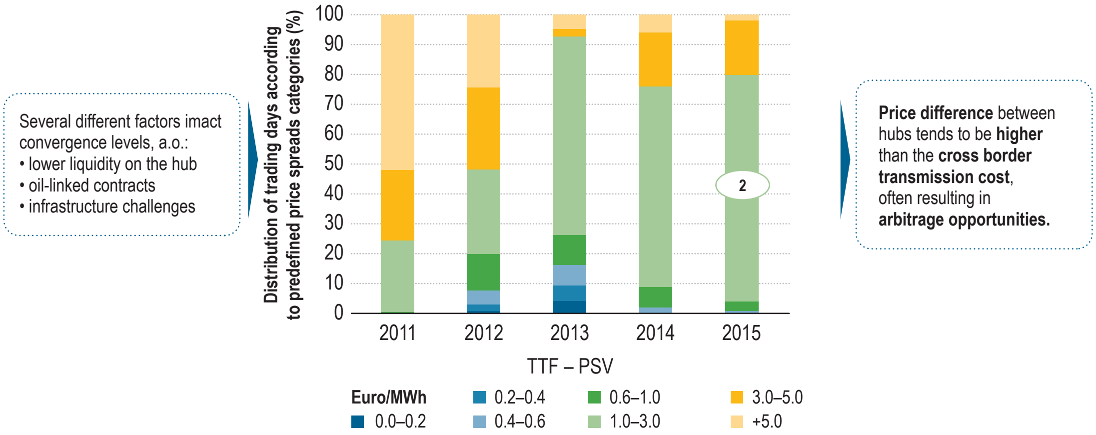
121 Price convergence across European hubs has improved in recent years. This can be explained by a combination of factors. On the one hand, there is the increasing market participants' involvement in hubs looking for price arbitrage possibilities. Financial-arbitrage trading operations (e.g. spread trade, locational swaps) have a considerable impact on this, as, in some markets, certain types of trade without physical capacity booking/use are allowed, driving convergence even below transmission costs. On the other hand, a context of gas oversupply supports price convergence via arbitrage of surplus positions. In addition to that, broader coverage abilities for traders[43] facilitate the comparison of liquidity and prices fostering hub trade. Finally, the facilitation of cross-border trade via new infrastructure and harmonised regulation are also key contributors to higher convergence.

122 However, the picture is not equally applicable to the whole of the EU, as underlying price differences persist across different gas hubs[44]. Price convergence is the highest among gas hubs in the North-Western European (NWE) region. The reasons for this are the high levels of liquidity, sufficient available cross-border capacity and the presence of a more effective regulatory regime (e.g. more advanced implementation of network codes). In other regions (see Figure 34 for the TTF-PSV case), larger hub price differences can be observed. This is due to lower liquidity on individual hubs, higher contracting of gas through long-term oil-indexed contracts, as well as infrastructure challenges which often result in physical and contractual congestion at cross-border interconnection points (IPs).

43 For example, ICE Endex and PEGAS became active in Italy in 2015. PEGAS also became active in the UK in 2015.

44 This does not imply that the goal of market integration is absolute price convergence.

Figure 34: Level of price convergence between TTF and PSV – 2011–2015

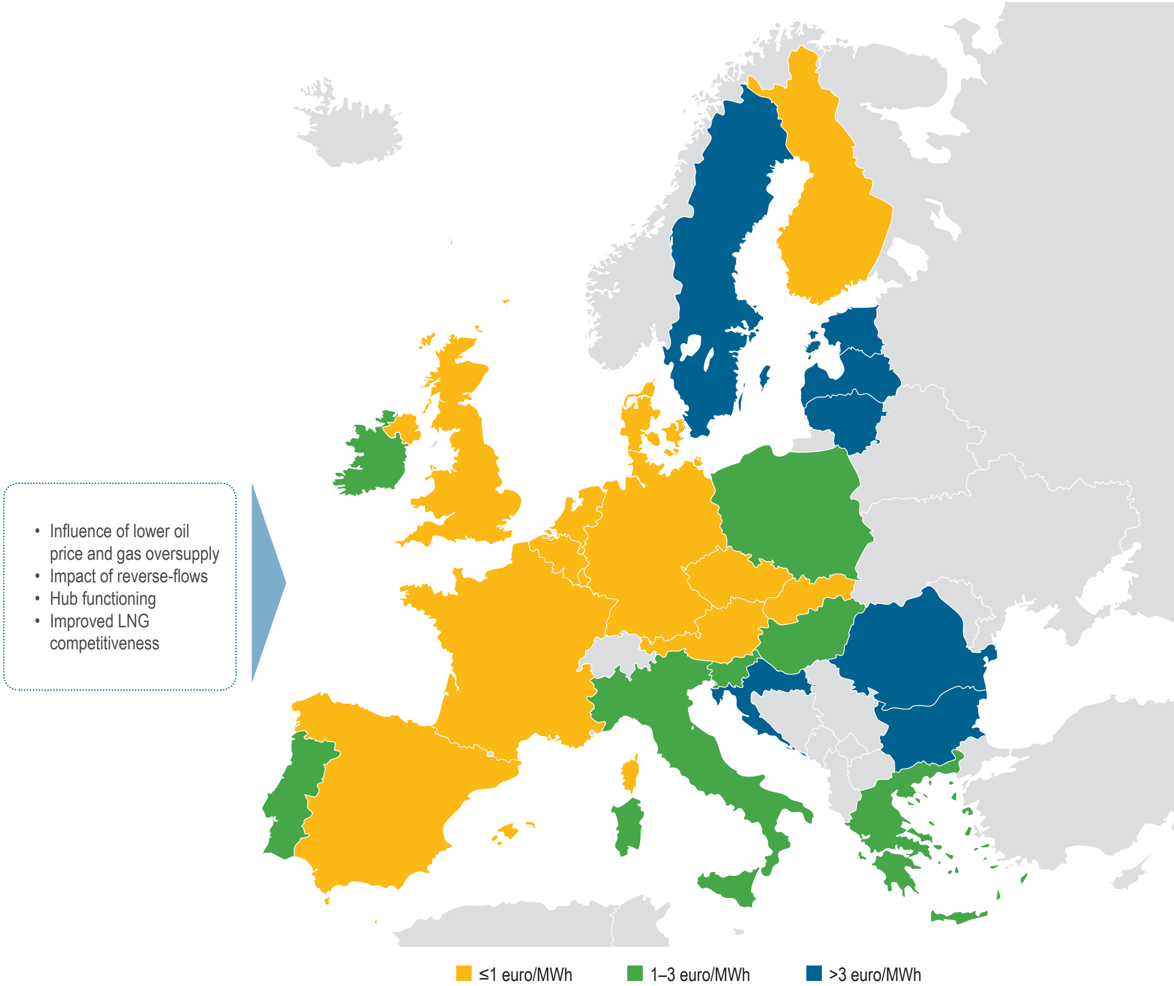


Source: ACER based on Platts data.

123 As EU hubs prices increasingly converge, situations in which hub price spreads are lower than the respective cross-border transmission charges have become very frequent. This is particularly observable in the NWE region. In the other cases where hub price spreads are higher than transmission charges – and in the absence of capacity constraints – booking capacity and performing arbitrage trading should be advantageous.

124 The alignment of prices can also be observed when comparing prices at which suppliers' source gas in different MSs (Figure 35). The results indicate that in markets where hubs have an important supply hedging role, lower sourcing costs are registered. In this regard, markets in NWE exhibit the lowest prices. The spreads with other regions continued to narrow in 2015.

Figure 35: EU MSs assessed gas suppliers' sourcing prices – 2015 yearly average with TTF = 21 euros/MWh



Source: Eurostat Comext, Platts, IGU, NRAs and ACER calculations.

125 The extent of existing cost differences is related to the type of supply contract, the source of gas supply and the level of liquidity and competition within the MS. All these factors interact with the degree of hub development and the level of market integration. The ongoing narrowing of price spreads also implies that most regions are benefiting from stronger market interconnection, hence more competition.

126 In some MSs, wholesale price differences persist, suggesting that further welfare benefits in terms of lower gas wholesale prices can be reaped from further integration, including by the correct implementation of the Network Codes. The total estimated gross welfare losses from incomplete market integration in 2015 ranged between 4 and 4.5 billion euros[45]. These losses have decreased by 60% since the Agency began their calculations in 2012, a reduction mainly driven by demand reduction, the drop in oil prices, and hub development.

45 Losses are quantified by comparing the suppliers' sourcing price with the TTF sourcing price, which is taken as a reference. The results provide an estimate of potential savings that could be achieved if all suppliers' in the EU had comparable TTF hub gas sourcing prices. This exercise does not take into account factors such as transportation costs and investment costs, or elements such as contractual obligations, demand-supply constraints or capacity availability. The upper figure results from using declared import prices on the border, and the lower figure results from using hub product prices for those MSs where a range of prices was used to assess suppliers' average sourcing costs. Depending on multiple market factors, market prices in EU MSs could converge around a middle point or could be lower overall, thanks to enhanced competition and liquidity levels.

Degree of NCs implementation and market effects

127 This year, the Agency has for the first time analysed the market effects of the Congestion Management Procedures (CMP) Guidelines and of the Capacity Allocation Mechanism (CAM) Network Code[46]. However, the analysis at this point covers only two years, and hence does not allow for far-reaching conclusions. In addition, challenges in the quality of ENTSOG TP data complicated the monitoring.

128 When analysing capacity booking and utilisation patterns for 2015 versus 2014 at an aggregated EU level, two elements stand out. While capacity bookings tend to remain stable on a daily average, booking rates for peak moments increased. Likewise, contractual utilisation for peak moments showed an increase, while yearly average utilisation decreased slightly.

129 A comparison of these two values with prior results confirms a decrease, on a yearly average, in aggregated technical capacity being contracted and a change in capacity utilisation trends. Shippers increasingly contract capacity for a shorter term to cover needs associated with high seasonal demand (profiling of bookings). In addition, there could be a slight increase in confidence to acquire capacity as CMP measures, triggering the release of unused capacity, are gradually applied. In general, capacity seems progressively more accessible for shippers. In the broader market context, this is further explained by falling consumption levels and reverse nominations physical netting.

130 The Report also examines the volume of offered bundled capacity and the amount of bundled capacity sold at monthly capacity auctions – bundled means that the allocation of capacity on both sides of the border occurs as a single capacity product. The analysis reveals that, at present, limited values are offered and sold as bundled capacity. The prevalence of legacy long-term contracts and the difficulty of revising those without regulatory or market pressure may keep the value of this indicator low in the coming years.

131 When looking at gas flows via IPs and for those where data were available, it seems that physical utilisation values remained stable in 2015. As in 2014, for the vast majority of IPs – around 70% of IPs – average physical utilisation was below 50%.

46 CMP establishes a set of measures in order to prevent and reduce contractual congestions at cross-border points in the EU, CAM standardises cross-border capacity products and their allocation via transparent auctions held on joined booking platforms and establishes that at EU IPs, capacity must progressively be offered as a bundled product. Existing contracts of unbundled capacity shall be bundled when they expire.

2.9 Recommendations on wholesale gas markets

132 The analysis shows that markets are working better and better. However, MSs ought to complete the implementation of the 3rd package and of initiatives such as the GTM:

a) The GTM: Refrain from introducing new market model rules pending the ongoing implementation of the GTM. The ongoing effort to redesign the electricity wholesale market may not warrant mutatis mutandis a change in the gas market model, which seems to be working better and better;

b) Network Codes: A timely and proper implementation of the CMP GLs and CAM, CMP, BAL and interoperability NC across all MSs is essential to further enhance the creation of the Internal Gas Market. Proper market functioning is not helped by the disparate implementation of NCs across MSs, nor does it promote competition;

c) The market needs to play fully without undue intervention: e.g. market dynamics put TTF and NBP hubs in the lead for hedging forward supplies. Reflection on how the GTM can further boost market functioning could be envisaged.

133 In a context of declining indigenous production and flat demand growth, the MSs and market participants must further diversify supply portfolios by attracting new gas sources either via LNG or pipeline. While it is not within the scope of this Report to issue recommendations on security of supply, this greatly affects market functioning. Diversified security of supply strategy will further increase upstream producers' competition dynamics, resulting in more competitive EU price formation. As such:

d) Several EU MSs are still supplied by less than – the GTM proposed threshold of – three distinct sources. This situation seems to restrain competition. In addition to reaching the three distinct sources, for market functioning purposes there is merit in MSs also striving for a balanced portfolio. This means that each of the distinct sources ought to represent sizeable volumes. However, the market decides;

e) Alleviate any remaining infrastructure gaps. In a few EU MSs, the lack of interconnectivity seems to explain the high upstream HHI market concentration values. Examples of such critical gaps are the bi-directional corridors that are planned to connect, respectively, Greece-Bulgaria-Romania-Hungary and Poland-Baltics.

134 Facilitate further the possibility of using gas supply mechanisms based on more shorter-term hub-based transactions, which might result in enhanced gas-on-gas price formation, especially in regions with still less functioning market dynamics and the near absence of forward markets (Iberian Peninsula, SSE and Baltics). However, suppliers' and producers' sourcing contractual mechanisms are a matter of independent commercial decisions. As advocated elsewhere in this Report, regulated end-user prices should be abolished. However, responsible authorities can contribute to promoting the role of hubs by, for example, indexing any temporary remaining regulated end-user prices to hubs and by transferring physical delivery points at the flange into VTPs, as is required by the 3rd Package.

135 Facilitate growth in trading activity in gas hubs, as wholesale traders and financial actors are beneficial in raising liquidity and triggering price convergence among hubs. This must go hand in hand with measures to facilitate trading, e.g. the option for wholesale traders not to have to book transmission or storage capacity.

136 There seems to be an increasing emphasis on physical short-term sourcing and price risk management. Hence the development of liquid within-day-trading linked to balancing markets should be further facilitated.

137 The use of existing cross-border infrastructure via enhanced operational cooperation needs to be optimised before any new infrastructure is considered. At present, there is no contractual congestion on most EU cross-border IPs, so prudence is warranted on deciding about more investment. NRAs need to continue to monitor the correct application of measures defined by the CMP though. If investments in new infrastructure are needed, these should:

f) Be selective and based on validated CBA methodologies and appropriate market tests to reduce the risk of any over-investment. The CBA also needs to include a regional perspective;

g) Promote ways to ensure enhanced implementation of the 3rd Package, such as making EU infrastructure grants conditional on concrete measures to develop gas wholesale markets.

138 As the case study on PSV developments shows[47], the reduction of regulatory obligations on storage capacity allocation that go beyond security of supply needs is a key driver for attracting new market entrants and further developing hub liquidity. Other MSs should also investigate whether the same approach should also be implemented in their markets.

139 In MSs with weaker functioning markets and less developed gas hubs (Iberian Peninsula, SSE, Baltics) consider ways to foster hub development or seek cooperation with neighbouring more advanced hubs:

h) The exercise should be initiated by NRAs via self-assessments on the market functioning as outlined in the GTM;

i) Learn valuable lessons – e.g. roadmaps and best practices – from ongoing market integration initiatives such as BeLux that may be of use for possible future integration projects;

j) A well-functioning, independent VTP is essential for a competitive gas wholesale market to develop. Bulgaria, Greece and Romania are called upon to implement their pending VTP legislative proposals as soon as possible;

k) In MSs where incumbent players seem to have limited incentives to provide hub liquidity, gas resale obligations could initially trigger competition. The presence of market makers in these less liquid hubs can help to raise market liquidity.

140 Call on stakeholders to facilitate and further improve data availability, quality and transparency:

l) Overcome data reporting and quality difficulties as observed with the ENTSOG Transparency Platform. Data are not always available, reliable or transparent. This hinders a real understanding of underlying market dynamics. In addition, monitoring may benefit from an improved database; and

m) Use English more as a language for operational communication and possibly legal contracts. This will facilitate, inter alia, market entry for new players.

141 Enhance collaboration with adjacent countries in the East via the legally binding framework of the Energy Community and the voluntary cooperation initiative of MedReg to foster competitive and secure wholesale gas markets across the continent of Europe. Expanding physical and/or virtual reverse flows, for example, will bring additional benefits in terms of more competitive, secure gas markets.

47 See case study 3 "Italian PSV developments" in the Gas Wholesale volume of the MMR.

List of figures

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