Summary

Monitoring Report 2012

- Developments of the electricity and gas markets in Germany -

Message from the two Presidents

The Monitoring Report 2012 marks the first time the Bundesnetzagentur (Federal Network Agency) and the Bundeskartellamt (Federal Cartel Office) have presented a joint report on the development of the electricity and gas markets in Germany. This close cooperation bears witness to the fact that both authorities have assumed a leading role in monitoring activities since 2011. The 2012 data survey was carried out by the two authorities working together. This had the advantage of minimising the reporting requirements on the companies concerned. The cooperation also built upon the experiences of the Bundesnetzagentur with monitoring processes in the last few years, in which the Bundeskartellamt was already involved.

The Monitoring Report 2012 documents, analyses and evaluates developments in the electricity and gas markets. The data collected and evaluated reflect the dynamic changes on the German energy market in 2011.

The report is an impressive testament to the fact that the *Energiewende* – the turnaround in energy policy – has brought about a significant change in the energy supply structure in Germany, particularly in terms of electricity generation. The decommissioning of eight nuclear power plants in early 2011, together with strong growth in volatile generation capacities in the renewables sector (particularly in solar facilities), has led to a noticeable decrease in the capacities of the four leading network operators RWE, E.ON, Vattenfall and EnBW. Moreover, conventional generation capacities have come under economic pressure from the growth of renewables. As a result of their feed-in priority, decoupled as it is from market activity, the increase in renewable capacities is forcing back conventional generation, which is managed by the market. The report demonstrates the paradigm change in the German energy industry related to the nuclear exit and expansive growth in renewable generation capacities.

A significant challenge is to reliably balance fluctuations in intermittent generation from renewable sources in the interests of securing supply. Although the grid was under

considerably more strain than in 2010, the electricity network operators were able to rise to this challenge in 2011. Apart from a slight increase in the average interruption duration on the medium and low voltage levels, quality of supply remains at a very high level. Nevertheless, the various intervention measures the network operators had to take – primarily rescheduling, redispatching and countertrading, along with reduced feed-in – and the activation of conventional cold reserve power plants indicate how critical the situation has become.

There is an urgent need for expansion of the electricity grid, particularly the transmission network. Compared to the strong increase in renewables, network expansion has only made extremely slow progress, with key projects experiencing considerable delays. On a positive note, however, it should be mentioned here that an initial draft of a national Network Development Plan based on the first scenario framework for electricity approved by the Bundesnetzagentur in 2011 has been submitted, which is to be used to develop a draft Federal Requirements Plan Act by the end of 2012.

Liquidity in the wholesale electricity markets continued to develop encouragingly in the year under review. This is an important factor for competition throughout the electricity sector, as the power exchange and bilateral wholesale trading create a broad spectrum of possibilities for downstream regional and local suppliers to procure electricity in a competitive environment. This means that consumers' options for switching supplier have also improved.

In the gas sector, importing is of key significance for supply to the German market. Border prices on the German import market – which are largely still linked to the oil price in the long-term import contracts – have increased steadily since 2010, increasing the difference from the spot market prices on the downstream market. Price negotiations between customers and gas importers and producers have already led to price reductions in long-term contracts.

Consolidation of gas market areas took place on 1 April 2011 and 1 October 2011, leaving two market areas in Germany at present. These mergers have also increased the liquidity and efficiency of the wholesale markets. Liquid wholesale markets, in particular the power exchanges, have gained real significance for pricing. The positive developments on the wholesale markets and the option of buying or selling gas on a day ahead basis or on the futures market have contributed significantly to allowing regional suppliers and municipal utilities to procure their gas via more short-term, flexible contracts, instead of on a long-term basis. The retail gas market continues to enjoy dynamic development, with the number of supplier switches increasing markedly compared to the previous year and the number of

active gas suppliers in the network areas rising. Consumers' options for switching supplier have thus also improved in the gas sector.

Success in competition development, as can be seen at both wholesale and retail level in the electricity and gas sectors for example, is by no means permanently assured however. There are risks for competition and the market particularly in the electricity sector with its non-market-oriented organisation of renewables.

A high level of societal acceptance is fundamental if the *Energiewende* is to succeed. This applies to grid expansion and upgrading measures, as well as to the reconfiguration of generation structure. The Bundesnetzagentur and the Bundeskartellamt, each working in its own area of expertise in the interests of energy consumers and competition, are guiding the restructuring of energy supply in Germany with great dedication and awareness of their shared responsibility.

Jochen Homann
Bundesnetzagentur President

Andreas Mundt
Bundeskartellamt President

Developments in the electricity markets

Market developments (BNetzA)

Generation

In 2011, the year under review, the area of power generation was characterised by a significant decline in non-intermittent generation capacities resulting from the permanent decommissioning of eight nuclear power plants. Intermittent generation capacity, on the other hand, saw a continued increase in 2011, driven in particular by the significant rise in the number of photovoltaic systems; this increase has continued unabated into the current year. Against the background of the decommissioning of the eight nuclear power plants, substantial network calculations were undertaken in the summer of 2011 in the interest of ensuring security of supply for the winter of 2011/12.

Based on these calculations, a re-commissioning of one of the eight decommissioned nuclear power plants was not necessary. In order to safeguard security of supply in areas that are particularly at risk, such as southern Germany, conventional power plants in southern Germany and Austria were activated from cold reserve status, and resumed operations as reserve power plants. During the winter of 2011/12, there were several situations in which the responsible transmission system operators had to fall back on reserve power plants in order to maintain system stability. Due to the decommissioning of one power plant block for technical reasons, a slight reduction of non-intermittent generation capacities in southern Germany is expected for the winter of 2012/2013. This year, transmission system operators again conducted network calculations in order to determine the need for reserve power plant capacity in the interest of maintaining security of supply for the winter of 2012/13. In this context, a figure of 2,500 MW of available generation capacity was assessed as being required to maintain secure network operations. This requirement can be covered by available reserve power plants in the winter of 2012/2013.

Networks

The quality of the electricity supply, despite a slight increase in the average duration of interruptions in the medium to low voltage range, continues to be at a relatively high level. The average non-availability (System Average Interruption Duration Index - SAIDI) for final consumers in the low and medium voltage range was 15.31 minutes, putting it slightly above the figure of 14.90 minutes calculated for the year 2010.

It was, however, significantly lower than the average of 17.44 minutes for the period of 2006 to 2010.

Despite the significant increase, compared to the year 2010, in the number of tense network situations, German transmission system operators in 2011 were at all times able to manage the situation using the instruments in accordance with section 13(1) of the Energy Act (EnWG) (primarily network switching, redispatch and countertrade measures) as well as in accordance with section 13(2) of the EnWG (primarily reduction of electricity feed-in).
Compared to 2010, renewable energy feed-in restrictions under section 11 of the EEG at the different network levels more than tripled, totalling 421 GWh (compared to around 127 GWh in 2010). The rapid increase in feed-in management measures to temporarily reduce the feed-in from renewable energy sources, cogeneration plants and mine gas systems is directly tied to the unabated expansion of renewable energy sources and the slow pace of network expansion projects. In 2011, the temporary reduction of feed-in capacity was necessary in particular in network areas in northern Germany with a high volume of installed wind power capacity.

A majority of the 24 network expansion projects listed in the annex to the Power Grid Expansion Act (EnLAG), according to information provided by the TSOs (status October 2012), will start operations later than expected. 15 of the 24 projects already have an expected delay of between one and five years.

The draft of the first electricity scenario framework, which the TSOs submitted to the Bundesnetzagentur on 19 July 2011, was first presented for consultation and subsequently approved by the Bundesnetzagentur. As a result, on 3 June 2012, the TSOs were able to submit to the Bundesnetzagentur the first ever joint national draft Network Development Plan, which contains all effective measures, from the standpoint of TSOs, for the demand-based optimisation, strengthening and expansion of the network.

In the year 2011, investments in and expenditures on network infrastructure by the four German TSOs totalled approx. €847m (2010: €807m). In the area of the DSOs, investments in and expenditures on network infrastructure in the year 2011 amounted to approx. €6,281m (2010: €6,401m). However, the expansion and upgrading of network infrastructure at transmission and distribution system levels will increase significantly in the years to come. In particular the expansion of renewable energies requires considerable investments in network infrastructure. Against this background, there will be a continued increase in the revenue cap, and, as a result, in network tariffs. The revenue cap, which serves as the basis for

calculating the tariffs of the different network areas, increased for transmission system operators by around 16.71 percent from 2011 to 2012. The increase for distribution system operators was 8.87 percent. The average volume-weighted network tariff in the period between 1 April 2011 and 1 April 2012 increased significantly, both for household (low voltage) and business (low voltage, metered profile) customers, as well as for industrial customers (medium voltage), an increase which is due to a variety of factors.

European integration of electricity markets

In 2011, Germany was once again the hub for electricity exchange in the central European interconnected system. Compared to the year 2010, the average available transmission capacity decreased, for various reasons, across all German cross-border interconnectors, by 7.12 percent, to 21,336 MW (import and export capacity). There were changes in particular at the German-French border brought about by the decrease in the average available export capacity (by 9.2 percent) and import capacity (by 13.5 percent), as well as at the border between Germany and Denmark. Here, the average available export capacity decreased by 7.8 percent, while the import capacity decreased by 30.8 percent. On the Baltic Cable (Germany-Sweden), there was a reduction in capacity of 35 percent on the export side and 20.5 percent on the import side. Against this background, following the successful introduction of market coupling in the CWE region in fall of 2010, the rapid implementation of the flow-based method of market coupling is now planned. In April 2011, the first feasibility study on this was presented, accompanied by an updated project plan, which showed that the launch can be expected in mid 2013.

Retail

There have been further improvements in the possibilities for electricity customers to choose from a wide range of suppliers in 2011. In 2011, nearly three quarters of all network areas had more than 50 active suppliers. In 2007, that number was only at around one quarter. All total, in 2011, the year under review, there were 219,272 switches of supplier in the segment of industrial and business customers, which is nearly 32,000 more than in the year 2010. As of late 2011, only 3.1 percent of industrial and business customers were still with their incumbent supplier. 42.8 percent of industrial and business customers have a special contract with the electricity company that is the incumbent supplier in the respective area. 54 percent receive electricity from a supplier other than their incumbent supplier. Among household customers, there is a continuing trend to leave their incumbent supply contract. By now, 43.4 percent of customers have a special contract with their incumbent supplier, while 17 percent of all household customers have a supply contract with companies other than the

incumbent supplier. Nevertheless, nearly 40 percent of all household customers still remain in their incumbent supply contracts. In 2011, a total of over 3.8m final customers switched suppliers. Compared to the year 2010, that amounts to an increase of 27 percent.

In 2012, the average total price for industrial customers declined slightly, compared to the previous year, by 0.01 ct/kWh. For business customers, there is an average increase of the total price by 0.36 ct/kWh. Compared to the year 2011, the average price for household customers in the default price plan has increased by 2.8 percent. The price increase in all consumer groups – incumbent supply, special contract with the incumbent supplier, and special contract with a third-party supplier – has declined slightly compared to the previous year. Incumbent supply is still the most expensive type of supply. Household customers can achieve lower prices by switching supplier or contract. The average electricity price for all household customers (as volume-weighted average across all tariff categories) was 26.06 ct/kWh in the year 2012. Despite the price-reducing effect brought about through supplier and contract switches, that is 2.4% (+0.61 ct/kWh) above the figure for the year 2011.
Seen in an European context, a comparison of electricity prices in the European Union shows that, in the segment of household customers, prices in Germany are above average or in the top tier, depending on whether taxes and levies are taken into consideration. In a comparison of European electricity prices for industrial consumers, Germany is below the European average (not including taxes and levies), and in the upper quarter if taxes and levies are included.

For 2011, the year under review, the Bundesnetzagentur for the first time conducted surveys concerning threatened interruptions of supply, interruption requests and interruptions actually carried out under section 19(2) of the Electricity Incumbent supply Ordinance (StromGVV) as well as the related costs. The surveyed companies reported that interruptions of service were threatened a total of approximately six million times, with an average outstanding payment of €120. In approximately 1.25m cases, electricity suppliers commissioned an interruption of service, and actual interruptions in supply were carried out approximately 312,000 times. Electricity network operators billed suppliers an average of €32 for carrying out an interruption of supply.

Market developments (BKartA)

In its assessment of the electricity sector, the BKartA has focused mainly on the wholesale and retail markets, but the generation sector is also highly relevant under competition aspects.

Generation

In analysing the wholesale and retail sectors it is particularly important to take into account the situation in the upstream generation sector. At the generation level the Bundeskartellamt defines a product market for the first-time sale of electricity (first-time sales market) which also includes imports and exports. This market also plays a key role with regard to the downstream levels of distribution, networks and final customers.

The generation market has changed with the closure of nuclear power stations and the significant expansion of capacity from renewable energy sources. The closure of nuclear power plants has reduced the generation capacities and thus the market shares of the leading power generating companies E.ON, EnBW, RWE and Vattenfall. In Germany, the four companies still account for approx. 73 percent of the competitive electricity generation capacity. As there are no bottlenecks at the cross-border interconnectors, the Bundeskartellamt considers Germany and Austria as one market: On this relevant geographic market the share of the four large suppliers in competitive generation capacity is about one tenth less.

Furthermore, conventional generation capacity has come under economic pressure due to the expansion of renewable energy sources. In view of the feed-in priority for renewables which is isolated from the market mechanism, the expansion of capacity from renewable energy sources is pushing back electricity generation which is controlled by the market mechanism. In Germany, the non-competitive capacity derived from renewable energy sources meanwhile amounts to 69 GW as compared to 105 GW of conventional power generation capacity. The enormous expansion of subsidised renewable energy sources which benefit from priority feed-in limits the market power of the four large electricity generators on the first-time sales market. In the retail sector the market shares of the four large suppliers have also decreased over the past years. Their market share in the household customers sector amounted to 45 percent in 2011. In 2008, it was still 50 percent.

Wholesale

The wholesale sector is characterised by high liquidity as illustrated by exchange trading: Trading volumes in the spot markets have increased; in the futures market last year's high volume has been maintained. The spot market recorded a total trading volume of 240 TWh, the futures market 457 TWh. Compared to the overall value achieved in 2002, the year when the two power exchanges of Frankfurt/Main and Leipzig merged, this represents an increase by a factor of 4.6.

Although exchange trading only represents a small part of the wholesale sector, it has an important signalling function for price formation, also in the off-exchange wholesale sector. In comparison to the 2010 mean value, the mean prices of the standard products increased in the spot and futures markets in 2011 by 5 to 15 percent.

The liquidity of the wholesale sector is decisive for competition as exchange trading and bilateral wholesale provide the downstream regional and local suppliers of electricity with a broad range of opportunities to purchase electricity, thus expanding their scope for pro-competitive activities.

Retail

Competition in the electricity retail sector has shown some positive development. The possibilities for final customers to switch supplier have been further improved. Competition is based on the concept that customers are free to choose between a variety of offers by different suppliers. This possibility to switch to another offer is crucially important for the development of the market. In contrast to the situation for commercial and industrial customers and households in the electricity sector, opportunities to switch supplier are still considerably restricted in the electric heating sector. In this sector, the basic suppliers still more or less have monopoly positions. Efforts to open up this market are still at an initial stage although some success has been achieved not least through antitrust proceedings.
In the year under review the final customer prices in the key customer groups of industrial customers, commercial customers and household customers, which have significantly increased in the course of the last few years, remained on average unchanged or increased relatively moderately as compared to the previous year. Specifically the price components for network fees, taxes and state duties, which are not formed under competitive conditions, have increased.

Conclusion and prospects

It is due to the liberalisation process which eliminated outdated market regulations and restrictions that the creation and stimulation of competition in the network-based energy sector, and above all in the electricity sector, has become possible at all. However, the success of market development under competitive conditions has by no means been secured on a permanent basis. The volatile renewable energy sources sector is not organised on market economy concepts and therefore poses risks to competition and the market.

Non-market mechanisms in the renewable energies sector lead to crowding out and distorting effects on the competitively organised conventional generation of electricity. Conventional power stations are being squeezed out of the market; at the same time, however, there is still a need for these capacities due to the unreliable feeding in of electricity generated from renewable energy sources. This makes further regulatory intervention in the market necessary which further restricts the functioning of the market.

Ultimately, only competitive framework conditions can secure efficient and cost-saving energy supply. Competition and supply security are not inconsistent with one another. On the contrary, competition is an efficient path leading to the desired security of supply.

Developments in the gas markets

Market developments (BNetzA)

Gas imports have risen slightly since 2010 to their current level of 1,411 TWh (2010: 1,384 TWh). Exports increased over the same period from 463 TWh in 2010 to 516 TWh in 2011. Production of domestic gas continued to decline, amounting in 2010 to around 11.9bn m^3 (2010: 12.63bn m^3). The reserves-to-production ratio of eleven years has remained unchanged since 2010.

On 1 April 2011 the number of market areas was reduced to one for L-gas and two for H-Gas. Market areas were merged again on 1 October 2011 with the integration of the L-Gas 1 (Nowega, EWE, Gasunie) and Gaspool market areas; Germany therefore still has two market areas.

The maximum usable volume of working gas in underground storage is 22.245bn mN^3 (2011: 20.970bn mN^3). Of this, 9.250bn mN^3 is held in cavern storage facilities and 12.996bn mN^3 in pore facilities.

Developments in the gas retail market are as dynamic as ever. Around 15 percent less gas was sold to final customers than was the case in 2010. The fall in consumption by private households was particularly marked, largely due to relatively warm weather in January/February and November/December 2011. In 2011, gas network operators delivered 934.61 TWh of gas to final customers, who can now choose between 31 or more gas suppliers in over 41 percent of network areas. In over 31 percent of network areas final customers even have the choice between more than 50 gas suppliers. The dynamic development of this very healthy diversity of suppliers indicates how attractive regional and supraregional gas markets are in Germany.

Over 1.2m final customers switched their gas suppliers in 2011. Compared with the previous year, 370,000, or around 40 percent, more customers switched suppliers. This ongoing positive trend in 2011 was reflected in a relative switching rate of 11.54 percent and corresponds with the growing number of gas suppliers operating in each of the network areas referred to earlier.

On 1 April 2011 the gas price for household customers with standard, or default, supply was 6.95 ct/kWh. This is equal to an increase in the gas price of almost five percent. Network tariffs in this consumer category are 1.16 ct/kWh, equal to a share in the total gas price of approximately 17 percent. Energy procurement and supply costs, which make up 54 percent of the retail price paid by household customers, have risen in the course of a year by around twelve percent to 3.75 ct/kWh.

Market developments (BKartA)

In its assessment of competition in the gas sector, the BKartA has focused mainly on the wholesale and the retail markets. Other areas of relevance from a competition point of view are imports and production.

Imports and production

The supply of the German market with gas crucially depends on gas imports. Border prices on the German import market are largely determined by the indexing of gas prices to oil prices in long-term import contracts and have steadily risen since 2010. This has resulted in a gap between border prices and spot market prices on the downstream markets. On account of the significant price differences of up to more than 60 percent, distributors have entered into price revision negotiations with gas importers and producers. These negotiations have already resulted in lower prices in long-term supply contracts and should, with a certain delay, also have an effect on border prices.

Wholesale

This relation between spot-market prices and border prices shows how much pricing is influenced by liquid wholesale markets, in particular the gas exchange. The positive developments on the wholesale markets and the fact that it is now possible to buy or sell any quantity of gas at short term or for future delivery has induced municipal utilities and regional suppliers to change their gas supply contracts from long-term contracts to shorter and more flexible contracts.
Furthermore, the liquidity and efficiency of the wholesale markets has been further increased by the merging of market areas into two remaining areas. Trade volumes on the exchange and off-exchange have again significantly increased compared to the previous year, in both cases by up to 25 percent. Most of the trading takes place off-exchange: The volume traded on the exchange amounts to only three percent of the total volume, whereas 97 percent are traded off-exchange.

Retail

At the retail level, the volume sold to final customers has decreased by approx. 15 percent (mostly due to the mild winter of 2011). Not surprisingly, the absolute amount of gas that was purchased by final customers from new suppliers (changeover volume) has also decreased and is slightly lower than last year. The number of customers who have switched supplier, however, has significantly increased compared to last year, by approx. 40 percent. At the same time, the number of gas suppliers active in the network areas has also increased. In more than 70 percent of the network areas, final customers can now buy their natural gas from 30 or more gas suppliers. This shows that also in the gas sector it has become easier for customers to change supplier.

The average price level, however, has continued to increase (compared to last year) for all final customer groups. This is most likely due to the increasing border prices for natural gas.

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Bundesnetzagentur
für Elektrizität, Gas, Telekommunikation,
Post und Eisenbahnen
Referat 603
Tulpenfeld 4
53113 Bonn

E-Mail: Harald.Doerr@bnetza.de

Bundeskartellamt
Arbeitsgruppe Energie-Monitoring
Kaiser-Friedrich-Str. 16
53113 Bonn

E-Mail: Markus.Lange@bundeskartellamt.bund.de