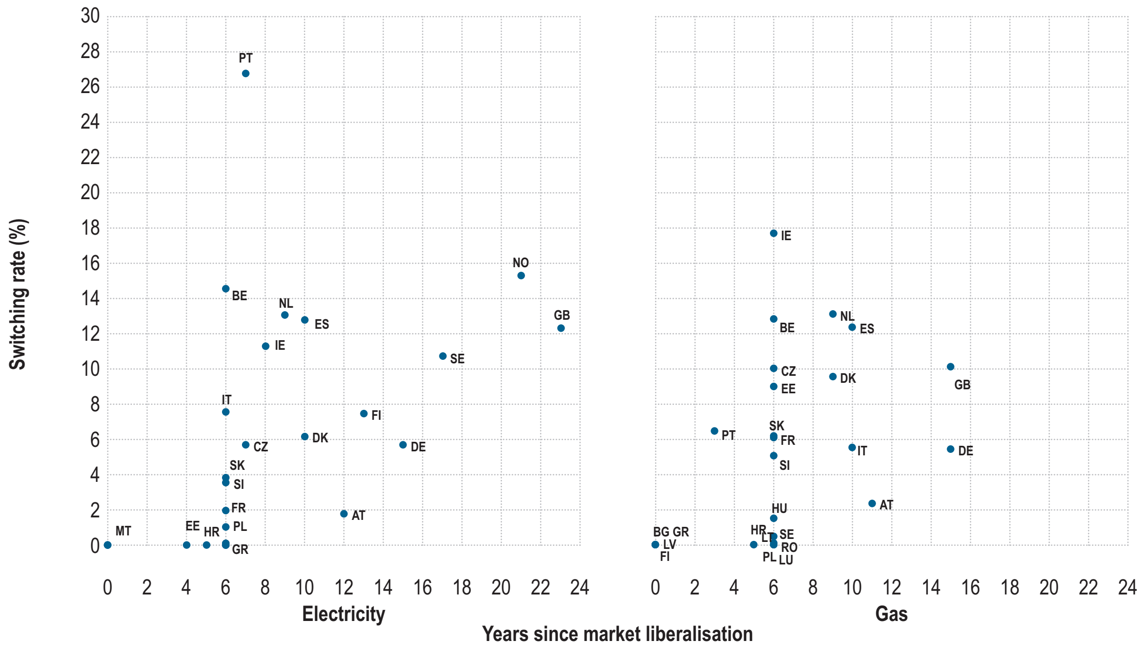
and Ireland). However, once the price-competition phase of the market is more stabilised, and/or consumers are satisfied with their current suppliers, switching rates may be lower, even in competitive markets (e.g. Austria and Germany[96]).

149 Figure 29 illustrates a weak but positive relationship between switching rates and time since market liberalisation, showing that switching tends to be higher in those countries where the market has been liberalised longer. However, in some countries which introduced full retail competition later, consumer activity has gathered momentum, and they recorded a very high switching rate relative to the number of years since market liberalisation (e.g. Belgium and Portugal in electricity and Belgium and Ireland in gas).

Figure 29: Relationship between switching rates and years since market liberalisation – (%)



Source: CEER National Indicators Database (2014) and ACER calculations

150 A factor that may impact the above relationship is that, although liberalisation may have taken place in a given market, there is usually a delay between liberalisation and the observed switching effect. This is because certain elements required for switching need time to develop (e.g. consumer awareness of competition and choice and the switching process). Nevertheless, there are other reasons which explain why consumers may choose to switch or not, as referred to below.

Price responsiveness

151 It is generally assumed that if consumers are price responsive, in a situation where price differences exist, they will tend to switch to the supplier offering a cheaper supply contract. To assess this, pricing data obtained from price comparison websites and switching data have been compared.

152 Figure 30 shows that notable savings might be achieved by switching from the incumbent standard offer to the best offer in the market. The analysis shows that the alternative offers were cheaper than the incumbent supplier offers in a majority of MSs. For household electricity consumers, the average

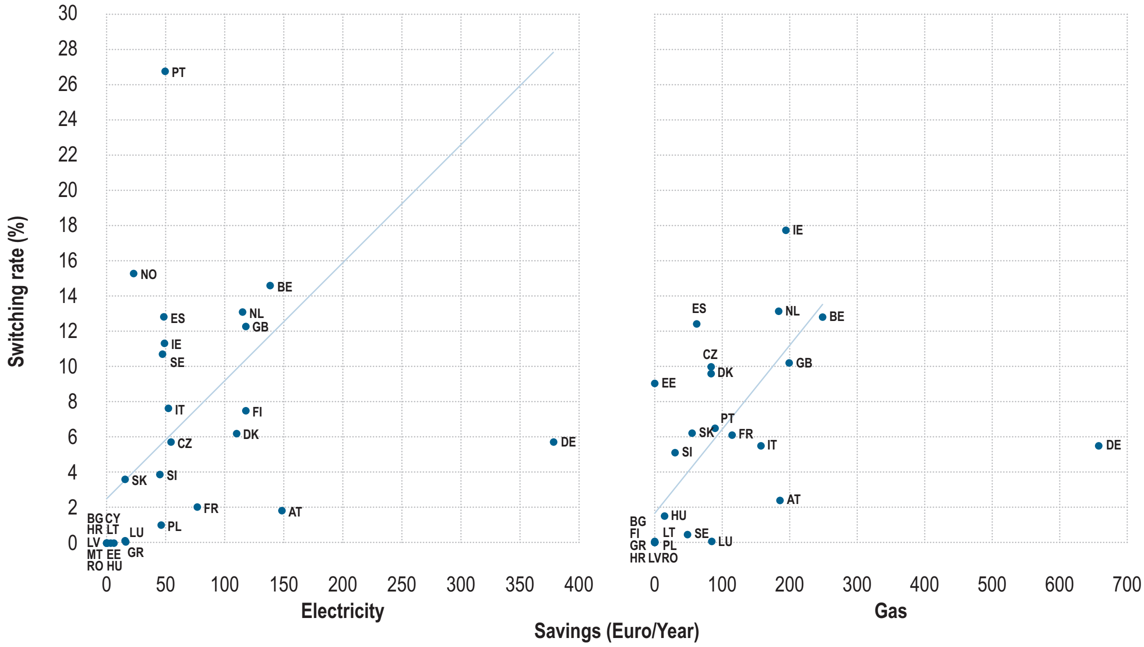
96 In these two markets, the strong presence of segmented and trusted regional suppliers reduces switching rates.

annual saving available (compared to the incumbent standard offer) ranges from over 16 euros in Greece to 378 euros in Germany. In gas, annual saving opportunities are much higher and range from 38 euros in Romania to 355 euros in Germany.

153 Figure 30 also shows that, in some capitals, switching rates seem to be positively related to price differentials, more so in gas than in electricity as consumer switching is influenced by other factors. This is consistent with the findings of last year's report.

154 Differences may be explained, among other reasons, by the phase of competition in the market. It is important to observe that data may be affected by the regional segmentation of competitors in the market (in the figure, switching data are national, whereas price data correspond to the capital). Savings assessed in the exercise were calculated based on the retail price of the most usual incumbent offer in the capital city. The particular features of the incumbent's standard offer in comparison to other competitors' prices (and particularly the features of the lowest price offer) may affect the correlation values presented below.

Figure 30: Relationship between countries' overall switching rates and annual savings available in capital cities – 2013 (%)



Source: ACER Retail Database and CEER National Indicators Database (2014) and ACER calculations

Note: Consumption level considered 4,000 kWh/year for electricity and 15,000 kWh/year for gas.

155 Electricity and gas consumers seem to be less price sensitive in the capitals of Austria, Germany and Luxembourg than in other MSs, as recorded switching rates in 2013 for these capitals are loosely related to savings potential. The strong presence of regional incumbents may help to explain this for Austria and Germany. The same could be said for electricity consumers in the capitals of France and Poland, which are also on the list of countries where consumers arguably under-switched in 2013. Such behaviour might be linked to different consumer preferences or high satisfaction with their current supplier, but barriers to switching and other factors that influence consumer switching decision could also have been determining factors.

Other factors

156 It is evident that, apart from potential savings (i.e. price responsiveness), other determinants can influence consumers' switching decisions. For the preparation of this MMR, the Agency benefited from the support from BEUC, the European consumer organisation, in assessing these determinants[97].

157 The reasons for consumers not switching to the lowest price suppliers include:

- lack of awareness of the significant savings that can be made – in some countries, this may even be exacerbated by the high number of retail competitors, which increases search costs;
- complex tariff structures, thus making it difficult to identify potential savings;
- loyalty to their incumbent supplier – this is most likely to be relevant in countries with municipal suppliers;
- perceived complexity of the switching process (i.e. consumers are 'afraid' of switching suppliers because they fear being cut off during the switching process) – as they are not aware of the obligations of local distributors to guarantee uninterrupted supply; and
- lack of understanding of the unbundling of retail and distribution grid operations – consumers believe that they have to remain with local incumbent suppliers to have access to technical assistance and service in the case of a disruption.

158 While none of these issues alone may be responsible for low switching rates, in combination they deter consumers from switching. Therefore, targeting single issues rather than a range of deterrents may not be effective. Rather, a combination of transparent and reliable price comparison tools, better information on unbundling and simple efficient processes for switching supplier will contribute to improving switching rates.

159 In some countries, authorities and politicians have not been very active in promoting switching opportunities (or even consumer awareness of competition and the option to switch). However, other countries (e.g. Great Britain, Austria, Belgium, and Italy) show that public information campaigns and/or tariff calculation tools offered by or encouraged and supervised by regulatory authorities can be useful.

160 In other countries, switching has been triggered by fiercer competition in the media among suppliers (e.g. in the Czech Republic suppliers' led strategies via increased marketing activities, which led to higher switching rates).

97 Further exchanges of knowledge with BEUC on this topic are envisaged in the future.

Case study 2: Satisfaction with the existing supplier as a positive deterrent to switching in the Netherlands

The Netherlands Authority for Consumers and Markets (ACM) considers active consumers to be the prime beneficiaries of a well-functioning market. They put pressure on suppliers to lower their prices, to improve the quality of services and to innovate their products. Moreover, consumers that are not active in the energy market are those most likely to pay higher prices (see also: Case study 3 on tariff surveillance). Thus, identifying switching barriers and removing them has a dual effect, helping to improve the functioning of the market.

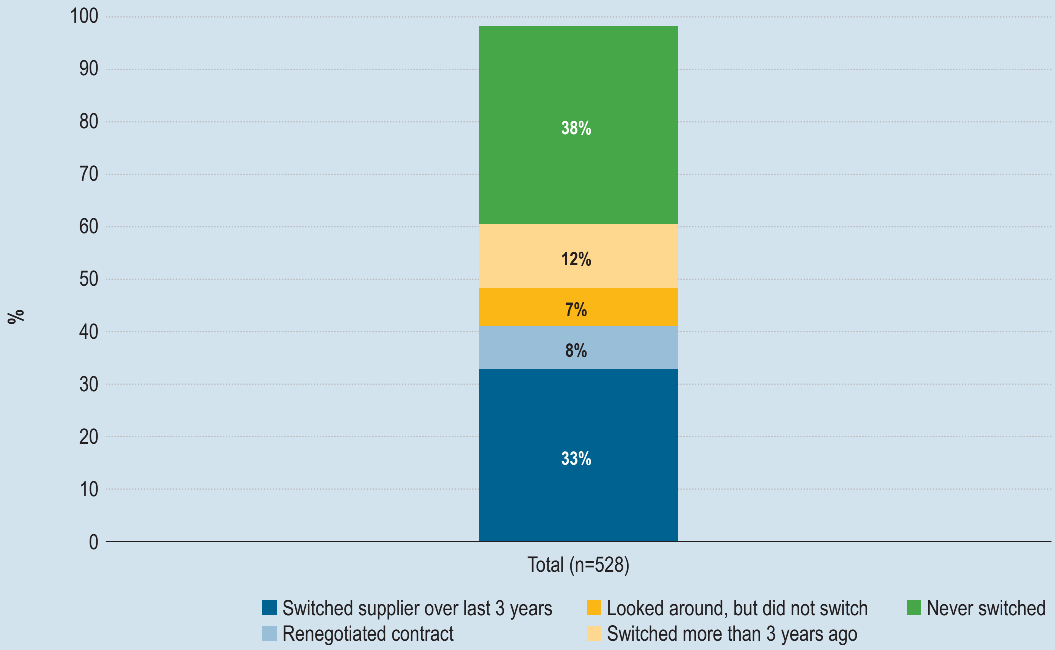
Dutch household consumers[98] who do not switch claim to be very satisfied with their current supplier. ACM conducted a study to find out if this is true, and with a view to tackling switching barriers for consumers in the energy market.

The Dutch energy market for household consumers

Since the full liberalisation of the energy market in 2004, 45% of household consumers have switched supplier[99], most of them in the past three years. In addition, 8% of consumers renegotiated their contract with their current supplier and 7% sought a better offer, although they did not switch (Figure i).

The annual household switching rate has seen a steady increase since market liberalisation, and rose to 13.1% in 2013, which is the highest switching activity since market opening in 2004.

Figure i: Consumer switching behaviour in the Netherlands



Source: ACM, July 2014

98 Only household consumers are considered in this study.
99 Data is based on an online consumer survey undertaken for ACM in the first half of 2014.

Consumers who switched supplier saved an average of up to 300 euros per year[100]. The switching procedure, although perceived as troublesome in the early years after the market opening, is now perceived as straightforward: 95% of consumers who switched supplier are satisfied or very satisfied with the process. Despite the financial benefits, 45% of all consumers, excluding those who renegotiated their contract, have not switched supplier, and 38% have not been active at all in the energy market.

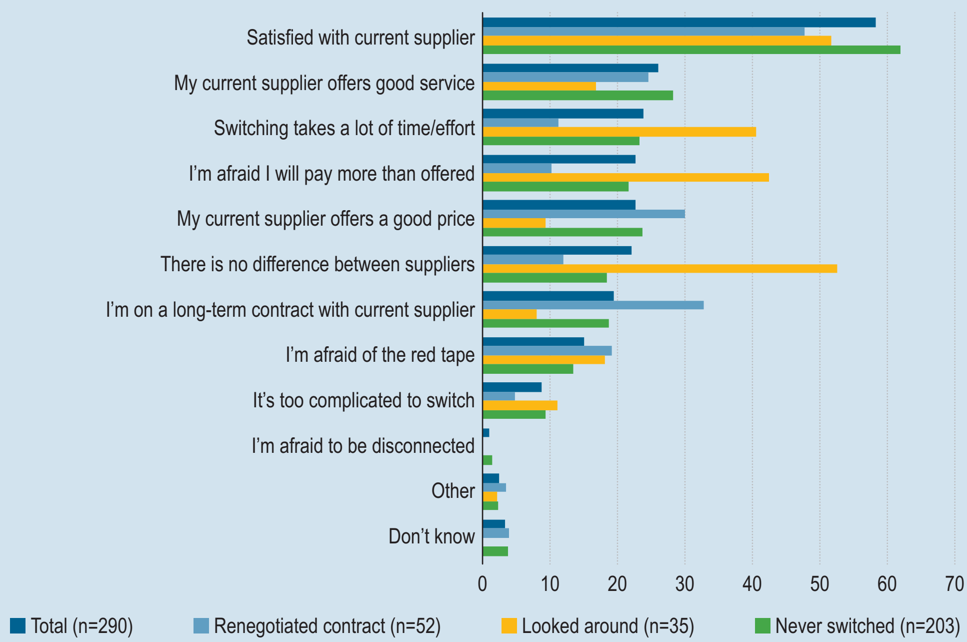
Reasons for switching

The majority of consumers switch to save money. A group of consumers who switched supplier more than three years ago and have not switched since, chose to do so consciously for green electricity. Interestingly, consumers who renegotiated the contract with their own supplier found their current supplier very trustworthy.

Satisfaction with current suppliers

Dutch consumers say they are very satisfied with their current supplier. When asked about the level of service provided by their current supplier, 80% of all household consumers say that they are satisfied or very satisfied, while 19% are indifferent. Only 1% of consumers are unsatisfied. Satisfaction with their current supplier is also the main reason 62% of consumers who have never switched supplier did not do so (figure ii). Further reasons for staying with their current supplier include good-quality service and the price of their current suppler. The group of consumers who sought better deals but did not ultimately switch mention other reasons for not switching: no perceived difference between suppliers (53%); fear of ending up paying more than promised (43%); and a time-consuming and bothersome switching procedure (41%).

Figure ii: Reasons for remaining with the current supplier



Source: ACM, July 2014

100 Based on a snapshot analysis of offers for dual-fuel on price comparison websites in March 2014.

The question is whether this apparent satisfaction is, in fact, contentment with the current supplier, or whether consumers are content with the situation as it is now. A small group of consumers may be satisfied with their current supplier, but the majority generally do not have much to do with their supplier. One could argue that the satisfaction (or a part thereof) expressed by these consumers is in fact more a reluctance to change things as they are now, or a matter of their familiarity with something they have known (or think they have known) for a long time. This is where the effect of cognitive biases may play a role.

The perceived price gap trigger

Misconceptions about the savings that can be achieved when switching supplier also play a large role. On average, household consumers claim they would switch if they could save at least 175 euros annually; however, on average, they think that they can only save up to 82 euros annually. This perceived price gap is a significant switching barrier and could be reduced by informing consumers of the actual savings which could be made (as high as 300 euros). Nevertheless, consumers do not base their decisions solely on rational choices.

Cognitive biases

When consumers feel insecure about what they can do, about what choices are available, they will rely on heuristics, or simple shortcuts, which enables them to deal with complex issues, or things that they perceive as complex, such as the energy market. This can lead to cognitive biases. It is not easy to detect cognitive biases and measure their influence on consumers' inertia. Based on previous studies and scientific literature, ACM is currently focusing on addressing three cognitive biases in its external communication and awareness campaigns for consumers in an attempt to prompt consumers to choose consciously: social proof, the status quo bias and the loss-aversion bias.

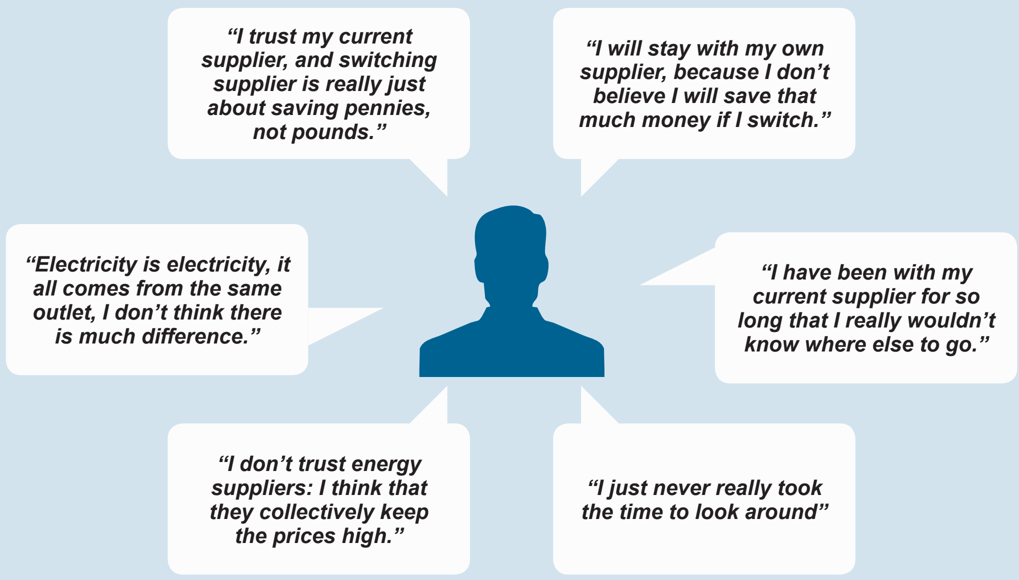
Social proof

Social proof is an important bias. One could argue that, while most consumers do not switch, the social standard is not to switch. Indeed, when asked, only 10% of consumers say that they would probably switch supplier within the next two years. However, when switching is recommended by family members or friends, 31% of all consumers say that they would probably switch.

Status quo and loss-aversion bias

Another bias that causes inertia is the status quo bias. Consumers tend to stick with what they know and are less likely to trust new energy suppliers. Only 21% of all consumers trust new and unknown energy suppliers. The status-quo bias is probably also the most important reason for consumers to renegotiate their contract with their own supplier. Closely related to the status quo bias is the loss-aversion bias. Consumers are, on average, risk-averse and try to minimise losses. Figure ii shows that 23% of all consumers do not switch because they are afraid they will ultimately pay more than the alternative price being offered.

Figure iii: Reasons mentioned by consumers for not switching suppliers



Source: ACM, July 2014

Cognitive biases may change over time. If the current trend in switching continues, the social preference bias will most likely shift towards a situation in which the social norm is to switch. Assuming that consumers start to share their positive experiences, the status quo bias will subsequently also change. And, consequently, the loss aversion bias will indeed also lose its grip on inertia. However, ACM decided not to wait for this slow and uncertain process to happen.

Switching campaign 'You snooze, you lose'

ACM made it a priority in 2014 to address switching barriers for consumers, recognising that consumer-oriented interventions affecting their switching decisions are not the only option. Energy suppliers themselves can and will have to improve their offers, contracts and bills with regards to clarity, comparability and simplicity. ACM has already taken a number of measures to achieve this goal.

By using its national point of contact Consuwijzer.nl as the main communication channel, ACM provided consumers with the information and tools to start comparing offers from energy suppliers. In November 2013, Consuwijzer launched its switching campaign and used some of the insights into cognitive biases. The campaign employed so-called 'nudges'[101] to influence consumer switching behaviour. The campaign video (http://youtu.be/VmP8sYUqN1s) entitled 'If you snooze, you lose' prompts consumers to participate actively by pointing out that, by doing nothing, they will certainly lose money. ACM recognises that the effect of 'nudging' is difficult to measure or verify, so the campaign is considered part of an ongoing experiment and a learning process towards effectively influencing consumer behaviour.

101 Nudges are subtle messages or incentives to influence consumer behaviour, without interfering with the consumer's free choice. See also: Nudge: Improving Decisions about Health, Wealth, and Happiness, Richard H. Thaler, Cass R. Sunstein.

Consumers' experiences

161 This sub-section considers the four key areas of consumers' experience of the retail electricity and gas household markets and their relation to consumer engagement, i.e. switching:

- satisfaction with electricity and gas services;
- views on the choice of products available to them;
- ability to compare suppliers' prices easily; and
- experience and perception of the switching process.

162 Information about consumers' experiences is a key aspect for assessing the overall performance of the electricity and gas markets for households.

163 Consumers' perception of choice can be understood as a prerequisite for consumer engagement while consumers' perception about the ease of switching influences their engagement. Consumers' views are important indicators of whether suppliers are responding adequately to changing consumer preferences. If consumers are not satisfied with their current supplier, they are more likely to switch and thereby drive competition in the market.

164 As pointed out earlier in this section, consumers' switching behaviour depends to a great extent on whether they are able to make informed choices (i.e. compare various offers easily) and their experience and perception of the switching process. Without appropriate information, consumers are unable to make an informed choice and this, in turn, may lead to less optimal market outcomes (i.e. suppliers will be better able to exercise some degree of market power). Data on consumers' experiences, therefore, provide further evidence of how competition works when combined with data on other indicators (e.g. prices, mark-up, product differentiation, market concentration, switching, etc.).

165 In order to assess consumers' experiences, the Agency obtained data from a customer survey undertaken for the European Commission's Directorate-General Health and Consumers[102] and analysed it to understand how competition works at the level of the individual household consumer, in particular with the expectation that markets exhibiting a high level of offer activity and good competition (as presented in previous chapters) a) serve consumers who acknowledge a good choice on the market; and b) serve engaged consumers (exhibiting higher switching rates). On the other hand, markets that are not functioning well may adversely affect consumer satisfaction and their perception of choice, i.e. exhibiting, on average, lower consumer satisfaction scores.

166 Table 2 below summarises the findings in the four key areas of consumers' experiences with respect to the electricity and gas household markets.

102 The EC DG Health and Consumers regularly compiles a Consumer Market Scoreboard, which provides at the EU-wide level a quantitative assessment of how different markets work for consumers. The 2013 edition of the Market Monitoring Survey, which has been used as the main statistical source for the 10th edition of the Consumer Markets Scoreboard (published in June 2014) can be found at the following address: http://ec.europa.eu/consumers/consumer_evidence/consumer_scoreboards/market_monitoring/index_en.htm. It should be noted that it was not possible to conduct interviews for both electricity and gas markets in every country as: (i) gas markets do not exist in some countries; and (ii) in some countries, these markets are monopoly markets and therefore the questions of the switching component and the choice component were not asked for these specific markets.

Table 2: Consumer perception of selected elements of the retail electricity and gas household markets and switching rates – 2013 (ratings)

	Expectations		Choice		Comparability		Ease of switching		Switching rates (%)	
	E	G	E	G	E	G	E	G	E	G
AT	8.3	7.8	7	6	6	5.9	6.4	6	1.8	2.4
BE	7.7	7.6	7.8	7.4	6.8	6.7	7.4	7.1	14.6	12.8
BG	4.5	7	1.6	5.2	4.6	6.9	2.1	5.9	0	0
HR	6.5	6.6	2.2	3.5	4.9	5.9	3.2	4.1	0	0
CY	6	-	-	-	6	-	-	-	0	-
CZ	7.2	7.1	7.1	7	6.5	6.4	7.4	7.1	5.7	10
DK	8.2	8.1	6.8	6	5.1	5.2	6.8	6.6	6.2	9.6
EE	6.7	7.8	6.8	3.4	5.4	6.9	5.8	4.7	0	9
FI	8.3	-	8.1	-	6.3	-	7.2	-	7.5	-
FR	7.4	7.3	7.5	7.3	7.2	6.9	7.2	6.9	2	6.1
DE	7.9	7.4	8.1	7.4	7.6	7.1	7.6	7.1	5.7	5.5
UK	6.8	7	7.4	7.5	6	6.2	6.5	6.8	12.3	10.2
GR	5.8	7.4	-	5.7	5.7	7	-	6.2	0.1	0
HU	6.7	6	5.5	5.4	6.3	5.7	4.3	4.6	0	1.5
IE	7.5	7.2	6.3	5.7	6.3	6.4	7.4	7.1	11.3	17.7
IT	6.8	6.9	6	5.9	5.6	6.4	6.4	6.3	7.6	5.5
LV	7.4	7.5	2.1	3.4	4	5.7	2.5	3.4	0	0
LT	7.5	8.2	4.6	-	8.1	8.7	3.8	-	0	0.1
LU	8	7.5	7.5	7.4	7.2	7.6	7.4	7.5	0.1	0
MT	6.9	-	-	-	6.7	-	-	-	0	-
NL	8	7.6	8.3	7.6	6.6	6.6	7.2	6.8	13.1	13.1
NO	7.1	-	8.3	-	6.2	-	8.1	-	15.3	-
PL	6.9	7.2	4.8	5	6	6.8	5.3	5.6	1	0
PT	6.8	7.5	5.6	5.4	6	6.6	6.1	6.2	26.8	6.5
RO	6.6	6.9	4.6	3.5	7	6.9	4.5	4.1	0	-
SK	7.8	7.9	7	6.5	7.1	7.9	6.8	6.8	3.6	6.2
SI	8.4	8.4	7.5	7.4	7.4	7.9	7.6	7.6	3.9	5.1
ES	5.8	6.9	4.7	4.9	5	5.9	5.8	6.3	12.8	12.4
SE	8	-	8.6	-	5.7	-	7	-	10.7	0.5
Average	7.2	7.4	6.2	5.9	6.2	6.7	6.1	6.1	5.6	5.6

Source: DG SANCO (2014) and ACER calculations

Notes:

'Expectations' is a dimension that measures the extent to which the market generally lives up to what consumers want, assessed with the question: "On a scale from 0 to 10, to what extent did the products/services on offer from different retailers/providers live up to what you wanted within the past year?"

'Choice' measures if consumers are satisfied with the choice of different suppliers/retailers in a given market and is assessed with the question: "On a scale from 0 to 10, would you say there are enough different retailers/providers from which you can choose?"

'Comparability' reflects the ability of consumers to compare between products or services as they are offered by different suppliers or providers in the market, and implicitly includes a price and quality comparison. This topic was assessed with one question: "On a scale from 0 to 10, how difficult or easy was it to compare the products/services sold by different retailers/offered by different service providers?"

'Switching' is evaluated through actual switching behaviour and the perceived ease of switching (both for consumers who have actually switched and for consumers who have not). This component was assessed with the question: "On a scale from 0 to 10, how difficult or easy do you think it would have been/was it to switch provider in the past year?"

167 The above results show that markets in Belgium, the Czech Republic, the Netherlands, Norway and Sweden are markets with engaged electricity household consumers (relatively high switching rates) who perceive their markets to be functioning well[103]. The same is true for Belgian, Dutch, French, German, Slovakian and Slovenian gas household consumers, showing higher switching rates and good consumer perception of the market.

168 Consumers in Finland, Luxembourg, Slovakia and Slovenia also show a positive experience and view of the electricity and gas markets according to the four categories analysed in their respective countries (i.e. they are the highest scoring countries over all elements). This, however, may not always affect their actions (for example, lower switching rates for electricity household consumers in Luxembourg, Slovakia and Slovenia, despite the high overall consumer perception scores).

169 British, Portuguese and Spanish electricity and gas consumers could be perceived as the most critical consumers in Europe, having switched the most despite their relatively low ratings of the perceived choice and/or comparability of offers on the market.

170 Bulgaria, Croatia, Hungary and Romania are clearly at the bottom of the ranking. The large difference between the scores for different elements is a clear indication that the performance in these markets is highly country-dependent, and thus that it is possible, through actions on a national basis, to improve.

171 Consumers in Bulgaria, Croatia, Latvia and Romania are particularly dissatisfied with the choice of suppliers[104]. These findings are in line with the analysis presented in Section 2.2.3, which also shows that consumers in these countries have no choice at all or very little.

172 The results of the consumer survey also suggest that consumers in many MSs do not find the price comparisons and switching process easy. It is important that pricing information be transparent, relevant and accurate for the consumers who use it, particularly where it underpins the decision to switch supplier.

103 Average scores higher than 7.

104 Consumers in countries where consumers have no choice of supplier (i.e. where only one supplier exists) are not asked this question.

2.4 Barriers to efficient retail market functioning

173 This section analyses the barriers that still hinder retail market integration and some of the possible improvements that could facilitate their better functioning. In this regard, the section analyses, first, the different barriers that suppliers may face when entering new EU MS retail markets (Section 2.4.1), then provides an update of the situation of regulated retail prices across EU (Section 2.4.2) and finally provides insights into the potential of demand response solutions (Section 2.4.3).

2.4.1 Barriers to cross-border entry into retail energy markets

174 The 2nd edition[105] of the MMR analysed the level of foreign presence in national retail markets and pointed out the lack of cross-border entry into EU MSs retail energy markets in general. Since cross-border entry into retail energy markets has the potential to improve competitiveness, it is important to identify and assess barriers and obstacles to cross-border entry and expansion.

175 In view of this, the Agency commissioned a study to perform a range of in-depth interviews based on a questionnaire of 43 questions with 30 carefully selected EU suppliers that have entered adjacent cross-border retail markets. In the interviews, they expressed their experience with cross-border market entry barriers in electricity and gas[106]. It is worth mentioning that the reported findings are based on the perceptions identified from the mentioned suppliers' opinions and that further research is needed to validate the legitimacy of the individual barriers mentioned in each MS. However, all of the reported barriers were mentioned by more than one interviewee.

Customer behaviour

176 One problem perceived by suppliers is the difficult access to market information for customers, especially for profiled[107] customers. This is based on the fact that reliable price comparison tools do not exist in some of the MSs[108] (e.g. Croatia, France and Romania). Other interviewees expressed concern about missing communication between NRAs and customers (e.g. announcements of market liberalisation and its consequences for market participants). Hence, according to these suppliers, in some countries, customers are not aware that they can change their energy provider, e.g. in Croatia and Poland.

177 In other cases, interviewees claim that there are unjustified fears, e.g. in terms of security of supply, which are even reinforced by NRAs due to the lack of transparent unbundling/branding rules (for example, the same name of former state-owned producer/distributor and retailer in Croatia – HEP Group; or similar names in France – EDF and ERDF). Even if customers intend to change the suppliers, there may be additional barriers, such as difficult and non-transparent switching procedures, e.g. in France, Italy, Slovakia and Slovenia, long termination periods (e.g. in Germany, Poland and Hungary) or cease charges for customers (Poland).

105 See: MMR 2012, pages 29 and 142.

106 E-Bridge (2014), Barriers to cross-border entry into retail energy markets, October: http://www.acer.europa.eu/Official_documents/Acts_of_the_Agency/References/Barriers_to_cross_border_entry_Final_Report.pdf.

107 Profiled customers: customers with standard load profiles (i.e. households and small business units).
Non-profile customers: intensive energy customers with an individual demand forecast (industrial plants and generation).

108 In some MSs, price comparison tools exist, but according to the suppliers interviewed, these instruments are not sufficiently reliable to give customers adequate information.

Regulatory framework

178 A key concern often expressed by interviewees is the lack of access to relevant information for new entrants. In some countries, there is a perception that relevant data are lacking, e.g. customer databases in Bulgaria and France or price information/statistics in Croatia, the Czech Republic, Hungary, Poland and Slovakia. In this context, it was additionally pointed out that in most MSs important information and documents are available only in the respective local language, and not in English. This problem seems to be particularly relevant for Eastern and Southern European markets.

179 Retail price regulation is another key barrier, which, according to most of the interviewees, results in very low or negative retail margins. This means that regulated prices are too low and often even below wholesale price levels. This is especially perceived in Croatia, Hungary, Poland, Latvia, Lithuania, Italy and France. Regulatory periods are sometimes too long and, in some countries the price calculation for regulated retail is perceived as non-transparent and more influenced by political decisions than by market-based and economically rational considerations (especially in Eastern Europe).

180 In addition to the application of price regulation, interviewees mentioned a second reason for (too) low margins, which is intense competition (e.g. in Austria, Belgium, Germany and the Netherlands). This cannot be perceived as a barrier to entry in a classic economic point of view, but it may hinder further market entries nevertheless.

181 Another issue observed is the difficult and time-consuming licensing procedure for entrants based on the requirements of NRAs. Along with the significant bureaucracy and the quantity of documents that have to be provided, detailed reporting obligations and various licenses are requested (e.g. Bulgaria, Croatia, the Czech Republic, Spain, Hungary, Italy, Poland, Romania and Slovakia). For example, in some countries, it is mandatory to provide an official translation of legal documents (Poland), or a resident lawyer is required (the Czech Republic and Spain; in Croatia, a local taxable subsidiary is even required). Additional issues for smaller entrants are requirements concerning high bank guarantees in order to obtain a license (e.g. in Hungary).

182 In addition, in some countries there is a perceived high degree of uncertainty about future regulatory developments. The interviewees mentioned the non-transparent decision-making process, which is often influenced by politicians (especially in Eastern Europe). But, also for Western Europe, regulatory changes are often alleged as short-term and characterised by ex-post de facto amendments (France, Italy or the Netherlands), resulting in high and unpredictable financial consequences for suppliers.

183 High environmental obligations are not regarded as a high entry barrier. However, some of the interviewees lament the lack of harmonisation of environmental rules/obligations across the EU, as they perceive these obligations in several countries to be yet another tax imposed on them (Germany was cited in particular). It was also mentioned that the impossibility of cross-border trading in environmental certificates (for electricity) is a potential barrier to entry. In summary, the stability of the regulatory framework and fear of political influence are the main factors hindering further cross-border market entries.

Wholesale markets

184 In general, wholesale regulation is perceived as a significant barrier to entry. This includes, for example, obligations/quotas regarding the country of origin of traded natural gas in Poland, or political influence (by the incumbent e.g. EDF on wholesale price regulation in France (ARENH)).

185 As some important documents are not available in English, language issues are also a crucial point for grid access. Some interviewees also mentioned complex and difficult access to the grid due to high reporting obligations, especially in Eastern Europe. Other problems are complex network codes and high IT requirements.

186 to cross-border capacities and associated regulation also play a relevant role for potential entries. Such barriers were explicitly mentioned for France, Hungary and Eastern Europe in general.

187 Another important issue is the liquidity of energy markets. In particular, it was frequently stated that dominant incumbents and lack of diversification in power production are responsible for illiquid markets (Bulgaria, Croatia, Hungary, Romania and Slovenia). Furthermore, disrupted exchanges are barriers to entry and expansion (especially in Eastern Europe). In Croatia, for example, no OTC market exists, while the OTC market in Romania is dominated by a state-owned incumbent. In Slovenia, future trading products do not exist and, Croatia has no power exchange at all.

188 Moreover, barriers to entry due to balancing regimes were stated by interviewees. In particular, balancing is still underdeveloped (poor quality and complex access to requested data in Romania and Poland) and, often, very expensive for retailers (Austria, Bulgaria, Croatia and France), especially in gas markets. Due to portfolio effects, these barriers are even higher for smaller suppliers (and hence for potential new entrants). Additionally, high storage obligations (for gas) are mentioned as an issue for many interviewees, and were especially mentioned for Bulgaria, France and Poland.

189 The existence of a transparent and functioning wholesale market – especially exchanges and access to cross-border capacities – significantly influences the decision to enter a new market.

Additional challenges

190 In the last section of the questionnaire, the interviewees had the opportunity to state other relevant problems which may prevent (cross-border) entries into the retail energy markets of the EU. In essence, most of the issues mentioned above were confirmed by the answers. In addition, the lack of standardisation of contracts (e.g. between supplier and DSOs), processes and reporting obligations concerning market entries in the various MSs appear to be significant barriers to market entry.

191 This is especially relevant for relatively small market players, as their playing field is even more restricted. They generally do not have the required national expert knowledge and external expertise is costly for them.

192 Moreover, it has become apparent that uncertainty about future regulatory developments is often greater for foreign than for local entrants Foreign retailers have fewer contacts with NRAs than local retailers, which increases their information disadvantage. They need local native speakers as contacts to be updated on developments in the regulatory framework. The process is sometimes too complex to follow for foreign potential market entries (the United Kingdom is mentioned here). The fear of unexpected political influence on the regulatory framework also plays a major role in the low entry level of foreign retailers.

Overcoming the barriers

193 Most interviewees identified as very important the need for market designs of EU retail energy markets to be harmonised in order to reduce barriers to entry and expansion. It was frequently mentioned that it would be a powerful simplification if market entries and exits and the involved legal frameworks, licensing procedures, reporting obligations and supplier processes were harmonised throughout the EU (see Case study 3 on retail market integration in the Nordic area).

194 It was accepted by the interviewees that the MSs need an opportunity for particular arrangements to handle local specifics. However, it was stressed that, for this purpose, it is very important to define general principles (e.g. licensing procedures).

195 It is also perceived as important that all relevant documents be available in English and data exchange standardised. In addition, common requirements for the switching procedure for customers should be defined in a simple and transparent way.

196 Another important issue is a strong commitment to full privatisation and price liberalisation in order to prevent political influence on retail energy markets, which often run counter to sound economic principles. Various interviewees desire stricter monitoring of NRAs and the transparency of their decisions by the Agency.

197 Regarding gas, it was mentioned that larger bidding zones and virtual balancing zones as well as a reduction in storage obligations may help to overcome barriers to entry. However, for electricity, more market coupling and a specific harmonisation of RES support schemes seems to be promising.

198 Overall, the most important perceived barriers to entering retail energy markets at the EU level seem to be the lack of harmonisation of MSs regulatory frameworks, the persistence of retail price regulation, high uncertainty concerning future regulatory developments and the low liquidity of wholesale markets, particularly in the less-developed markets. The interviewees also identified low margins and stiff competition as issues in specific, more developed markets.

Case study 3: Retail market integration in the Nordic area

The energy regulators of the Nordic area[109] have decided to harmonise the Nordic retail markets with a view to increase and diversify product choice, enhance opportunities from switching, to achieve greater efficiency deriving from automated and simple switching procedures and to achieve greater cohesion of the wholesale and retail market.

In 2006, a non-legal entity for improving cooperation was established: the Nordic Energy Regulators (NordREG). It is based on voluntary agreements between the regulators and is supported by the Nordic ministers for energy. NordREG works towards a common harmonised retail market in the Nordic region through its working programme covering the following four areas: retail markets, wholesale and transmission, network regulation and market surveillance.

As part of its work, NordREG reviews the conditions for the establishment of the most economically beneficial common end-user market for Nordic customers. Through harmonised solutions, the main goal is to eliminate the key entry barriers for stakeholders in the electricity market, with the aim of enhancing customer involvement and choice. NordREG's view is that a harmonised Nordic retail market should be based on a supplier centric model[110], as it is considered a model with significant advantages for the Nordic customers, electricity companies and the Nordic society generally.

Outcomes of NordREG work – A Nordic supplier centric model

Between 2006 and 2007 NordREG mainly worked on issues related to system operators handling of emergency situations, congestion management and the beginning of the development of a common Nordic balance settlement. There was also a need to establish a solid foundation for the wholesale market so that the next steps could be taken towards a Nordic retail market.

In 2008 NordREG made a study on the costs and benefits of a Nordic retail market which demonstrated net benefits, and this led to a greater emphasis on considering measures which would enable the development of a common market. NordREG developed a market design for the harmonised Nordic retail market in 2009. In line with European developments, NordREG made in 2010 an implementation plan for a Nordic retail market, a report on grid investments in a Nordic perspective and finding common ground for the implementation of the 3rd energy package.

Since 2011 NordREG has analysed different retail market models, commissioned several studies and held several public consultations that have led to the publication of several recommendations in five areas according to detected harmonisation needs. These five areas are: (i) Customers billing mechanism; (ii) Supplier switching conditions; (iii) Market players information exchange and metering reading settings; (iv) Customers / market players interface; and (v) Information exchange – a national point of information. The next steps involve the members implementing these recommendations.

In the spring of 2014 NordREG made a study into how far the members have come in the implementation towards a supplier centric model. The table below summarises the results.

109 The Nordic area – comprising of Denmark, Finland, Norway and Sweden – consist of almost 15 million electricity customers consuming about 360 TWh per year. They are provided by as much as 400 different – predominantly national – electricity suppliers, with larger companies, such as Fortum, EON and Vattenfall and a few exceptions i.e. smaller companies with customers in more than their own country.

110 A supplier centric model means that the supplier will be the stakeholder that interacts with the customer with regards to for example switching, moving and billing.

Table i.Overview of implementation progress of the supplier centric model in the Nordic countries-2014

	Information exchange	Combined Billing	Moving	Switching
DK	Data hub was introduced 2013. New version will be launched Oct. 2015.	Combined billing is planned to be introduced Oct. 2015.	The supplier has taken care of the moving processes since 1 March 2013.	Supplier centric with the implementation of the wholesale model Oct. 2015
FI	Project to investigate future information exchange model will be finished by the end of 2014. Decision on the future model will be done after that.	No legislation done or planned	Will be initiated after investigation regarding future information exchange model has been chosen.	Will be initiated after investigation regarding future information exchange model has been chosen.
NO	Establishment of data hub is underway and will be operational from Oct. 2016.	Currently being reviewed. Proposal will be delivered within 2014.	Will be changed when the data hub is operational.	Will be changed when the data hub is operational.
SE	Ei has proposed a centralized information exchange model to the Government 19 June 2014.	Ei has proposed combined billing to the Government.	Ei has proposed that the supplier should take care of the move out and move in process to the Government.	Supplier centric switching process is implemented.

Source: NordREG's work towards a harmonised Nordic retail market – Roadmap update and national implementation monitoring. NordREG, 2014

Challenges Ahead

The harmonisation towards a common Nordic retail market is scheduled to be carried out in three phases:

1. NordREG proposing recommendations after extensive consultations;
2. Nordic MSs political commitments and national decisions on their implementation; and
3. National Nordic market adaption of the recommendations.

In order to better coordinate the different recommendations, NordREG has developed a target model framework for different areas, such as, for example, billing and information exchange provisions.

When Nordic recommendations are issued by NordREG, it has been agreed that each national regulator must take them into account for developing the provisions in their individual national retail electricity market. Since the work is supported by the ministries, the policy makers will also take full account of NordREG's opinions. There is however, no common Nordic energy legislation so the implementation must be carried out in national laws which in turn demands a high level of commitment by the ministries. This makes it more challenging to set a final deadline for a fully harmonised Nordic electricity market.

NordREG's vision is that, following implementation of a harmonised Nordic retail market, all Nordic electricity customers will benefit from a free choice of suppliers and energy service companies along with competitive prices, and reliable supply and energy services through the Nordic and European electricity market.

2.4.2 End-user price regulation[111]

199 As expressed by the surveyed suppliers in the previous section (2.4.1), regulated prices can impact the development of competition in retail markets. Price regulation may reduce suppliers' margins (even without pushing them to negative levels), as these may be set at a different level than the resulting supply and demand forces would produce. It may also dampen entry incentives, increase investor uncertainty and/or prompt consumers to disengage from the switching process. Regulated prices act as a focal point around which competing suppliers are able to cluster and – at least in markets with strong consumer inertia – this situation might considerably dilute price competition.

200 Regulated prices should be set at levels which avoid stifling the development of a competitive retail market. They must be consistent with the provisions of the 3rd Package, and should be removed where a sufficient level of retail competition is achieved.

201 This section provides: (i) an update on the status of regulated end-user prices for households; (ii) a case study 'Tariff oversight in a fully liberalised market – the Dutch experience'; and (iii) a selection of case studies with factual examples of how regulated end-user prices for households were removed in the Czech Republic, Estonia and Ireland.

Progress in 2013

202 According to the information received from NRAs, during 2013, end-user price regulation for electricity households was removed in two MSs (Estonia and Greece). Moreover, according to the Italian NRA, household end-user prices for electricity and gas in Italy should no longer be considered as regulated. Therefore, as of 31 December 2013, household end-user price regulation existed in 15 countries (out of 29) for electricity and in 15 countries (out of 26) for gas.

203 As pointed out in last year's report, the full opening of the Estonian electricity market with no price regulation for all customers was achieved from 1 January 2013.

204 In Greece, from 30 June 2013 electricity low voltage end-user prices (households and small enterprises) are no longer regulated[112]. The only exceptions to this rule are end-user prices for vulnerable customers.

205 In Italy, a single buyer (Acquirente Unico) is responsible for procuring electricity to cover the requirements of the standard offer market (*'mercato di maggior tutela'*), i.e. to supply domestic and small business consumers who did not switch away from the standard offer (about 72% of all consumers and 25% of final energy volumes). This electricity is procured on the market and resold to standard offer retailers in accordance with directions from the NRA at prices which reflect the single buyer's recognised costs, including procurement costs. The profit margin of standard offer prices equals the cost of entry of a new entrant into the market and is based on estimates provided by the single buyer and the Italian NRA. According to the latter, Italian standard offer prices (i.e. reference prices) are based entirely on market conditions and do not distort competition among suppliers. However, the standard offer prices may still be a focal point for suppliers and be considered by consumers as a "safer" option than competing offers, including by new entrants. In this respect, standard offer prices,

111 In this report, a regulated end-user price is considered as a price subject to regulation or control by a public authority (e.g. government or NRA) as opposed to a price determined exclusively by supply and demand. This definition includes many different forms of price regulation, such as the setting or approval of prices by an authority, the standardisation of prices or combinations of these.

112 This is based on law 4038/2012. Prior to this change, electricity retail prices were regulated by a decision of the Ministry of Environment, Energy and Climate Change, after the Regulatory Authority for Energy's recommendation, according to law 4001/2011.

while not necessarily distorting competition between suppliers, may still reduce the propensity of consumers to switch towards better offers. A similar approach was introduced in Spain in December 2013 (see paragraph (214) below).

206 In 2013, the liberalisation of the electricity market in Portugal entered its final stage with the phasing out of regulated tariffs for household consumers, with a view to creating conditions for effective competition. However, there is a transition period until the end of 2015 for low-voltage customers with contracted power not exceeding 10.35 kVA, i.e. mainly households. During the transitional period, customers who have not yet chosen a supplier in the market will continue to be supplied by the energy supplier of last resort at a transient rate fixed by ERSE, the Portuguese NRA. On this period, ERSE will publish, transitory tariffs every quarter. Economically vulnerable customers retain the right to be supplied at regulated prices.

207 In most MSs where price regulation still exists, the regulator sets the level or methodology of the regulated price, but in Belgium, France, Greece, Hungary and Spain, these are set by the government, while the regulator only gives an opinion.

208 Most EU MSs maintain a dual market structure where regulated and non-regulated markets are present: in these countries, household consumers have the choice of being supplied at regulated prices or the liberalised market price. However, the option to switch to market prices is still not possible for gas households in Bulgaria, Greece and Latvia.

209 Despite the fact that, in the majority of MSs, switching to unregulated price is possible, most household consumers continue to stay on regulated prices. The relative level of prices determines consumers' incentives to switch between the regulated and non-regulated segment of the market. If the regulated price is lower than the liberalised market price, consumers have no incentive to switch to unregulated prices and vice versa. In a number of European countries, particularly in Eastern Europe, regulated end-consumer prices have historically been below cost; therefore, little scope has existed for an unregulated competitive market to emerge.

210 Special regulated prices for vulnerable consumers aimed at protecting low-income consumers who spend a large proportion of their incomes on energy exist in several countries (i.e. ten in electricity and three in gas), but the percentages of consumers paying these special tariffs are relatively low.

211 Latvia, Lithuania, Poland and Slovakia have adopted roadmaps for the removal of price regulation in electricity. In Romania, under the power price deregulation calendar, the share of electricity delivered at liberalised market prices was introduced in six stages for industrial consumers from September 2012 to 2013 and in ten stages for households between July 2013 and the end of 2017. A number of other countries (e.g. France and Romania) are also working towards the removal of price regulation. In Spain, on 27 December 2013, the new Electricity Act modified the last resort tariffs for electricity and introduced the PVCP (Precio Voluntario Pequeño Consumidor or Voluntary price for small consumers) for electricity households. This price includes the energy cost (price resulting in the spot market during the period), access tariffs and other charges. In Denmark, according to the proposal[113] deregulation in 30 of the 39 default supplier areas will take place by 1 October 2015 in conjunction with the termination of the new tendered obligations of supply. For the remaining 9 areas, the regulation will end in May 2017, when the old obligations to supply the default supplier product expire.

113 The proposal for deregulating electricity retail prices was adopted by parliament in June 2014.

212 Roadmaps for the removal of retail price regulation in the gas household market are also in place in several MSs. Ireland has set clear dates for price deregulation (the latest competition review from the CER indicates that deregulation of the sector could take place in July 2014), while Romania proposed a calendar for phasing out regulated prices from mid-2014 (for industrial consumers) and end 2018 (for households). These roadmaps show that their removal at the European level will be achieved sooner in electricity than in gas, as MSs are showing more commitment to removing regulated electricity prices. In 2013, the liberalisation of the gas market in Portugal entered its final phase with the phasing out of regulated tariffs for household consumers, with a view to creating conditions for effective competition. However, there is a transitional period until the end of 2015 for low-pressure customers with an annual consumption below 500 m^3, essentially households. During this transitional period, customers who have not yet chosen a supplier market will continue to be supplied by the energy supplier of last resort at a rate fixed by the ERSE transient. In this period, ERSE will publish transitory tariffs every quarter. Economically vulnerable customers will retain the right to be supplied at regulated prices.

213 In a minority of MSs (e.g. Great Britain, Germany, the Netherlands, the Czech Republic, Slovenia and the Nordic countries) retail prices are fully liberalised, and there is no government intervention apart from social security policies.

Case study 4: Tariff oversight in a fully liberalised market – the Dutch experience

Introduction

'Tariff Surveillance' was introduced with the liberalisation of the Dutch retail energy market in July 2004[114] because of the concern that a sizeable group of consumers might not take advantage of the opportunity to change supplier, and could therefore be vulnerable to unreasonably high tariffs once the market opened. Still today, ACM observes that, even with potential savings as high as 314 euros, 56% of consumers have not changed supplier. Tariff Surveillance requires all (new) tariffs to be submitted to ACM, which may assess them. If ACM deems a specific tariff unreasonably high, it may set a maximum tariff. The combination of opening up the retail market for competition and arranging some sort of safety net to prevent unreasonably high tariffs required a balanced approach to the implementation of the legislation.

Principles

In implementing the legislation, ACM defined several principles that must be applied to Tariff Surveillance in a liberalised retail market. The basic principle is that Tariff Surveillance should be implemented with as little effect as possible on the development and functioning of the market. This means that suppliers should be able to set their tariffs freely, within the range of what is reasonable.

Moreover, price differences are necessary in order to motivate consumers to choose different suppliers or contracts. Additionally, the implementation minimises the impact on suppliers' product definition and innovation.

114 The Dutch Electricity Act (Section 95b) and the Dutch Gas Act (Section 44) provide the legal basis for this scheme.

With these principles in mind, Tariff Surveillance is designed as a safety net that shaves off the edges of the price spectrum, thus preventing unreasonably high tariffs where competition does not already do so.

Implementation

To mitigate the effect on the suppliers' price-setting, ACM initially assesses the reasonableness of tariffs based on an undisclosed benchmark model which incorporates wholesale prices, operational and capital expenses, and a reasonable margin. The model is undisclosed to avoid the risk of becoming a 'focal' point in price-setting behaviour for certain groups of customers. This applies especially to customers not active in the market.

Suppliers are free to set any tariff they wish, and to offer them on the market. However, they have to submit all tariffs to ACM for assessment. Tariffs are initially assessed with the general benchmark model. Modelling a reasonable tariff in a dynamic and complex environment, such as the energy sector with continuous product innovation, requires extensive investigation after the initial assessment. This investigation may be completed by ACM concluding that the specific tariff is not unreasonable. Alternatively, the retailer may decide to change the initial tariff. In 2013, this happened in only two cases (out of thousands of individual tariffs). ACM has never needed to use its ultimate power to set a specific maximum tariff. ACM highlights tariffs only if they seem unusually high, and does not approve tariffs that are not. In practice, this procedure means that the conclusion that a tariff is unreasonably high is always drawn ex post.

ACM recognises that Tariff Surveillance can have a potential impact on market initiatives. However, the Dutch market shows that, in practice, Tariff Surveillance offers enough room for tariff differentiation. For instance, ACM's energy report for the second half of 2013 reveals that, for all types of contracts (permanent or fixed-term contracts), price differences are substantial[115]. Also, the existence of Tariff Surveillance does not cause a barrier for new suppliers to enter the market. As of 31 December 2013, there are 43 suppliers for gas and electricity on the Dutch market. Serving just over 7 million household connections, this number can be considered high. Furthermore, Tariff Surveillance has little effect on the room for developing new and innovative products, since ACM updates the benchmark model continuously because of changing market circumstances, and ACM seeks practical ways to facilitate the introduction of innovative price concepts, such as prices based on daily spot market prices or competitor's prices.

Recent developments

In 2004, the Dutch legislature considered that a group of consumers would not take advantage of the opportunity to change supplier once the market had opened. Even today, 56% of consumers have not changed supplier. Therefore, this group of consumers is potentially vulnerable to unreasonably high tariffs. Besides getting the basics right (billing and switching procedures), it is very important that these consumers become active in order to stimulate competition. ACM focuses on what is needed to enable these consumers (and other consumers) to make a well-informed and conscious choice. Based on ACM's research, consumers lack simple, clear, easily comprehensible and comparable offers, contracts and bills in order to make a well-informed and conscious choice[116]. Empowered consumers enhance competitive pressure on suppliers, who risk consumers switching away if prices are too high.

115 In the case of electricity and natural gas (dual-fuel), the price difference between the costliest and the cheapest permanent contract (measured in March 2014) was 169 euros per year. In the case of fixed-term contracts, price differences varied between 69 and 314 euros, depending on term lengths.

116 See also the Dutch case study on switching (Case study 2).

Path to deregulation

214 This section provides a selection of case studies with factual examples of how regulated end-user prices for households were removed in the Czech Republic, Estonia and Ireland. These case studies were drafted by NRA experts from these countries.

Case study 5: The path to deregulation in the Czech electricity market

The liberalisation of the Czech electricity market is governed by Act No 458/2000 on the conditions of business and state administration in the energy industries, which is based on Directive 2003/54/EC. Opening the electricity market means in practice that the originally protected consumers whose electricity prices were set by the NRA (the Energy Regulatory Office) every year, have turned into eligible consumers with the right to select their electricity supplier. For these customers, only the network component of the resulting electricity price is still subject to regulation.

Directive 2003/54/EC, which was transposed into the Energy Act, required the ownership or at least strong legal unbundling of the regulated activities of electricity transmission and distribution from electricity generation and sales, which are not subject to regulation. This requirement was imposed on the incumbent integrated power companies in the Czech Republic.

Full market opening and removal of price controls

The opening of the electricity market in the Czech Republic started on 1 January 2002. Since then, the various categories of what had originally been protected customers have gradually become eligible consumers with the right to select their electricity supplier. The electricity market, offering supplier switching opportunities, was opened for customer categories as follows:

- From 1 January 2002, consumers with an annual consumption of over 40 GWh;
- From 1 January 2003, consumers with an annual consumption of over 9 GWh;
- From 1 January 2004, all consumers with continuous metering of consumption, except for households;
- From 1 January 2005, all final consumers except for households; and
- From 1 January 2006, all final consumers including households.

The full opening of the electricity market created the need to inform final customers about the opportunity to switch their supplier and also, and above all, about the process of migrating to a different supplier. The Energy Regulatory Office therefore posted on its website easy-to-follow guidance for final household consumers in case they decided to switch their electricity supplier. The Office also posted a list of electricity traders from which consumers could select their supplier.

In connection with the completed process of opening the electricity market and the Energy Regulatory Office's effort to provide consumers with the most comprehensive information for their decisions on supplier selection, the Office also posted an interactive ready-reckoner of electricity supply tariffs. Using this application, low-demand consumers connected to the low-voltage level can compare, on the basis of the details entered (the distribution rate, the annual consumption), the costs of electricity supply from various suppliers, and find the best supplier in relation to the nature and size of their demand.

Customer protection measures

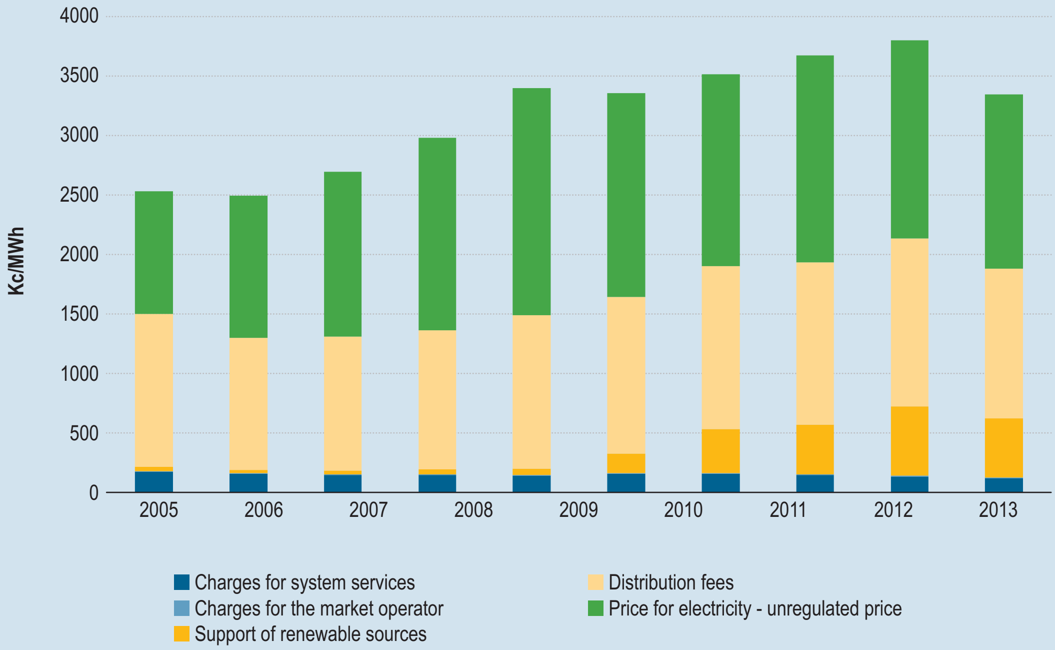
In the wake of increasing competition in the market, electricity traders initially used relatively aggressive methods to acquire customers by way of peddling (i.e. door-to-door selling) and fixed-term contracts, which had not been used until then. For many customers who were not knowledgeable about the energy sector, when pressured by multiple peddlers and having terminated an already executed fixed-term contract, this meant having to pay penalties to the original trader.

Therefore, the Energy Act was amended to include a provision reflecting the above developments and establishing certain rights for consumers to protect them, and imposing certain matching obligations on traders. Under this provision, traders must publish, in a way enabling remote access, their terms and conditions of gas and electricity supply and their gas and electricity supply prices no later than 30 days before the effective date of any changes thereto. The provision also requires traders to allow consumers a non-discriminatory choice of the method of payment for their gas or electricity supply. When billing advance payments for gas or electricity supply, traders must set advance payments proportionately to consumption in the preceding comparable billing period, but not exceeding the gas or electricity consumption reasonably expected in the next billing period.

Main developments

Figure i below shows the trend in prices from 2005, when there was a gradual opening of the electricity market for businesses and then, from 2006, for all consumers. The chart shows the evolution of the unregulated price of energy and regulated components of the final retail price – i.e. distribution feeds, charges for system services and market operator and support of renewables sources. These values imply a gradual price increase for consumers in this category (i.e. consumers on low voltage – households and small businesses). In 2014, some regulated components, especially distribution prices, but also prices to support renewables, were reduced.

Figure i: Development of prices for retail consumers – 2005–2014 (Kc/MWh)

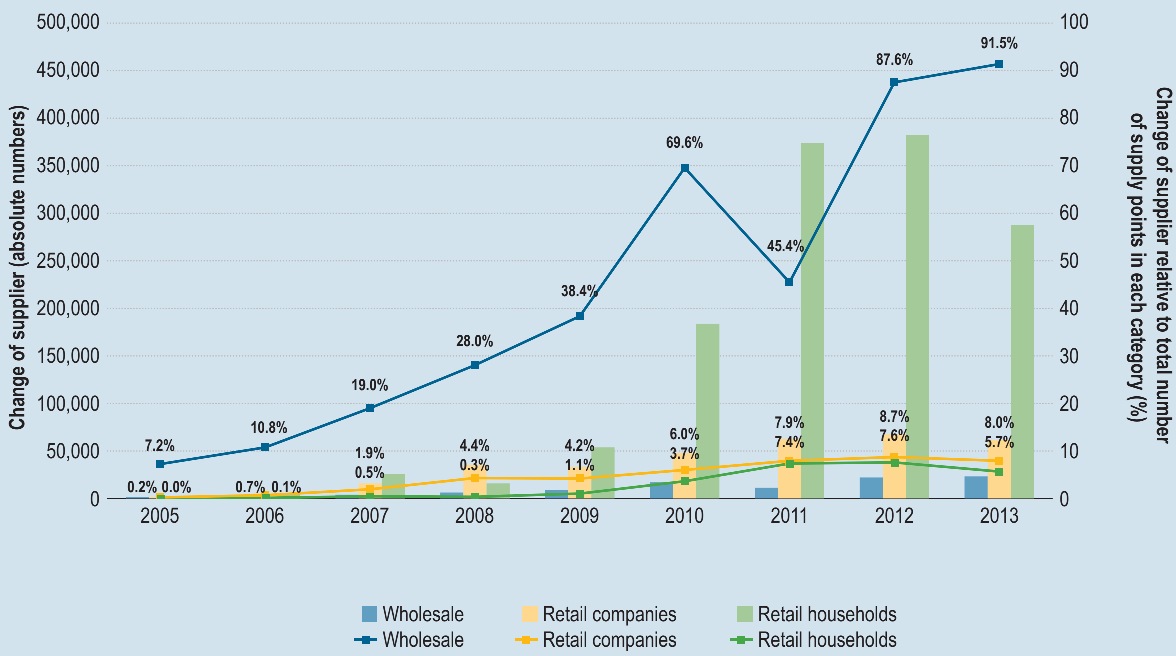


Source: Energy Regulatory Office (2014)

Competition has evolved in the retail market, with more and more businesses seeking to supply electricity to customers. In the wake of the market's opening, suppliers mainly relied on door-to-door sales; however, they currently resort to advertising campaigns, participation in mass-scale electronic auctions for groups of consumers and the acquisition of weaker competitors in order to expand.

In 2013, the number of consumers switching suppliers (see Figure i) dropped by approximately 100,000 on a year-on-year basis, following a few years of increasing supplier switching rates. This situation can be attributed to the fact that consumers cannot terminate fixed-term contracts, such terminations being liable to high penalties, and also the saturation of the market, where many customers have already selected the energy supplier that is best for them.

Figure ii: Switching activity – 2005–2013 (total number of switches and %)



Source: Energy Regulatory Office (2014)

The Energy Regulatory Office currently registers some 380 licences awarded for trading in electricity, but only 50 of these traders supply electricity to more than 100 supply points. Therefore, these traders can be regarded as active electricity suppliers focused on low-demand customers. The largest number of consumers are supplied by the dominant electricity suppliers, who are legally unbundled, but still vertically integrated with distributors in terms of ownership. Since 2006, especially two "new" traders, Bohemia Energy entity, s.r.o. and Centropol Energy, a.s. increased the number of consumers significantly. These companies supply electricity to approximately 300,000 supply points.

Summary

The Czech electricity market was fully liberalised on 1 January 2006. On the supply side, the market shows active suppliers who apply different selling strategies and engage in take-overs, while two new suppliers entered the market. In 2013, the demand side saw a gradual stabilisation of consumer switching compared to 2012. The end price for customers did not decrease, primarily due to the high level of support for renewable energy sources, which is part of the non-contestable component of the final price.

Case study 6: Path to deregulation – Estonia (electricity market)

Prior to the full opening of the electricity market in 2013, a campaign to raise consumer awareness was organised and run by the Government. This campaign, from November 2011 to January 2013, included advertising, direct mailing, brochures, publications webpage, regular public opinion surveys, event marketing (i.e. a promotional strategy that involves face-to-face contact between companies and their customers at special events like concerts, fairs, and sporting events) and a telephone information service. The campaign provided consumers with practical information and was targeted to all residential consumers, including consumers in rural areas, elderly people, the Russian-speaking population, young people and business consumers.

The phases of the campaign were:

- Phase 1: presenting the opening of the electricity market – energy security, obligations arising from European Union membership, competition;
- Phase 2: how to be prepared: monitoring energy consumption, consider ways to save energy, what the electricity bill consists of;
- Phase 3: practical information for consumers: what to keep in mind when choosing a supplier, switching supplier; and
- Phase 4: follow-up: actual process of opening the market; how to respond when consumers took no steps before market opening.

A logo for the opening was branded. More than 20 suppliers signed a good-will agreement. A public webpage (www.avatud2013.ee) was created and a banner campaign launched. Quarterly studies were done on the risks and awareness of consumers; booklets and special edition hand-outs added to national and local newspapers; cooperation with Estonian National Broadcasting and articles, interviews; continuous press releases were developed.

The subsequent removal of regulated retail prices

In connection with the market opening in 2013, an information exchange platform (data warehouse) was created in 2012, which was an important precondition for enabling Estonian electricity consumers to switch electricity suppliers. The data warehouse is a digital environment administered by a system operator. Through the data warehouse, information exchange on the electricity market takes place in order to change the supplier and transmit the metering data. The data warehouse ensures that switching is effective and takes into account the principles of equal treatment.

The Electricity Market Act was amended to protect consumers and introduced a universal service regulation. The aim of this service was to avoid household consumers (i.e. those with a low voltage connection and a main circuit breaker of up to 63A) being left without an electricity supply if they did not choose a supplier.

Universal service is the selling of electricity to household or small consumers by the network operator or by a seller designated by the network operator on the basis of the standard conditions for universal service approved by the Competition Authority. The price for universal service is formed according to the market or power exchange price, to which justified cost and reasonable profit are added by the network operator/seller. The Competition Authority is obliged to verify justification of the latter. The seller is required to disclose the basis for price formation every month, by the 9th day of the subsequent month.

The main developments in the market since (full) price deregulation

The opening of the electricity market brought along many new electricity suppliers, which has made the market more competitive, and consumers have freedom of choice. In 2012, there were five independent suppliers and, in 2013, 15, and 34 network operators licensed to sell electricity.

Since the opening of the market, the market share of the biggest electricity market supplier, Eesti Energia AS, has decreased, from 79.4% in 2012. In 2013, the balance portfolio of Eesti Energia AS was on average 71.9%, and in January 2014, approximately 60%. The rate of consumer switching was 5% in 2013 for the household and small business market.

In 2012, the average regulated electricity price in Estonia was 3.15 cents/kWh, but in 2013, there was a remarkable increase in the price. In 2013, on the open market (Nord Pool Spot Estonia area), the average price was 4.31 cents/kWh. Thus, the electricity price increased by approximately 37% in 2013 compared to 2012. In the first half of 2014, the average electricity price was 35.27 cents/kWh. The decrease in price was mainly affected by the launching of EstLink2 undersea cable between Estonia and Finland.

EstLink2, which became operational at the beginning of 2014, increased the electricity transmission capacity between Estonia and Finland by nearly 1,000 MW. Opening a second undersea cable will not necessarily mean a more favourable price for electricity in Estonia, but will result in the price equalisation of the Estonian and Finnish stock exchanges on the Nord Pool Spot market. According to data from the Nord Pool Spot, power exchange prices in Estonia and Finland were the same on the day-ahead market for 97.8% of the time in May; the same indicator in April showed an equivalence for 96.8% of the month.

Summary

In the assessment by the Competition Authority, the opening of the electricity market in Estonia began successfully. The open electricity market along with the stronger connections with Nordic countries enable stronger competition between producers, more transparent and lower prices for consumers and ensures the fulfilment of the preconditions for a well-functioning electricity market.

Case study 7: Path to deregulation – Ireland (electricity and gas markets)

Background

Historically, in Ireland, electricity and gas were supplied to all customers connected to the electricity and gas distribution network by the state-owned incumbents, ESB and Bord Gáis Eireann, respectively.

In the mid 1990s, the EU set out requirements for MSs gradually to open up their electricity and gas markets[117]. In February 2000, as a first step in this process, the Irish electricity market was opened to allow customers using 4GWh or more of power per year to choose their own supplier. With resulting positive developments and increased levels of competition, market opening gradually increased and

117 EU Directives 96/92/EC, 2003/54/EC and 2009/72/EC.

all segments of the market were opened to full retail competition in 2005.

During this period, the Commission for Energy Regulation (CER) continued to regulate each of the incumbent supplier's electricity and gas tariffs through the setting of annual allowable fixed revenue, which was largely based on numbers of consumers.

Recognising the increased level of competition in the Irish retail electricity market, changing market dynamics and the progressive transition to a fully deregulated market, CER set out proposals on changes to the form of regulation to apply until such time as all markets had been deregulated. A key consideration in this process was the CER's commitment to retaining appropriate regulatory controls to support competition and protect domestic consumers. Tariffs continued to be set on a cost-reflective basis, in a transparent framework, with continued regulatory oversight.

This process, along with transposition of the 3rd Package, which underpinned the transition of the regulatory system from an ex-ante to an ex-post one, with the CER having expanded market monitoring, ultimately led to full deregulation of the electricity market and gas market in April 2011 and July 2014, respectively.

The roadmap to deregulation

In 2009, CER consulted on proposals for a roadmap for deregulation[118]. Subsequently, in April 2010 and June 2011, CER published its decision on the deregulation of the Irish retail electricity and gas markets, respectively[119]. The Roadmap set out the competitive milestones for the deregulation of business and domestic energy sectors, ending the obligations of price control, with regulated tariffs, on the incumbent energy suppliers[120,121].

With the key considerations of supporting competition and protecting consumers to the fore, CER set out the following criteria to decide on the deregulation of the specific markets in both electricity and gas:

(i) A market must have at least active three suppliers active; and

(ii) A market must have a minimum of 2 independent suppliers, each of which has at least a 10% share[122]; and

(iii) For electricity, for each of the business markets, ESB supply companies must have a percentage market share of 50% or less; in the domestic market, the percentage market share is 60% or less, conditional on the removal of the ESB brand from the retail market. For gas, BG Energy's non-domestic sector share by volume must be less than 50%; in the domestic market, this share is 60%, or 55%, conditional on the rebranding of BG Energy.

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118 See: http://www.cer.ie/docs/000818/cer09189.pdf.

119 In the gas Roadmap, while they are the same as electricity, the criteria were indicative. This was finalised in April 13, See: CER/13/096.

120 For gas, this is a discretionary power conferred on the CER in Section 6 of the Gas Act 2002.

121 The unbundled entities of ESB Customer Supply, ESB Primary Energy Supply and Bord Gáis Energy.

122 In electricity, the independent supplier must have at least a 10% share of the load (GWh) in the relevant market. In gas, each must have at least a 10% share of volume consumption for the Fuel Variation Tariff and Non-Daily Metered Industrial & Commercial markets or a 10% share by consumer numbers in the Residential market.

(iv) Switching rates must be greater than 10% in the domestic market for both electricity and gas.

In conjunction with the Roadmaps, CER published detailed competition reviews. These reviews set the criteria against the various markets to determine if the threshold as set out in the Roadmap to Deregulation had been met. This review concluded that: (a) the electricity and gas business markets had met the criteria and, therefore, were deregulated in October 2010 and Oct 2011, respectively and; (b) the retail domestic markets had not yet met the threshold and therefore CER would continue to monitor competition in this regard until the threshold for deregulation had been met.

Next steps for the roadmap to deregulation

CER recognised the need to convey to stakeholders the specific steps and work involved to deliver and sustain market deregulation, specifically by providing them with the relevant information about the regulatory environment and the coming changes in order to avoid regulatory uncertainty. In June 2010 and in May 2013, for the electricity and gas markets, respectively, CER published the 'Next Step for the Roadmap to Deregulation' which set out the work programme to be followed by CER and the associated timelines. Specifically, the work programme covered the following key areas: legislation and licence changes, a consumer communications plan, domestic tariff regulation, competition reviews, consumer protection consultation, supplier rebranding, market monitoring and global aggregation[123].

CER considered that the ultimate aim of deregulation is to benefit consumers, so the work programme places particular emphasis on consumer protection issues and associated suppliers' obligations. CER consulted specifically on this topic, so that decisions in this regard could be incorporated in parallel with the deregulation process[124].

Full deregulation and consumer protection

In its decision paper Domestic Market Deregulation, published in March 2011, CER confirmed that all deregulation criteria had been met and the final phase of the deregulation of the retail electricity market would occur on 4 April 2011. It was noted that in the previous competition review it had expected that the incumbent electricity supplier (now known as Electric Ireland after successfully being rebranded) would have met the 60% threshold for the domestic market by April.

Similarly, based on the latest competition review from CER, the criteria for the deregulation of the domestic gas market had recently been fulfilled. As a result, deregulation of the sector took place on 1 July 2014 (BGE met the 55% threshold for domestic market share).

Further to the outcome of the customer protection consultation process, CER decided to implement a number of additional measures to ensure customer protection in the deregulated market. The measures are designed to provide customers with the information they require to actively engage with the market and benefit from competition. The decisions that placed obligations on suppliers are collated and prescribed in the Electricity & Natural Gas Suppliers Handbook published by CER[125].

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123 See: http://www.cer.ie/docs/000207/cer10083.pdf and http://www.cer.ie/docs/000002/cer13123a.pdf.

124 See: http://www.cer.ie/docs/000004/cer11057.pdf.

125 Specifically, the Handbook sets out requirements under Condition 18 of the Electricity supply licence and Condition 21 of the Natural Gas Supply Licence when preparing terms and conditions of supply (for household consumers), their Codes of Practice and Customer Charters.

Conclusion and future arrangements

All business market segments in electricity and gas have been fully deregulated for the past number of years. The domestic electricity sector has been fully deregulated in Ireland since April 2011 and, most recently, the domestic gas market in July 2014. Since the full deregulation of the electricity market, there has been a significant increase in the levels of consumer switching between suppliers, which were some of the highest in Europe[126]. To ensure that consumers benefit fully from the deregulation of the electricity and gas markets, it is important that CER adequately monitor competition on an on-going basis (as provided for in legislation)[127].

In December 2013, CER published a consultation paper which proposed an enhanced market monitoring framework[128]. This paper outlines CER's proposals with regard to the indicators that it proposes to collect from suppliers and networks to form a new market monitoring framework. Best practice guidelines were used as building blocks for the framework (ERGEG guidelines). In addition to these best practice guidelines, CER took into account the specifics of the Irish retail markets, leading to a tailored framework for this jurisdiction. The subsequent decision paper in this regard was published in July 2014, and CER plans to implement the additional market monitoring requirements over the next year.

Consumer protection is a key obligation of CER's remit in a deregulated market place. Therefore, alongside market monitoring, CER has: (a) set up regular consumer stakeholder meetings to inform stakeholders of CER's upcoming work streams and any public consultations that will be held over the following months that are of relevance to domestic consumers, while providing an opportunity for more active participation in CER's consultation process; (b) as provided for in legislation, a dispute resolution service for consumers with an unresolved dispute with their supplier or network operator, which also allows CER to gauge levels of consumer satisfaction in the market; and (c) commissioned annual consumer surveys to further aid CER's understanding of consumers' opinions.

In conclusion, the CER recognises that the deregulation of the electricity and gas markets has had a positive impact on consumers in Ireland through competitive pricing[129]. However, there is still a need to ensure that this remains, and equally, that consumers are protected in an increasingly competitive market. CER is committed to continuing this work though the consumer care functions and the enhanced market monitoring proposals outlined.

126 See: MMR 2012, page 151.

127 S.I. No. 450 of 2010 – European Communities (Internal Market in Electricity) Regulations 2010.

128 See: http://www.cer.ie/docs/000885/Market%20Monitoring%20in%20the%20Electricity%20and%20Gas%20Retail%20Markets%20Consultation%20Paper(CER13302).pdf.

129 According to the ACER/CEER MMR 2012 report, Ireland had the highest switching rates in Europe, and price competition was intense (highest potential savings from switching suppliers).

2.4.3 Demand-side flexibility

215 Integration of demand-side flexibility (DSF) is an important component in the EU's strategy for a transition towards a low-carbon economy[130]. At the EU level, DSF is firmly grounded in the Electricity Directive[131] and the Energy Efficiency Directive[132]. It should result in significant efficiency gains, as well as improve the functioning of IEM. The Agency has commissioned a study to assess the state of play of DSF, which identifies these (potential) benefits based on existing literature on electricity and gas. This section summarises the findings of the study[133].

216 The study distinguishes between implicit DSF and explicit DSF. Implicit DSF means flexibility that is implicitly valued, e.g. when consumers choose to change their consumption in response to time-based price signals. Explicit DSF, often called demand-side response (DSR), means flexibility that is explicitly rewarded in the market, e.g. when customers are requested to change their demand in response to a system operator signal. The distinction is blurred in the case of real-time prices.

217 Within this dichotomy, DSF takes several forms. DSF may include demand change, time-shifting demand, embedded generation, fuel substitution and efficiency schemes. It may also be distinguished by its purpose, its means of operation and the speed and duration of response. In electricity, DSF is characterised by short response times and relatively short durations or response. Usually, the shortest timescales of response require DSR, since implicit DSF does not usually operate at that level. In gas, useful response times and durations of response are longer, since balancing takes place over a whole day.

218 Flexibility of various forms delivers several valuable services in energy systems, such as reliability, and the efficient balancing of supply and demand. DSF is one of several methods of delivering flexibility in energy markets, but can have a comparative advantage in delivering flexibility on particular timescales. As with other sources that provide flexibility, DSF can simultaneously provide several valuable services to energy markets and systems, such as congestion management, peak-load shaving, and short-term balancing.

2.1.1.1 State of play

219 The report surveyed the NRAs of the MSs on DSF for electricity and gas[134]. There is a significant variation in the penetration of DSF across the MSs. DSF is more common for electricity than for gas. In general, countries that have schemes already in place or are currently planning to implement such measures have a relatively higher level of energy consumption.

130 EC (2012a), Making the internal energy market work, COM(2012) 663 final, 15 November 2012. EC (2011), Energy Roadmap 2050, COM(2011) 885.

131 Directive 2009/72/EC, of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in electricity and repealing Directive 2003/54/EC (OJ 2009 L211/55).

132 Directive 2012/27/EU of the European Parliament and of the Council of 25 October 2012 on energy efficiency, amending Directives 2009/125/EC and 2010/30/EU and repealing Directives 2004/8/EC and 2006/32/EC (OJ 2012 L315/1).

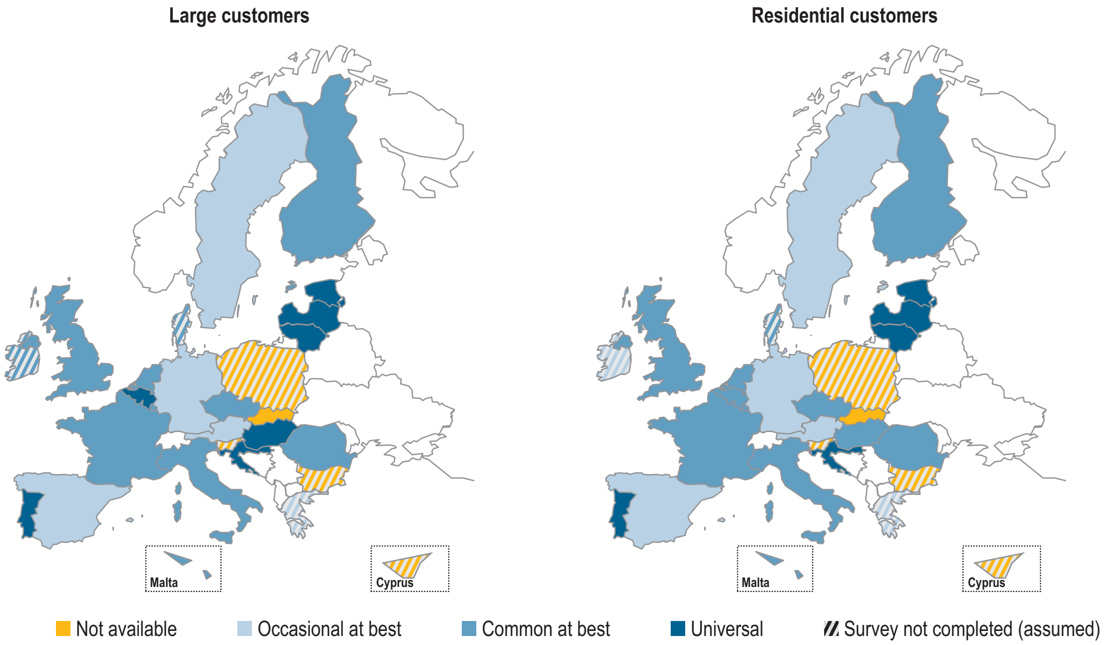
133 CEPA (2014), Demand Side Flexibility – The potential benefits and state of play in the European Union, October 2014 See: http://www.acer.europa.eu/Official_documents/Acts_of_the_Agency/References/DSF_Final_Report.pdf.

134 Not all NRAs responded to the questionnaire used for this study. In those cases, the presented results are based on publicly available data or conservative estimates. These may underestimate the penetration of demand-side flexibility. Moreover, the presented results are weighted by total energy consumption per MS.

Electricity

220 There is a significant variation in the penetration of DSF for electricity across the MSs. Time-based prices are available to all categories of consumers in 90% of MSs. These products are used more frequently by large and medium consumers than for residential consumers (commonly used in 55% and 45% of MSs respectively).

Figure 31: Time-based electricity prices by customer group in Europe – 2013



Source: CEPA (2014)

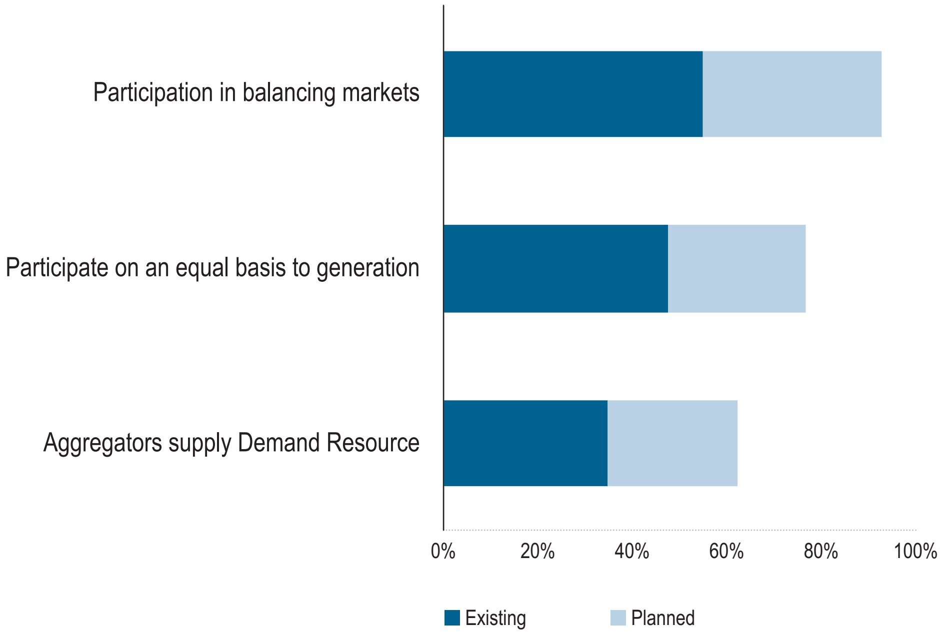
221 Based on those MSs with at least 'occasional' availability, the study assesses that time-based prices are available to some extent, in principle, to 92% of EU customers. The most common type of time-based prices are on/off-peak, which are commonly available in 60% of MSs. MSs where on/off-peak prices are common account for approximately 80% of total electricity consumption. Time-based network tariffs are less common than time-based prices, but still commonly used in 45% of MSs. On/off-peak tariffs are again the most common form of time-based network tariff variation.

222 The survey responses also covered demand-side participation in wholesale and balancing markets. In addition to MSs where participation is already possible, a significant number of MSs stated that they are currently developing plans for demand-side participation in these markets.

223 In over 50% of MSs, demand response can already participate in the wholesale market, while participation is planned to be introduced in another 30% of them. However, participation is not always on an equal basis with generation and is still not always possible via demand-side aggregators (possible or planned in 65% and 70% of MSs, respectively).

224 The picture for demand-side participation in balancing markets is broadly similar. Participation is possible or planned to be introduced in 55% and 40% of MSs respectively. Participation on an equal basis with generators is possible in nearly 50%, and via aggregators, in 35% of MSs. The opportunity for participation via aggregators is therefore relatively lower than for the wholesale market.

Figure 32: Demand participation in balancing energy markets (% of MSs) – 2013

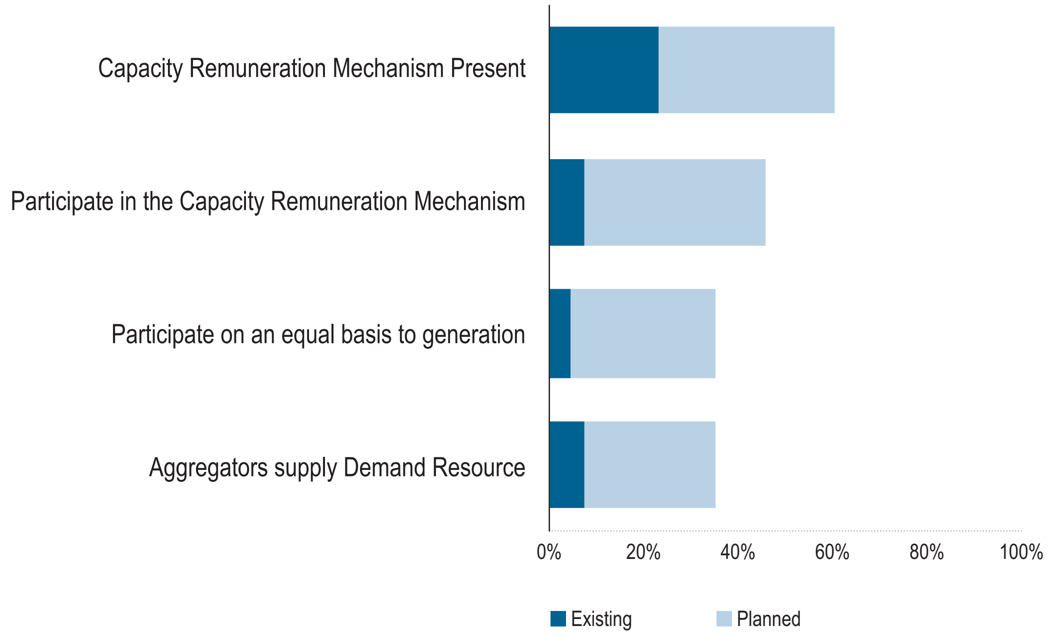


Source: CEPA (2014)

225 Demand-side resources can participate in the market for balancing reserves in 40% of MSs, with another 20% of them currently developing plans for participation. Participation is mostly on an equal basis with generation. It is most common and most commonly planned to be introduced in the markets for secondary and tertiary reserves, but closely followed by the market for primary reserves. Participation in the reserve markets via aggregators is possible in 50%, and planned to be introduced in another 10%, of MSs.

226 Nine MSs have some type of a capacity market in place, and another three are planning some form of such a mechanism. When weighting the responses by energy consumption, approximately 40% of MSs are in the planning stage, while 10% already have a capacity market with demand-side participation. The capacity markets in the MSs are at different stages of development, and details may still change as the schemes are being developed. Participation on an equal basis with generation and via aggregators is possible or planned in about half of the countries with plans for a capacity market.

Figure 33: Demand participation in capacity markets (% of MSs) – 2013



Source: CEPA (2014)

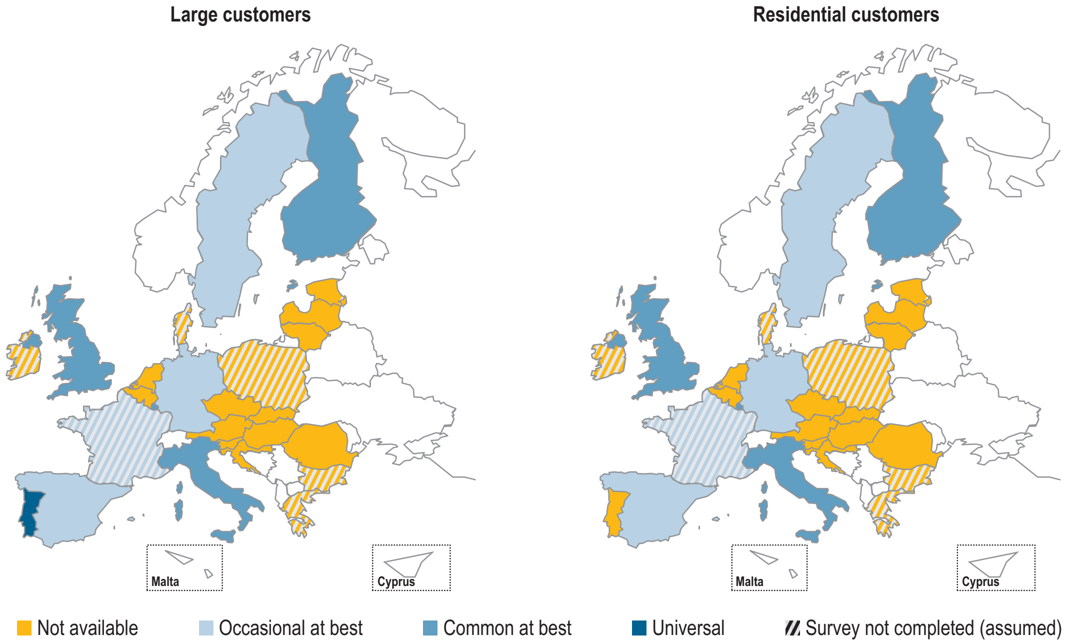
227 The study pointed to a number of other options for explicit demand-side participation, which are already used or currently under development in the MSs in addition to participation in wholesale market, balancing market and balancing reserves. These other options include, for example, programmes led by the distribution network operators. Depending on their type, demand-side resources can participate in at least one mechanism in 30%–60% of MSs.

Gas

228 DSF is less common for gas than for electricity. The availability and take-up of time-based gas prices varies significantly between consumer classes. Time-based prices are common for large consumers in 45% of MSs. They are also available to medium consumers, but commonly used in only 10% of MSs. For residential consumers, time-based prices are available in 10% of the MSs, where they are common but not universal. The most common type of time-based prices are seasonal. A range of other time-based prices types exist, including day-of-week and on/off-peak prices.

229 Time-based network tariffs are less common than time-based prices. They are commonly used in less than 25% of MSs, mainly by large and medium consumers, and less often by residential consumers. Seasonal network tariffs are the most common form of time-based network tariff variation. Other types of time-based network tariffs are used in only a few MSs.

Figure 34: Time-based gas supply tariffs by customer group in Europe



Source: CEPA (2014)

230 The NRAs also reported on the use of interruptible gas contracts in the MSs. There is a variety of arrangements for interruptions and reductions in place among the MSs. The most common types are reductions and interruptions called directly by the DSO or TSO, which are available in 50% of MSs; interruptions called by suppliers are available in 20%, while the potential participation of aggregators is reported in only one MS (Italy).

2.1.1.2 The potential benefits of DSF

Electricity

231 Implicit DSF has the potential to reduce energy use and reduce the level of peak demand through greater efficiency in the use of energy. Among smaller users, these benefits will most likely be facilitated by the smart metering programme, which is being rolled out in most MSs. Table A5 (in annex 8) summarises studies making estimates of the potential benefits from reliance on implicit DSF in the EU.

232 MSs have come to different views of the scope for energy savings, and the value of that, from smart meters in their own countries. The average energy saving is 3% of affected demand, implying a simple resource cost saving of 3 euros/kW/yr of peak demand (which would imply 1.5 billion euros/yr applied across the EU). GB has found that the value of the energy saving would be worth 6 euros/kW/yr in Great Britain[135], (which would imply 3 billion euros/yr if replicated across the EU), even though GB projects only a 2.2% energy saving[136]. This implies that GB found a wider range of benefits from this energy saving than others. Including those wider costs and benefits which MSs took

135 See EC COM(2014) 356 as quoted in Table 1.1. This is the energy effect excluding the costs of smart metering and the administrative benefits of smart metering such as remote reading and (dis)connection.

136 EC SWD(2014) 189 Cost-benefit analyses & state of play of smart metering deployment in the EU-27 at Figure 9.

into account, some MSs have not found a cost/benefit case for universal smart metering[137]. Broader estimates of the potential benefit of implicit DSF range up to 12 euros/kW/year (6 billion euros/year if replicated across the EU), which is consistent with the findings of some metering trials using stronger incentives.

233 Table A5 (in annex 8) summarises various attempts to quantify the benefits of explicit DSF in varying contexts. In the shorter term, its greatest value is likely to lie in delivering reliability. In some markets in the US, where relatively large quantities of demand-side resource are provided, they are largely purchased through capacity mechanisms. Studies focusing on this, summarised in Table 1.2, indicate possible net benefits in the range of 0.5 euros/kW/year to 2 euros/kW/year (which would imply 0.25 billion euros/year to 1 billion euros/year if achieved across the EU).

234 In the longer term, the EU is going through a major process to decarbonise its energy usage. This development poses two major challenges:

- Significant penetration of relatively inflexible low-carbon generation technologies will considerably reduce the efficiency of the demand-supply balancing task if delivered, as now, mainly by generation and storage.
- Electricity load growth may result from decarbonising applications such as transport and space heating, which currently mainly use fossil fuel. This is also likely to increase peak demand relative to off-peak, reducing the utilisation of generators and the network.

235 Developments in Germany show that, with a large stock of intermittent generation, price differences between demand peak and off-peak periods can become small, and volatility is driven more by variability of supply. Simple time-of-use (ToU) prices contribute little to managing this situation. But DSR can increase the ability of the system to integrate low-carbon generation, while reversing the trend of degradation in infrastructure utilisation. With a sharper peak, energy efficiency is also important to improve utilisation, which is under-rewarded by users' own energy cost savings, as already recognised by the participation of efficiency schemes in capacity markets in the US.

236 The future financial benefits of DSR are more uncertain. DSR competes with electricity storage, higher flexibility generation, and interconnection to provide flexibility services. The value of DSR depends upon the cost and usage of these other sources of flexibility. Developments in wind forecasting will also affect the value that demand-flexibility services can provide.

237 Because of these uncertainties, estimates of the financial benefits of DSR in the future vary widely. Lower amounts (6 euros/kW/year to 10 euros/kW/year by 2030, or 3 billion euros/year to 5 billion euros/year for the EU) have been found where substantial other sources of flexibility are assumed to be added to the system. Much higher values (up to 92 euros/kW/year by 2050 – GB study, which would imply 45 billion euro/year if replicated across the EU) have been exhibited where such other sources of flexibility are not increased.

137 Belgium, the Czech Republic, Germany, Latvia, Lithuania, Portugal, and Slovakia. Three states have not reported at date of EC COM(2014) 356.

Gas

238 The potential for implicit DSF at present is more limited in gas than in electricity. Smart gas meters are undergoing a relatively limited roll-out, providing additional implicit DSF opportunities in only some MSs, because only a minority of MSs found a financial case for them. Since gas is balanced on a daily timescale, customers need to shift demand at such timescales to provide useful balancing. In major applications such as space heating and water heating there is limited opportunity for shifting on a useful timescale.

239 There is long experience of using shipper-mediated interruptible contracts in gas. But increased access to liberalised gas markets and the potential for re-trading their contracted gas offer larger customers a more efficient route to market to obtain value from their flexibility than through shipper-mediated interruption.

240 There is a potential for explicit DSF mediated by the system operator (SO) to be useful in increasing system reliability in demand or supply emergencies, and reducing the cost of managing network congestion, albeit demand for this type of flexibility has been reduced in recent years by reductions in the demand for gas creating relatively high network reliability. The cost of using storage services[138] is relatively low compared to the estimated value of lost load of the great majority of potential DSF providers, beyond those who might already regularly take interruptible service to assist in managing seasonal variation. It is therefore likely that DSR's value is greater in managing rare supply events and network congestion, whereas storage is more economical for managing more frequent events.

241 The cost of multi-annual storage does not compare so favourably against the cost of buying wholesale gas in the market[139]. The ability however, to buy additional gas when required to respond to supply emergencies is dependent on the ability to obtain additional delivery on a rapid timescale which in an emergency could be exacerbated by infrastructure constraints. One major purpose of storage and DSF is to manage the lack of ability to buy in gas, whether due to lack of landing capacity or inability to obtain rapid delivery.

242 As greater quantities of intermittent generation are integrated into the electricity system, occasional surpluses of cheap electricity occur which may need to be curtailed. The use of hybrid devices which can substitute electricity for gas can use this cheap surplus electricity and avoid burning gas. The greater need for flexible generation to balance intermittent sources may also increase the gas demand peak, and increase the value of DSR to facilitate those peak demands. The study did not present a summary table of estimated savings from the use of DSF in gas, as insufficient estimates have been made for such a summary.

138 See: DG TREN Study on natural gas storage in the EU, October 2008.

139 Quarterly Report on European Gas Markets, Q2 2013, EC DG-Energy.

2.5 Conclusions and recommendations

243 Since 2008, household and industrial consumer prices for electricity have primarily increased due to their non-contestable part (i.e. network charges, taxes and levies and VAT) as a consequence of non-harmonised regulatory frameworks across Europe. This trend in price increase was the most pronounced in Portugal, Latvia, Estonia, Lithuania, Greece, Spain and Cyprus.

244 The monitoring results show that the moderately concentrated electricity retail markets of Finland, Italy, Norway, Denmark, Great Britain, Germany and the Netherlands perform relatively well on the basis of a selection of the key competition performance indicators. The same is true for the Dutch, British, Spanish, German, Slovenian and the Czech gas retail markets, although gas retail markets are often more concentrated than in electricity. Retail competition performance indicators show no or weak signs of competition in MSs, with highly concentrated markets at national level in electricity for Bulgaria, Malta, Cyprus, Romania, Latvia, Lithuania and Hungary, and in gas for Bulgaria, Poland, Latvia, Hungary, Croatia and Luxembourg.

245 The results show further that in several countries which have relatively low market concentration, and perform relatively well based on other indicators presented in this report (e.g. choice of suppliers and offers, switching rates, entry/exit activity, and consumer's experiences), the link between retail and wholesale electricity prices is still weak. Electricity mark-ups in Austria, Germany, Great Britain and the Netherlands have increased constantly over the observed period. In this respect, changes in retail prices have often not been responsive to changes in the wholesale electricity price. Therefore, the market outcomes in these countries are as one would expect in a competitive market.

246 The majority of electricity and gas household consumers are not participating actively in the market by exercising choice among available suppliers or price and product offerings. As result, the proportion of electricity and gas household consumers with an alternative supplier (i.e. non-incumbent) is still very low in all but a few MSs: Great Britain (both markets), Norway in electricity and Germany, Spain and Ireland in gas markets.

247 The key perceived barriers to entering retail energy markets at the EU level overall seem to be the lack of harmonisation of MSs regulatory frameworks, the persistence of retail price regulation, high uncertainty concerning future regulatory developments and the low liquidity of wholesale markets, particularly in less-developed markets. The interviewees in the consultant study also identified low margins and tough competition as issues in specific more developed markets.

248 Although regulated end user-prices for households still exist in 12 out of 29 countries in electricity and 15 out of 26 countries in gas, the trend of removing them continued during 2013. In addition to the removal of end-user price regulation in an additional three MSs for electricity and one MS for gas households in 2013, plans for their removal are firmly in place in several MSs.

249 As already pointed out in last year's MMR, in order to promote market entry further, which will have an effect on competition and price levels in the market, MSs should follow good practices by: (i) allowing free opting in and out of regulated prices; (ii) setting regulated prices at least equal to or above cost; and (iii) updating regulated price to reflect the sourcing cost as much and as frequently as possible. In this way, they can facilitate the development of retail competition, which will in turn create the conditions for the removal of regulated prices.

3 Wholesale electricity markets and network access

3.1 Introduction

250 The creation of the IEM requires the full integration of Europe's energy networks and systems with a view to promoting efficient and secure energy supply, and facilitating the transition to a low-carbon economy.

251 Interconnectors connecting wholesale electricity markets play a vital role in ensuring that the internal European energy market is able to operate flexibly and efficiently. However, the assessment of the level of market integration and of the level of efficiency in the use of interconnectors contained in this report shows that, despite some progress in the recent years, important barriers to market integration still remain (Section 3.3) for two key reasons. The first reason is the inefficient use of existing transmission networks stemming from inefficiencies in cross-zonal capacity calculation, in cross-zonal capacity allocation, and, possibly, in the definition of bidding zones. The second is the lack of adequate investment in electricity network infrastructure to support the development of cross-zonal trade between areas characterised by different demand-supply balances.

252 In order to improve the efficiency of existing capacity utilisation, it is vital to implement a common, EU-wide cross-zonal approach to capacity allocation. This has been and still remains the focus of the Agency's work over the last three years, with the development of binding rules at EU level through the framework guidelines/network code process[140] and their early implementation through the Electricity Regional Initiatives process[141]. This is still one of the top priorities of the Agency. The aim of this work is to implement the Electricity Target Model (ETM), i.e. a shared vision to improve the level of market integration between MSs and to facilitate cross-border trade in all timeframes.

253 The ETM is intended to remove the remaining cross-border barriers to market integration, as it envisages: (i) single day-ahead market coupling with implicit auctions of cross-border capacity, which should replace explicit auctions; (ii) a single intraday market coupling with continuous implicit allocation of cross-border capacity; (iii) a single European platform for allocating long-term transmission rights; (iv) a flow-based capacity allocation method in highly meshed networks; and (v) for balancing, a TSO-TSO model with Common Merit Order (CMO) list for cross-border exchanges of balancing energy. As regards short-term markets, efficient, liquid and integrated balancing and intraday markets will facilitate the integration in the system of energy produced from RES by progressively exposing them to the same commitment and balancing responsibilities as conventional generators.

254 Efficient cross-zonal capacity calculation and the appropriate definition of bidding zones are other important elements of an efficient electricity market. The Capacity Allocation and Congestion Management (CACM) framework guidelines and the respective network codes provide for clear objectives in this area: (i) full coordination and optimisation of capacity calculation within regions; (ii) the use of flow-based capacity calculation methods[142] in highly meshed networks; and (iii) regular monitoring of the efficiency of bidding zones. These processes are intended to optimise the utilisation of the existing infrastructure and to provide the market with more possibilities to exchange energy, enabling the cheapest supply to meet demand with the greatest willingness to pay in Europe, subject to the capability of the existing network.

140 In particular, in the areas of Capacity Allocation and Congestion Management for Electricity (CACM) and Electricity Balancing.

141 ACER (2013), Regional initiatives status review report 2013: Final Steps Towards the 2014 Deadline. See: http://www.acer.europa.eu/Official_documents/Acts_of_the_Agency/Publication/ACER%20Regional%20Initiatives%20Status%20Review%20Report%202013.pdf.

142 In the flow-based capacity calculation method, exchanges between bidding zones are limited by the maximum flows on the critical network elements and power transfer distribution factors.

255 In view of the above and in line with the previous editions of the MMR, this chapter assesses: in Section 3.2 the level of market integration and the benefits stemming from the use of cross-border capacity; in Section 3.3 the barriers to market integration. Section 3.4 concludes this chapter with recommendations.

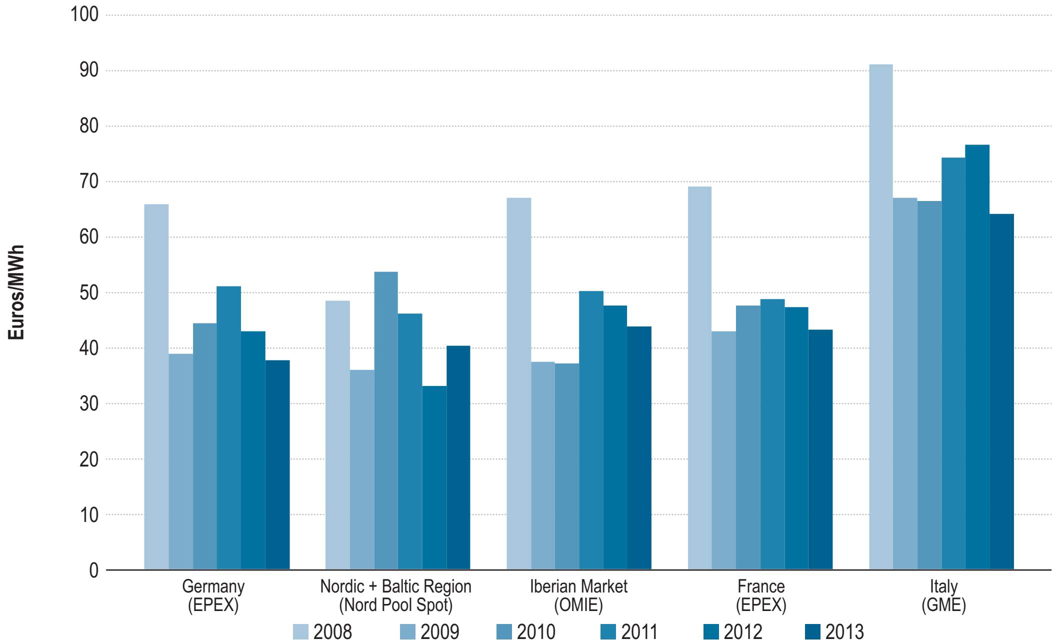
3.2 Markets' integration

256 This section reports on key developments in EU electricity wholesale markets, including an assessment of the level of wholesale market integration and its benefits.

3.2.1 Level of integration: price convergence

257 Figure 35 presents recent trends in wholesale electricity prices in the EU. Between 2008 and 2009 prices on nearly all EU day-ahead wholesale markets dropped by one third. The 2009 drop was due to the economic downturn that began in 2008 and impacted energy demand and fuel prices in 2009. With some exceptions, prices increased very slightly in 2010, but from 2011 onwards further decreases have been observed. This can be explained by the increasing penetration of renewables, combined with the availability of cheap coal on international markets. Aggregated production from solar and wind plants increased by more than 45% since 2011. This increase was essentially driven by the existence of national support schemes for renewables (see Annex 9 for an overview of these support schemes). Prices on the Nordic market show a different pattern, due to the fact that this market has a large share of hydro-based generation.

Figure 35: Evolution of European wholesale electricity prices at different European power exchanges – 2008–2013 (euros/MWh)

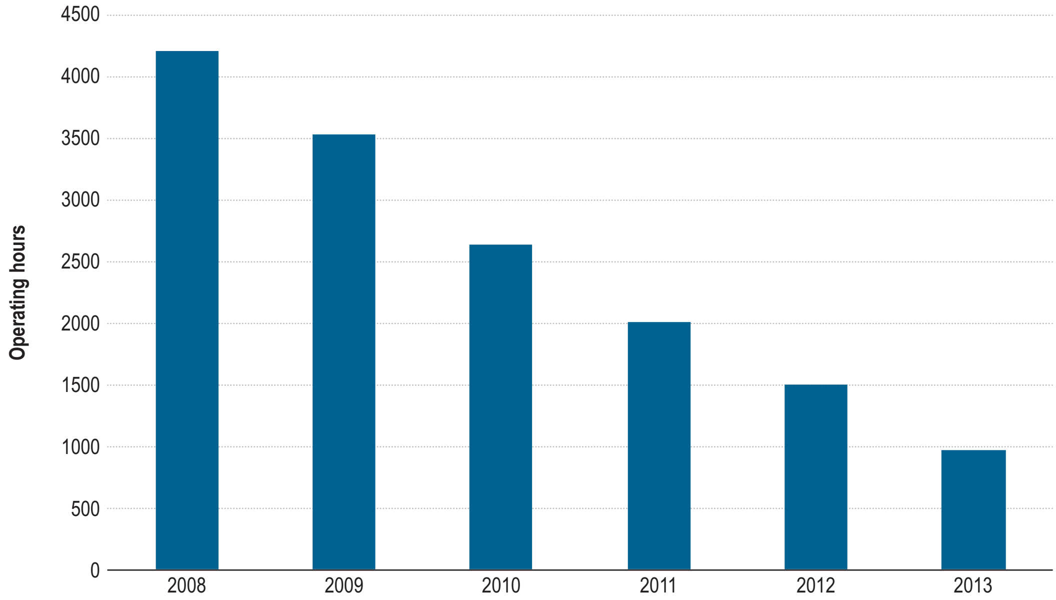


Source: Platts, PXs and data provided by NRAs through the Electricity Regional Initiatives (ERI[143]) (2014) and ACER calculations

143 A total of 23 EU MSs and Switzerland replied to the ERI 2014 questionnaire, Germany made available data only for 2012; Ireland and Lithuania did not provide data.

258 The lower levels of electricity wholesale prices in Europe since 2009 have impacted gas-fired power plants in particular. Their marginal cost has exceeded day-ahead prices during an increasing number of hours in the course of the last few years, crowding them out in the electricity dispatch merit order. As a result, the level of utilisation of gas-fired power plants has decreased. Figure 36 exhibits this for Spain, where the average number of operating hours of gas-fired power plants has steadily decreased since 2008.

Figure 36: Evolution of the level of utilisation of gas-fired power plants in Spain – 2008–2013 (number of operating hours)



Source: CNMC (2014)

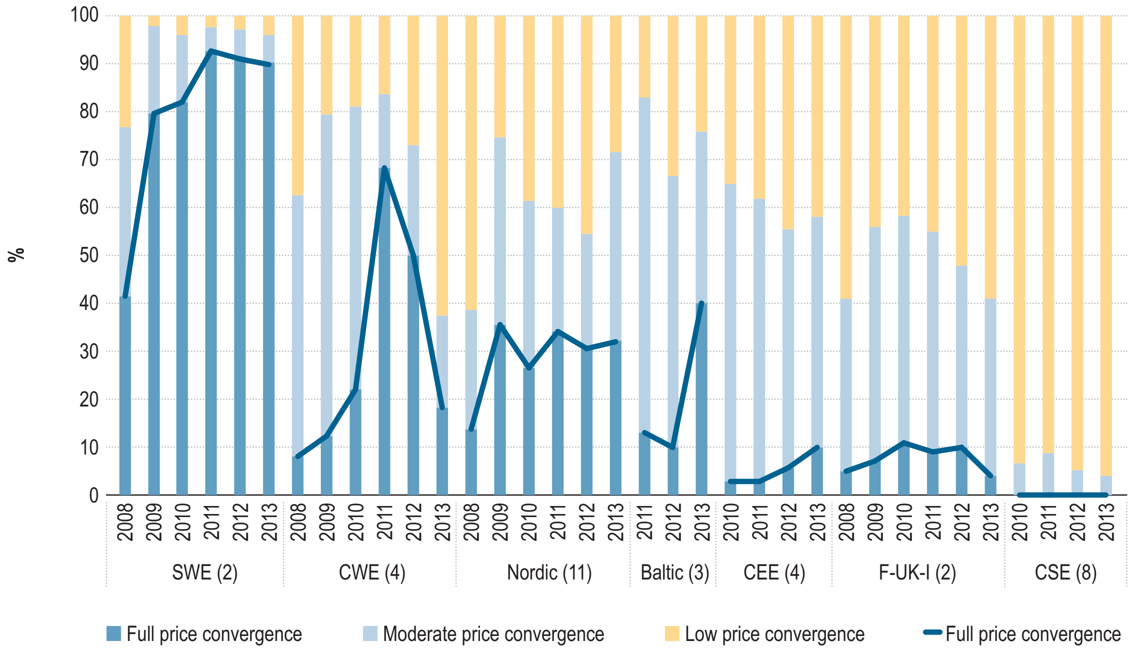
Day-ahead price convergence within regions

259 The convergence of wholesale electricity prices can be regarded as an indicator of market integration, even though the optimal level of market integration does not necessarily require full price convergence. The remainder of this section focuses on day-ahead markets price convergence within and across different regions. The section also assesses future market prices in the Central-West Europe (CWE) region for the same period. For the purpose of the analysis, countries were grouped into regions, and price convergence was assessed both within each region and across the regions. Regions are defined in accordance with Annex I of Regulation (EC) No 714/2009 (OJ L 211, 14/8/2009), with some slight modifications[144] to facilitate the analysis of price convergence.

144 The definition applied in this section is therefore as follows: the Baltic region (Estonia, Latvia and Lithuania), the CEE region (the Czech Republic, Hungary, Poland and Slovakia), the CSE region (Greece, Italy, Slovenia and Switzerland), the CWE region (Austria, Belgium, France, Germany, and the Netherlands), the FUI region (United Kingdom and the Republic of Ireland), Nordic (Denmark, Finland, Norway and Sweden) and the SWE region (Portugal and Spain).

260 Figure 37 provides an overview of the development of hourly price convergence[145] within EU regions over the last years.

Figure 37: Price convergence in Europe by region (ranked) – 2008–2013 (% of hours)



Source: Platts, PXs and data provided by NRAs through the ERI (2014) and ACER calculations

Note: The numbers in brackets refers to the number of bidding zones per region included in the calculations.

261 The most significant decline in full price convergence in 2013 was observed in the CWE region. Following an 18% drop in 2012 compared to 2011, an additional decrease of 32% took place in 2013, resulting in a price convergence level of 18% for the region. This is slightly below the level registered in the CWE region in 2010 (22%) i.e. the year of the expansion of the CWE market coupling to Germany (November 2010). Moreover, the number of hours with a price differential exceeding 10 euros/MWh (low price convergence) has nearly quadrupled in the CWE region over the last two years, from 16% in 2011 to almost 64% in 2013. The most significant increase in full price convergence took place within the Baltic region, which registered equal prices during 40% in 2013 compared to 10% in 2012.

CWE Region

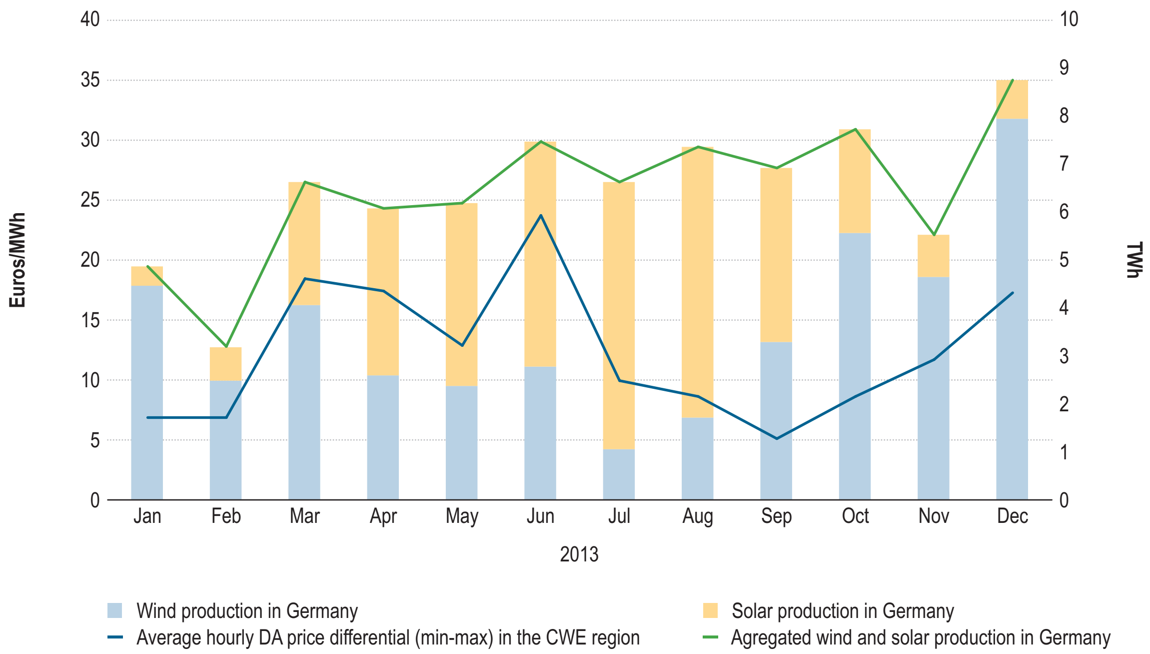
262 Since 2011, day-ahead price convergence has been decreasing in the CWE region. This decrease has become more evident since the third quarter of 2012. Price divergence has been particularly high between Germany and the Netherlands, where full price convergence was registered during only 19% of the hours in 2013, compared to 52% in 2012 and 68% in 2011. The overall sharp price divergence in the CWE region can be explained by a combination of factors.

263 First, the increasing share of wind and solar power in Germany drove German wholesale prices in 2013 down more than elsewhere in the region, causing high price spreads in the CWE region,

145 Price differentials are calculated as the hourly difference between the maximum and minimum price of the assessed bidding zone prices. The results are presented as a percentage of all hours in three categories: the number of hours with a price differential: (i) of less than 1 euros/MWh (i.e. 'full price convergence'); (ii) from 1 to 10 euros/MWh (i.e. 'moderate price convergence'); and (iii) of more than 10 euros/MWh (i.e. 'low price convergence'). Note that the results are affected by the number of bidding zones in a given region (i.e. price convergence is easier to achieve in regions with fewer bidding zones).

in particular between the German and the Dutch markets. As a consequence, German electricity exports reached a record[146] in 2013[147]. Figure 38 shows an important correlation between the price spreads in the CWE region and aggregated solar and wind generation in Germany in 2013. While in 2012 price divergence in the CWE region was overall correlated with production from wind[148], Figure 38 highlights the contribution of solar generation to price divergence in 2013, particularly during the summer.

Figure 38: Monthly aggregated wind and solar production in Germany compared to price differentials in the CWE region – 2013 (TWh and euros/MWh)



Source: Platts, ENTSO-E (2014) and ACER calculations

Note: The price differentials are calculated as the hourly difference between the maximum and minimum price of the bidding zones of the CWE region. In 2013, the lowest price was recorded in Germany for around 87% of the times.

264 Second, cheap coal on international markets and the large coal-fired power plants in Germany (around 45%[149] of total electricity production in 2013 was coal-based) contributed further to low German day-ahead prices. Moreover, in the Netherlands, where gas-fired power plants account for around 70% of installed capacity[150], power prices have been rising over the last two years due to increasing gas prices. The impact of fuel prices in Germany and the Netherlands are shown in Figure 39, with increasing gas-coal price spreads and increasing day-ahead price spreads between 2011 and 2013.

265 Finally, French and Belgian price premiums to Germany can be partially explained by a reduced availability of nuclear power plants in France and in Belgium, where from June 2012 to June 2013, two nuclear plants were taken off the grid for inspection[151].

146 ENTSO-E (2014).

147 Cross-border export capacities from Germany to neighbouring MSs in the CWE region did not increase in 2013. Therefore, the soaring German exports can be explained only by a higher utilisation of the interconnectors from Germany to its neighbouring countries.

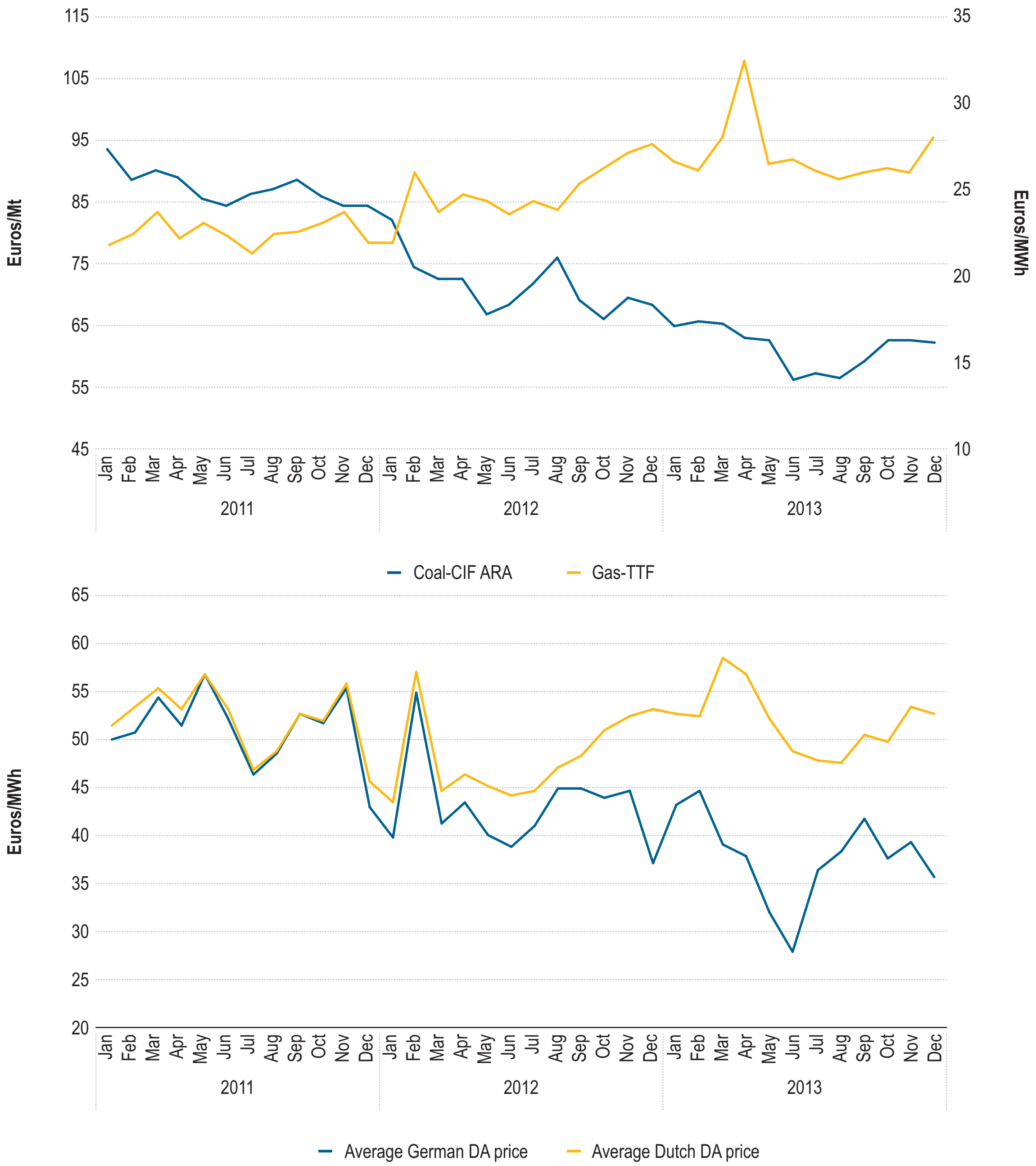
148 See: MMR 2012, page 63, figure 14.

149 Source: BNetzA (2014).

150 According to TenneT, see: http://energieinfo.tennet.org/Production/InstalledCapacity.aspx.

151 See: http://ec.europa.eu/euratom/observatory_news.html.

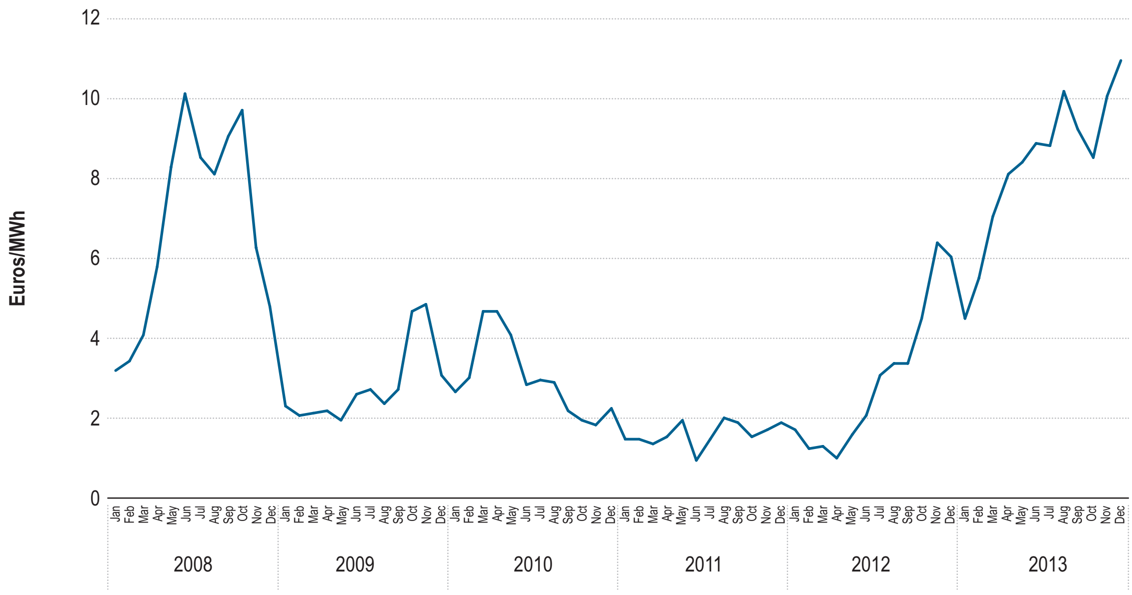
Figure 39: Evolution of fuel (Coal-CIF ARA & Gas-TTF) and power prices (German and Dutch average day-ahead prices) – 2011–2013 (euros/Mt and euros/MWh)



Source: Platts (2014)

266 Figure 40 shows that in the period from 2008 to 2013, convergence of future market prices in the CWE region followed the trend shown for day-ahead price convergence. Moreover, it shows that in 2013, the market anticipated price differentials across the CWE to further increase during 2014.

Figure 40: Price differentials of base load year-ahead products in the CWE region – 2008–2013 (euros/MWh)



Source: Platts (2014)

Note: The figure shows the prices of base load power for delivery one calendar year ahead in the CWE region. The price differentials are calculated as the difference between the maximum and minimum year-ahead prices (closing daily values) of the bidding zones of the CWE region.

Baltic Region

267 The level of full price convergence in the Baltic region increased to 40% of all hours in 2013 from merely 10% the year before[152], due to the launch of the new bidding area at Nord Pool Spot covering Latvia in June 2013. Although full price convergence occurred for 80% of the hours in June, it dropped to less than 25% between July and October.

268 This sharp decrease can be explained by maintenance work on generation and cross-border transmission capacities. During the summer, several generation maintenance works took place in the Baltics and Finland, which obliged the less competitive power plants, particularly in Latvia and Lithuania, to operate. This contributed to the observed price differentials between these two MSs and Estonia. Reduced cross-border capacities were observed in the Region due to network outages caused by maintenance works which were moved from summer to autumn.

269 Figure 41 shows a high correlation between the available export capacity from Estonia to Latvia and the level of price convergence in the Baltic region in 2013 after the bidding area of Latvia was created.

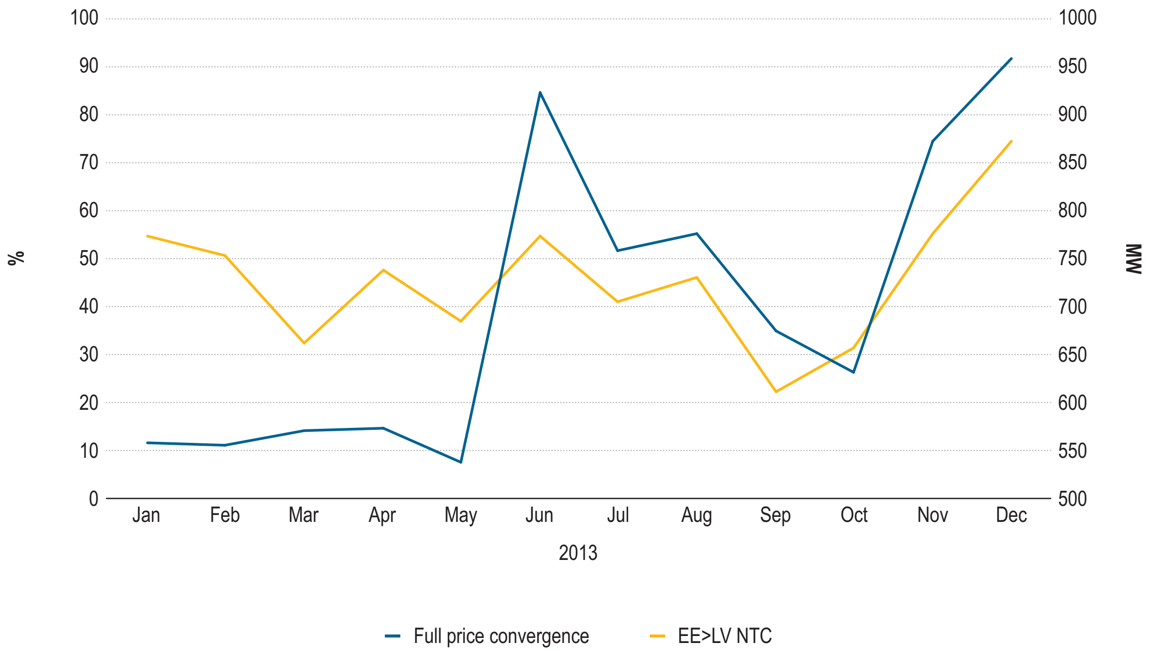
270 In addition, the decrease in price convergence during the summer can be partly explained by limited imports from Russia and Belarus to Lithuania (the main importer from these two countries in the

152 Before 2013, price convergence was calculated only for Estonia and Lithuania, which are not directly connected. Therefore, high price convergence could not have been expected until the new bidding area of Latvia (which is connected with both Estonia and Lithuania) was created.

Baltic region) during that period, contributing to high prices in Lithuania. This was due to reductions in the cross-border capacity available from Russia and Belarus to Lithuania. The interconnector with Russia (via Kaliningrad) was affected by maintenance works on the combined heat and power (CHP) plant located in Russia close to the Lithuanian border, while the interconnector with Belarus was affected by maintenance works which took longer than expected in 2013. In addition, the physical flows resulting from the imports from Russia to Lithuania cannot be channelled through the Estonian-Latvian border since 15 March 2013, when an agreement among the Baltic TSOs was signed. This agreement aimed, *inter alia*, to allocate to internal trading (within the Baltic States) the entire available transmission capacity between Estonia and Latvia, which, before the agreement, was also available for Russian exports and imports.

271 In this context, it is worth mentioning that the characteristics of the Baltic wholesale markets, with few participants, low liquidity, high concentration and limited cross-border capacities make day-ahead prices and hence price convergence sensitive to small changes in available generation and interconnector capacity.

Figure 41: Full price convergence in the Baltic region compared to cross-border capacity (monthly average NTC) from Estonia to Latvia – 2013 (% and MW)



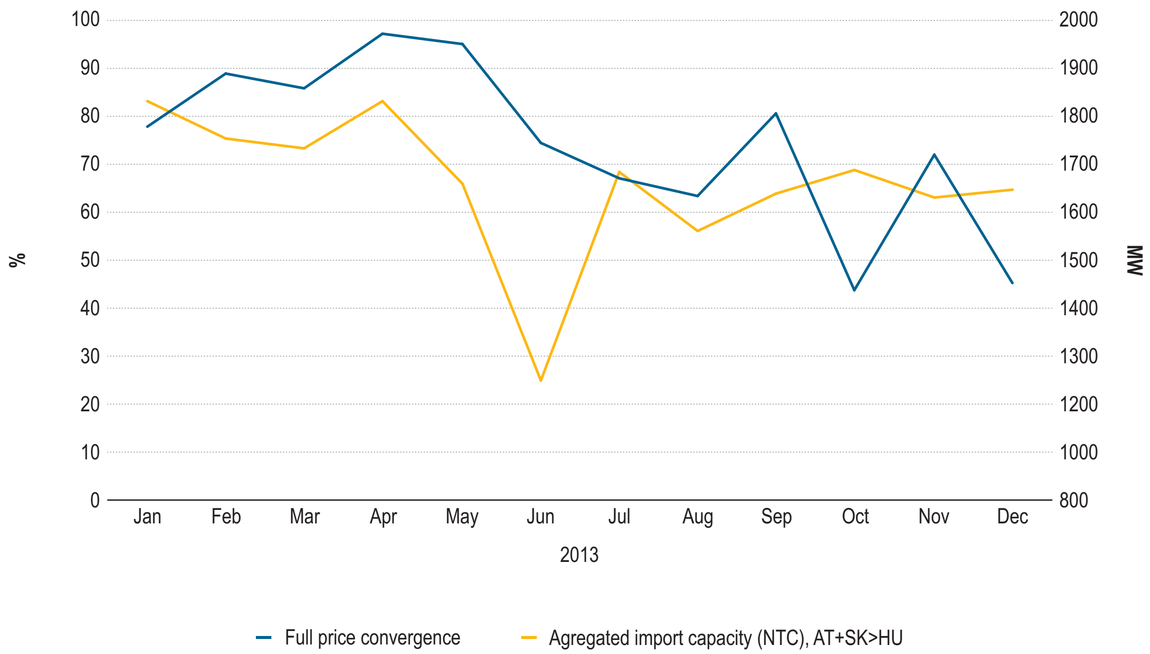
Source: Platts and ENTSO-E (2014)

CEE Region

272 Full price convergence in the CEE region increased modestly from 6% of all hours in 2012 to 10% in 2013. However, between the Czech Republic, Hungary and Slovakia, it doubled from 37% of all hours in 2012 to 74% in 2013. This is due to the extension of market coupling from the Czech Republic and Slovakia to Hungary in September 2012. In these markets, day-ahead prices converged more than 90% of the time in May 2013, but price convergence significantly decreased over the second half of the year (falling to just less than 50% in December). This was mainly due to restricted cross-border capacity from Slovakia and Austria to Hungary, causing Hungarian prices to increase.

273 Figure 42 shows a sharp drop in the number of hours with full price convergence due to the decrease in import capacity (NTC) from Slovakia and Austria to Hungary since May 2013. According to the Hungarian NRA, the cross-border capacity between Austria and Hungary was frequently reduced due to reinforcement works in the North-East Austrian network, which impacted the capacity offered on that border in 2013. Furthermore, the maintenance of different Hungarian and Slovak grid elements had a considerable influence on NTC values between these two MSs. Finally, the low price convergence observed in October 2013 was caused not only by reduced import capacities, but also by outages at several nuclear plants in Hungary (including the Paks nuclear power plant) and neighbouring countries[153].

Figure 42: Full price convergence among the Czech Republic, Hungary and Slovakia compared to aggregated import capacity (monthly average NTC) from Austria and Slovakia to Hungary – 2013 (% and MW)



Source: Platts and ENTSO-E (2014)

Nordic, FUKI, SWE and CSE regions

274 In the F-UK-I region, full price convergence was achieved during 4% of all hours in 2013, which is a slight decrease in comparison to 2012. Whilst the average aggregated NTC value for the Moyle and East West interconnectors between Great Britain and Ireland increased by 9% (538 MW in 2012 to 584 MW in 2013), price convergence was not enhanced. This is probably due to completely different wholesale market arrangements in the respective countries and the lack of market coupling implementation.

275 In 2013, the price convergence in the SWE (91% of hours with full price convergence) and Nordic regions (32%) remained essentially unchanged compared to 2012 (with 92% and 31%, respectively). In the Central-South (CSE) region, overall full price convergence remained low.

153 See: http://www.pxe.cz/pxe_downloads/Statistics/Market_comment/mc1310.pdf.

Inter-regional price convergence

276 In 2013 inter-regional price convergence remained at lower levels than within the regions. Nevertheless, some noticeable increases occurred, namely between Germany and Denmark West, Germany and Sweden, and Poland and Sweden, where full price convergence was recorded during, respectively 50%, 32 % and 19% of all the hours in 2013, compared to 43%, 27% and 8% in 2012.

277 The development of the available capacity (NTC) between Germany and the two above-mentioned Nordic MSs deserves closer attention. In both cases, cross-border capacity decreased in 2013 compared to 2012, although the increasing penetration of renewables in Germany and available cheap coal[154] reduced German day-ahead prices closer to Danish and Swedish ones. Average cross-border capacity from Germany to Sweden declined by 18% from 375 MW in 2012 to 308 MW in 2013[155], which continued the downward trend observed the year before (average NTC of 407 MW in 2011). This was particularly relevant during off-peak hours, since in 2013, German prices during those hours were on average lower than Swedish ones for the first time in the last three years.

278 A higher amount of export capacity made available from Germany to Sweden should have allowed prices to converge further. According to the Swedish NRA, the reduction in the available capacity is likely to have been caused by a combination of factors on both sides of the border. On the German side, it might have been due to the increasing renewable generation in the northern part of the German grid, forcing the relevant German TSO (TenneT) to limit exports to Sweden at times of high RES injection, creating bottlenecks within the single bidding zone of Germany and Austria. On the Swedish side, it is explained by the limited capacity of the so-called ‘West Coast Corridor’ in Sweden, which restricts the amount of power that can flow from the continent into Norway during off-peak hours. This capacity is about to increase with further investments in the transmission network, for instance in Skagerrak 4, the fourth interconnector between Norway and Denmark.

279 Similarly, average cross-border capacity from West Denmark to Germany decreased by 18% from 811 MW in 2012 to 669 MW in 2013[156]. During peak hours in 2013, when Danish prices (West Denmark) were lower than German ones, exports to Germany were limited and, as a consequence, the level of price convergence was lower than it could have been. The Agency sent a letter on 11 March 2014 to the Danish and German NRAs raising questions about the decreases in cross-border transmission capacity available on this border. On 11 April 2014, the two NRAs sent a joint reply where information from the two relevant TSOs (Energinet.dk and TenneT GmbH) was provided. According to the two TSOs “several coinciding constraints are the reasons for less available capacity” which includes “the high pace of increase in wind generation, increased volatility”. In addition “necessary network maintenance in Northern Germany in combination with lengthy procedures for network development” was mentioned. However, these reasons may not fully explain the decrease in the NTC value in 2013, as these factors were already present in preceding years. The Agency was informed by the NRAs that the TSOs conducted a study to investigate the possibility of increasing the daily NTC by taking remedial actions.

280 A low level of price convergence is still observed in 2013 between Great Britain and CWE, e.g. between Great Britain and France or Great Britain and the Netherlands, with equal prices in 2013 in less than 5% and 10% of the hours, respectively.

154 According to the evolution of the European-delivered CIF ARA coal price (Platts).

155 In the opposite direction, it slightly increased by 5%.

156 In the opposite direction, it remained unchanged.

281 The market coupling of Great Britain with the CWE, Nordic and the Baltic regions, through the North Western Europe (NWE) Price Coupling[157] initiative launched on 4 February 2014, is expected to improve price convergence across all these regions in the coming years. Furthermore, since 13 May 2014, capacity at the French-Spanish border is implicitly allocated through the same price coupling project, which is expected to contribute to further price convergence on this border.

3.2.2 Benefits of market integration

282 This section reports on the benefits of market integration. It updates on progress in market coupling and on the 'gross welfare benefits' that the integration of the electricity European wholesale markets renders.

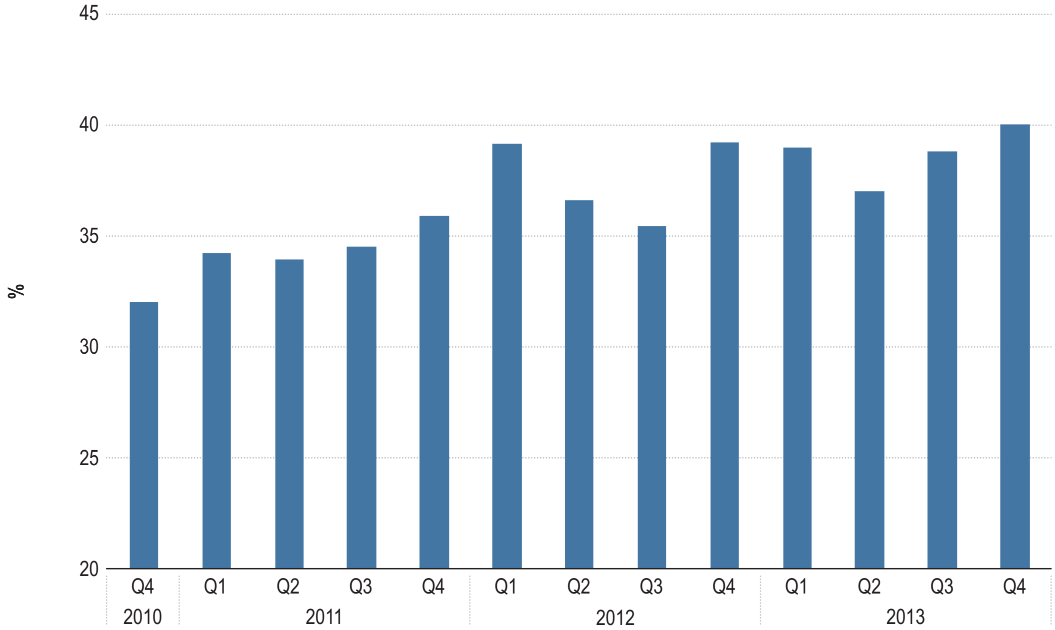
3.2.2.1 Progress in market coupling

283 This section provides an update on the use of existing cross-border transmission capacity throughout Europe at the day-ahead timeframe. First, it presents the level of commercial use of interconnections. Second, it assesses the economic efficiency of market coupling (implicit capacity allocation) compared to the explicit allocation of cross-border capacity. The use of the remaining capacity after day-ahead (i.e. cross-border intraday trade and exchange of balancing services) is analysed in section 3.3.1. Figure 43 shows the evolution of the (commercial) use[158] of overall EU electricity cross-border capacity at the day-ahead timeframe over the last thirteen quarters. According to this figure, the use of cross-border capacities has gradually increased in the course of the last three years, reaching 40% in 2013. The increased use of the interconnectors could be due to a combination of reasons (including higher price dispersion, e.g. as observed in the CWE region in 2013) and does not necessarily entail a more efficient use of capacity.

157 The NWE Price Coupling is a project initiated by the TSOs and PXs of the countries in the NWE region which allows for the market coupling of all the bidding areas within the CWE, Nordic and Baltic regions and Great Britain by using a single algorithm, the Price Coupling of Regions (PCR) solution.

158 The percentages of use of the interconnections are calculated for every border and direction as follows: all the hourly net nominations are added and divided by the total amount of capacity offered to the market (NTC D-1 values). The results are shown in aggregated form for all borders.

Figure 43: Evolution of the quarterly level of commercial use of interconnections (day-ahead) as a percentage of NTC values for all EU borders[159] – October 2010–2013 (%)



Source: ENTSO-E, data provided by NRAs through the ERI, Vulcanus (2014) and ACER calculations

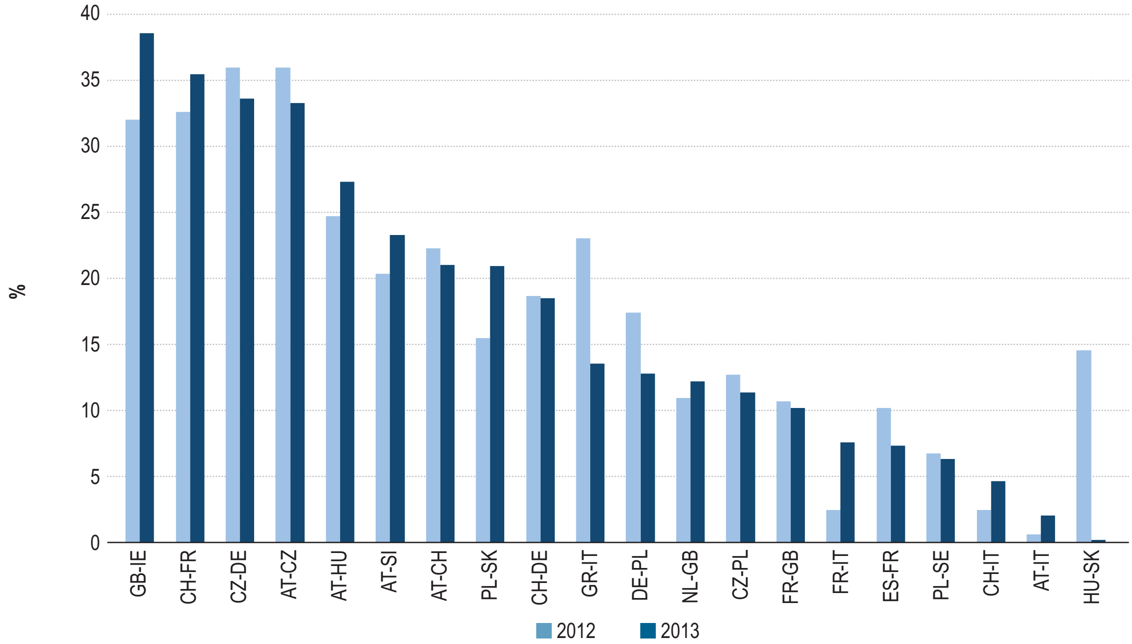
284 The ETM for the day-ahead market envisages a single European price coupling applied throughout Europe which eliminates the remaining 'wrong-way flows'[160] and hence improves the use of cross-border capacities for trade. Figure 44 shows the evolution of 'wrong-way flows' between 2012 and 2013 on EU borders where market coupling has not yet been implemented. It shows that 'wrong-way flows' are still present on around one third of all EU borders, and that, in 2013, 'wrong-way flows' disappeared only on the Hungarian-Slovakian border due to the implementation of market coupling in September 2012[161].

159 Over 40 EU borders were included in this analysis.

160 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 euros/MWh.

161 In 2013, market coupling was not extended to any existing bidding area in Europe. However, on 3 June 2013, a new bidding area covering Latvia was launched within Nord Pool Spot, allowing for the transmission capacity between Estonia and Latvia and between Lithuania and Latvia to be implicitly auctioned.

Figure 44: Percentage of hours with net day-ahead nominations against price differentials per border – 2012–2013 (%)

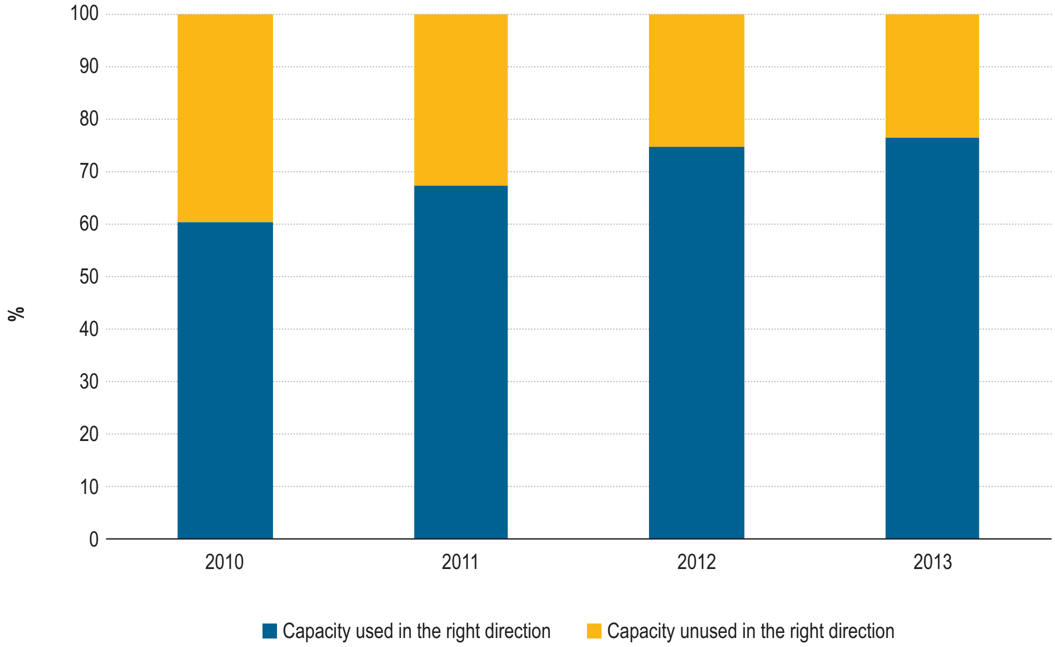


Source: ENTSO-E, data provided by NRAs through the ERI, Vulcanus (2014) and ACER calculations

Note: Only borders with 'wrong-way flows' present in more than 2% of the hours of 2012 and 2013 are shown. Wrong-way flows are not present on borders which are already coupled (not shown in the figure), with the exception of the borders between Great Britain and the Netherlands and between Poland and Sweden. These two borders present 'wrong-way flows' when they are calculated on the basis of the most liquid day-ahead price references in the British and the Polish markets. These prices are different from those formed as a result of the respective auctions.

285 The absence of 'wrong-way flows,' although necessary, is not sufficient to guarantee the efficient use of interconnections in the day-ahead market. When prices diverge across a border, the full utilisation of the cross-border capacity in the 'right direction' is also essential for achieving efficient use of an interconnection. Indeed, the utilisation level of an interconnector in the 'right direction', in the presence of price differentials, is a suitable indicator of the efficient use of cross-border capacities. Figure 45 shows that, overall, the efficient use of European electricity interconnections has increased from less than 60% in 2010 to 77% in 2013, following the implementation of market coupling at several borders between 2010 and 2012. In 2013, however, market coupling was not extended to other EU borders. Therefore, efficiency of the interconnections remained virtually at the 2012 level, i.e. a less than 2% increase. The remaining 23% improvement will be achieved as soon as market coupling is implemented on all the borders with explicit auctions at the end of 2013 (some already coupled during the course of 2014, as explained at the end of this section).

Figure 45: Percentage of available capacity (NTC) used in the 'right direction' in the presence of a significant price differential, all EU electricity borders – 2010–2013 (%)



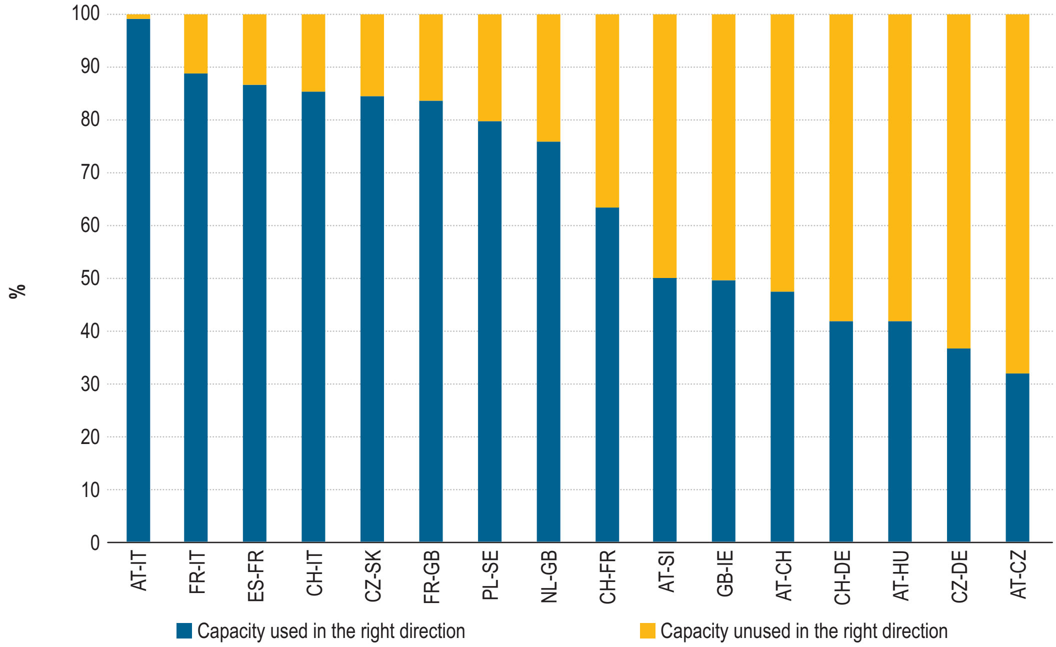
Source: ENTSO-E, data provided by NRAs through the ERI, Vulcanus (2014) and ACER calculations

Note: 2010 only includes the fourth quarter.

286 Figure 46 shows levels of efficient use of interconnection capacity for those borders with explicit day-ahead auctions[162]. In 2013, borders within the Central-East Europe (CEE) region recorded the lowest levels of efficient cross-border capacity use.

162 The capacity on the borders between Great Britain and the Netherlands, and between Poland and Sweden is implicitly auctioned. Since the most liquid day-ahead price references in the British and the Polish markets are different from the prices formed as a result of the respective auctions, the two borders were also included in the analysis of the efficient use of the interconnectors. The N2EX and PolPX day-ahead prices are used for the respective zones of Great Britain and Poland.

Figure 46: Percentage of available capacity (NTC) used in the 'right direction' in the presence of a significant price differential, per border – 2013 (%)



Source: ENTSO-E, data provided by NRAs through the ERI, Vulcanus (2014) and ACER calculations

Note 1: On coupled borders (not shown in the figure) 100% of the available capacity is used in the right direction, with the exception of the borders between Great Britain and the Netherlands and between Poland and Sweden. See the Note under Figure 44.

Note 2: The borders within the CEE region with 'multilateral' technical profiles (PL-CZ+DE+SK and DE_50Htz-CZ+PL) are not included in this figure, since the methodology applied to the other borders, based on NTC values, is not applicable to these CEE borders for this or the following figures. Figure 44 shows that in 2013 on those borders (CZ-DE, DE-PL, PL-SK) capacity was underutilised, as they were affected by 'wrong-way flows'.

287 Due to the implementation of market coupling on 25 out of 40 borders, the EU has made a significant efficiency gain (and hence improved social welfare) for the benefit of EU consumers. In order to know the overall benefits from market coupling, it would be desirable also to examine a period of trade before the implementation of market coupling for each border. This is not always possible due to the lack of comprehensive data on NTC values before September 2012. For non-coupled borders, the actual 'loss in social welfare' can be assumed to equal the benefits from market coupling once this is implemented. An order of magnitude for the whole of the EU can be obtained by using the estimate from non-market coupled borders and relate that, proportionally, to the market coupled borders.

288 Figure 47 shows that 'social welfare losses'[163] in Europe due to the lack of market coupling amount to more than 400 million euros/year (average of 2012 and 2013). This would mean an annual 'social welfare gain' of around 12.5 million euros per GW of available cross-border capacity, or around 600 million euros per year for all the borders where market coupling has already been implemented. In sum, once market coupling is fully completed, a 'social welfare gain' of more than 1 billion euros/year is expected[164].

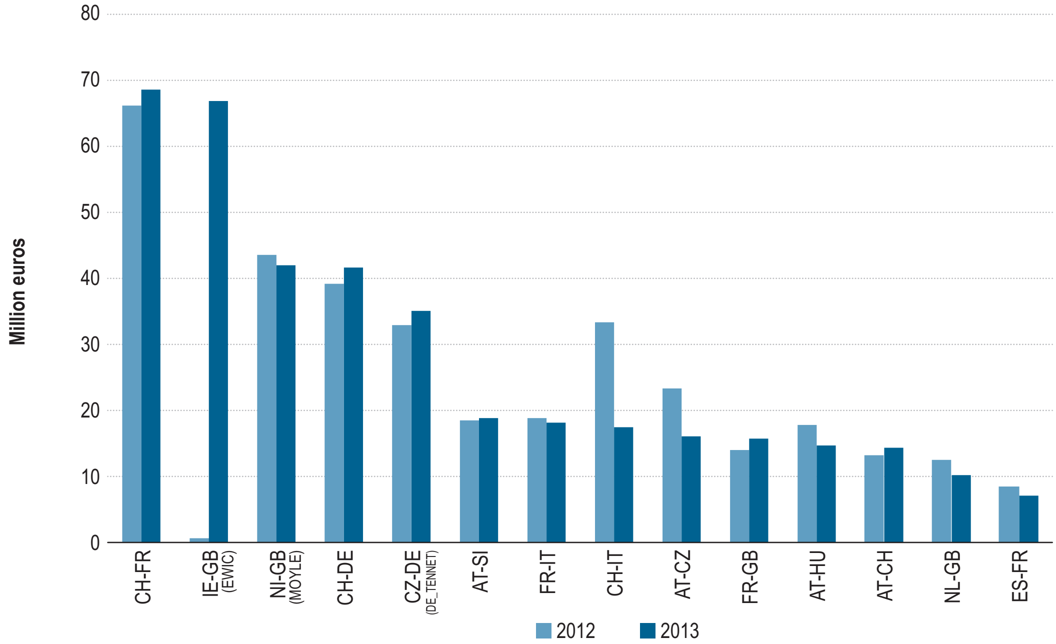
289 In Figure 47, the EU borders are ranked by the 'loss in social welfare' due to the absence of market coupling in 2012 and 2013. It shows that the French-Swiss border continues to have the highest loss in total surplus (almost 70 million euros)[165], closely followed by the border between Great Britain and Ireland, where the 'loss' significantly increased compared to 2012. On this border, new capacity was made available following the commissioning of the East-West interconnector late in 2012. Although the new interconnector offers more trading possibilities and will contribute to increasing social welfare in the British and Irish markets, the gains in social welfare are lower than they could be if the Irish and British wholesale markets were coupled. The lack of market coupling on this new interconnector, partly explains the increase in 'social welfare losses' observed on this border in 2013.

163 The 'loss in social welfare' associated with the absence of implicit auctions between two bidding zones has been approximated below, as the product of the positive price differential across the border between those two zones and the daily capacity that remains unused or is used in the opposite direction. This approximation should be considered with caution, as it probably overestimates the results due to the absence of implicit methods, although it provides an indication of the scale of the loss of social welfare on each border. For more details on the methodology used to calculate 'loss in social welfare', see: MMR 2012, page 81.

164 This extrapolation might underestimate the benefits, as it is based on estimates on borders which are not yet coupled. One would expect borders where the benefits are highest to be coupled first. The figure of 1billion euros/year is a conservative value compared to the estimates delivered by Booz&Co for the European Commission, see: http://ec.europa.eu/energy/infrastructure/studies/doc/20130902_energy_integration_benefits.pdf.

165 For details on the reasons for the 'social welfare loss' on this border, see: MMR 2012, page 82.

Figure 47: Estimated 'loss in social welfare' due to the absence of market coupling, per border – 2012–2013 (million euros)



Source: ENTSO-E, data provided by NRAs through the ERI, Vulcanus (2014) and ACER calculations

Note 1: Only non-coupled borders are shown, with the exception of the borders between Great Britain and the Netherlands and between Poland and Sweden. See note under Figure 44.

Note 2: The borders within the CEE region with 'multilateral' technical profiles are not included in this figure; see note under. IE-GB (EWIC) refers to the East West Interconnector which links the electricity transmission grids of Ireland and Great Britain. NI-GB (MOYLE) refers to the Moyle Interconnector which links the electricity grids of Northern Ireland and Great Britain.

290 The values of losses due to inefficient day-ahead allocation methods shown above illustrate the urgent need to finalise the implementation of the ETM. Indeed, an important step towards the full implementation of market coupling throughout Europe was achieved on 4 February 2014, when the NWE price coupling went live. Also, since 13 May 2014, the capacity on the French-Spanish border is implicitly allocated through the PCR algorithm.

3.2.3 Gross welfare benefits of interconnectors

291 Market integration is expected to deliver several benefits; one of these is enhanced economic efficiency, allowing the lowest cost producer to serve demand in neighbouring areas. This section shows the additional benefit of an incremental increase in interconnector capacity on a bidding zone border, using the 'gross welfare benefits' indicator. The indicator is based on the same methodology introduced in the first edition of the MMR.

292 Gross welfare benefit includes, first, 'consumers' and 'producers' surplus gained by consumers and producers who participate in power exchanges (welfare is measured as the difference between the prices bid into the market and the obtained matched prices multiplied by the quantity) and second, congestion rents. The first component measures the monetary gain (saving) that could be obtained by consumers (producers) because they are able to purchase (sell) electricity at a price that is less than the higher (lower) price they would be willing to pay (offer) as a result of changes in cross-border transmission capacity. The second component corresponds to price differences between intercon-

nected markets multiplied by hourly aggregated nominations [166] between these markets. It is important to note that gross welfare benefits, as opposed to net welfare benefits, exclude all costs incurred by TSOs in making this cross-border capacity available to the market.

293 For the purpose of this section, several European Power Exchanges[167] were asked to perform a simulation in order to estimate these gross welfare benefits for the year 2013. The algorithm used for the simulations originates from the Price Coupling of Regions (PCR) Project, which is a joint effort between seven power exchanges, APX, BELPEX, EPEX SPOT, GME, NORD POOL SPOT, OMIE and OTE, aimed at implementing a single European day-ahead price coupling of power regions.

294 There are a few caveats underlying the results presented in this section. For example, the gross welfare benefits include merely the power traded in organised day-ahead exchanges, thus excluding, for instance, forward products such as week-ahead, year-ahead and all OTC trade. As a consequence, the estimated surpluses cannot be considered as the whole welfare benefit in a given country. Moreover, not all borders in Europe are included, which is partly due to the fact that not all markets have been market-coupled yet, or because not all Power Exchanges participated in the analysis. A strong assumption underlying these simulations is that bids submitted in each market remain the same, irrespective of the scenario in terms of available cross-border capacity (all things else being equal). Furthermore, the results refer to one year (2013), and can change from year to year due to factors such as the amount of wind-based generation, the dynamics of hydro power affected by precipitation levels and market fundamentals. Due to timing constraints, the most recent and optimal set-up of the algorithms was not used for these calculations. Finally, market price boundaries as well as (supply and demand bid) curve shapes have a strong influence on the calculated total welfare. This makes it very difficult to compare total welfare between different scenarios in which the cross-border capacity is modified while assuming unchanged order books.

295 The gross welfare benefits for 2013 were computed for two scenarios:

1. Historical scenario: the gross welfare benefit for 2013 calculated on the basis of detailed historical information such as network constraints, the exchange participants' order books (that is, supply and demand bids) and available cross-border capacity. For the latter, the ATC (available transfer capacity) was used as a proxy of capacity effectively made available for trade on 24 borders;

2. Incremental scenario: the same as in the Historical scenario, with the ATC values for each border inflated by 100 MW[168]. As explained above, the assumption is that all other elements (market bids, network constraints, market rules, etc.) remain the same.

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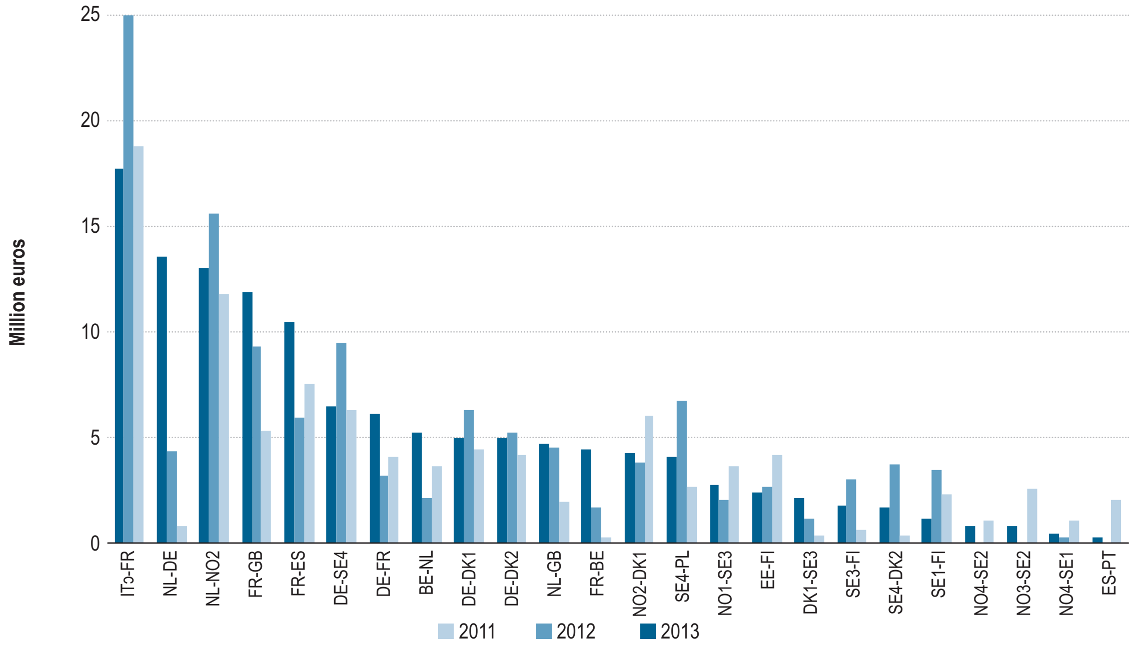
166 Due to mainly ramping constraints on an interconnector, congestion rents are more accurately assessed by means of nominations rather than cross-border capacity.

167 APX, BELPEX, EPEX SPOT, Nord Pool Spot, GME, OMIE and OTE. These were the same Power Exchanges which performed the simulations and provided the results shown in this section.

168 It can be argued that the 100 MW threshold used is to some extent an arbitrary value. Absolute values allow for comparing a border across the EU, although 100 MW is relatively large for some interconnectors and small for others. Secondly, this value is mentioned in Article 9 of Regulation (EU) No 543/2013 of 14 June 2013 as a threshold from which changes in transmission capacity should be reported. See: OJ 2013 L 163/1, 14 June 2013; http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2013:163:0001:0012:EN:PDF.

296 Figure 48 shows the so-called 'Incremental Gain' for 2013, which is the difference between the gross welfare benefit from the Incremental scenario and the Historical scenario and which borders would benefit the most from making extra capacity available. For comparability, the figure also presents the results from the previous two MMR editions, i.e. 2011 and 2012[169]. Note that extra capacity in this context is not necessarily associated with more investments, but could instead be related to more efficient methods of calculation capacity.

Figure 48: Simulation results: gross welfare benefits from incremental gain per border – 2011–2013 (million euros)



Source: PCR project, including APX, EPEX SPOT, Nord Pool Spot, GME, OMIE (2014)

Note: ɔ indicates that the zone is a GME zone; DK, NO and SE with a number refer to the different bidding zones in Denmark, Norway and Sweden. The results ranged for 2013.

297 As for previous years, the figure indicates that in 2013 additional capacity between Italy and France would have yielded the highest social welfare increase (i.e. almost an additional 16 million euros per year in 2013, which is, however, about a third less than a year before). Other interesting interconnectors in 2013 for improving capacity include the borders between: the Netherlands-Germany (on this border, the social welfare increase nearly tripled between 2012 and 2013 from 4 million euros per year to 13 million, respectively), Netherlands-Norway, Netherlands-Germany, France-Great Britain, France-Spain and Germany-Sweden.

298 This indicator should be further developed to become a monitoring tool which can be used to assess the utilisation of the existing network and track the progress of market integration.

169 Different versions of the algorithm were used for the two years.

3.3 Improving the functioning of the internal market: removing barriers

299 This section refers to the different features of the ETM in order to illustrate how it can contribute to removing the identified barriers to further integration of the IEM.

3.3.1 Utilisation of cross-border capacity in the intraday and balancing timeframes

300 Cross-border capacities are offered to the market and traded in different timeframes. After the forward and day-ahead timeframes, remaining capacities are offered for trade during the intraday timeframe and for exchanges in the balancing timeframe. This section presents a review of the use of capacities in these two timeframes with a view to identifying the remaining barriers to the further integration of the Internal Electricity Market. First, it evaluates the impact of different capacity allocation methods on cross-border intraday trade. Second, it assesses the potential use of the remaining cross-border capacity after the intraday timeframe to further integrate the balancing markets.

Cross-border intraday trade

301 An intraday market is a market that operates between the gate closure of the day-ahead market and the intraday gate closure time (i.e. the point in time when energy trading for the intraday timeframe is no longer permitted).

302 The level of liquidity in intraday markets is a key element in achieving well-functioning intraday markets and efficient cross-border intraday trading. In particular, illiquid intraday markets may hinder the efficient utilisation of the available cross-border intraday capacity, while intraday cross-border trade may contribute to the development of liquidity in these national markets.

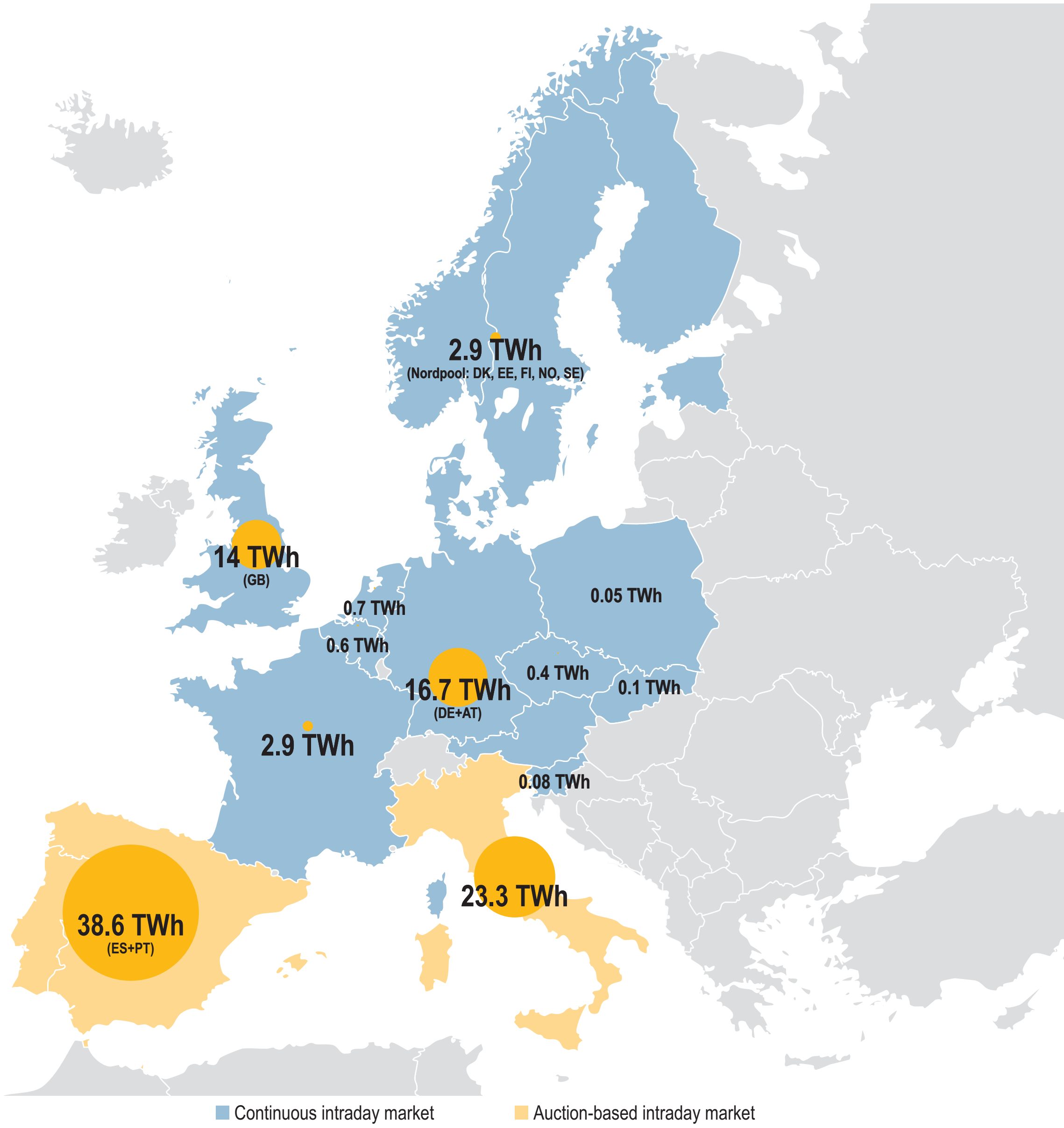
303 Figure 49 provides an overview of the liquidity level (expressed as traded volumes) in national organised intraday markets and their designs in 2013. The different levels of liquidity of national markets can be explained by many factors, including the amount of intermittent generation and how the market design addresses the uncertainty of wind (and other intermittent) generation forecasts, i.e. whether intermittent generation is incentivised to minimise its imbalances by adjusting its schedule in the intraday timeframe. For instance, the three markets with the highest levels of intraday liquidity (i.e. the Iberian, Italian and German markets) have a high level of intermittent generation. In Spain, with the highest volumes traded in the intraday timeframe, intermittent generation is incentivised in the same way as conventional generation to reduce their imbalances. In Germany, intermittent generators are not charged for their imbalances, while in Italy they are charged, although less than conventional generation.

304 In addition, other local factors affect intraday liquidity. These include whether the intraday market is exclusive[170] and whether portfolio bidding is allowed. In non-exclusive intraday markets, a portion of intraday volumes can be traded through bilateral trading (e.g. in Germany), thus reducing the intraday liquidity observed in the organised intraday markets. A similar effect occurs when portfolio bidding is allowed[171], since market participants may prefer to refine their schedules internally rather than through the organised intraday market. This is opposed to unit bidding (e.g. applied in the Iberian Market) where generators have to submit a separate market bid for each of their generating units.

170 That is, whether the organised intraday market is the only way for a market participant to be able to change their nominated position after the day-ahead market and ahead of the final intraday gate closure.

171 Under portfolio bidding arrangements, a market participant can send one bid for energy in a single bidding zone, covering both all of its production assets and any demand it is responsible for procuring on behalf of end-customers.

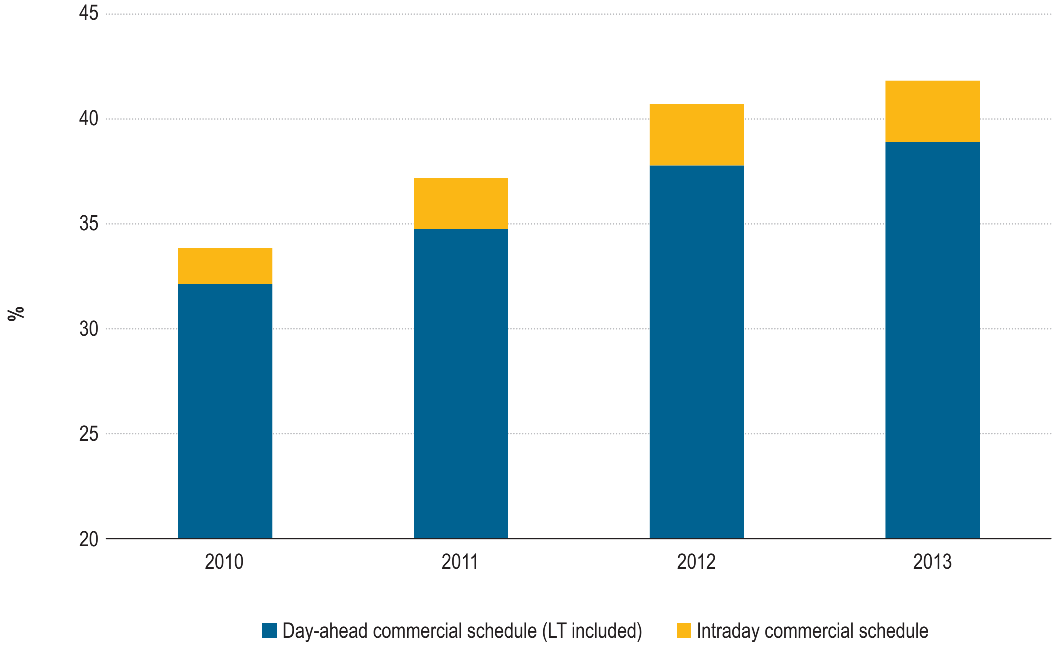
Figure 49: Intraday liquidity and design in national markets – 2013 (TWh)



Source: The CEER national indicators database (2014)

305 Figure 50 shows the relatively low utilisation levels of intraday EU cross-border capacity compared to the day-ahead timeframe (including long-term nominations) between 2010 and 2013. It also shows that, in 2013, the utilisation of cross-border capacity in the intraday timeframe remained virtually unchanged compared to 2012, whereas between these years the use of capacities in the day-ahead timeframe increased by 3%. Capacity underutilisation is not necessarily an inefficient outcome, since electricity market prices may not have justified a trade at the time the capacity was offered, i.e. there was no scarcity. More detailed analysis, including price information, is required to assess the level of efficiency in the use of cross-border capacities. The consistency of intraday price differentials with intraday cross-border trade is one of the elements analysed in what follows.

Figure 50: Evolution of the annual level (average values) of commercial use of interconnections (day-ahead and intraday) as a percentage of NTC values for all EU borders – October 2010–2013 (%)



Source: ENTSO-E, data provided by NRAs through the ERI, Vulcanus (2014) and ACER calculations

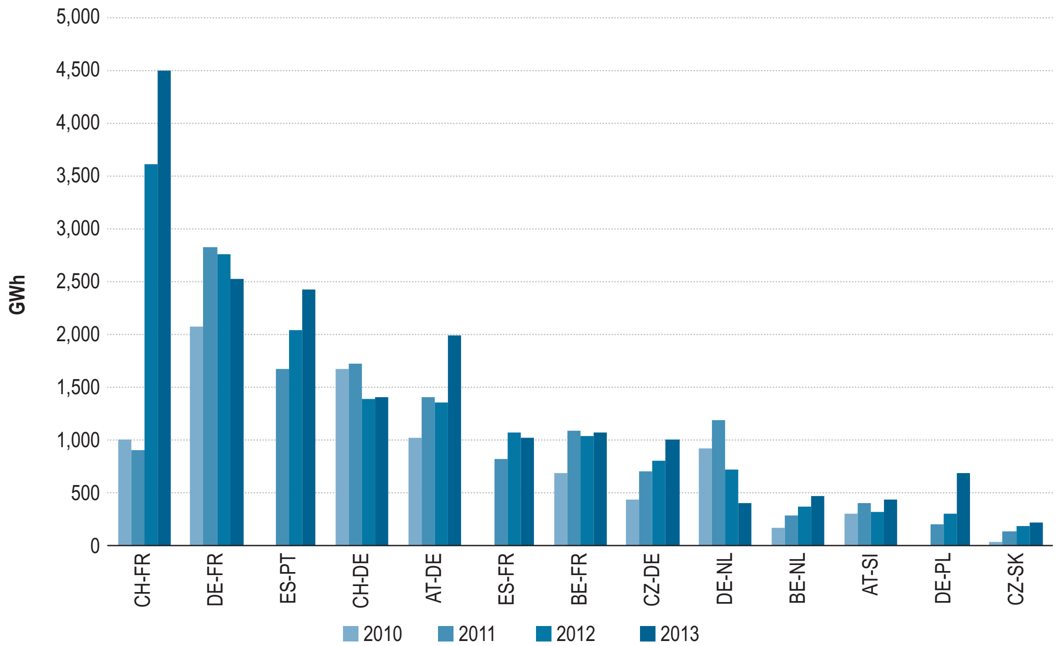
Note: More than 40 EU borders were included in the analysis.

306 Figure A 9 in annex 10 shows the cross-border capacity available after the day-ahead gate closure per border. In 2013, the available cross-border capacity was not, on most borders, an impediment to developing cross-border intraday trade. However, there are some directions where less than 10% of the capacity remains available for use in the intraday timeframe, such as from Austria to Italy, France to Italy or Slovenia to Italy. On other borders where congestion is frequent (e.g. in the direction from Norway to the Netherlands, where on average less than 15% of cross-border capacity is still available after the allocation of capacity in the day-ahead timeframe), it is often argued[172] that there could be an added value in reserving some day-ahead cross-border capacity for potential use in the intraday or balancing timeframes. This added value is associated with the potential use of interconnectors for exchanging reserve capacity (e.g. flexible reserves) in order to have the option of using it during the intraday or balancing timeframes in case of unexpected events. An assessment of the potential benefits from reserving day-ahead cross-border capacity for its potential use in the intraday or balancing timeframes would require a sophisticated welfare analysis to calculate the value of using the network capacity in different timescales. This analysis falls outside the scope of this report.

172 See: http://www.poyry.com/sites/default/files/imce/files/revealing_the_value_of_flexibility_public_report_v1_0.pdf.

307 Figure 51 shows an upward trend in traded volumes since 2010 in the intraday timeframe. In 2013, the most significant progress compared to 2012 was recorded on the borders between Switzerland and France, and between Austria and Germany. The increase in trade followed the introduction of regulatory changes in the respective intraday markets. Since June 2013, the allocation model on the Swiss-French border includes continuous implicit intraday allocation, in parallel with the previous explicit allocation system. This is considered as an interim step towards the full implementation of the intraday Target Model[173]. On the Austrian-German border, the improvement took place following the expansion of the continuous intraday market to Austria in October 2012.

Figure 51: Level of intraday cross-border trade: absolute sum of net intraday nominations for a selection of EU borders – 2010–2013 (GWh)



Source: ENTSO-E, data provided by NRAs through the ERI, Vulcanus (2014) and ACER calculations

Note: Only borders with aggregated intraday nominations above 200GWh in 2013 are shown.

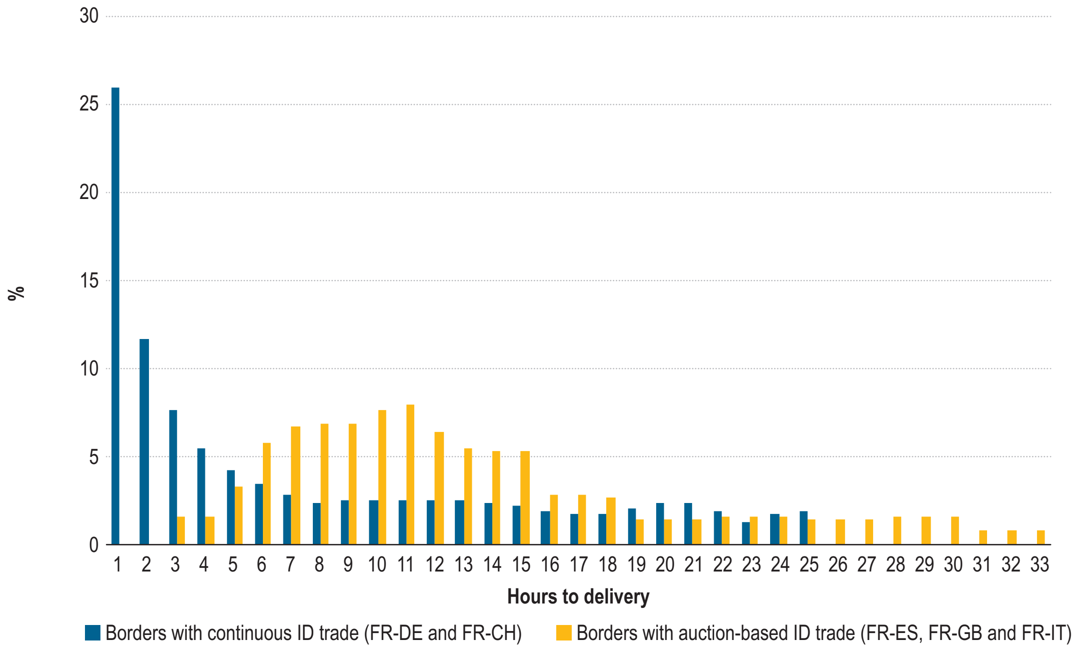
308 For the intraday timeframe, the ETM envisages an implicit cross-border capacity allocation mechanism using continuous trading on electricity markets, with reliable pricing of intraday transmission capacity reflecting congestion. This model aims, among other things, to provide market participants with a fast (on short notice) and flexible way of adjusting the portfolio of market participants, which is particularly important in view of the increasing share of variable RES-based generation, and to allow for the efficient use of the available intraday cross-border capacity. The ability of the various intraday cross-border allocation methods to provide flexibility and to realise an efficient use of the interconnectors is assessed in what follows.

309 The ability of cross-border intraday trade to allow close-to-real-time trading can be regarded as an indicator of flexibility. Figure 52 shows that intraday capacity allocation methods featuring continuous trading allow for close-to-real-time trade as opposed to methods which are based on implicit or explicit auctions.

173 According to the Framework Guidelines on Capacity Allocation and Congestion Management for Electricity, explicit access is considered as a transitional arrangement until sophisticated products which meet the needs of market parties are developed. The removal of direct explicit access for each border will be subject to consultation with market parties and then approval by the relevant NRAs.

310 The extra flexibility offered by continuous intraday trading compared to other designs appears to be valued by the market. According to Figure 52, almost half of the intraday capacity (45%) on the analysed borders featuring continuous intraday trading is requested and allocated between one and three hours prior to delivery in 2013. This close-to-real-time capacity demand indicates that intraday markets serve balancing needs for market players associated with RES.

Figure 52: Allocation of intraday cross-border capacity according to the time remaining to delivery for a selection of borders – 2013 (%)



Source: CRE (2014)

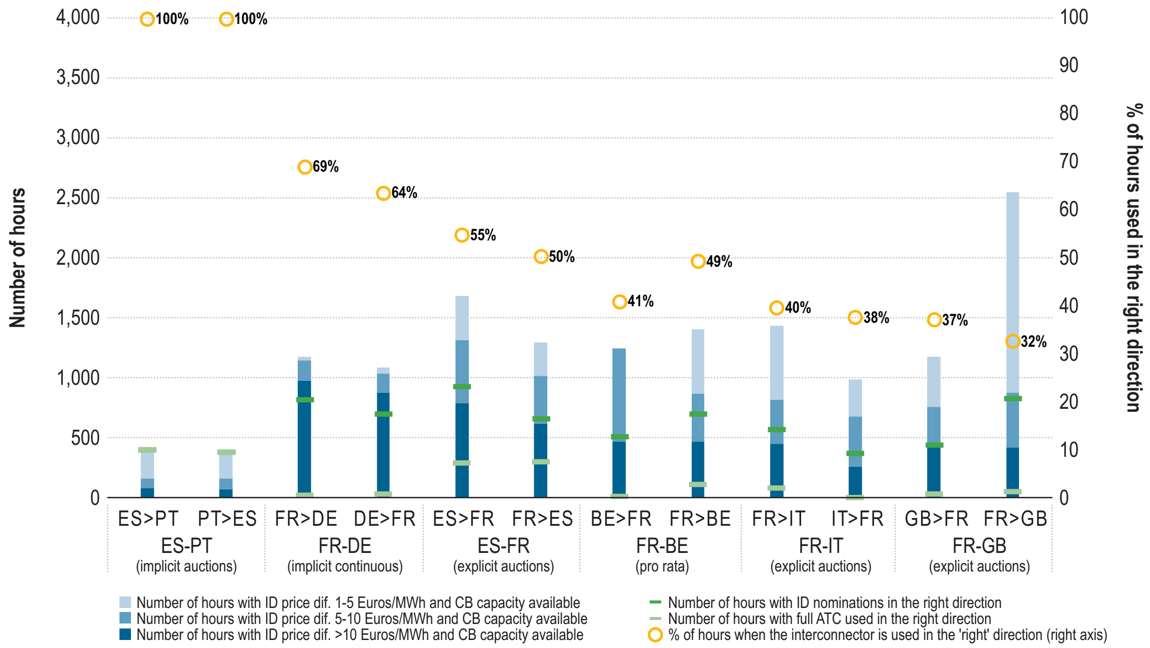
311 Assessing the level of efficiency of cross-border capacity in the intraday timeframe is not straightforward. The main challenge stems from the lack of a unique intraday price for the two areas across a given border and time unit, as opposed to the day-ahead market, where a single price is usually cleared for every price area and time unit (typically one price for every hour). Based on these prices, an indication of the efficiency of cross-border trade can be provided by the share of hours when flows are set from the lower to the higher price zone in each hour (see section 3.2.2.1 where this is done for the day-ahead timeframe).

312 For the purpose of assessing the efficient utilisation of intraday cross-border capacity, the most representative prices are provided by the closest-to-real-time trades, since they are considered to better reveal the value of cross-border capacity at the time when final cross-border nominations are determined. In the case of several auction rounds, the closest-to-real-time trades can be valued at the price of the last auction for every delivery hour. In the case of continuous trading, Figure 52 suggests that the weighted average intraday prices should be aligned with the prices of the closest-to-real-time trades (due to their highest weight in the average)[174].

174 Indeed, power exchanges usually release a price reference (a clearing price in the case of auctions, and index or a weighted average in the case of continuous trading, etc.) which can be taken as a proxy for the true value of the energy traded at the intraday timeframe.

313 Figure 53 shows the consistency between intraday price differentials and final net nominations. First, it illustrates the potential of cross-border intraday trade per border by showing the number of hours with a price differential of more than 1 euro/MWh and more than 100 MW of capacity available in the 'right' economic direction' on a given border-direction. According to this indicator, all borders included in the analysis have the potential to be used in the intraday timeframe. Even on the French-Italian border, usually congested from France to Italy in the day-ahead timeframe, cross-border intraday trade in that direction would be efficient during more than 1,000 hours in 2013. Second, the figure illustrates the efficiency in the cross-border intraday trade by showing the share of hours when the capacity available at the intraday timeframe is used in the 'right' direction[175]. It shows that borders featuring implicit cross-border allocation methods (in particular implicit auctions[176]) rank highest in delivering an efficient use of the interconnectors. The French-Italian border featuring explicit cross-border auctions records the lowest efficiency in the use of intraday cross-border capacity.

Figure 53: Potential for intraday cross-border trade and efficiency in the use of cross-border intraday capacity on a selection of EU borders – 2013 (number of hours)



Source: ENTSO-E, data provided by NRAs through the ERI, Vulcanus (2014) and ACER calculations

Note 1: Since intraday liquidity (volumes traded) is relatively low in some markets, an arbitrary threshold of 50 MW was used for the analysis. The percentages illustrate efficiency by indicating the share of the hours when capacity is used in the right direction (>50 MW used) with intraday price differentials of at least 1 euro/MWh and sufficient availability of cross-border capacity (at least 100 MW).
Note 2: The French-German border features both implicit continuous and explicit OTC cross-border capacity allocation.

175 A threshold of 50 MW of cross-border capacity used in the 'right' direction was taken.

176 Figure 53 shows that implicit auctions seem to perform better than implicit continuous trade in terms of efficiency. However, this conclusion should be treated cautiously for two reasons. First, the analysis of implicit continuous trading has been performed only on a border (between Germany and France) where continuous trading runs in parallel with explicit allocation. Second, the indicator used in Figure 53 is based on volume-weighted average prices (in the case of continuous trading) and should be considered as a proxy for measuring efficiency.

314 Efficiency at the French-German border, featuring both implicit continuous and explicit OTC cross-border capacity allocation, is slightly lower than what could be expected. In theory, the implicit continuous allocation of cross-border capacity should tend to set the net cross-border flows from the lower to the higher price zone. Nevertheless, in 2013 the cross-border intraday net nominations on the interconnector were not always aligned with the intraday price differentials across the border. This could be due to a combination of factors. First, intraday liquidity on the French intraday market is relatively low[177]. Second, continuous intraday trading might allow bilateral trading to take place at prices not fully aligned with the remaining bids and offers. These two elements could cause the weighted average intraday prices (the ones used for the analysis above) not to be fully aligned with the prices of those trades which determine the cross-border flows. Finally, the co-existence of two cross-border capacity allocation methods (implicit continuous and explicit OTC) might result in an imperfect alignment of prices and cross-border flows. The precise influence of all these factors on the efficient use of this interconnector needs to be further analysed.

315 Finally, Figure 53 shows that the full utilisation of the available intraday cross-border capacity in the presence of significant price differentials is not frequently achieved on most borders. This is usually due to inefficient cross-border allocation methods (mainly explicit mechanisms), combined with limited intraday liquidity.

316 The following conclusions can be drawn. First, cross-border capacity is not currently an impediment to developing intraday cross-border trade. Second, the combined analysis of available intraday cross-border capacity and intraday price differentials shows that a significant amount of cross-border capacity remains underutilised. Third, continuous allocation methods (either implicit or explicit) seem more adequate to provide the flexibility needed to accommodate the increasing amount of RES. Finally, implicit methods perform better in terms of efficiency than any other explicit allocation methods (either pro-rata or based on auctions)[178]. In the future, the MMR will continue to track efficiency in the use of intraday cross-border capacities.

317 The implementation of the intraday Target Model will improve the liquidity of national intraday markets as well as efficiency in the use of intraday cross-border capacity. This will help create a truly integrated European intraday market that is able to efficiently balance and dispatch the increasing amount of RES close to real time. The implementation of the intraday Target Model was delayed several times in 2012 and 2013 due to the difficulties found by Power Exchanges in agreeing during the selection and negotiation process with the intraday platform provider. The rapid adoption of the Governance Guideline accompanying the CACM Comitology Guideline[179] should contribute to providing a more robust governance framework and therefore a more efficient decision-making process.

177 The intraday volumes in France are not as high as in other intraday markets such as the Iberian or Italian ones.

178 Until the problem of efficient capacity pricing within continuous allocation is solved, intraday capacity is implicitly allocated for free and on a first-come-first-served basis. It has to be noted that this approach may not be efficient when the capacity left over from the day-ahead market coupling becomes valuable in the intraday timeframe due to, e.g. significant changes in supply and demand or due to a sudden increase in transmission capacity following a recalculation of capacity in the intraday timeframe. However, the Agency expects that the future development of an efficient capacity pricing methodology, as foreseen in the draft CACM network code, will improve the overall functioning and efficiency of the intraday market.

179 At the 26th meeting of the European Electricity Regulatory Forum, Florence, 20–21 May 2014, it was announced that the Commission would propose to adopt the CACM Regulation as binding Guidelines (instead of a network code) in the Comitology procedure.

Cross-border exchange of balancing services

318 Electricity system balancing includes all the actions and processes performed by a TSO in order to ensure that the total electricity withdrawals (including losses) equal the total injections in a control area at any given moment[180]. In view of this, TSOs maintain the system frequency within predefined stability limits by drawing on balancing services, which include balancing reserves and balancing energy. In addition, according to the Framework Guidelines on Electricity Balancing, TSOs are responsible for organising balancing markets and shall strive for their integration, keeping the system in balance in the most efficient manner. Among other elements, adequate imbalance settlement[181] mechanisms and cross-border balancing exchanges are the key elements in ensuring that systems are balanced in the most efficient way.

319 An integrated cross-border balancing market aims at maximising the efficiency of balancing, by using the most efficient balancing resources, while safeguarding operational security[182]. This section reports first on the level of exchange of balancing services across EU borders in 2013 and second on the potential for further integration and harmonisation of balancing markets in Europe.

320 Currently, balancing markets in Europe are generally national in scope (or smaller) and supplying balancing energy (or reserves) across a border to an adjacent MS is not frequently allowed. Insufficient coordination among TSOs, the absence of EU-wide regulatory rules for cross-border exchange of balancing services and the lack of harmonisation of the main aspects of national balancing markets seem to be the main factors causing the lack of progress observed in the integration of balancing markets. In addition, some other challenges are frequently present in the balancing markets, including an insufficient level of competition due to high market concentration, which may result in higher balancing costs for end-users. An assessment of the performance of national balancing markets has not been performed for this report. Nevertheless, it should be noted that the integration (and adequate harmonisation) of balancing markets results in efficiency gains at the national level for at least the following reasons. First, it lowers market concentration, hence reducing the scope for exercising market power. Second, by integrating balancing markets, low cost resources are better utilised, yielding a decrease in overall costs for balancing services. And third, the harmonisation of the main aspects of national balancing markets should contribute to reducing distortions and to preventing an inefficient exchange of balancing services.

321 Figure 54 and Figure 55 show, respectively, the share of balancing reserves procured and the share of balancing energy activated abroad[183] in 2013. It illustrates that the exchange of balancing services across the analysed EU borders is currently limited. Exceptions include Estonia, Switzerland and Slovenia, where the amount of reserves contracted abroad represented 100%, 53% and 47%, respectively, of the system reserves in 2013, and France, where the share of balancing energy contracted abroad represented 15% of the total activated balancing energy in 2013.

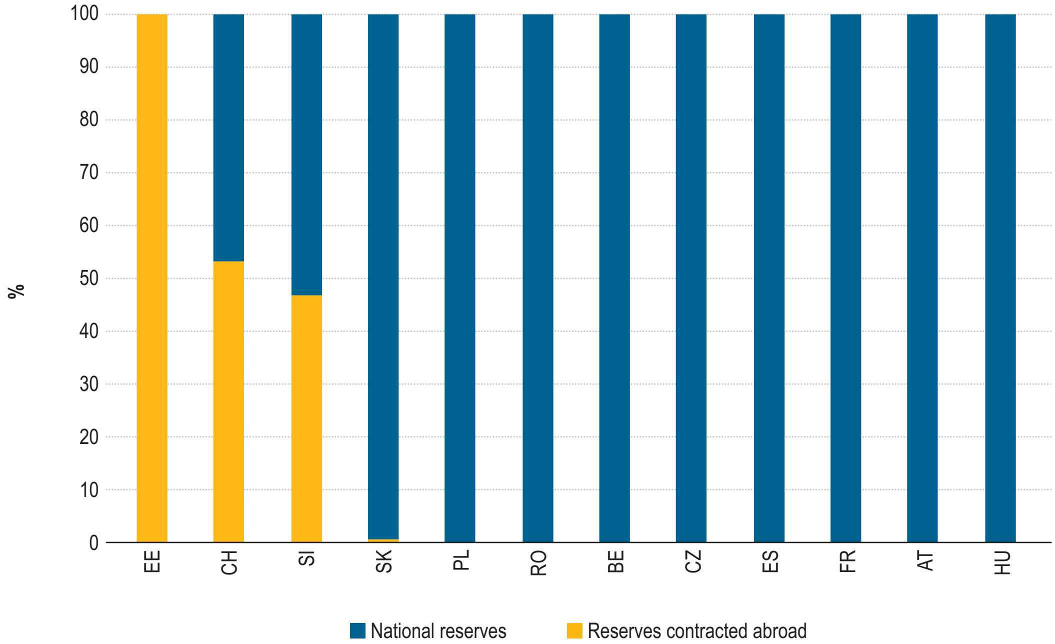
180 However, this section does not address the issue of system adequacy, which refers to the ability of the system to meet electricity demand at all times in the future.

181 Imbalance Settlement is a financial settlement mechanism aimed at charging or paying Balancing Responsible Parties (BRPs) for their imbalances.

182 Operational security refers to the transmission system's capability to operate within operational security limits (i.e. thermal, voltage, short-circuit current, frequency and dynamic stability limits).

183 The values of balancing energy activated abroad are taken from the survey among NRAs through the ERI in 2014. However, the answers did not include all the energy activated abroad, e.g. they excluded the activated balancing energy when the exchange is based on a multilateral TSO model with a CMO list (e.g. Nordic countries). Volumes of imbalance netting were also not included.

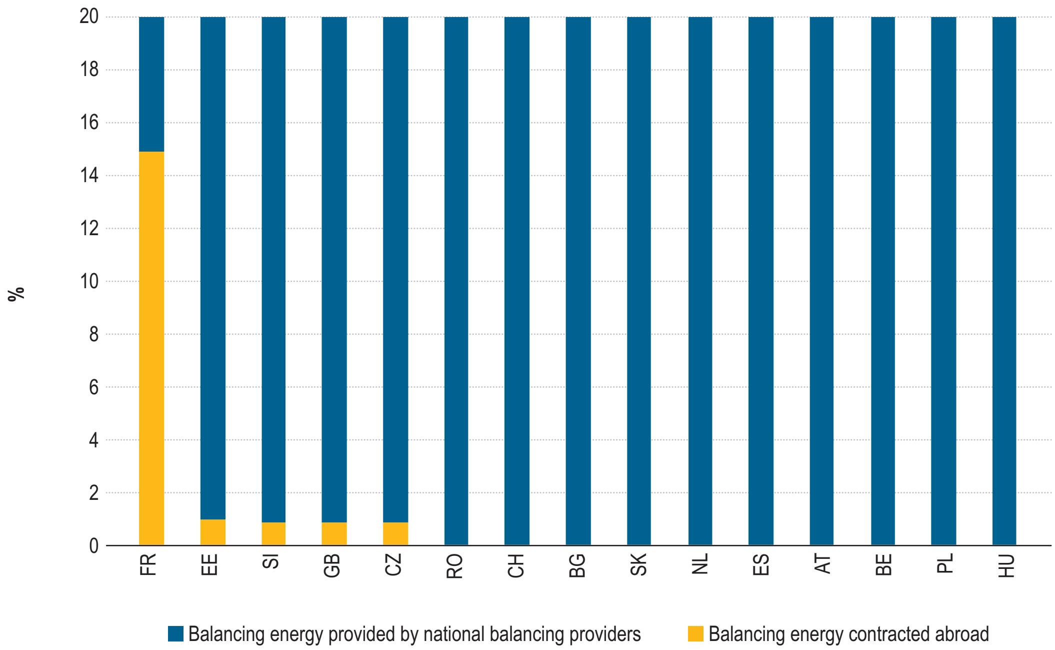
Figure 54: EU balancing capacity contracted abroad (energy and capacity) as a percentage of the amount of reserve capacity in national balancing markets – 2013 (%)



Source: Data provided by NRAs through the ERI (2014)

Note: The data on capacity (or reserve capacity) used to calculate the percentages presented in this figure refer to all types of reserves, with the exception of Spain, where manually-activated frequency restoration reserves are not included.

Figure 55: EU balancing energy activated abroad as a percentage of the amount of total balancing energy activated in national balancing markets (%)



Source: Data provided by NRAs through the ERI (2014)

Note: The data used to calculate the percentages presented in this figure refer to balancing energy activated from all types of reserves, with the exception of France, where only balancing energy from frequency restoration reserves is included. The figure does not include all the energy activated abroad, e.g. it excludes the activated balancing energy when the exchange is based on a multilateral TSO model with a CMO list (e.g. Nordic countries). Volumes of imbalance netting are not included.

322 In order to achieve an efficient exchange of balancing services, common standard products must be defined by TSOs and an adequate level of harmonisation of core aspects of balancing mechanisms should be achieved. This would allow those products to achieve sufficient liquidity and adequate competition in the markets where they are traded.

323 The exchange of cross-border balancing services can take several forms, depending on their level of integration. For example, the cross-border trade of these products can be based on the exchange of surpluses (i.e. what remains available after a TSO has secured sufficient services to meet the expected balancing needs of its own system) or can be based on the sharing of all the available resources by using a CMO list. According to the Framework Guidelines on Electricity Balancing, the target model for the exchange of balancing energy will be based on a multilateral TSO-TSO model[184] with a CMO list for the manually-activated frequency restoration reserves (FRR)[185] and replacement reserves (RR)[186], and on an equivalent concept for an automatically activated FRR.

324 In 2013, in parallel with the framework guidelines and network codes process, ENTSO-E has approved a number of pilot projects on balancing intended to gain bottom-up experience for the implementation of the European Balancing Market established in the Agency's framework guidelines[187]. The text below provides more details on the extension of the current balancing mechanism between GB and France (BALIT) to the borders between Portugal and Spain and between Spain and France, in the context of the above-mentioned pilot projects.

184 A TSO-TSO model is a model for the exchange of balancing services exclusively by TSOs. It is the standard model for exchanging balancing services. A TSO-BSP model is a model for the exchange of balancing capacity or the exchange of balancing energy where the contracting TSO has an agreement with a BSP in another responsibility or scheduling area.

185 Frequency Restoration Reserves are the active power reserves activated to restore system frequency to the nominal frequency and for synchronous areas consisting of more than one load-frequency control area power balance to the scheduled value.

186 Replacement Reserves are the reserves used to restore/support the required level of Frequency Restoration Reserves to be prepared for additional system imbalances.

187 See: footnote 141.

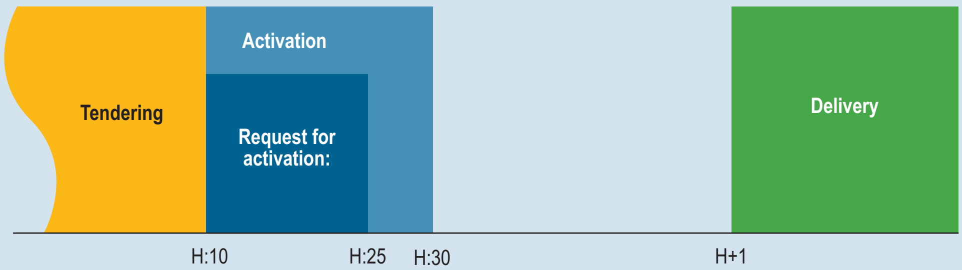
Case study 8: Extension of the BALIT mechanism to the SWE region

Within the ERI SWE region (Portugal, Spain and France), the three respective TSOs have been working on the implementation of a cross-border balancing scheme since 2010. These TSOs decided to use the BALIT platform to manage the exchange of balancing energy from replacement reserves. This platform was designed and developed by RTE to manage the exchange of cross- border balancing energy between Great Britain and France. The balancing exchanges were launched on 11 June 2014 at the French-Spanish interconnection and on 16 June 2014 at the Portuguese-Spanish interconnection.

The project consists of the implementation of bilateral TSO-TSO exchanges across the SWE borders, i.e. Portugal-Spain and Spain-France. Each TSO will be able to submit bids to the platform corresponding to their surplus of energy over its required margins, i.e. each TSO will only share bids that are not considered necessary to maintain its system control area within security limits. Close to real time, the TSOs will be able to activate bids submitted by a neighbouring TSO, which is subject to the confirmation that there is no danger to the security of the system from where the bid was submitted.

As soon as a TSO activates a cross-border balancing bid, this is notified to the TSO that submitted the bid. The timing for tendering and activating cross-border balancing bids is depicted below in figure i. It shows that 50 minutes before delivery, the tendering process is closed, i.e. no more bids can be submitted to the platform. TSOs can then request the activation of cross-border bids no later than 35 min. ahead of delivery time. The activation of bids must be confirmed shortly after (30 min. ahead of delivery time at the latest).

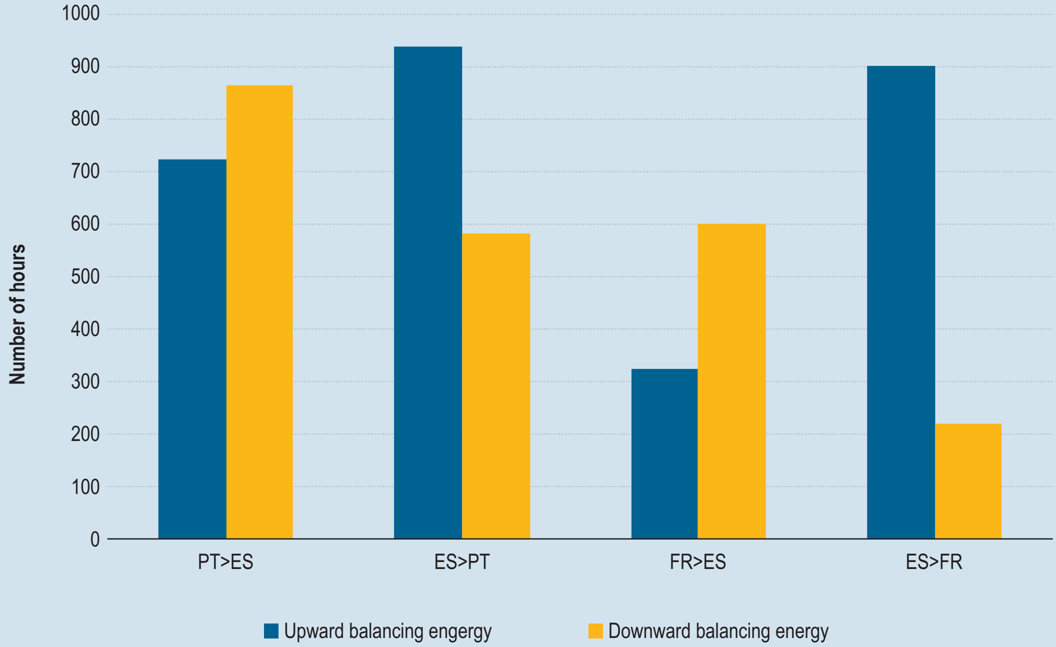
Figure i: Schematic representation of the tendering and activations of balancing bids in the BALIT mechanism applied in the SWE region.



Source: CNMC, CRE and ERSE

Figure ii provides an indication of the potential benefits that could be achieved by the exchange of balancing energy in the SWE region. The figure shows the number of hours in 2013 when there was sufficient cross-border available capacity to exchange at least one block of 50 MWh in the economic direction (based on the observed marginal prices for upward and downward regulation).

Figure ii: Potential exchange of balancing energy in the SWE region – number of hours when the exchange of at least 50 MWh in the economic direction would have been possible, 2013 (number of hours)



Source: CNMC, CRE and ERSE (2014)

Note: Only those hours when marginal prices of balancing energy were available (the price is only revealed when there is activation of balancing energy) have been considered. Moreover, for simplicity the study does not take into account the possibility of netting imbalances, For these reasons, the number of hours shown in this figure should be considered as a conservative estimate of the potential for the exchange of balancing energy from replacement reserves in the SWE region.

The estimates above suggest that perceptible benefits can be expected from the introduction of this mechanism in the SWE region. However, the benefits are limited compared to systems based on a full CMO list, because the BALIT mechanism only allows for the trading of 'surpluses', meaning that the balancing energy from the most efficient available resources is not always activated.

The region will evolve towards deeper integration and will pursue the early implementation of the model envisaged in the Framework Guidelines on Electricity Balancing. This will be achieved by developing a multilateral platform to exchange standard products from manually-activated balancing energy from replacement reserves on the basis of common merit order list(s).

325 One of the simplest forms of exchanging balancing services is the netting of imbalances. This aims to prevent the counteracting activation of balancing energy by off-setting opposing imbalances between adjacent imbalance areas. The netting of imbalances results in an effective energy exchange from an area with an excess of energy (surplus) to an area with a deficit (shortage) subject to available cross-border capacity. A case study on imbalance netting across the Austrian-Slovenian border is presented below.

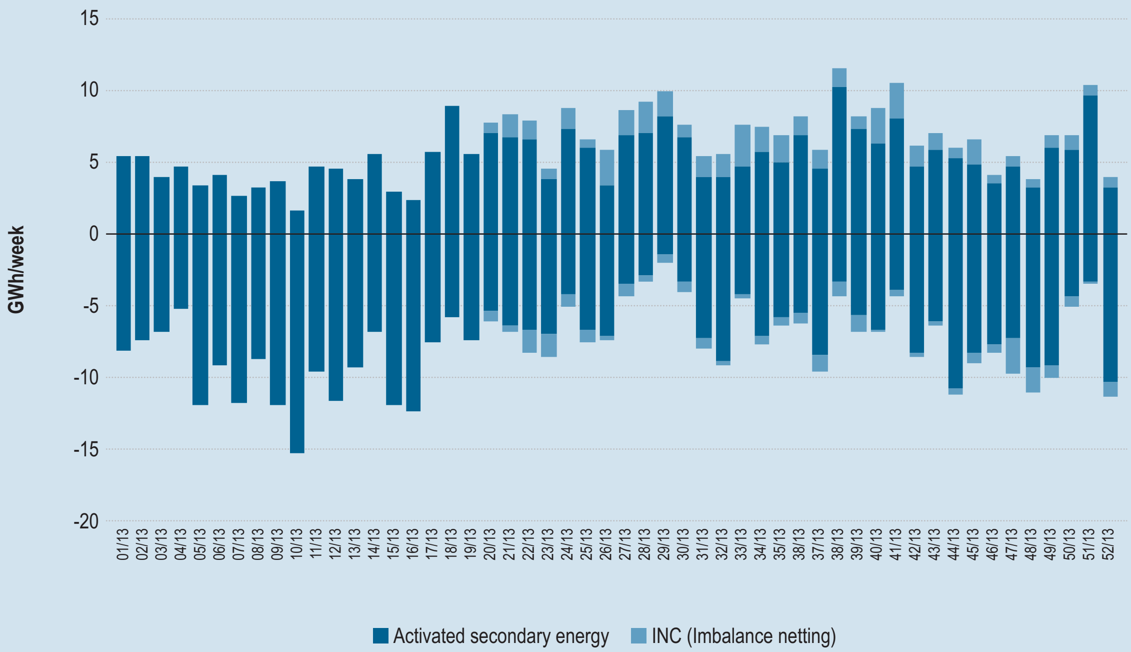
Case study 9: Netting of imbalances across the Austrian-Slovenian border

Imbalance Netting Cooperation (INC) between the Austrian TSO APG and the Slovenian TSO ELES started in May 2013. Before activating the balancing energy from automatic FRR[188] (aFRR), the optimisation module (operated by APG) compares the area control error (system imbalance) of both participating control areas. When the system imbalances of both TSOs have the opposite sign (direction), there is a potential for netting imbalances. The netting is performed continuously in real time up to the available cross-border capacity. When the netting is applied, the optimisation module sends adjusted signals to the respective controllers which are activating the aFRR for the remaining imbalances.

The financial settlement is based on equal sharing of costs and benefits for each Imbalance Settlement Period (ISP), where the costs represent the loss of income from the avoided downward activation of aFRR (downward opportunity price) and benefits represent the gains from the avoided upward activation of aFRR (upward opportunity price). The settlement price for the energy exchanged between the TSOs as a consequence of the imbalance netting is the average of the two opportunity prices.

From May 2013 until the end of 2013, 19% (11%) of upward (downward) aFRR needs in the APG area were met by applying imbalance netting (see figure i). This allowed for a reduction of 9% in the costs of aFRR in the control area of APG.

Figure i: Secondary Reserves activated in the APG Control Area – 2013 (GWh per week)

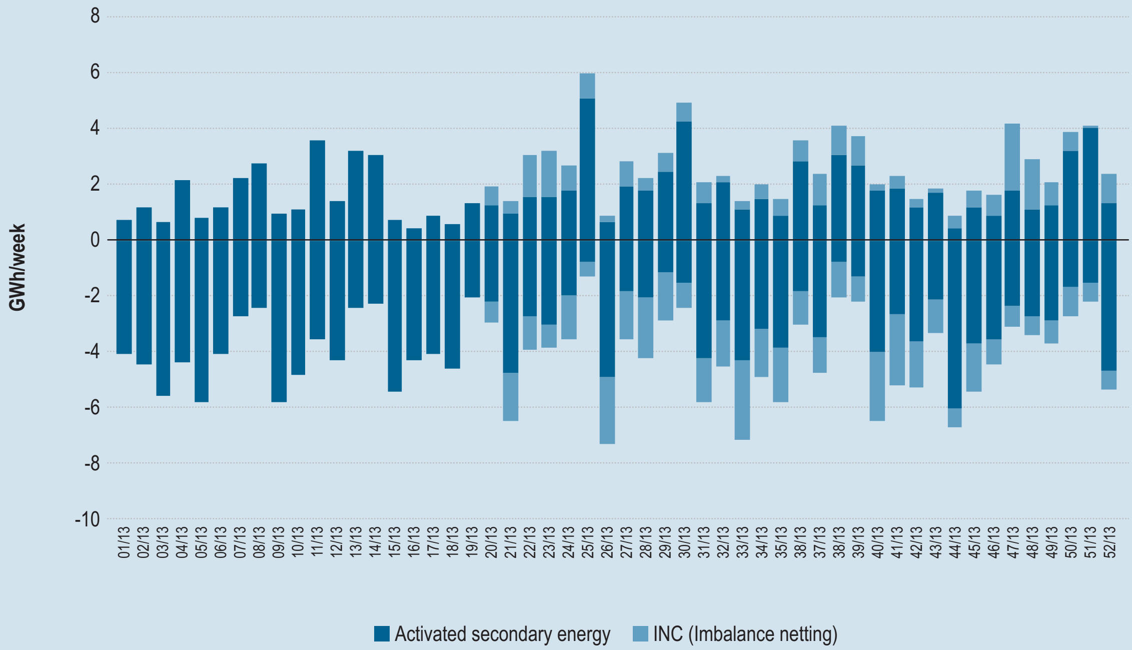


Source: APG

In the same period, ELES' needs for upward (downward) aFRR were reduced by 29% (33%) due to imbalance netting (see figure ii).

188 Automatic FRR means FRR that can be activated by an automatic control device.

Figure ii: Secondary Reserves activated in the ELES Control Area, 2013 (GWh per week)



Source: ELES

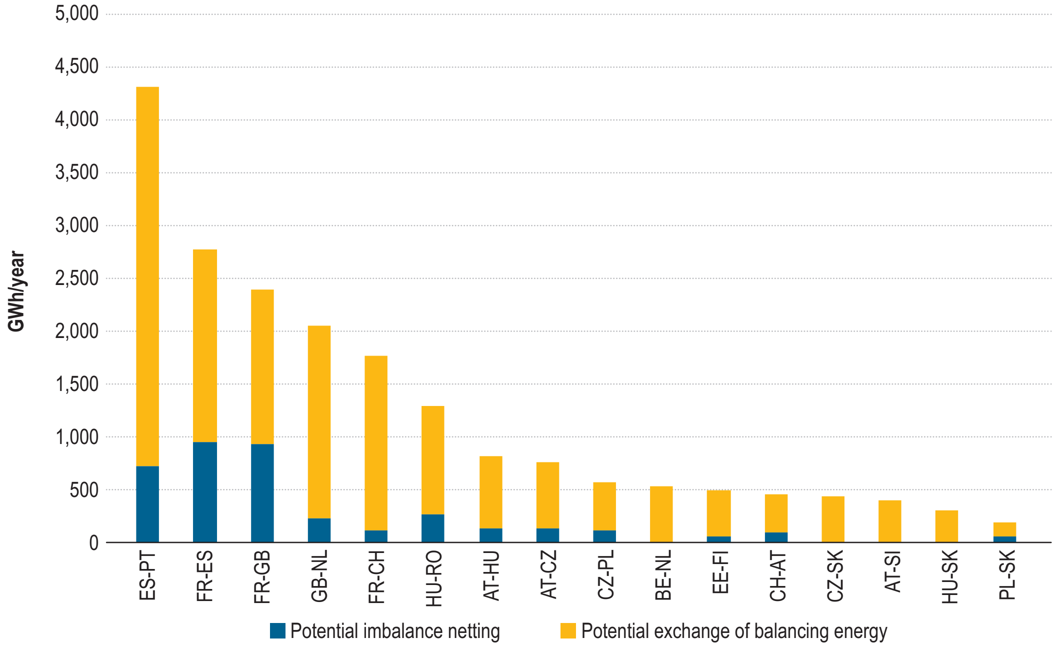
In April 2014, APG also joined the "International Grid Control Cooperation" (IGCC) project involving the cooperation of TSOs within, and on some borders of, Germany. Since then, imbalance netting in APG area has been performed in two steps. First, the imbalance netting is applied with ELES and second, the remaining imbalance of APG control area is netted within the IGCC project.

Like other imbalance netting projects in Europe, the INC project is considered successful primarily because significant efficiency gains in the activated aFRR (and consequently costs for imbalances) are obtained in a very short time and with little effort and implementation costs. Both INC and IGCC are contributing to the early implementation of the requirements contained in the draft Network Code on Electricity Balancing and thus to the European target model for electricity balancing.

326 While imbalance netting is important in and of itself, it is worth noting that it represents only a part of the potential efficiency gains from the exchange of balancing energy and in a wider sense from balancing market integration. Figure 56 shows the activation of balancing energy (GWh/year) that could have been avoided by applying imbalance netting across a selection of EU borders in 2013, together with the potential for a further exchange of balancing energy (assuming a full CMO list). The analysis is based on the hourly available capacity on a given border, the imbalance position of the systems across that border and the respective imbalance prices[189].

189 Full details on the methodology used to make these estimates are included in Annex 11.

Figure 56: Estimate of potential volumes of imbalance netting and further exchange of balancing energy across a selection of EU borders – 2013 (GWh/year)



Source: Data provided by NRAs through the ERI (2014) and ACER calculations

Note: On the following borders where imbalance netting is currently applied (CZ-SK, HU-SK, BE-NL, AT-SI), no potential for imbalance netting is shown.

327 Figure 56 shows that the border between Spain and Portugal provided the highest potential for exchange of balancing energy (including imbalance netting) among the analysed borders, in terms of absolute volume of exchanged energy (GWh/year) in 2013. This can be explained by the relatively high volumes of activated balancing energy in the Iberian market, which is likely to be related to the high penetration of intermittent generation sources in these two electricity systems. The volumes of imbalance netting potential across the selected borders accounted for around 20% of the overall system imbalances in 2013, which means that approx. 20% of the activated balancing energy could have been avoided by applying imbalance netting.

328 An accurate estimate of the welfare benefits obtained from the integration of balancing markets could be obtained only through having access to (and the ability to process) all the data corresponding to the bids and offers submitted by all BSPs from all the imbalance areas that are relevant for the analysis and by including the respective technical constraints for every settlement period [190]. It is not the intention of this section to perform such a detailed analysis, which could cover many millions of data points. However, what follows is intended to shed some light on the potential efficiency gains of further integrating national balancing mechanisms.

329 An indication of the potential of further integration of national balancing markets is provided by the imbalance price differences across imbalance price areas in Europe. According to the Framework Guidelines on Electricity Balancing, the imbalance prices should ensure that BRPs support the system's balance efficiently, and incentivise market participants in keeping and/or helping to restore system balances. Moreover, imbalance prices should reflect the costs of balancing the system in real time.

190 An example of this kind of analysis is included in the Impact Assessment on European Electricity Balancing Market Final Report, 2013. See: http://ec.europa.eu/energy/gas_electricity/studies/doc/electricity/20130610_eu_balancing_master.pdf.