NATIONAL REPORT DENMARK 2017

STATUS FOR 2016

DANISH ENERGY REGULATORY AUTHORITY

Contents

1. Foreword

DERA is the regulatory authority of Denmark and annually publishes the National Report, which is an account of the development of the markets in Denmark. The report covers 2016 and follows the common reporting structure developed by the Council of European Energy Regulators (CEER). Data and content refer to the period January 2016 to December 2016 unless otherwise stated.

Within national borders, the long term political goal of a fossil-free Denmark by 2050 continues to set the direction for changes to the Danish energy system. To reach this goal, Denmark is, in the short term, to be among the three countries in the world to raise its renewable energy share most by 2020 and to be one of the three most energy-efficient countries in the OECD by 2020.

Cooperation and trade between the European countries is a cornerstone of an efficient and well-functioning market in the electricity and natural gas sectors, especially as new and renewable energy technologies with fluctuating production continue to make up a larger proportion of production across most of Europe. DERA is committed to a swift implementation of network codes and guidelines, so the full potential of the European energy market can be harvested without undue hesitation to the benefit of European consumers.

Finn Dehlbæk
Director General
Danish Energy Regulatory Authority

2. Main developments in the gas and electricity market

2.1 The electricity market

2.1.1 Wholesale

The Danish spot prices (West Denmark (DK1) and East Denmark (DK2)) are usually higher than the so-called Nordic system price, but lower than the Continental European prices, reflecting Denmark's geography between the Nordic hydro based system and the thermal based continental production. The system price is the common wholesale price there would be in the Nordic area, if there were no congestions in this area. As a result, in 2016, the average wholesale price in Denmark was 28.0 EUR/MWh, while the average prices from APX NL, EPEX and Nord Pool's system price respectively was 32.2, 29.0 and 26.9 EUR/MWh.

In general, the 2016 spot prices followed the development of the system price of Nord Pool. The price in DK2 was higher than the system price, while the price in DK1 was lower, except from May to October. The net production in Denmark was 28,930 GWh in 2016. This is higher than the production in previous years. According to numbers from the Danish Energy Agency (DEA), Denmark's wind turbines produced 44.2 pct. of the total electricity supply in 2016. The share of wind energy is expected to increase in coming years.

In 2016, Denmark's net import from Germany and Norway was respectively 2,153 and 5,058 GWh, while Denmark was a net exporter to Sweden with 2,154 GWh. In total, Denmark was a net importer of electricity with 5,057 GWh in 2016.

In 2017, the Danish Ministry of Energy, Utilities and Climate agreed on a joint declaration with the German Federal Ministry for Economic Affairs and Energy, as well as the German regulatory authority (Bundesnetzagentur) and DERA that a minimum level of capacity is required on the electricity transmission link between Jutland and Germany, DK1-DE, for trading of power for the day-ahead market. The aim of the agreement is to gradually make the full capacity of the DK1-DE interconnector available for electricity trade as soon as the relevant infrastructure development has been completed. The agreement will be implemented as of 1 December 2017, but commenced with a pilot phase as of July 2017, which runs until the end of November 2017.

2.1.2 Retail

The average price for consumers, including VAT, taxes and PSO[1], increased from 30.55 cEUR/kWh in 2015 to 30.8 cEUR/kWh in 2016.

In June 2014, an amendment of the Danish Electricity Act (DES) was passed. Pursuant to this amendment, the supply obligation system, including the specific supply obligation product, was abolished from 1 April 2016. To secure electricity for all consumers, a new obligation of delivery was introduced in its place.

[1] PSO stands for Public Service Obligations and is a duty on electricity to finance support for renewable energy.

The amendment also abolished the so-called basic product, starting from 1 October 2014. This means that all inactive consumers were moved to a product without any price regulation. In 2016, the non-regulated products amounted to around 98 pct. of the consumption. However, 66 pct. of the consumption is sold to consumers, who have not actively decided to change product and therefore receive a product chosen by the supplier.

On 1 April 2016, the so-called *wholesale model* (engrosmodellen), also known as the supplier centric model (SCM), was introduced. One important effect of the SCM is the introduction of mandatory combined billing for consumers.

In 2016, a new price comparison tool (PCT) was launched: *Elpris.dk*. This tool is administered by DERA, and its main purpose is to simplify the consumers' comparison of various offers from the Danish electricity market.

In November 2016, the Danish Parliament passed new legislation on the Public Service Obligation payment (PSO) which today is an integrated part of the consumer electricity invoice. The PSO covers subsidies for renewable energy and energy research. According to the new regulation, the current PSO payment will gradually be reduced from 2017 and is to be abolished in 2022 for all electricity consumers.

2.1.3 Transmission and distribution

Transmission

Pursuant to Commission Regulation (EU) 2015/1222 of 24 July 2015 establishing a Guideline on Capacity Allocation and Congestion Management (CACM GL), the Danish Energy Regulatory Authority (DERA) approved several proposals in 2016. These are described in section 3.1.4.

In spring 2017, following FCA GL, DERA issued an analysis showing that the Danish bidding zones did not have sufficient hedging opportunities. Following this, DERA and the Swedish Energy Market Inspectorate (*Energimarknadsinspektionen*) in a joint decision requested the relevant TSOs, Energinet.dk and Svenska Kraftnät, to provide other means of cross-zonal hedging.

In October 2017, ACER issued its decision on the TSOs' proposals for Harmonised Allocation Rules (EU HAR) for long-term electricity transmission rights. With reference to Article 51 of the FCA GL, ACER adopted the EU HAR. On 11 and 12 October 2017, DERA approved the TSO proposal for regional requirements to harmonised allocation rules for CCR Nordic and CCR Hansa.

In 2016, construction of the COBRA cable (COpenhagen-BRussels-Amsterdam cable), a Project of Common Interest (PCI) under the European Commission, begun. COBRA is expected to be operational in 2019.

Kriegers Flak is an offshore wind farm located in the Danish part of the reef Kriegers Flak in the Baltic Sea. Kriegers Flak is planned to be operational ultimo 2018.

The Viking Link cable project between Great Britain and Denmark is being planned and developed. Energinet.dk currently awaits approval of the investment from the Danish Ministry of Energy, Utilities and Climate.

In March 2017, DERA cancelled Energinet.dk's capacity reservation of 100 MW to the exchange of automatic reserves in the electric interconnector *Skagerrak 4* (SK 4) between Denmark and Norway, thereby repealing a time-limited approval of the reservation given in 2010. In 2010, DERA gave a time-limited approval of the reservation for a 5-year period from 2014 under the condition that Energinet.dk made an evaluation of the socio-economic benefits of the reservation after one year of operation. SK4 was operational in 2014. DERA's 2017 decision has been appealed to the Energy Board of Appeal where the case is currently pending.

Energinet.dk published the present network development (covering both electricity and natural gas) plan in 2013, comprising the long-term (2032) structure of the transmission network as well as the network structure on short- (2017) and middle-term (2022). Regulatory scrutiny of the network development plan did not reveal discrepancies between the national plan and projects and the community wide projects of common European interest, and DERA made no recommendations for changes in the network development plan or individual investment projects. In February 2017, Energinet.dk published a ten-year plan containing its planned reinvestments, extensions, strengthening and redevelopment of the grid.

In 2016, the Copenhagen-based Nordic Regional Security Coordinator (RSC) was established. The Nordic RSC is the joint office for the four electricity TSOs in the Nordic Region (Fingrid, Statnett, Svenska Kraftnät and Energinet.dk). It supports the national TSOs in maintaining the security of the power systems across the four countries (Finland, Norway, Sweden and Denmark).

Distribution

In 2015, DERA decided to lower the revenue cap in 2016 with EUR 12 million EUR for DSO's, corresponding to a reduction on 1,4 pct. of the revenue cap.[2] In 2016, DERA has decided to lower the revenue cap in 2017 with EUR 9,5 million for the 49 DSO's, corresponding to a reduction on 1,1 % of the revenue cap.[3] The objective is that a lower revenue cap for the companies, which is based on a benchmark analysis on the companies' efficiency, will give incentives to the companies to focus on efficiency.

A new regulation was passed and will be effective from 1 January 2018. It is based on a revenue cap, built on a cost cap with efficiency regulation, a cap for returns on historical investment and a return on future investment set as a market based WACC and finally on a reduction of the revenue cap in case of inadequate quality of supply.

[2] Percentages calculated using available final revenue caps for 2015. It is expected that DERA completes final revenue caps for 2016 by the end of 2017.
[3] See footnote 2.

Following the recommendations of the Electricity Regulation Committee (*Elreguleringsudvalget*), two expert groups were set up to give recommendations on the determination of the WACC (weighted average cost of capital) and on a new benchmark model.

In 2016, the government appointed Committee of Experts provided the Danish Minister of Energy, Utilities and Climate, with recommendations for determining the electricity grid companies' future investments based on a WACC calculated for an average grid company. The purpose is to provide the grid companies with a reasonable, systematic risk-adjusted return, equal to the risk of operating in an efficient regulated monopoly business. An important part of the Committee of experts' assignment was to ensure that the WACC-level did not give incentives to either under- or overinvestments in the development and maintenance of the distribution grid. Its recommendation was handed to the Minister of Energy, Utilities and Climate in April 2016.

The government appointed Committee of Experts regarding a benchmark model began its work for a new benchmark model in 2015. Its recommendations and the new benchmark model were handed over to the Minister of Energy, Utilities and Climate in February 2017. The proposed model may be used to identify the potential for grid companies' efficiency improvements and for determining efficiency requirements. Compared to the existing benchmark model, the proposed model is based on more advanced methods of calculation to estimate the correlation between input (operation costs and capital costs) and output (three grid services) and includes further services. It is expected that the model will be used for the benchmarking of the DSOs, when the new regulation has been initiated.

2.2 The gas market

2.2.1 Wholesale

The spot price on Gaspoint Nordic (GPN) is highly correlated with the spot prices on the two German gas hubs, NCG and Gaspool, and the Dutch gas hub, TTF. The average spot price of GPN was 13.63 EUR/MWh in 2016. In August 2016, the price on GPN dropped to 9.74 EUR/MWh which is the lowest spot price since 2009. By the end of 2016, the price on GPN increased significantly (19.05 EUR/MWh) compared to the low price in August 2016.

The Danish gas exchange, Gaspoint Nordic (GPN), is becoming increasingly more important every year, and the share of traded volume delivered on ETF has increased significantly during the last two years. In the last quarter of 2014, the volume on the ETF exceeded the volume on Gas Transfer Facility (GTF)[4] and this trend continued in 2016. In the second part of 2016, there has been a tendency for an increase in traded volume on the GTF. In 2016, the traded volume on ETF reached 24.1 TWh. The volume delivered on ETF made up 70 pct. of total volumes on ETF and GTF. The traded volume on GTF was 10.2 TWh in 2016.

[4] GTF facilitates delivery of bilateral trades, and Exchange Transfer Facility (ETF) which is used as the delivery point for trades carried out on the Danish gas exchange Gas Point Nordic (GPN). GTF is owned by the Danish TSO, Energinet.dk.

In 2016, the Danish production of natural gas was 4,269 million Nm3 which is a small reduction compared to 2015. Danish gas exports amounted to 2,004 million Nm3 in 2016. The export to Germany made up 27 pct. which is a decrease from 42 pct. in 2015. The remaining export went to Sweden (43 pct.) and the Netherlands (29 pct.). In 2016, Denmark imported 646 million Nm3 – 71 pct. from Norway and 29 pct. from Germany.

The Danish gas production has been decreasing for a long period, but Denmark was (and continues to be) a net exporter in 2016.

In March 2017, the Danish government reached an agreement with the Danish Underground Consortium (DUC) which is expected to facilitate future oil and gas investments in the Danish North Sea. The agreement supports a two-figure billion DKK to be invested in oil and gas extraction in the North Sea by rebuilding the major Danish production platform for gas, the Tyra facilities. During the shutdown period of Tyra (December 2019 until March 2021), all gas for the Danish (and Swedish) market will have to be imported from Germany via the IP Ellund.

2.2.2 Retail

Consumer prices increased slightly during 2016, but from a very low level. The quarterly retail prices for 2016 ranged from 71.7 to 75.4 EUR/MWh.

As of May 2016, the majority (around 82 pct.) of Danish gas customers are supplied at unregulated prices which are not supervised by DERA. The supply obligation products and the basic products are currently supplied by two gas suppliers, and DERA is currently supervising the prices of these products.

2.2.3 Transmission and distribution

Transmission

In 2013, a new methodology for tariff setting for gas at transmission level was approved and has been in effect also in the tariff year 2016. With the new regime, Denmark has moved away from uniform tariffs (postage stamp principle) and has introduced differentiated tariffs for the different entry/exit points in the Danish transmission system.

The new infrastructure (including the new pipeline from Egtved to Ellund) and especially the new compressor station at Egtved has been used less than expected since its commissioning (primarily because of the market situation with a net export flow), and the data on use has been insufficient as to genuinely assess the validity of the initial cost distribution. Therefore, the two year pilot period of approval of the differentiated tariffs was extended to 2016.

In 2016, DERA has thus reviewed the tariff regime and has decided on some changes with effect from 1 October 2016. The main objective is to have a more even cost allocation across the system that better reflected the actual use of the system and the benefits to the overall system and the mar-

ket of the new infrastructure, e.g. in terms of improved security of supply and better market integration.

The expansion of the Danish (and German) gas transmission network has improved security of supply for Denmark and Sweden and facilitated – increased – competition in the gas market to the benefit of the consumers. Additionally, the Danish grid expansion provides a foundation for a better market integration between the Danish and German wholesale markets. It is already clear that the infrastructure expansion has contributed significantly to reducing the price spread between the Danish gas exchange and the German hubs.

The Polish gas TSO, GAZ-SYSTEM S.A, and the Danish gas TSO, Energinet.dk, are currently investigating the possibility of establishing a connection between the Polish and the Danish gas transmission systems – the Baltic Pipe Project. With the assistance of external consultants, the two TSOs have concluded an EU supported feasibility study – *"Feasibility Study regarding the PCI Poland-Denmark interconnection Baltic Pipe"* – for the project. The study was finished in December 2016 and shows substantial socio-economic benefits for both Denmark and Poland.

In November 2016, DERA decided on the tariff to be paid for transporting natural gas in DONG's pipeline from the Tyra production field in the North Sea to the gas processing plant in Nybro on the west coast of Denmark, the so-called upstream system. DERA ordered the tariff to be set to DKK 0.0575/m3 in transport agreements concluded by DONG with Maersk Energy Marketing A/S in the period from November 2012 to March 2014. Maersk Marketing A/S subsequently filed a complaint with DERA. The case is currently pending a decision by the Western Division of the Danish High Court on preceding cases.

Distribution

In 2013, DERA decided to lower the cap for operating costs annually in the period from 2014-2017 with 2.05 pct., 1.35 pct. and 0.6 pct. for each of the three DSO's, respectively. In 2016, that corresponded to DKK 4.4 million in total for the three DSO's, and a similar level is expected in 2017.

In February 2016, the DEA presented the work of the Gas Regulation Committee: *"An efficient gas sector"* (*En Effektiv Gassektor*). The report describes and evaluates the challenges of the gas sector (TSO, DSO and retail), the economic regulation and structure of ownership of the DSOs. It also contains an analysis of the retail market. The committee recommended adjustments to the economic regulation; for the work of the electricity WACC expert group to be implemented into gas regulation; more analysis of the industry and elimination of price control on retail products.

In June 2016, DONG Energy was listed on the Copenhagen Stock Exchange. DONG Energy owned one of the three Danish DSOs. Energinet.dk purchased the grids as it was considered to be a change in ownership of vital Danish energy infrastructure may result in the execution of a right and duty for the Danish State to buy the infrastructure.

In June 2016, the Parliament passed an amendment to the Natural Gas Supply Act (L 630). One of the main purposes of this amendment was to ensure the ability for the TSO, Energinet.dk, to take over Dong Energy's gas infrastructure. The Danish TSO now runs the DSO as a separate company. Further, all DSO's, irrespective of ownership, shall comply with existing revenue cap regulation.

The government has agreed with a majority in Parliament to increase the municipalities' incentive for a consolidation of the gas distribution grid. Accordingly, the government in June 2017 presented a bill with the intention that the consolidation should be carried out through a state purchase of the remaining two municipally owned DSOs' grid. The state purchase is expected to be executed by the Danish TSO, Energinet.dk, as it is considered to be vital Danish infrastructure. The Danish TSO may according to Danish law execute this right.

2.3 REMIT

DERA is a national regulatory authority in relation to Regulation (EU) No 1227/2011 of the European Parliament and of the Council on wholesale energy market integrity and transparency (REMIT).

In 2016, DERA contributed to the close collaboration with ACER and the national regulatory authorities in Europe by taking part in several working groups and task forces. Regionally, DERA focused on collaboration with the Nordic and Baltic regulators to ensure a coordinated and consistent regional approach to the enforcement of REMIT and regional monitoring. DERA also continued its formalised cooperation with the Danish Gas Exchange, Gaspoint Nordic, and the Nordic power exchange, Nord Pool.

On 22 November 2016, DERA invited interested parties to join the 4th seminar on REMIT in Copenhagen. Through regular seminars, DERA aims to share the latest REMIT developments. One of the main focuses of the 2016 seminar was market abuse in the intraday markets. Another key topic on the agenda was the new section 9 of the ACER Guidance on the application of REMIT regarding the obligations of persons professionally arranging transactions (PPATs).

After having placed high priority on collaboration with ACER on IT security in 2016, DERA was granted access to information reported to ACER in spring 2017.

3. The electricity market

3.1 Network regulation

3.1.1 Unbundling

Certification of Transmission System Operator (TSO)

In October 2011, DERA adopted its draft decision on the certification of the Danish system operator Energinet.dk for electricity and for natural gas following the rules for ownership unbundling. DERA received the Commission's opinion on the draft decision in January 2012. The Commission expressed agreement with the draft decision and did not express any disagreements with the assessments and conclusions in DERA's draft decision.

On that basis, DERA adopted its final decision on the certification of Energinet.dk in February 2012. This decision was identical with the draft decision. Subsequently Energinet.dk bought/merged with 10 regional transmission grid companies. DERA made an investigation into all agreements concerning the operations. DERA did not find any reason for re-certification.

Energinet.dk is the sole TSO in Denmark. The transmission grid had a length of 6,144 km in 2016, cf. table 1. In 2015, the length was 6,007 km.

Table 1 | Transmission system operator, 2016

Number of TSOs	Length of transmission grid
1	6,144 km

Source: The DERA secretariat

Unbundling of Distribution System Operator (DSO)

There are 50 DSOs in Denmark. The total length of the distributions grid is 159,000 km (at a voltage level under 60 kV) and the distributions grid covers a total number of 3,300,000 consumers.

The Danish Parliament has passed the Danish Electricity Supply Act No. 418 /2016 (DES)[5], in which the obligations in the Electricity Directive Article 26 are integrated. Together with executive order No. 667 of 2015, these legal acts define a number of obligations the DSOs have to fulfil to ensure that they will act unaffected by commercial interests of other vertically integrated associated companies. The executive order No. 667 of 2015 contains new rules concerning the Danish supplier centric model (*Engrosmodellen*) which entered into force on 1 April 2016.

Amongst the above mentioned obligations are DSO management requirements. The management must be free of incentives to discriminate between associated and independent companies. To ensure that the management of the DSO is not affected by interests of other companies within the group, no directors, board members, nor other influential employees with significant decision power can participate in the management of the group's electricity production or trading compa-

[5] This act consolidates the existing rules regarding the Danish electricity supply.

nies.

With respect to the communication and branding of the DSOs, DERA monitors the communication interface toward the customers in accordance with DES and executive order No. 667 of 2015. The monitoring is being executed in order to ensure that the branding of the DSO supports their independent identity separated from the consolidated company and prevents that associated companies are able to benefit from the branding (which otherwise would discriminate any independent competing company).

Furthermore, the DSOs are obliged to annually turn in a compliance program as well as a report describing the measures carried out to ensure their fulfilment of the compliance program. DERA receives both the compliance program and the annual report and monitors the DSO's fulfilment of the Article 26 requirements.

In accordance with the Electricity Directive, member states can decide not to apply the obligations in Article 26, provided that the DSO has less than 100.000 connected customers, cf. Article 26(4). A number of the provisions in Article 26(4) are applied in Denmark.

The license to distribute electricity provides certain limitations for the DSOs regarding activities which the company can engage in when having a DSO license. The DSOs are restricted to act only within an independent company and to participate exclusively in license related activities. These requirements also contribute to guarantee that the resources within the DSO companies are kept in the regulated company. Further, the DSOs' surplus is regulated to prevent abuse of the DSOs' monopoly.

The supplier centric model

Since the supplier centric model (*Engrosmodellen*) entered into force on 1 April 2016 in Denmark, the allocation of responsibilities has changed, thus the electricity suppliers have become the main point of contact in the electricity retail markets. The supplier centric model means that the electricity suppliers are obliged to fulfil the tasks of invoicing of rates and many other obligations related to the final costumers of electricity.

In practice, this means that communication concerning a certain final electricity consumer between the DSOs and the TSO (Energinet.dk) and the electricity suppliers are normally to be dealt with through the DataHub according to regulations set by Energinet.dk. The DataHub is a common data platform containing necessary information on the final electricity customers, the consumption of electricity and the tariffs to pay. However, direct communication processes between the DSOs and the electricity suppliers may be permitted according to regulations set by Energinet.dk. This option may be allowed only in specific situations related to a certain final electricity costumer in which the DSOs and the electricity suppliers need a clarification on specific issues of metering, billing, problems relating to grid connection or the like.

Before the adoption of the supplier centric model, DERA received a large number of inquiries from final electricity customers as well as from the DSOs, wanting to know if certain DSOs had violated the regulations concerning prohibition against the supply of commercially sensitive information and commercially advantageous information by passing them to a vertically integrated associated company. Since 1 April 2016, the number of inquiries has decreased. DERA has not provided statistics on the above mentioned inquiries, but based on experience and knowledge the decrease in number of inquiries has been noticeable compared to the period before 1 April 2016.

3.1.2 Technical functioning

Balancing services

The current method of recovery of balancing costs and the principles for settlement of imbalances used by the Danish TSO was approved by DERA in 2012.

Electricity producers hold balance responsibility for the electricity produced at their own plants and are required to assign the balance responsibility to a *Balance Responsible Party* (BRP) if they wish for another party to hold this responsibility.

Balancing costs are basically recovered by the market participant, causing the cost/imbalance according to whether the market participant is *consumption balance responsible* or *production balance responsible*. Consumption balance settlement applies a one price settlement, and the production balance settlement applies a two price principle, reflecting whether the production imbalance supports the system or not. The pricing principles incentivise the balance responsible to be in balance.

This method is the same in the four Nordic countries participating in the common Nordic balancing market *"The Nordic regulation Power Market"*.

Being a state owned non-profit company, the primary aim of the Danish TSO (*Energinet.dk*) is to maximise social welfare when deciding on market design etc.

Monitoring time taken to connect and repair

DERA monitors the time taken by Energinet.dk to make connections and repairs. Energinet.dk prepares an annual report for DERA regarding this topic.

DERA monitors the time taken by the DSOs' to make connections and repairs based on annual reports from the Danish Energy Association. The annual benchmarking of DSOs includes the duration and frequency of interruptions.

Monitoring safeguard measures

In Denmark, all Danish authorities – municipalities, regions and central authorities – are required to plan for the maintenance of their most critical functions in the event of major accidents and crises. This principle of sector responsibility is outlined in the Danish Emergency Management Act.

As transmission system operator, Energinet.dk is responsible for emergency preparedness in the Danish electricity and gas sectors and for coordinating the emergency preparedness of the sectors before, during and after a crisis. The Danish Energy Agency has granted Energinet.dk the authority to supervise and ensure emergency preparedness in the electricity and gas sectors.

All companies in Denmark providing electricity production, transmission, and distribution pursuant to the Danish Electricity Supply Act, together with Energinet.dk, have therefore prepared the necessary planning and taken the necessary steps to safeguard the electricity supply during crises and other extraordinary situations. This involves:

- Vulnerability analyses, general contingency plans, detailed contingency plans, and security plans
- Training, exercises, reporting of relevant incidents, statistics, etc.
- Operational matters during a crisis
- Inspection of the companies' work on contingency planning and crisis management

In case of a crisis, the power sector plan states that Energinet decides how to minimise market disturbance based on an evaluation of the specific crisis and the rules laid down in the Market Regulations prepared by Energinet.

Nordic Crisis Management

Energinet and the Danish Energy Agency are members of NordBER (*Nordic contingency Planning and Crisis Management Forum*) together with the other Nordic TSOs and the Nordic energy authorities.

NordBER's mission is to strengthen the Nordic TSOs' emergency preparedness and facilitate mutual assistance in case of crisis.

Renewable Energy Sources (RES) regulatory framework

Connection, access and dispatching regimes

New installations that produce electricity from renewable sources have the right to be connected to the grid. Energinet.dk and the network companies cooperate to ensure this network access.

Electricity generation from decentralised co-generation plants and electricity generation installations that produce electricity from renewable energy or use waste products as fuel have priority access to the grid. Energinet.dk can only reduce or alleviate prioritised electricity generation if the reduction of electricity generation from other installations is not sufficient to maintain the technical quality and balance within the combined electricity supply system.

Prioritised access also applies to electricity from tendered offshore wind farms in accordance with the Danish RE Act as they can only be curtailed under special circumstances and against compensation for operational loss.

Energinet.dk establishes the criteria for reducing prioritised electricity generation, and these criteria are approved by DERA.

Balance responsibility for RES-E

RES-E (renewable energy sources for electricity) is traded under the same conditions as other electricity generation.

Until 1 July 2015, Energinet.dk handled the balance responsibility for wind turbines and small-scale RE installations under purchase obligation. From 1 July 2015 to 31 December 2018, following a tender process, this balance responsibility is being handled by two Danish balance responsible parties (BRPs).

Onshore wind turbines > 25 kW on market terms (i.e. no longer eligible to receive a premium tariff) are required to assign the responsibility to a BRP. These wind turbines then receive a balancing subsidy for a maximum of 20 years of 1.8 øre/DKK (approx. € 0.0024) per kWh due to the balancing costs they face. Off shore wind farms also hold balance responsibility but do not receive the balancing subsidy. In these cases the developers instead include this cost in the tender amount.

3.1.3 Network tariffs for connection and access

Transmission

According to national law (executive order No 816, 2016), DERA approves the tariff methodology for the Danish TSO, Energinet.dk, and the Danish TSO sets the actual tariffs in accordance with the approved methodology and submits the resulting tariffs to DERA.

Energinet.dk is a completely state owned company not allowed to build up equity or pay dividends to its owner, the Danish Ministry of Energy, Utilities and Climate. Energinet.dk is regulated under a strict cost plus regime which means that the company can in principle only recover "necessary costs" by efficient operations and a "necessary return on capital". The TSO has to transfer any surplus income (over coverage) back to the consumers through reduced tariffs – in principle in the calendar year following the calendar year which gave rise to the surplus income. In extraordinary cases, the payback period may be longer in order to secure a stable tariff development. The same principle applies if Energinet.dk has an under coverage (deficit) but of course with opposite effect for the consumers.

According to the Danish Electricity Act (DES), DERA has to approve the annual report of Energinet.dk, and the decision on over coverage/under coverage is part of the approval process. The scrutiny of the annual report also involves regulatory scrutiny of the TSO's cost base.

DERA and Energinet.dk participated in the 2009 and 2013 European benchmark analyses of electricity TSOs and in the first European benchmark of gas TSOs which was concluded in 2016. The benchmarks were concluded within CEER and continue to play a role as background for DERA's

economic regulation and assessment of Energinet.dk. DERA expects to participate in CEER electricity and gas benchmarks in 2017/2018.

Distribution

In 2004, when the current regulation of the distribution companies (DSO) was adopted, there were 115 distribution companies. Today (May 2017) there are 49 distribution companies. The reduction in numbers of DSOs can mainly be attributed to mergers between DSOs (customer owned) and to municipals selling their distribution companies to other – consumer owned – DSOs.

DERA annually determines a revenue cap for each of the Danish DSOs. For a given distribution company, the revenue cap is fixed as a ”regulatory price” per kWh multiplied by the expected kWh transported in the coming year. The cap ensures that fixed price tariffs are not raised (compared to the level of tariffs in 2004). Furthermore, DERA determines the maximum allowed return on grid assets. In accordance with the Danish Electricity Act (DES), the maximum allowed return is fixed to the yield of a long term mortgage bond rate plus 1 percentage point. The allowed income of DSOs is restricted by either the revenue cap or the ‘maximum allowed return on grid assets’.

DSOs may apply to DERA for an increase of the revenue cap in order to cover ”necessary investments” due to public requirements, new supply areas etc. which are not included in the general obligation of distribution network companies to maintain and develop the network. Since 2007, DERA has made a benchmark of the economic efficiency of the distribution network companies for which a net volume model is used. Based on the results from this benchmark, DERA sets individual efficiency requirements for the network companies. Since 2008, the benchmarking has also contained an assessment of the quality of supply which in 2011 was extended to include the duration and frequency of interruptions.

DERA can set provisional individual efficiency requirements for the network companies if the companies fail to report the required information needed to assess the economic efficiency of the company. For the present period, the overall efficiency requirements involve a reduction in the companies’ 2017 revenue cap of approximately DKK 72.9 million or 3.73 pct. of the companies’ controllable costs. This efficiency requirement has been disputed by two companies.

The companies’ costs appear in the annual accounts which must be audited by a certified accountant and submitted to DERA every year.

DERA approves the companies’ tariff methodology and the methodology of terms of use, terms of connection and of access to national networks. The approvals are conditioned on the tariff and conditions being set in a fair, objective and non-discriminatory manner and based on necessary costs where every group of costumers pays the cost that they give rise to. The tariff methodology is set to prevent cross-subsidisation between groups of costumers.

To prevent cross-subsidisation between distribution and supply activities, the companies must comply with the rules regarding entity, accounting and management unbundling. DERA supervises the development of the retail market's efficiency. Pursuant to relevant law, DERA is also required to inform the Competition and Consumer Authority of circumstances that may be in violation with competition law.

Once the DSO tariff methodology is approved, the DSO sets its tariffs accordingly. Further, according to the Danish regulation, the DSO reports when tariffs (set according to a methodology) are adjusted. Larger DSOs adjust several times each year – usually four times. For smaller DSOs, annual adjustments are more common. Occasional investigations may be conducted after inquiries from costumers.

As the DSOs are free to set their own tariffs based on their approved methodology, it is the DSOs' responsibility to adjust revenues in accordance with the revenue cap and/or maximum return.

Methodologies may be revised if necessary which was the case in 2014 concerning small solar panels (households). The amount of these installations grew rapidly, and the tariff structure was consequently updated in order to include payment for the operational availability of the grid.

In June 2015, DERA accepted a new, industry wide tariff model developed by the Danish Energy Association on behalf of the DSOs. The DSOs may, according to DERA's approval, use the model to calculate tariffs based on their costs and their revenue cap. The model calculates tariffs based on the costs related to each group of consumers in a fair, objective and non-discriminating way and according to the necessary costs.

The model allocates the allowed revenue to the cost drivers. By doing this, it ensures that a consumer at a low voltage level, e.g. 0.4 kV, pays for the use of the entire grid. A consumer on a higher voltage level, e.g. 50 kV, does not pay for maintenance of the 10 kV and 0.4 kV grids. Hence the model ensures that the DSO tariff is based on the specific DSO grid and the consumer category. The allocation of income to cost drivers creates consistency between revenue caps and actual costs of running the grid. If consumers on 0.4 kV level drive 50 pct. of the costs, the group pays 50 per-cent of the revenue according to the model. The model allocates individual costs to consumers (e.g. metering) based on the average costs for that group of consumers.

The model opens up for time-differentiated tariffs (time-of-use tariffs) for all groups of consumers and thereby creates a possibility for the DSOs to utilise smart meters which has been outrolled to 50 pct. of consumers as of 2015. The time-differentiation is based on expected demand, not on the actual demand in the grid, as data is not yet available, and as the model calculates the tariffs based on a data-set – thus real-time tariff adjustment is not yet a possibility.

The model furthermore calculates a payment for "availability". As many households have become electricity producers with e.g. PV solar panels, DSOs are experiencing lower consumption from the

grid but not decreasing costs. As these households remain dependent on the grid when the panels do not produce, they pay a share of the costs. Therefore, in general terms, an availability tariff is calculated for larger producers and a fixed availability payment is set for smaller producers. Whether the tariff or the fixed payment applies depends on the installation.

So far, 37 of the current 49 DSOs set their tariffs according to the new model, albeit 8 of them differ to some extent, and the tariffs are as such set more homogeneous across the country.

In December 2014, the Electricity Regulation Committee published recommendations concerning changes of the regulation of the DSOs. The committee recommended higher transparency in the DSOs tariff setting. This has, to some degree, been met by the industry wide tariff model.

DERA has the authority to require DSOs to modify their terms and conditions, including tariffs, if these are inconsistent with the Danish Electricity Act (DES).

Prior to the final approval of a DSO's methodology or prior to decisions concerning the revenue cap or the individual efficiency requirements, the DSO will have the opportunity to comment on a version of the approval. After the approval, the DSO concerned may complain to the Energy Board of Appeal. A complaint must be in writing and must be submitted within four weeks of the decision.

3.1.4 Cross-border issues

Access to cross-border infrastructure

Allocation of capacity and congestion management

There has been no significant change in capacity allocation and congestion management procedures in 2016. All day-ahead cross-border capacity was allocated via the multi-regional coupling (MRC). Flows and prices were determined through implicit auctions. Residual capacity that was not used in the day-ahead market was given to the intraday market.

On both Danish bidding-zone borders to Germany (DK1-DE and DK2-DE) as well as the internal border (DK1-DK2) physical transmission rights (PTRs) were issued through monthly and in regards to the German border also yearly auctions. The capacity was used entirely financially through the Use-It-Or-Sell-It (UIOSI) option, so capacity was given back to the (day-ahead) market.

Due to challenges in the German grid, available cross-border capacity on the border DK1-DE has remained low in the southward direction. This led to only 11 pct. available capacity in the direction towards Germany, but around 87 pct. from Germany towards Western Denmark. Furthermore, no long term capacity in the form of PTR was auctioned in the southward direction in 2016 from DK1 to DE. Monthly capacities from DE to DK1 were offered in varying capacities. DERA has been involved in several discussions together with German Authorities and other Danish Authorities around the DK1-DE border. For the border DK2-DE, available capacity was around 89 pct. in both directions, and yearly and monthly auctions were held in both directions.

In 2017, the Danish Ministry of Energy, Utilities and Climate agreed on a joint declaration with the German Federal Ministry for Economic Affairs and Energy, as well as the German regulatory authority (Bundesnetzagentur) and DERA that a minimum level of capacity is required on the electricity transmission link between Jutland and Germany, DK1-DE, for trading of power for the day-ahead market.

The aim of the agreement is to gradually make the full capacity of the DK1-DE interconnector available for electricity trade as soon as the relevant infrastructure development has been completed. For this, minimum available hourly capacities have been agreed. These will increase over time. In case the agreed minimum capacity cannot be physically transported due to grid constraints, countertrading will be used to avoid congestions in the grid while ensuring the agreed minimum level of trade in every hour.

The agreement will be implemented as of 1 December 2017, but commenced with a pilot phase as of July 2017, which runs until the end of November 2017. In the pilot phase, the minimum available capacity must be 80 MW in July, 160 MW in August, 240 MW in September, 320 MW in October and 400 MW in November. The minimum available capacity must stay at 400 MW from 1 December 2017. Minimum capacity will then rise to 700 MW in 2018, 900 MW in the first three months of 2019, 1000 MW from 1 April 2019 and 1100 MW from 2020. The agreement will run until the end of 2020.

DERA continuously supervises the implementation of the agreement, including compliance with the minimum level. DERA notes that the minimum available capacity has met the agreed levels for July and August 2017.

Actions under CACM GL

Nord Pool A/S was designated *Nominated Electricity Market Operator* (NEMO) for both day-ahead and intraday coupling in the two Danish bidding zones on 27 October 2015.

Pursuant to Commission Regulation (EU) 2015/1222 of 24 July 2015 establishing a *Guideline on Capacity Allocation and Congestion Management* ("CACM GL"), and, in particular, Article 4(5) thereof, EPEX Spot SE notified DERA on 18 January 2016 that EPEX Spot SE proposes to perform single day-ahead and intraday coupling in the two Danish bidding zone areas, DK1 and DK2. DERA has allowed EPEX Spot SE to offer trading services in the two Danish bidding zones. EPEX Spot SE has not yet (May 2017) commenced operation in the Danish bidding zones.

Pursuant to CACM GL, and, in particular, Article 9(11) and Article 15(1) thereof, ACER adopted a decision on the electricity transmission system operators' proposal for the determination of Capacity Calculation Regions on 17 November 2016.

According to this decision, the *Capacity Calculation Region 1: Nordic* (CCR Nordic) shall include the following Danish bidding zone borders:

a. Denmark 1 – Sweden 3 (DK1-SE3);
b. Denmark 2 – Sweden 4 (DK2-SE4); and
c. Denmark 1 – Denmark 2 (DK1-DK2).

The *Capacity Calculation Region 2: Hansa* (CCR Hansa) shall include the following Danish bidding zone borders:

a. Denmark 1 – Germany/Luxembourg (DK1-DE/LU); and
b. Denmark 2 – Germany/Luxembourg (DK2-DE/LU).

In accordance with CACM GL Article 9(1), TSOs and NEMOs shall develop the terms and conditions or methodologies required by the CACM GL and submit them for approval to the competent regulatory authorities within the respective deadlines set in the CACM GL. Article 9(7) specifies the proposals for terms and conditions or methodologies subject to approval by all regulatory authorities of the concerned region.

The regulatory authorities of CCR Hansa and of CCR Nordic have agreed on Rules of Procedure that reflect arrangements between the concerned regulatory authorities in order to deliver decisions under CACM GL in an efficient and transparent manner.

For CCR Hansa, DERA has been appointed *Single Point of Contact* between the concerned regulatory authorities and the transmission system operators/nominated electricity market operators.

FCA GL and EU HAR

FCA GL is the EU legislative framework for long-term transmission rights, as opposed to the CACM GL which handles the intraday and day-ahead markets. FCA GL went into force on 17 October 2016 and establishes a framework for the calculation and allocation of interconnection capacity and for cross-border capacity in forward markets.

In October 2017, ACER issued its decision on the TSOs' proposals for Harmonised Allocation Rules (EU HAR) for long-term electricity transmission rights. With reference to Article 51 of the FCA GL, ACER adopted the EU HAR. EU HAR is a single set of harmonised rules for trading across European bidding zone borders. On 11 and 12 October 2017, DERA approved the TSO proposal for regional requirements to harmonised allocation rules for CCR Nordic and CCR Hansa.

In December 2016, DERA commenced the assessment of the sufficiency of the hedging opportunities in the Danish bidding zones. This resulted in a decision as per May 2017 that the Danish bidding zones are assessed not to have sufficient hedging opportunities and to ask the relevant TSOs, Energinet.dk and Svenska Kraftnät, to provide other means of cross-zonal hedging. This decision was taken in collaboration with the Swedish Energy Market Inspectorate.

Monitoring technical cooperation between Community and third-country TSOs
On a European level, Energinet.dk cooperates with Community TSOs and third-country TSOs (e.g. Statnett in Norway) within the TSO organisation ENTSO-E (43 TSOs from 36 countries). ENTSO-E cooperates within four main areas: System development, system operation, market and R&D. Further to this, ENTSO-E has (within three of the main areas: System development, system operation and market) established several regional groups, where Energinet.dk participates in those relevant for Denmark.

On a regional level, Energinet.dk cooperates with Community TSOs and third-country TSOs as part of two *Coordinated Capacity Calculation Regions* (CCRs[6]), CCR Nordic and CCR Hansa.

Energinet.dk also cooperates bilaterally with relevant Community TSOs, e.g. the other Nordic TSOs, the Dutch TSO and the German TSOs, and third-country TSOs, e.g. the Norwegian TSO.

Energinet.dk can therefore provide DERA with information and reports from all relevant common projects relating to technical cooperation between Community and third-country TSOs.

Monitoring TSO investment plans in view of TYNDP and PCI
The regulatory authority regarding the Danish TSO's, Energinet.dk, investments is divided between the Danish Energy Agency (DEA) and DERA, where DEA is responsible for the approval of Energinet.dk's investment plans etc. as well as approval of actual investments.

DERA is responsible for the monitoring of Energinet.dk's investment plans in the context of compliance with the communitywide TYNDP which comprises projects of common interest (PCI projects) as well as other cross border investment projects by Energinet.dk. The monitoring process has revealed no discrepancies between Energinet.dk's plans and the community wide TYNDP.

Energinet.dk is responsible for preparing investment plans (transmission) and to submit the plans to the Danish Ministry of Energy, Utilities and Climate (owner of Energinet.dk) for approval and to DERA for monitoring compliance and compatibility with the European TYNDP.

Energinet.dk is responsible for assessing the need for new infrastructure and for planning possible (transmission) network expansions according to executive order No. 1034 of 11 November 2011.

Energinet.dk published the present network development plan in 2013 covering the long-term (2032) structure of the transmission network as well as the network structure on short- (2017) and middle-term (2022). Regulatory scrutiny of the network development plan did not reveal discrepancies between the national plan and projects and the community wide projects of common European interest, and DERA made no recommendations for changes in the network development plan or individual investment projects.

[6] Requirement of the CACM regulation

In February 2017, Energinet.dk published a 10-year plan covering the company's planned reinvestments, extensions, strengthening and redevelopment of the grid.

COBRA cable

In 2016, construction of the COBRA cable (COpenhagen-BRussels-Amsterdam cable) begun. COBRA cable is an interconnector between the Netherlands and Denmark. It holds the status of Project of Common Interest (PCI) under the European Commission and is expected to be operational in 2019.

Viking Link

The Viking Link cable project between Great Britain and Denmark is being developed and planned. Viking Link is a proposal to build an electricity interconnector between Bicker Fen Great Britain and Denmark. The authorities in Great Britain have approved National Grids investment in Viking Link while Energinet.dk awaits approval of the investment from the Danish Ministry of Energy, Utilities and Climate. According to the project plan, Viking Link is expected to be operational ultimo 2022.

Kriegers Flak

Kriegers Flak is an offshore wind farm located in the Danish part of the reef Kriegers Flak in the Baltic Sea. The Kriegers Flak combined grid solution between Germany and Denmark is currently under construction and will be used to connect a Danish and German offshore wind farm to the grids in Denmark and Germany respectively, and as an interconnector between the two countries. Kriegers Flak is planned to be operational ultimo 2018.

Skagerrak 4

In March 2017, DERA cancelled Energinet.dk's capacity reservation of 100 MW to exchange of automatic reserves in the electric interconnector *Skagerrak 4* (SK 4) between Denmark and Norway, thereby repealing a time-limited approval of the reservation given in 2010.

In 2010, DERA gave a time-limited approval of the reservation in a 5-year period from 2014 under the condition that Energinet.dk made an evaluation of the socio-economic benefits of the reservation after one year of operation of the interconnector. SK4 was operational from 2014.

Energinet.dk submitted the 2015 evaluation primo 2016. The evaluation showed a significant decrease in the Danish socio-economic benefits of the reservation compared to the 2010 expectations which made up the foundation for DERA's time-limited approval. Thus, the reservation no longer provides a significant Danish socio-economic benefit. The 2016 evaluation shows it is unclear whether Denmark has an added value of the reservation when compared to using the (reserved) capacity in the spot market for electricity.

Furthermore, it has not been possible to create a market for reserves for the Danish producers towards Germany, thus making the negative consequences of the reservation to the market for reserves in Western Denmark larger than expected. Energinet.dk's reservation in SK4 has been used to buy automatic reserves in Norway under a 5-year contract covering the entire demand for these reserves in Western Denmark and eliminating competition from Danish producers in the contract period.

DERA's decision to repeal the approval of the reservation has been appealed to the Energy Board of Appeal where the case is currently pending.

Cooperation
DERA cooperates with ACER and other NRAs on cross-border issues as obliged to by Article 37(1)(c) of the Electricity Directive. Furthermore, DERA cooperates with the other Nordic regulators within NordREG.

In 2016, the Copenhagen-based Nordic Regional Security Coordinator (RSC) was established. The Nordic RSC is the joint office for the four electricity TSOs in the Nordic Region (Fingrid, Statnett, Svenska Kraftnät and Energinet.dk). It supports the national TSOs in maintaining the security of the power systems across the four countries (Finland, Norway, Sweden and Denmark).

3.1.5 Compliance

Compliance of regulatory authorities with binding decisions of the Agency of the Commission and the guidelines
According to the Danish Electricy Act (DES) § 79 a, DERA is obligated to comply with any legally binding decision of the Agency and of the Commission. There have been no compliance issues in 2016.

Compliance of transmission and distribution companies, system owners and electricity undertakings with the relevant Community legislation, including cross-border issues
Pursuant to DES, DERA has the competence to order compliance whenever a breach of Regulation No. 714/2009 is registered. Additionally, DERA has the power to carry out inspections and the possibility to impose fines, when an order to comply is not observed.

According to DES § 19 d, certified undertakings are obliged to report to DERA any planned transactions that could impact compliance with the conditions for certification.

The certified TSO must submit a yearly financial report for DERA to calculate the difference between revenue and costs related to system operation on electricity and gas, including revenues resulting from allocation of interconnection capacity.

3.2 Promoting competition

3.2.1 Wholesale markets

Denmark is part of the Nordic electricity market and interconnectors to neighbouring countries are an important part of the Danish electricity system, especially for ensuring cost-effective integration of increasing wind power in the system. So far, Denmark has interconnectors to Sweden, Norway and Germany.

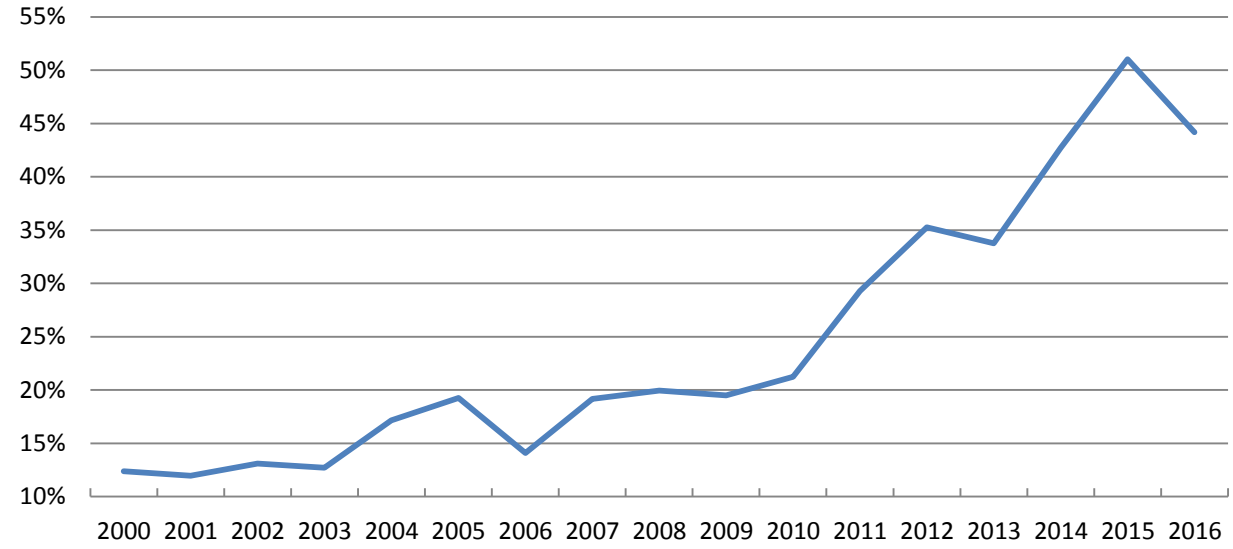
Table 2 | Danish electricity production, 2010-2016

Year	Net production, GWh	Net export, GWh			
		Germany	Norway	Sweden	Total
2010	36,763	-3,700	2,597	2,238	1,135
2011	33,382	2,315	-1,187	-2,446	-1,318
2012	29,139	7,082	-4,781	-7,514	-5,214
2013	32,956	-2,369	287	1,001	-1,081
2014	30,615	823	-2,667	-1,011	-2,855
2015	27,704	2,691	-4,954	-3,649	-5,912
2016	28,930	- 2,153	- 5,058	2,154	- 5,057

Source: The DERA Secretariat based on data from DEA
Note: Net production is gross production minus use of electricity in electricity generation. Negative value means import of electricity.

In 2016, the net production in Denmark was 28,930 GWh, which was larger than the previous year, cf. table 3. Production from Denmark's wind turbines have fallen with 6.8 percentage points, compared to 2015, to a share of 44.2 pct. of the total electricity supply in 2016, cf. figure 1, as the weather in 2016 was less suitable for wind production. Denmark has experienced an increase in the share during the last few years – and the share is expected to increase even more during the coming ones.

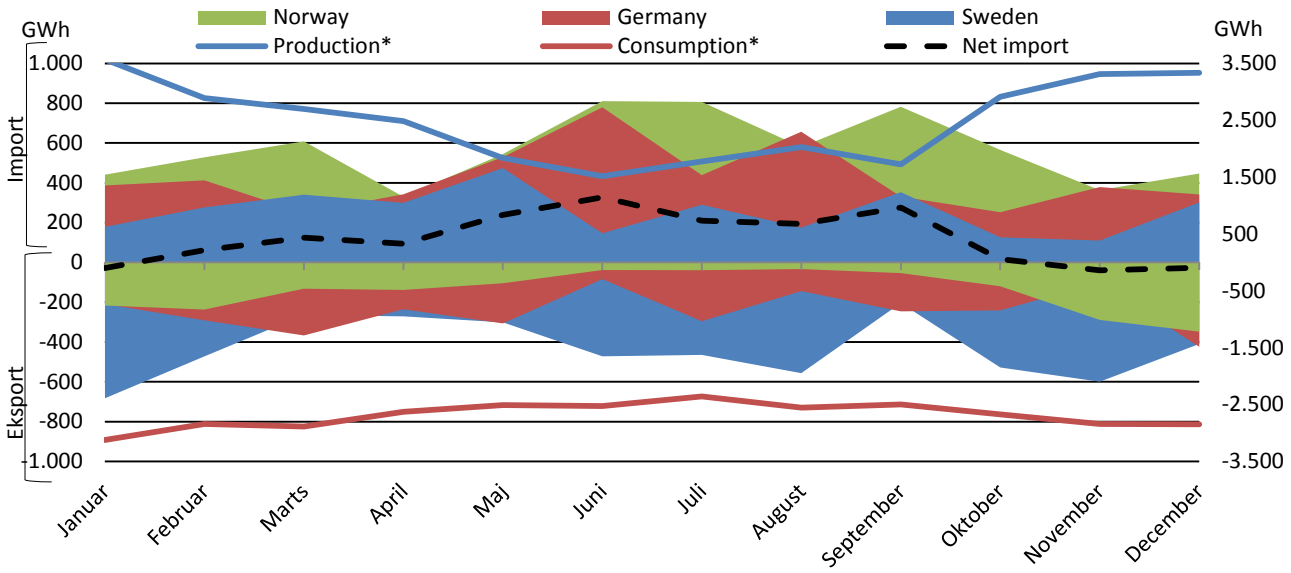
Figure 1 | Wind turbines' percentage share of total electricity supply, 2000-2016



Source: DEA

Denmark functions as a transit between Germany and the two neighbouring Nordic countries, Norway and Sweden. In 2016, Denmark's net import from Germany and Norway was respectively 2,153 and 5,058 GWh, while Denmark was a net exporter to Sweden with 2,154 GWh. In total, Denmark was a net importer of electricity with 5,057 GWh in 2016, cf. table 3 and figure 2.

Figure 2 | Danish electricity consumption, production and net export, 2016



Source: The DERA Secretariat based on data from Energinet.dk and DEA
Note: *Must be read on the secondary vertical axis

Production and import are positive numbers while consumption and export are negative numbers. The net export is positive when the export is greater than the import and vice versa. Consumption is gross which means that it includes transmission loss.

3.2.1.1 Monitoring the levels of prices, transparency and effectiveness of market opening and competition

In the Danish wholesale market, most of the trading takes place at the common Nordic power exchange, Nord Pool, owned by the Nordic and Baltic TSOs. In 2016, around 95,2[7] pct. of the total consumption of power in the Nordic market was traded at Nord Pool, and the exchange has one of Europe's most liquid day-ahead power markets. The prices for both day-ahead trading and intraday trading are made available at the homepage of Nord Pool.[8]

Market opening is generally high, as most of the interconnection capacity in 2016 is given to the market, cf. table 4. However, on the DK1-DE border, there has been a negative development in recent years. The level of net transfer capacity (NTC) that can be provided to the market has been constantly reduced over the last few years. Loadflows conditions and wind infeed in the north of Germany has led to decreased NTC levels. The situation is expected to improve significantly when planned and necessary grid infrastructure investments are realised within Germany. In 2017, an agreement was concluded regarding a minimum level of capacity on the electricity transmission link between DK1-DE for trading of power for the day-ahead market. The aim is to gradually make the full capacity of the DK1-DE interconnector available for electricity trade as soon as the relevant infrastructure development has been completed, cf. section 3.1.4.

Table 3 | Nominal transmission capacity for the Danish interconnectors, 2016

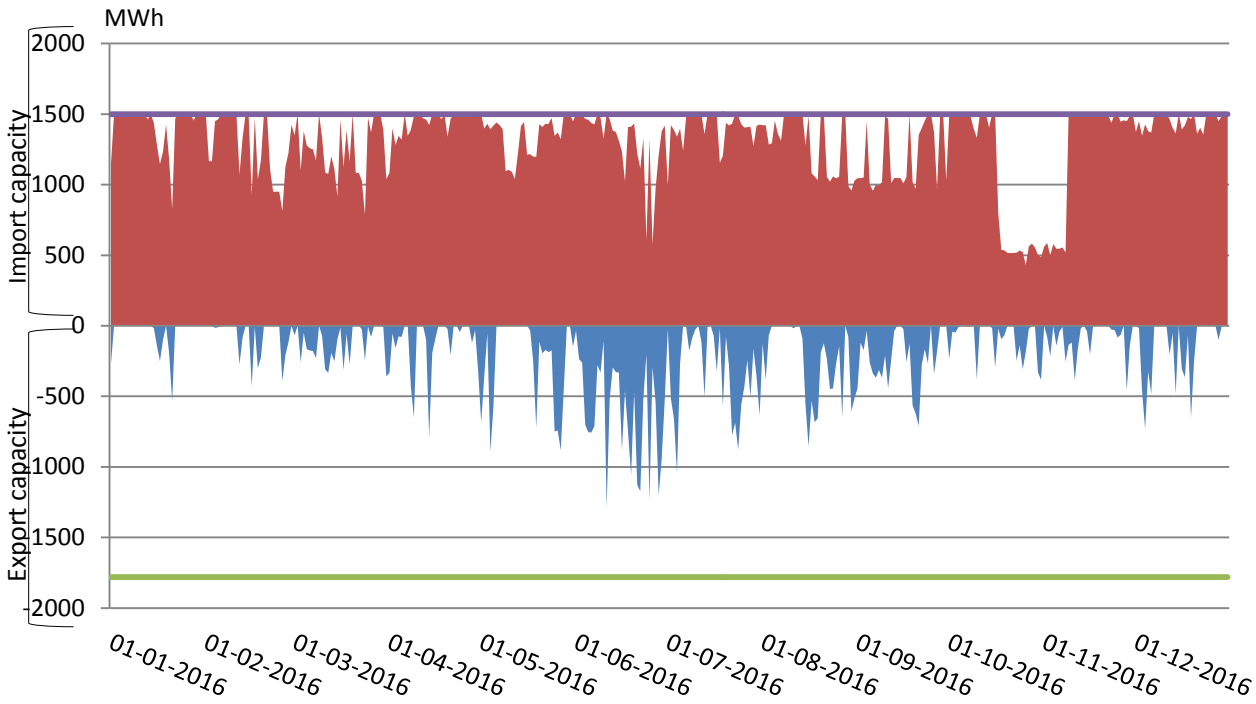
Connection	Direction	Nominal capacity	NTC/Nominal capacity
The Electrical Great Belt connection	DK1 → DK2	590 MW	96.4 %
(West Denmark – East Denmark)	DK2 → DK1	600 MW	96.8 %
Skagerrak-connection	DK1 → NO2	1,632 MW	90.4 %
(West Denmark – Norway)	NO2 → DK1	1,632 MW	85.6 %
Kontiskan-connection	DK1 → SE3	740 MW	86.7 %
(West Denmark - Sweden)	SE3 → DK1	680 MW	82.9 %
Oresund-connection	DK2 → SE4	1,700 MW	89.7 %
(East Denmark – Sweden)	SE4 → DK2	1,300 MW	93.0 %
West Denmark – Germany	DK1 → DE	1,780 MW	10.9 %
	DE → DK1	1,500 MW	87.0 %
Kontek-connection	DK2 → DE	585 MW	88.8 %
(East Denmark – Germany)	DE → DK2	600 MW	89.0 %

[7] This calculation does not take into account Lithuania's consumption and trading – data: Nord Pool.
[8] http://nordpoolgroup.com/

Source: Nord Pool and Energinet.dk
Note: The nominal transmission capacity is the maximal capacity that can be exchanged.

In 2016, 87.0 pct. of the nominal maximum transmission capacity was available to the market in the import direction and 10.9 pct. in the export direction from Denmark's perspective. A development of the NTC for the Western Danish-German border can be seen in figure 3.

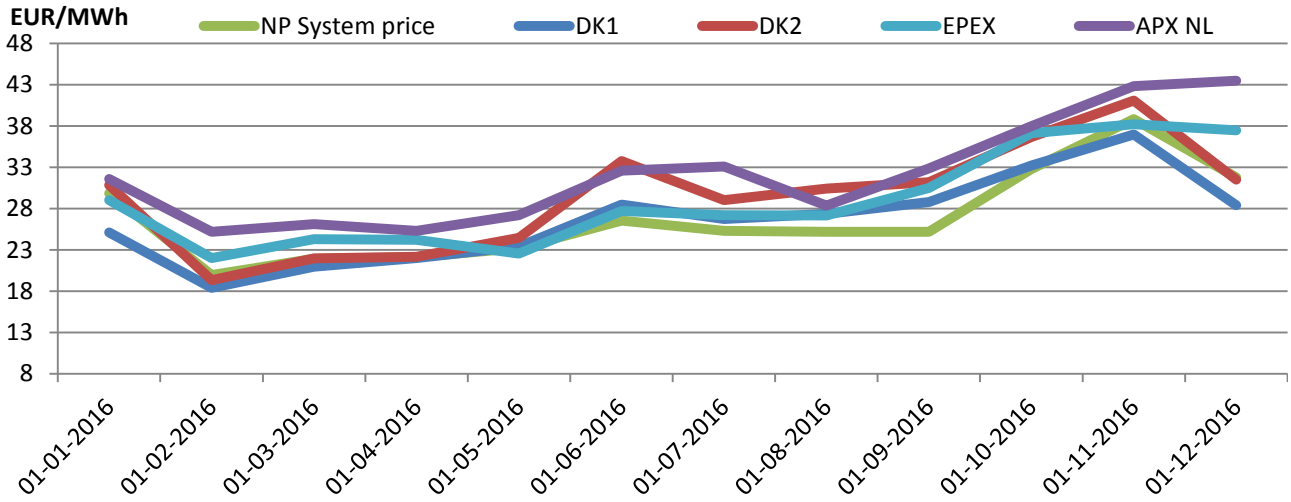
Figure 3 | NTC level for the interconnector between West Denmark and Germany, 2016



Source: The DERA Secretariat based on data from Energinet.dk
Note: Average monthly development in the NTC between West Denmark and Germany. The horizontal black lines represent the nominal maximum and minimum transmission capacity for the interconnector. The transfer capacity for import and export – from Denmark's perspective – are respectively given as positive and negative numbers.

The Nordic market is divided into bidding areas with Denmark being divided into two areas separated by the Great Belt. Figure 4 shows day-ahead prices in the two Danish bidding areas, Western (DK1) and Eastern Denmark (DK2), as well as the system price of Nord Pool, the EPEX day-ahead price for Germany and the APX NL day-ahead price for the Netherlands. The system price of Nord Pool denotes an unconstrained market clearing price, since the trading capacities between the bidding areas have not been taken into account in the calculation of this price. The system price is used as a reference price in Denmark.

Figure 4 | Day-ahead spot prices, 2016



Source: The DERA Secretariat based on data from Energinet.dk and APX NL

Whenever there are grid congestions, the Nordic area is divided into several price areas. The Danish spot prices are frequently higher than the Nordic system price, but lower than the Continental European prices, reflecting Denmark's geography between the Nordic hydro based system and the thermal based continental production, cf. figure 4.

Electricity wholesale prices primarily depend on the electricity prices on Nord Pool, which are influenced by precipitation in the Nordic countries, fuel prices for the thermal power plants, customer demand and outages in the transmission grid.

The Spot prices in Denmark for the year 2016 did in general follow the development of the system price of Nord Pool. Prices in DK2 were in general higher than the system price, while prices in DK1 were lower, except from May to October. The prices in DK1 and DK2 are often different (the average wholesale prices are respectively 26.7 and 29.4 EUR/MWh) and most of the time, the prices in DK1 are lower because of high wind production and import of hydro electricity from Norway.

The average wholesale price in Demark for the year 2016 was 28.0 EUR/MWh, while the average prices from APX NL, EPEX and Nord Pool's system price respectively were 32.2, 29.0 and 26.9 EUR/MWh.

DERA monitors the wholesale market in Denmark. A market monitoring report, focusing on price development, competition, market development, structural problems etc., is published twice a year. DERA did not observe any exceptional challenges to the wholesale prices in Denmark for the year 2016 for the two Danish bidding areas, i.e. the wholesale prices were far from the defined price caps (minimum of -500 EUR/MWh and maximum 3.000 EUR/MWh).

Total traded volume (i.e. intraday and day-ahead volume) for both of the Danish bidding areas increased by 5.2 pct. from 58.2 to 61.2 TWh from 2015 to 2016, cf. table 5. The intraday volume increased with 4.7 pct. (from 2.0 TWh in 2015 to 2.1 TWh in 2016), while the day-ahead volume increased with 5.2 pct. (from 56.2 TWh in 2015 to 59.1 TWh in 2016).

Table 4 | Yearly traded volume for both of the Danish bidding areas, 2015-2016

	2015	2016	Percentage change
Day-ahead volume	56.2 TWh	59.1 TWh	5.2%
Intraday volume	2.0 TWh	2.1 TWh	4.7%
Total traded volume	58.2 TWh	61.2 TWh	5.2%

Source: The DERA Secretariat based on data from Nord Pool

A small concentration on the Herfindahl–Hirschman Index (HHI) indicates a competitive market with no dominant players. The HHI for the year 2013 indicates a more competitive market in West Denmark compared to the HHI in East Denmark,[9] cf. table 6.

Table 5 | Concentration index (HHI) for the Danish wholesale markets per bidding area, 2013

DK1	DK2
893	3552

Source: Nordic Market Report 2014
Note: The market concentration index (HHI) is calculated as sum of squared market shares based on installed capacity and gives an indication to the likelihood of market power being used.

3.2.2 Retail markets

The state of competition of the retail market and the main changes in the recent year

The Danish retail electricity market was fully liberalised in 2003. This implies that Danish electricity consumers can freely choose between approximately 41 suppliers. However, some barriers for obtaining an effective competition in the retail market for electricity still exist. The parliament has taken important steps towards eliminating these barriers, e.g. by the introduction of the so-called *wholesale model* on 1 April 2016, also known as the *supplier centric model* (SCM). One important effect of the SCM is the introduction of mandatory combined billing for consumers.

The barriers for effective competition still existing in the retail market are related to a rather low mobility of consumers.

In June 2014, an amendment of the electricity regulation was passed by the Danish Parliament, following up on the initial recommendations of the Electricity Regulation Committee from May 2013. According to the amendment, the supply obligation system including the specific supply obligation

[9] DERA does not have available data to calculate a HHI for the years after 2013.

product had to be abolished from 1 April 2016. At the same time, a new obligation of delivery was introduced to secure the supply of electricity for consumers.

According to the same amendment, all inactive consumers were moved to a product without any regulations. In 2016, the non-regulated products amounted to around 98 pct. of the consumption. That being said, 66 pct. of the consumption is sold to consumers who have not actively decided to change product and therefore receive a product chosen by the supplier.

Nine license holders (with supply obligation licenses covering 2 pct. of consumers) still operate under the previous regulatory regime, i.e. with prices regulated by DERA, until the expiration of their licenses in May 2017. Today, all consumers receive market based products.

Since the launch of a new electricity market design with the SCM on 1 April 2016, the obligation of delivery commits all electricity suppliers on the Danish electricity market to provide electricity for consumers when paid by them, i.e. any electricity supplier has to supply any consumer who may request it. However, the delivery requirement applies only for household consumers – business customers are not guaranteed the same legal right.

3.2.2.1 Monitoring the levels of prices, transparency and effectiveness of market opening and competition

Prices

The average price of electricity for the consumer has increased from 30.55 cEUR/kWh in 2015 to 30.8 cEUR/kWh in 2016, cf. table 6.

Table 6 | Average retail electricity prices, euro cent per KWh, 2008-2016

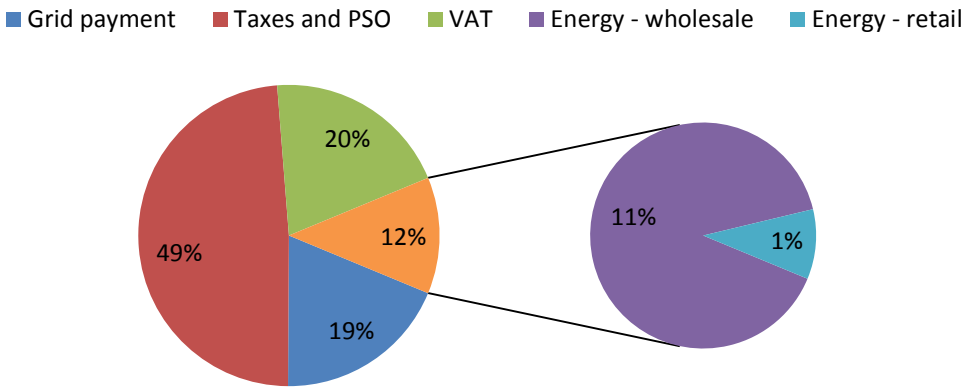
Euros cent/KWh	2008	2009	2010	2011	2012	2013	2014	2015	**2016**
Energy	7.33	5.42	5.71	6.63	5.54	5.03	4.76	4.11	3.9
Grid payment	4.60	4.95	4.95	5.22	5.39	5.39	5.47	5.54	5.8
Taxes and PSO	9.74	10.61	10.81	11.66	12.89	13.32	14.06	14.78	15
VAT	5.42	5.24	5.37	5.88	5.95	5.93	6.07	6.11	6.2
Total price	27.09	26.21	26.85	29.39	29.77	29.67	30.37	30.55	30.8

Source: The DERA Secretariat
Note: Exchange rate differences will make numbers differ slightly from Danish publications.
PSO (Public Service Obligations) are taxes to finance subsidies for renewable energy and energy research.
Subscription fees are included in the energy and grid components respectively.
An annual consumption of 4,000 kWh is the base for the above numbers.

The electricity price is composed of several elements cf. figure 5. The energy price (which again can be divided into retail and wholesale energy prices) is the price of electricity excluding taxes, PSO (public service obligations), transmission and distribution. The pure energy price constitutes

about 12 pct. of the total energy price, while taxes, PSO and VAT constitute about 69 pct. The remaining 19 pct. is from the grid (transmission and distribution) payment, cf. figure 5.

Figure 5 | Composition of the price of electricity, 2016



Source: The DERA Secretariat
Note: PSO (Public Service Obligations) are taxes to finance subsidies for renewable energy and energy research.

DERA also approves the distribution companies' methods of setting prices, i.e. the net tariffs. For more information, see section 3.1.3 on Network tariffs for connection and access.

PSO payment will expire
In November 2016, the Danish parliament passed new legislation concerning the PSO (public service obligations) payment, appearing today on the consumers' invoice. The PSO covers subsidies for renewable energy and energy research. According to new regulation, the current PSO payment will gradually be reduced from 2017 and is abolished in 2022 for all electricity consumers. The costs of PSO will instead be financed by the government's annual budget.

When the adjustment is fully implemented, the average retail prices of electricity will be reduced by the total PSO payment. At an annual consumption of 4,000 kWh, the current PSO payment amounts to approximately 10 pct. of today's electricity bill.

Transparency – new price comparison tool in operation
Legislation from June 2015 has obliged DERA to operate a new national online portal for electricity prices, which was launched on 1 April 2016. According to executive order No. 1279 of 25 October 2016, all prices/products offered at the electricity market for consumers with an annual consumption below 100,000 kWh have to be reported to the new price comparison tool (PCT).

The PCT is called *elpris.dk*, and it is operated by DERA. The main purpose of elpris.dk is to make it easier for consumers to compare the various offers on the Danish electricity market. As elpris.dk

covers the national market, the homepage will enhance the consumers' insight of electricity prices and contract conditions, making the market more transparent for consumers.

The electricity consumers have a wide diversity of electricity products to choose from. These can be divided into fixed prices and variable/spot price contracts – in both cases also from renewable sources if preferred by the consumers. In addition, some electricity suppliers offer combined products, where the supply of electricity is pooled with the delivery of a supplementary product (e.g. nature gas or other products).

The number of users of the PCT comparing the various offers at the Danish retail electricity market amount to around 150,000 from April to December 2016. This is more than 500 users per day. At the beginning of 2017, the number of PCT users slightly fell to approximately 450 users per day. The number of offers available to the consumers to choose from is about 250 products in 2016, falling to approximately 220 products at the beginning of 2017.

To handle ongoing suggestions for changes and improvements of the PCT, a new working group was established in November 2016. The group consists of representatives from the relevant consumers and business organisations related to supply and consumption of electricity for household and business consumers using less than 100,000 kWh per year. Also, different regulatory bodies are represented in the group, which is supposed to set up meetings at least twice a year.

Statistical surveys
DERA publishes different types of price statistics. The first survey is an annual report which depicts the retail prices of consumers with different consumption levels (1,800; 4,900; 15,000 and 50,000 kWh/year). It analyses the development of the retail prices and in particular the potential savings for consumers, making it easier for them to navigate, understand and if appropriate switch electricity supplier on the Danish electricity market.

In addition, DERA publishes a smaller quarterly statistical survey. It depicts prices of various products for household consumers and small business customers with an annual consumption of 4,000 kWh.

On a yearly basis, DERA also monitors the price development of products that the consumers receive, when they have not *actively* chosen a product in the market. For 2015 and 2016, these products were not priced significantly different from the rest of the market. In 2016, 66 pct. of the consumption for consumers with a yearly consumption of maximum 100,000 kWh was based on these types of products.

Effectiveness of competition
One of the main persistent barriers for effective competition in the retail electricity market is the rather low mobility of consumers.

The switch of supplier rate is about 6-7 pct., cf. table 7.

Table 7 | Switching rates 2014-2016

Year	Percent
2014	6.3 %
2015	7.2 %
2016	6.4 %

Source: Energinet.dk
Note: The number of switches of supplier is in proportion to the number of metering points (consumption).

3.2.3 Recommendations on supply prices, investigations and measures to promote effective competition

The Danish retail electricity market is today fully liberalised and accordingly any electricity consumer in Denmark has access to the competitive market – without any price regulation. As of May 2017, all Danish consumers receive competitive products without price regulation.

Supplier centric model and billing

The supplier centric model (SCM) was launched on 1 April 2016. The consumers' awareness of the electricity market is fundamental to enhance competition. Transparency of the market and consumer engagement has been highly prioritised in preparations of the new model.

In regard to the involvement of consumers in the retail electricity market to increase the overall competition, a legal order of billing has been implemented. With the introduction of SCM, the bills were merged into one single bill sent from the supplier, and the supplier is now responsible for the consumer's payment of taxes and levies. The supplier allocates the payment of taxes and levies to the DSO. This also means the supplier is responsible for all initial customer contact. Earlier, this responsibility was split with the DSO.

A DERA analysis from 2012 on competition in the retail market of electricity pointed to the challenge of inducing consumers to make an active choice of supplier as well as product. In 2016, the market also saw an increase in companies selling their products in other geographical areas of the national market, i.e. outside of their original supply obligation area.

Mandatory combined billing

The SCM was launched to enhance competition supported by greater transparency through the PCT and an updated DataHub (see below for more information on the DataHub) in order to make it easier for consumers to become more active in the electricity market. The consumers' awareness of the electricity market is fundamental to increase competition.

With regard to the involvement of consumers in the retail electricity market, a legal order of billing has been implemented with the aim to strengthen the overall competition. Along the introduction of

SCM, the bills of energy and transport were merged into one single bill (also known as *mandatory combined billing*) sent from the supplier. The supplier is now responsible for the consumer's payment of taxes and levies. The supplier allocates the payment of taxes and levies to the DSO. This also means the supplier is responsible for all initial contact to the customers. Earlier, this responsibility was split with the DSO.

DataHub – easy access to data for third parties and consumers
The Danish TSO, Energinet.dk, launched an updated[10] version of the DataHub in April 2016 with the introduction of SCM on the Danish electricity market.

All actors in the electricity market need to enter the DataHub to access specific data on metering data (meter readings) and master data (addresses etc.). All consumers can get access to the DataHub through their supplier and they have access to their own metering data. The electricity suppliers are free to choose how to visualise consumption data to their consumers. The standardisation of third party access has also been improved. Energy advisors, service providers and other third parties are now able to access the data of a specific consumer in a controlled and secure way. When a third party applies for access to consumer data, the consumer will verify the third party's identity by using a so-called *NemID*.[11] The consumer will then decide and control:

- Who can receive the data
- How much data can be received
- And for how long can data be accessed.

Investigations and measure to promote effective competition
In 2015-2016, there have been major investigations and measures to promote competition and to prepare for the introduction of the new supplier centric model launched on 1 April 2016. Approximately 50 grid companies, the national TSO (who is in charge of the Danish DataHub), 41 electricity suppliers, various IT companies, DERA, the Danish Ministry of Energy, Utilities and Climate, consumer and business organisations and others parties have invested huge resources in order to finish the complicated technical and regulatory transition to the new SCM model.

An overall estimate of the total spending of the introduction of SCM and the Danish DataHub indicates costs of approximately 1.2 billion DKK.[12]

In September 2016, DERA organised an online advertisement campaign to get the attention of more consumers on the new PCT, *elpris.dk*. The effect of the commercial initiative was quite significant in numbers of consumers using elpris.dk.

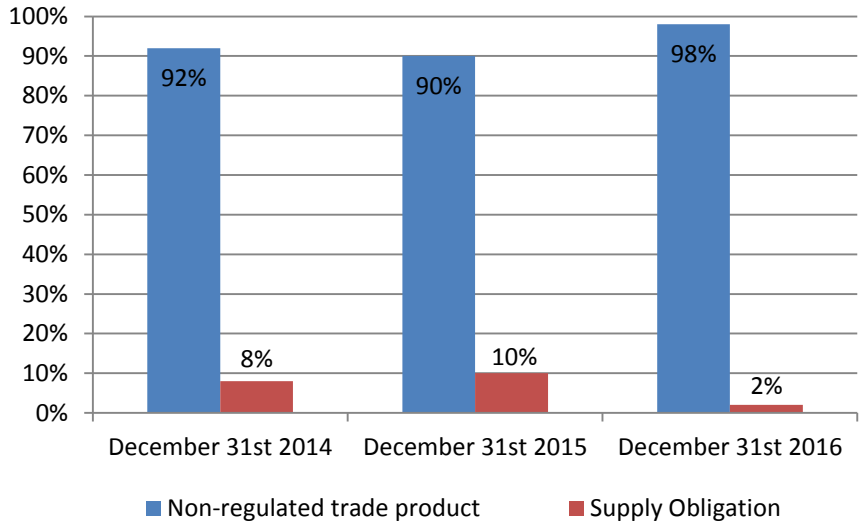
[10] The DataHub (version 1) started its operation 1 March 2013.
[11] NemID is common Danish secure *log-in* on the Internet, when doing online banking, finding out information from the public authorities or engaging with businesses that use NemID.
[12] Cf. answer 101-104 at the 19th of February 2016 from the Danish minister of energy, utilities and climate to the Committee of energy, utilities and climate of the Danish Parliament.

Types of products

About 98 pct. of the Danish electricity customers were supplied with market based products in 2016, and the level has increased significantly the last years, cf. figure 6. A few license holders, which were granted supply obligation licenses prior to 1 January 2013 for a period of 5 years, were still operating under the previous regulatory regime with prices regulated by DERA until their licenses expired in May 2017. They had, so far, been supplying electricity to around 2 pct. of the consumers.

However, the small share of customers left in the regulated market in 2016 does not give the full picture of the competition. Less than half the consumption in the competitive market was sold to customers who did not actively choose a product. This is due to the obligation to offer a so-called basic product to inactive customers, when the supply obligation product expires. All the customers were moved to a non-regulated product by their supplier (given passivity from the customer's side).

Figure 6 | Distribution of customers among different product types, 2014-2016



Source: DERA

Smart meters

In Denmark, the roll-out of smart meters continues at an increasing path. The Danish parliament has passed legislation that demands the installation of smart meters with hourly reading for all consumers by the end of 2020. Many of the grid companies have already installed smart meters and over half of Denmark's households, accounting for more than three-quarters of the consumption, already have a smart meter. The roll-out is required to be completed to all households by 2020 in order to comply with EU requirements and to meet Denmark's smart grid strategy. In this way, the government actively drives legislation and incentives for smart grids in order secure social benefits with integration of renewables and increased flexible demand.

Consumers, grid companies, suppliers of electricity and others are expected to benefit from the full implementation of smart meters to all consumers (metering points). Benefits for the consumers include being able to more accurately follow their consumption. Consumers can potentially save money by reducing their consumption at peak load, and to access new services from third parties. The grid companies can benefit with a more rapid response time to problems and the opportunity to improve investment planning with a better understanding of load pattern.

So far, only hourly meter readings of consumers with a consumption of electricity *above* 100,000 kWh per year have been allowed to be used in the final billing of the consumers. But recently, in May 2017, Energinet.dk announced that from December 2017, the suppliers can use available hourly meter readings *also* when billing consumers with an annual consumption of electricity *below* 100,000 kWh.

3.3 Security of supply

DEA is responsible for regulatory tasks relating to security of supply, including monitoring planning and approving new grids of more than 100 kV. For further information, see Energinet.dk's *"Systemplan 2016"* which is part of DEA's annual reporting.[13]

[13] To this date only in Danish: https://www.energinet.dk/Om-publikationer/Publikationsliste/Systemplan-2016

4. The gas market

4.1 Network Regulation

4.1.1 Unbundling

Certification of TSO

In October 2011, DERA adopted its draft decision on the certification of the Danish system operator, Energinet.dk, for electricity and for natural gas according to the rules for ownership unbundling.

DERA adopted its final decision on the certification of Energinet.dk in February 2012.

The legal status of the Danish TSO has not changed in 2016 or since the original certification, and it continues to be ownership unbundled.

In 2015, it was decided in a political agreement that Energinet.dk (gas) should purchase the gas distribution grid and upstream pipelines of DONG Energy, the major Danish gas company of which the Danish State is a majority shareholder. In May 2016, Energinet.dk purchased DONG's distribution grid for DKK 2.3 billion. Energinet.dk is also to buy DONG's upstream pipeline business, but the sales negotiations have been postponed but are, however, still expected to be completed at a later date.

The new activities of Energinet.dk are not expected to rise to any concerns in respect of the certification of Energinet.dk as a TSO.

Energinet.dk is the sole TSO in Denmark, and the gas transmission grid has a length of 924 km, cf. table 8.

Table 8 | Transmission system operator, 2016

Number of TSOs	Length of transmission grid
1	924 km

Source: The DERA secretariat

Unbundling of DSO

In Denmark, there are 3(4) DSOs and in 2016 the length of the distribution grid was approx. 18,224 km. In 2016, the distribution grid covered approx. 411,500 consumers, cf. table 9.

Table 9 | Distributions system operators, 2016

Number of DSOs	Length of grid	Total number of consumer metering points
3	18,224 km*	413,597*

Source: The DERA secretariat
Note: *Numbers from Energinet.dk.

The Danish Parliament has implemented a number of obligations in the Danish Natural Gas Supply Act para. 11 a. Together with the executive order No. 979 of 2011, these legal acts define a number of obligations the DSOs have to fulfil to ensure that they act without being affected by commercial interests of other vertically integrated associated companies.

Amongst these obligations are requirements to the management of the DSO. The management must be free of incentives to discriminate between associated and independent companies. To ensure that the management of the DSO is not affected by the interest of other companies within the group, it is decided that the directors, the board members, nor other influential employees with significant decision power can participate in the management of the group's gas production or trading companies.

With respect to the communication and branding of the DSOs, DERA monitors the communication interface toward the customers in accordance with the Natural Gas Supply Act para. 11 b and executive order No. 979 of 2011. The monitoring is executed to ensure that the branding of the DSO supports their own independent identity separated from the consolidated company and prevents that any associated company can benefit from the branding of the DSO (which otherwise would discriminate any independent competing company).

Furthermore, the DSOs are obliged to annually submit their compliance program as well as a report describing the measures carried out to ensure their fulfilment of the compliance program. DERA receives both the DSO's compliance program and the annual report and monitors the DSO's fulfilment of the requirements set out in art. 26.

The abovementioned obligations apply to all DSOs with more than 100,000 connected customers, cf. art. 26(4). In Denmark, 2 out of 3 DSOs meet the requirements of art. 26.

The license to distribute gas provides some limitations for the DSOs regarding activities, which the company can engage in when having a DSO license. The DSOs are restricted to act only within an independent company and exclusively to participate in license related activities. These requirements also contribute to ensure that the resources within the DSO companies are kept in the regulated company. Further, the DSOs' surpluses are regulated to prevent abuse of the DSOs' monopoly.

4.1.2 Technical functioning

Balancing services

The European network code on balancing (NC BAL) required national implementation by 1 November 2015.

The code was implemented in Denmark by 1 October 2014 (early implementation), introducing market based balancing. The Danish gas exchange, Gaspoint Nordic, serves as trading platform for market trading for the within-day product (title product) for balancing. The exchange has extended its opening hours (to 24/7) to service the new balancing model, and the DSOs now deliver metering

data for daily metered sites five times throughout the gas day. The model has full end-of-day cash-out and incentive-based balancing based on a helper/causer model.

In February 2016, the gas exchange announced that it has managed to sign a market maker agreement with a major Danish gas company to support short-term trading at the exchange. The company is committed to place within-day orders of 30 MW with a maximum spread of 0.25 EUR/MW.

Thus, since March 2016, there has been a market maker for the within-in product (title product) for all days of the year at Gaspoint Nordic.

In 2016, DERA approved certain adjustments to the Danish balancing model in order to adjust the model to market developments and shipper behaviour. The changes have been made in dialogue with the market and include a new way of calculating the neutral gas price which will in future be calculated on the basis of the within-day product exclusively. This change is related to the fact that there is now a market maker for the within-day product at Gaspoint Nordic. Another change is the introduction of one continuous trading window during the trading day, where the TSO can freely chose when to trade balancing gas. Previously, the TSO could only trade balancing gas at three specific trading windows during the day.

Finally, the level of the ”small adjustment” has been increased from 2.5 to 3 pct. to better reflect alternative market costs and to give more incentive for shippers to do their own balancing. In total, the balancing regime supports the development of a well-functioning short-term gas market.

Monitoring time taken to connect and repair
DERA monitors the time taken by the Danish TSO, Energinet.dk, to make connections and repairs. Every year, Energinet.dk prepares a report for DERA regarding this topic.

DERA does not monitor the time for the DSOs to make connections and repairs.

Monitoring access to storage, linepack and other ancillary services
According to the Danish Natural Gas Act, there is negotiated access to storage and linepack in Denmark. There is no price regulation under the Natural Gas Act, but DERA still has to make sure that third party access to storage is provided in a manner that is transparent, non-discriminatory and objective.

As of 1 January 2015, Stenlille storage facility was included in the Energinet.dk Group. From 1 May 2015, Energinet.dk Gas Storage introduced a new virtual storage point which means that the two physical storage facilities are operated as one storage in relation to the market and in the way storage customers nominate gas in and out of storage.

As of 1 November 2016, *Energinet.dk Gas Storage A/S* is now *Gas Storage Denmark A/S*, but the storage company is still fully owned by the Energinet.dk Group.

Gas Storage Denmark owns and operates two storage sites. One in *Stenlille* in the middle of Zealand, and one in *Lille Torup* in the northern part of Jutland. The two storage facilities are operated as one common storage point.

Gas Storage Denmark uses First-Come-First-Served (FCFS) and/or auctions (sealed bid or ascending clock) to sell storage capacity, and the total Danish storage capacity is approx. 1 billion m^3. Gas Storage Denmark is offering short term products (rest of year/month/day-ahead/within-day) and long-term products. Besides, Gas Storage Denmark is selling yearly and multi-yearly contracts both as Standard Bundled Units (SBUs) with different flexibility and as unbundled capacity according to the market demand. Increasingly, the Danish storage market is developing towards a situation, where capacity products are customised to storage customers' individual requests. This is also the result of the continued difficult market situation, forcing storage companies to go out in the market and meet customers' individual needs.

On the one hand, this is positive since market needs are met and innovative products are offered. On the other hand, it makes market access less transparent and the monitoring task more difficult.

As part of DERA's market monitoring pursuant to the Third Package market monitoring requirements, DERA monitors the storage market and its interaction with the overall Danish gas market.

DERA will monitor the flexibility market closely, and if storage competition and storage pricing seem to divert from the market, DERA will be ready to approach the legislator to discuss whether the present negotiated access regime can be sustained in the new monopoly situation with only one storage owner. For the time being, there is no indication that the monopoly situation in the Danish storage market can be abused, as the Danish flexibility market continues to develop with a high degree of competition.

Monitoring correct application of criteria that determine model of access to storage
In Denmark, there is negotiated access to storage. This is politically decided and supported by national law – based on the fact that storage is a competitive activity that also competes in a growing regional market and with other flexibility tools; e.g. new transmission infrastructure and more flexible contract structures.

DERA monitors the criteria supporting the choice of negotiated access. As mentioned, DERA will monitor access to storage. If competition, access conditions or product choices/prices would seem to suffer from the new storage situation in Denmark, DERA will approach the legislator to discuss if the access regime should continue to be negotiated or should in fact be changed to a regulated access regime.

Monitoring safeguard measures

A response to any supply crisis in the Danish gas system is provided within the overall crisis management system, which has been set up in Denmark to comply with the EU Regulation 994/2010 concerning measures to safeguard security of gas supply.

A new network code was introduced in the Danish gas market on 1 October 2012 in order to meet the requirements in the EU Regulation in the detailed market regulation.

Supply crises may be caused by geopolitical incidents, interruption of physical infrastructures, technical failures on production and processing facilities, major market distortions and/or similar events.

Non-market based measures cannot be applied at any pre-emergency level in the crisis management structure introduced by EU Regulation 994/2010 (Security of Supply).

At the emergency crisis level, non-market based instruments may be introduced only to the extent that purely market based instruments are not sufficient to effectively balance the gas system. The competent authority, DEA, will under the new crisis management system in accordance with EU-regulation 994/2010, article 10(5), inform the EU Commission when a supply crisis necessitates an escalation in the crisis management structure.

In Denmark, the level of protection is the maximum level allowed under the Security of Supply regulation, and market based instruments like commercial interruptibility are used to avoid having to declare emergency where the non-protected customers may ultimately be disrupted. Under the Danish commercial interruptibility regime, consumers above a certain consumption threshold may opt to participate in an auction where they place bids at what price they are willing to voluntarily cut off or reduce their consumption in case of a threatening supply situation. Thus, the TSO purchases the right to cut off consumers already in the alert phase. The products are called Hyper72 and Hyper3 and they indicate at what time (72 or 3 hours after an alert declaration) the successful auction bidders (consumers) have to cut off or reduce their gas consumption in a crisis situation.

Energinet.dk is responsible for providing information to the market whenever a critical situation may arise. Energinet.dk has the following three steps in its emergency supply preparedness; “early warning”, “alert” and “emergency”. The three steps make up the European gas market scale of warnings which were introduced on 1 October 2012 with the EU regulation concerning measures to safeguard security of gas supply. Depending on the consumers’ gas consumption, the Danish gas consumers are divided into protected and non-protected consumers.

In 2016, there were no national declarations of early warning, alert or emergency.

4.1.3 Network and LNG tariffs for connection and access

Transmission

There are no LNG (Liquefied Natural Gas) terminals in Denmark. Consequently, the following information applies only to gas transmission.

According to national law, DERA approves the tariff methodology for the Danish TSO, Energinet.dk. Energinet.dk sets the actual tariffs in accordance with the approved methodology and submits the resulting tariffs to DERA.

Energinet.dk is a completely state owned company which is not allowed to build up equity or pay dividends to its owner, the Danish Ministry of Energy, Utilities and Climate. Energinet.dk is regulated under a strict cost plus regime which means that the company can in principle recover only "necessary costs" by efficient operations and a "necessary return on capital". The TSO has to transfer any over-recovery back to the consumers through reduced tariffs – in principle in the calendar year following the calendar year which gave rise to over recovery. In extraordinary cases, the payback period may be longer in order to secure a stable price development. The same principle applies if Energinet.dk has an under-recovery, with the opposite effect for the consumers.

According to the Danish Natural Gas Supply Act, DERA has to approve the annual report of Energinet.dk. The decision on over over-recovery/under-recovery is part of this approval process. The regulatory scrutiny of the annual report also includes a review of the TSO's cost and asset base.

In 2013, a new methodology was approved and has been in effect also in the tariff year 2016. With the new regime, Denmark has moved away from uniform tariffs (postage stamp principle) and has introduced differentiated tariffs for the different entry/exit points in the Danish transmission system. The new regime introduced a new relationship between capacity and volume payments based on the actual annual split between variable and fixed costs. The capacity/volume split used to be fixed in the ratio 75/25 but is now adjusted on a yearly basis.

The approval of the differentiated tariffs was made temporary (a pilot period of 2 years). It was a requirement that the TSO should submit a new methodology after the pilot period based on empiric data on the use of the new pipeline from Egtved to Ellund and the new compressor station at Egtved.

The new infrastructure, and especially the compressor, has been used less than expected since its commissioning (primarily because of the market situation with a net export flow), and the data on use has been insufficient as to genuinely assess the validity of the initial cost distribution. Therefore, the pilot period of two years was extended to 2016.

Thus, in 2016, DERA reviewed the tariff regime and decided on some changes with effect from 1 October 2016. The main objective of the changes is to have a more even cost allocation across the system points that better reflect the actual use of the system and the benefits to the overall system

and the market of the new infrastructure, e.g. in terms of improved security of supply and better market integration.

Thus, a larger share of the capital costs for the new infrastructure has been transferred from the cross-border point Ellund (entry) to the Danish exit zone (end users) and the security of supply tariff which is also paid by all users. In addition, the distribution of the costs for the new compressor is made variable according to objectively defined flow scenarios.

Distribution

The Danish DSOs are subject to a revenue cap regulation. The revenue cap is set for the 3 DSOs for a four year period (currently 2014-2017). The revenue cap is set to allow the grid companies to have their costs of operations (by efficient use of capital) covered, and to allow them to cover the costs of historic debt, depreciations and return on new investments.

Before a new regulation period, DERA informs the DSOs about their expected revenue caps for each of the four years. The regulation is retrospective, and the expected revenue caps are revised, based on regulatory accounts.

DERA approves the companies' tariff methodology, the methodology of use, of terms and of connection and access to national networks. The approvals are conditioned on the methodology being set in a fair, objective and non-discriminatory manner. Further, the tariff methodology is set to prevent cross-subsidisation, i.e. according to the costs that the different grid users induce. Once the methodology is approved, a distribution network can set its tariffs accordingly and under respect of the company's revenue cap.

The distribution tariffs are set as volume charges, based on a methodology approved by DERA. DERA does not approve tariffs, but the DSOs have to report the tariffs to DERA when they change. The methodology was approved in 2005 and has developed on a continuous basis, sometimes independently for each DSO. For example, an adjustment to the methodology was approved in 2013, and new customers with large expected consumption can pay a lower unit price for distribution if they pay the full cost of the grid connection up front.

Tariffs for gas distribution are independent of distance and set to reflect the cost of delivery. The methodology ensures that all customers pay a high tariff for the first cubic meters delivered and a lower tariff for volumes that exceed certain intervals.

To prevent cross-subsidisation between transmission, distribution and supply activities, the companies must comply with the rules regarding entity, accounting and management unbundling, see section 4.1.1.

As a consequence of a political agreement made in 2015, aimed at introducing DONG Energy A/S on the stock exchange, Energinet.dk bought *DONG Gas Distribution A/S*, a DSO on gas distribu-

tion, in 2016. To ensure public ownership of gas distribution in Denmark, Energinet.dk bought 100 pct. of the shares in DONG Gas Distribution A/S. Since 1 October 2016, the company has been a subsidiary to Energinet.dk under the name *Dansk Gas Distribution A/S*. The contract had a value of DKK 2.3 billion.

4.1.4 Cross-border issues

Cooperation

DERA is involved in cross-border activities with Sweden. Sweden has no indigenous gas production and no gas storage or LNG facilities. Sweden therefore depends entirely on continuous Danish gas supplies for its consumption (approx. 1 billion m^3 per year). Security of supply is therefore a major issue for the Danish/Swedish cooperation. Further, DERA and Ei meet at regular intervals with the Danish gas exchange, Gaspoint Nordic, to discuss market development issues. In 2016, DERA has been actively involved in the Baltic Pipe Project (see below on cross-border infrastructure) and has cooperated extensively with the Polish regulatory authority, URE, on the preparation of the Open Season that has been launched in June 2017.

DERA and URE have e.g. met with the Danish and Polish TSOs and have coordinated their national decisions on capacity allocation rules for the Open Season. The Danish/Polish regulatory cooperation is expected to continue in 2017 and may include the preparation of an economic test and a coordinated CBCA decisions according to EU Regulation 347/2013.

Access to cross-border infrastructure, including allocation and congestion management

On 1 October 2013, a new 94 km gas pipeline in southern Jutland, from Ellund to Egtved, and a new compressor station in Egtved started operation. Together with the compressor station in Egtved, the new pipeline significantly increased the capacity of the gas transmission network and will allow Denmark to import sufficient natural gas quantities from Germany to cover both the Danish and Swedish consumption in the future – when gas production in the Danish part of the North Sea starts to decline.

The German TSO, Gasunie Deutschland, has also expanded the capacity on the German side of the Ellnd interconnection point, and by the end of 2016, the amount of firm capacity for Ellund (D > DK) is approx. 450,000 Nm3/hours.

Germany has implemented a short-term use-it-or-lose-it mechanism (capacity management procedure (CMP) measure) that creates additional firm capacity on a day-to-day basis at Ellund (exit Gasunie – entry Energinet.dk). However, it does not solve the challenge that (new) shippers may still face when trying to secure medium and long-term transport capacity into Denmark.

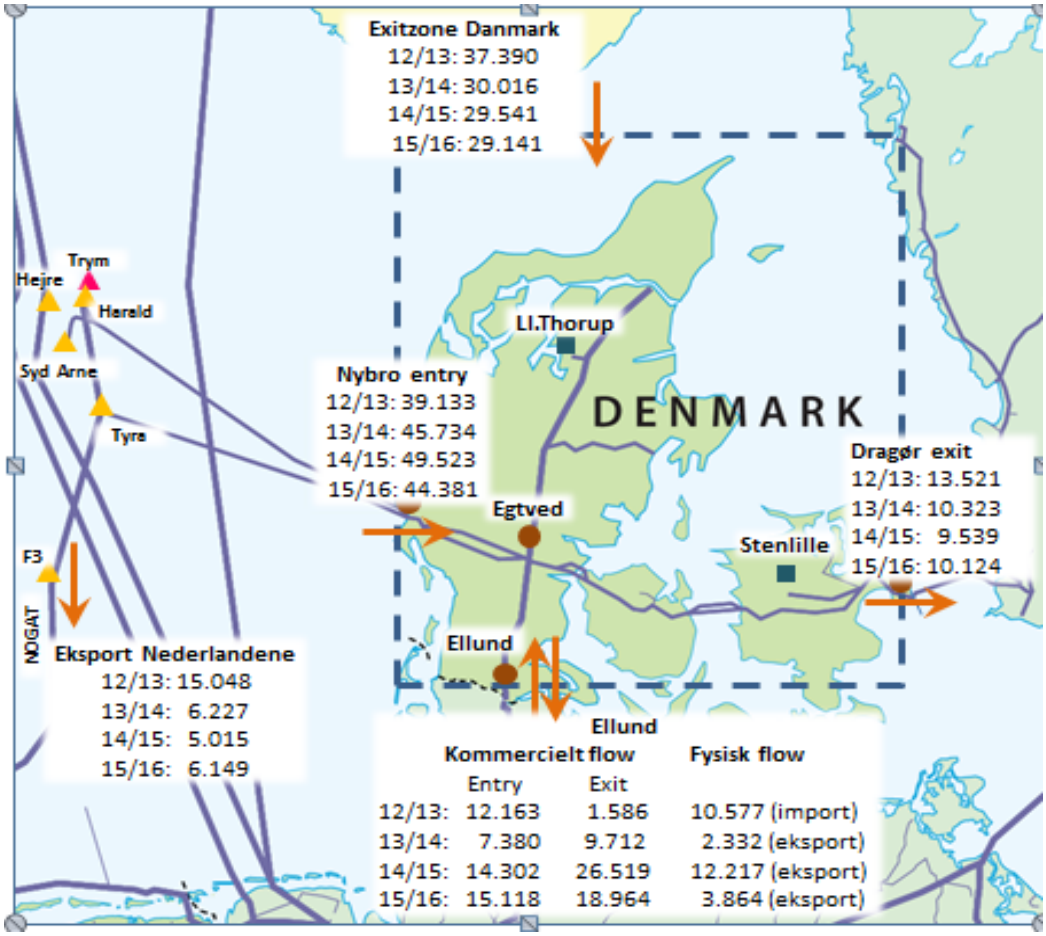
The expansion of the Danish (and German) gas transmission network has improved security of supply for Denmark and Sweden and facilitated (increased) competition in the gas market to the benefit of the consumers. Additionally, the Danish grid expansion provides a foundation for a better market integration between the Danish and German wholesale markets. It is already clear that the infra-

structure expansion (from 2013) has contributed significantly to reducing the price spread between the Danish gas exchange and the German hubs.

The Danish gas system consists of an exit-zone and two cross-border connection points Ellund (towards Germany) and Dragør (towards Sweden). Dragør is one-directional with no gas flow from Sweden to Denmark, cf. figure 7 for an illustration of the Danish entry/exits points – with flow figures for the gas years 12/13 up to and including 15/16.

Until 1 October 2013, it was only possible to import 2,303 MWh/h on an interruptible basis. However, today it is possible to import 7,700 MWh/h on a non-interruptible basis. The reserved capacity is much lower than the technical capacity for the import from Germany. Thus, there has not been taken full advantage of the new capacity level so far.

Figure 7 | Entry/exit points and transport flows of the Danish transmission system (Gwh), 2012-2016



Source: DERA, based on figures from Energinet.dk

In general, there is no congestion in the Danish transmission system, and in view of the expected future fall in consumption and the improved capacity situation it is very unlikely that any congestion will occur in any foreseeable future.

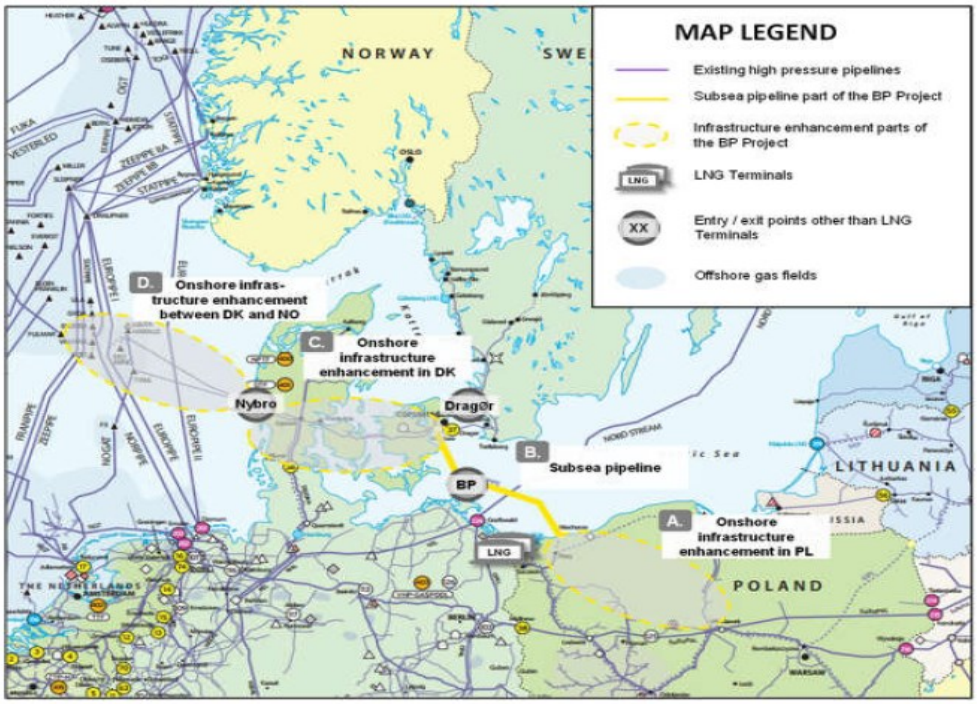
DERA approved a Danish congestion management procedures (CMP) scheme in September 2015, and the scheme came into effect on 1 October 2015. The CMP instruments are oversubscription-and-buy-back, surrender of capacity and long-term-use-it-or-lose-it – implemented in line with the Commission's guidelines for implementation. In 2016, there has been no use of the CMP instruments.

The Polish gas TSO, (GAZ-SYSTEM S.A), and the Danish gas TSO (Energinet.dk) are investigating the possibility of establishing a connection between the Polish and the Danish gas transmission systems – the Baltic Pipe Project.

Figure 8 | Description of the Baltic Pipe Project

The project will consist of four key components:

A. Onshore infrastructural enhancement in the Polish transmission system
B. Subsea pipeline connecting Polish and Danish transmission systems
C. Onshore infrastructural enhancement in the Danish transmission system
D. Offshore infrastructural enhancement between Denmark and Norway



Source: Energinet.dk and GAZ-SYSTEM – Model Paper

With the assistance of external consultants, the two TSOs have concluded a EU supported feasibility study – *"Feasibility Study regarding the PCI Poland-Denmark interconnection Baltic Pipe"* – for the project by the end of 2016.

The feasibility study was finished in December 2016, and the study shows that there are substantial socio-economic benefits from the project for both Denmark and Poland.

The main objectives of the Baltic Pipe Project are to further strengthen supply diversification, market integration and security of supply in Poland and in Denmark – and secondly in the Central and Eastern Europe (CEE) and Baltic region.

The Baltic Pipe Project is included in the second European list of PCI projects (Projects of Common Interest), adopted on 18 November 2015. The total costs of the project are estimated to be around 2 billion euros, and the transport capacity of the Baltic Pipe will be around 10 bcm/year.

Monitoring investment plans and assessment of consistency with Community-wide network development plan

The regulatory authority regarding the Danish TSO's (Energinet.dk) investments is divided between DEA and DERA, where DEA is responsible for the approval of Energinet.dk's investment plans etc. as well as approval of the actual investments.

DERA is responsible for the monitoring of Energinet.dk's investment plans and actual construction/building plans in the context of compliance with the communitywide TYNDP comprises projects of common interest as well as other cross border investment projects by Energinet.dk. The monitoring process has revealed no discrepancies between Energinet.dk's plans and the community wide TYNDP.

Energinet.dk is responsible for preparing investment plans (transmission) and submits the plans to the Danish Ministry of Energy, Utilities and Climate (owner of Energinet.dk) for approval and to DERA for monitoring compliance and compatibility with the European TYNDP.

Energinet.dk is responsible for assessing the need for new infrastructure and for planning possible (transmission) network expansions according to executive order No. 1034 of 11 November 2011.

Energinet.dk published the present network development plan in 2013 covering the long-term (2032) structure of the transmission network as well as the network structure on short- (2017) and middle-term (2022). Regulatory scrutiny of the network development plan did not reveal discrepancies between the national plan and projects and the community wide projects of common European interest and DERA made no recommendations for changes in the network development plan or individual investment projects. In February 2017, Energinet.dk published a 10-year plan covering the company's planned reinvestments, extensions, strengthening and redevelopment of the grid.

4.1.5 Compliance

Compliance of regulatory authorities with binding decisions of the Agency of the Commission and with the Guidelines

According to the Danish Natural Gas Supply Act § 41 b, DERA is obliged to comply with any legally binding decision of the Agency and the Commission.There have been no compliance issues in 2016.

Compliance of transmission and distribution companies, system owners and natural gas undertakings with relevant Community legislation, including cross-border issues

Under the Danish Natural Gas Supply Act, DERA has the competence to order compliance whenever a breach of Regulation No. 715/2009 is registered. Additionally, DERA has the power to carry out inspections and the possibility to impose fines when an order to comply is not followed.

According to Danish Natural Gas Supply Act § 10 c, certified undertakings are under an obligation to report to DERA any planned transactions that could impact compliance with the conditions for certification.

The certified TSO must submit a yearly financial report to DERA for approval of species revenues and costs related to system operation on electricity and gas.

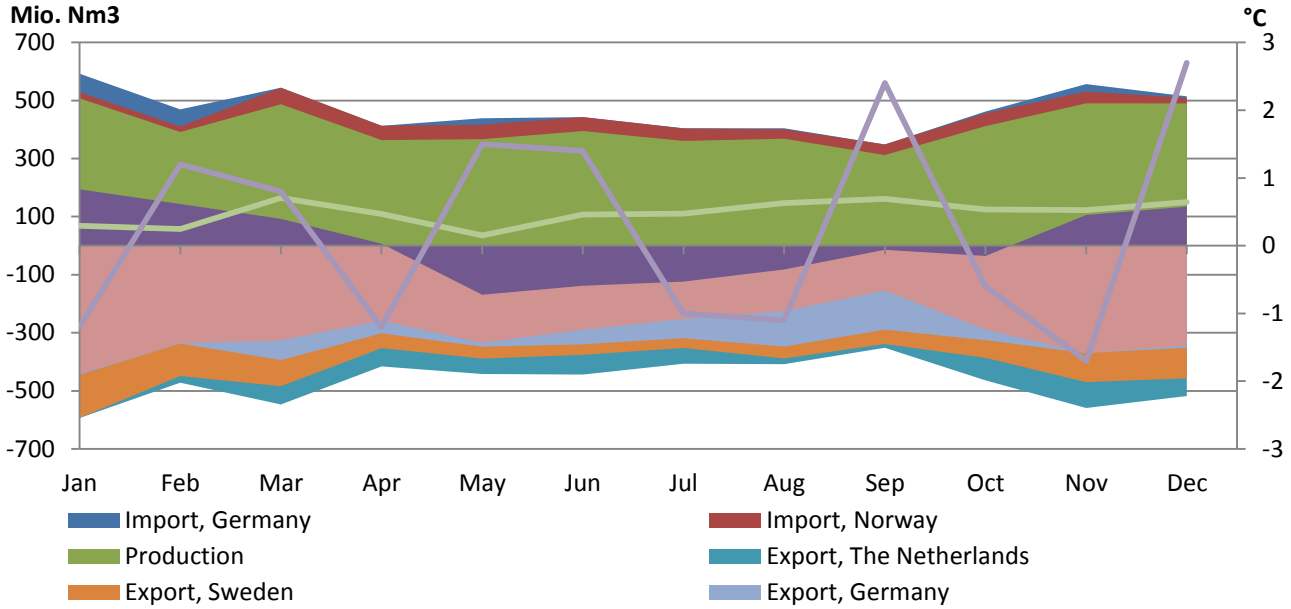
4.2 Promoting competition

4.2.1 Wholesale markets

In 2016, the Danish production of natural gas was 4,269 million Nm3 which is a small reduction compared to 2015. Danish gas exports amounted to 2,004 million Nm3 in 2016. The export to Germany made up 27 pct. which is a decrease from 42 pct. in 2015. The remaining export went to Sweden (43 pct.) and the Netherlands (29 pct.). In 2016, Denmark imported 646 million Nm3 – 71 pct. from Norway and 29 pct. from Germany.

The Danish natural gas fields are located in the North Sea, and production from the gas fields is transmitted to Denmark through Nybro or exported to the Netherlands. Furthermore, Denmark exports natural gas to Sweden via Dragør and to Germany via Ellund. Denmark imports natural gas from Germany via Ellund and from Norway via Nybro. The Danish gas production has been decreasing for a long period but Denmark continues to be and was a net exporter in 2016, cf. figure 9, and has been a net exporter for more than 10 years.

Figure 9 | Danish gas consumption, export, import, production and storage, 2016



Source: The DERA secretariat based on data from DEA and Danish Meteorological Institute
Note: Export and consumption are represented with negative values in the figure.

In July 2016, Energinet.dk announced that the export capacity on the Danish side of Ellund would be halved temporarily. The capacity was reduced from 5 July to 31 August 2016. In July 2016, the Bevtoft biomethane facility came direct onto the transmission grid in Denmark close to the Danish/German border at Ellund. Because of difference in gas quality specifications in Denmark and Germany there was – as a result of the injection of biomethane in the Danish system from Bevtoft – a risk of reduced capacity at the German side of Ellund. To avoid the risk of the loss of full capacity at the German side of the border, Energinet.dk made a preventive reduction of the capacity at the Danish side of the border – that means Energinet.dk temporarily closed the one of two transmission pipelines from Egtved to Ellund. This implied that the injection of biomethane from Bevtoft remained in the Danish transmission grid.

To avoid future reductions in the export capacity at Ellund Energinet.dk and the adjacent TSO, Gasunie Deutschland, have developed a procedure for handling the biomethane in the pipeline. Additionally, Energinet.dk has established a "cross-over connection" between the parallel transmission pipelines at Bevtoft. The purpose is to route the biomethane direct to Danish consumption which will reduce the risk of reduction of the export capacity at Ellund.

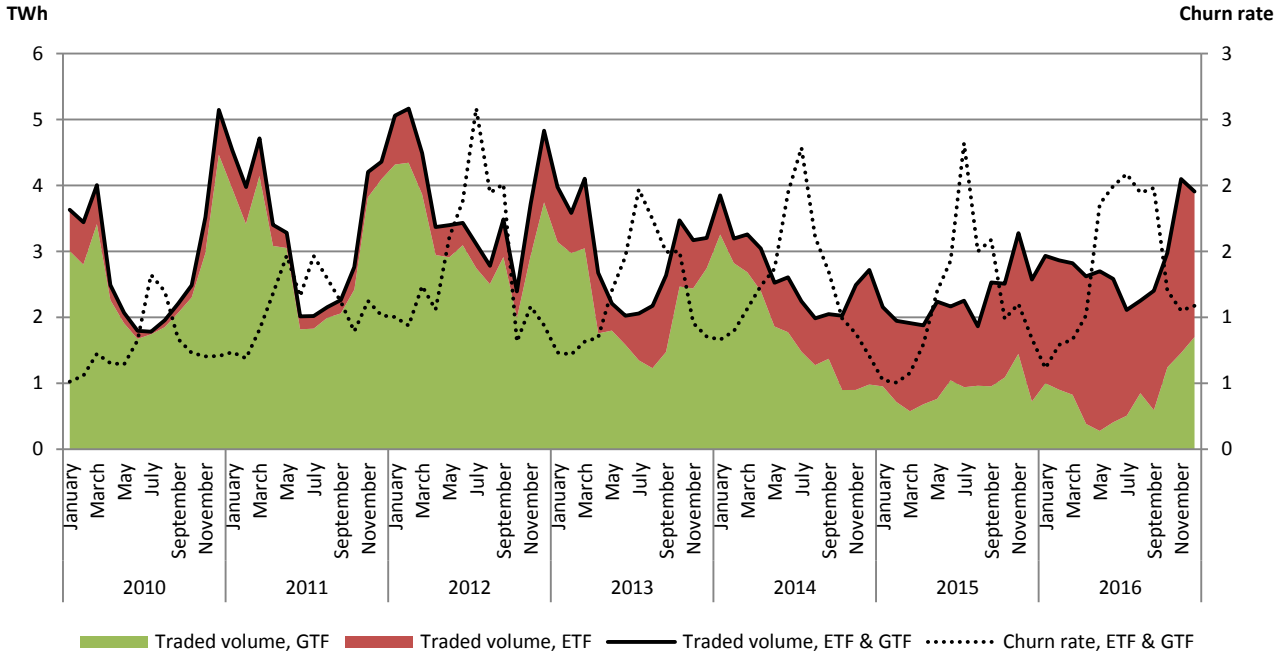
4.2.1.1 Monitoring the level of prices, the level of transparency, the level of effectiveness of market opening and competition

DERA monitors the wholesale market for natural gas in Denmark through semi-annual market monitoring reports and through ad hoc analyses.

The Danish gas market has two virtual trading facilities: Gas Transfer Facility (GTF), which facilitates delivery of bilateral trades, and Exchange Transfer Facility (ETF), which is used as the delivery point for trades carried out on the Danish gas exchange Gaspoint Nordic (GPN). GTF is owned by the Danish TSO, Energinet.dk. Gaspoint Nordic was until July 2016 partly owned by Energinet.dk and the European Energy Exchange, EEX, where EEX took over full ownership of Gaspoint Nordic. Gaspoint Nordic is now owned by Powernext, which is an EEX subsidiary company. After the change in ownership Gaspoint Nordic's gas products have also been available at the European trading platform PEGAS since November 2016.

Gaspoint Nordic is becoming increasingly more important every year, and the share of traded volume delivered on ETF has increased significantly during the last couple years, cf. figure 10. In the last quarter of 2014, the volume on the ETF exceeded the volume on GTF and this trend has continued in 2016. In the second part of 2016, there has been a tendency for an increase in traded volume on the GTF. In 2016, the traded volume on ETF reached 24.1 TWh. Thereby, the volume delivered on ETF made up 70 pct. of total volumes on ETF and GTF. The traded volumes on GTF was 10.2 TWh in 2016

Figure 10 | Volumes and churn rate on ETF and GTF, 2010-2016

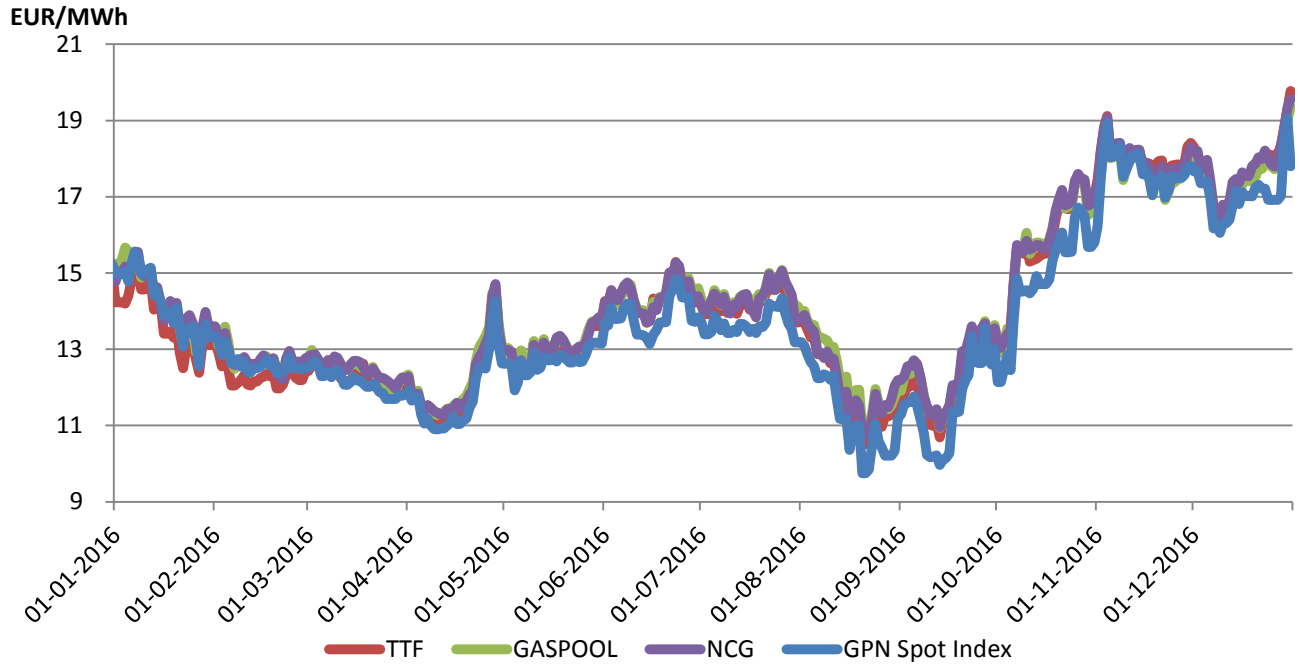


Source: The DERA secretariat based on data from Gaspoint Nordic and Energinet.dk
Note: Exchange Transfer Facility (ETF) is the delivery point (a virtual trading point) of all contracts at the Danish gas exchange Gaspoint Nordic. Gas Transfer Facility (GTF) is the delivery point (a virtual trading point) of all OTC- contracts.

The spot price on Gaspoint Nordic is highly correlated with the spot prices on the two German gas hubs, NCG and Gaspool, and the Dutch gas hub, TTF, cf. figure 11. The average spot price of Gaspoint Nordic was 13.63 EUR/MWh in 2016. In August 2016, the price on Gaspoint Nordic dropped to 9.74 EUR/MWh which is the lowest spot price since 2009. By the end of 2016, the price on Gaspoint Nordic

increased significantly (19.05 EUR/MWh) compared to August 2016. But overall, the gas price has been relatively low in 2016 compared to previous years.

Figure 11 | Spot prices on Northern European gas hubs, 2016



Source: The DERA secretariat based on data from Gaspoint Nordic and Gaspool

Analysis on the competition in the wholesale natural gas market

In early 2016, DERA published an analysis on the competition in the wholesale market for natural gas in Denmark.[14]

Relevant conclusions from the analysis include:

- **Access to transport gas to the Danish gas wholesale market:** DERA considers that, up to 2023, contractual bottlenecks could arise at the German side of Ellund, if import needs increase. In dialogue with Bundesnetzagentur, DERA will monitor contractual bottlenecks at Ellund, and DERA will monitor how the common European rules for managing bottlenecks (congestion management procedures, CMP) are being applied.

- **Transmission tariffs and competition:** DERA considers that too high tariff differences between Entry/Exit points in the Danish system could restrict competition in the Danish gas market. There is a limit as to how much tariff differentiation can be tolerated and how much higher the tariff at Ellund (entry) can be compared to other points before it will reduce continental gas imports via Germany. However, it is difficult to state exactly when the legal re-

[14] *"Analysis of Competition on the Danish Wholesale Market for Natural Gas"*, English summary, DERA, January 2016.

quirement that tariffs shall facilitate efficient gas trade and competition will become more important than the legal requirement that tariffs shall avoid cross-subsidies between network users – meaning that the individual network users shall in principle pay for the costs they generate.

- **Competition on the Danish gas storage market:** DERA considers that the Danish gas storage market (with two physical storages gathered in one storage company with one common storage point) will not inhibit competition in the Danish wholesale market. Because of the risk of cross-subsidisation, in its supervision of storage and transmission, DERA will especially focus on purchases by the TSO of storage services.

- **Transparency in the North Sea:** DERA will enter into dialogue with relevant stakeholders to examine the possibilities to publish data on gas flows to the Netherlands, i.e. via Tyra Vest-F3. Such flow data will provide market players with a better understanding of the amounts being transported to the Netherlands and the Danish gas market.

Upstream
In November 2016, DERA decided on the tariff to be paid to DONG Energy for transporting natural gas in DONG's pipeline from the Tyra production field in the North Sea to the gas processing plant in Nybro on the west coast of Denmark, the so-called upstream system. DONG Energy Salg & Service A/S owns the upstream system which is operated by DONG Offshore Gas Systems A/S. DERA ordered DONG to set the tariff to DKK 0.0575/m3 (2012 prices) in transport agreements concluded by the company with Maersk Energy Marketing A/S in the period from November 2012 to March 2014.

The case derives from a complaint from Maersk Energy Marketing A/S to DERA in November 2014 about the terms and tariffs for transport of natural gas in the upstream system for the period November 2012 to March 2014. In the complaint, Maersk Energy Marketing A/S referred to DERA's previous decision from January 2014, which reduced the tariff from DKK 0.10/m3 to DKK 0.0575/m3 (2012 prices) in transport agreements concluded by Maersk Energy Marketing A/S and DONG in the period July 2011-October 2012. This decision by DERA was confirmed by the Energy Board of Appeal in June 2014. DONG has subsequently brought this case before the courts, and the case is now pending at the Western Division of the Danish High Court.

4.2.2 Retail market
The Danish gas market was fully liberalised by 1 January 2004, resulting in Danish gas consumers being able to freely choose between gas suppliers. Furthermore, there are no barriers for suppliers to enter the retail market for natural gas as no permits or registrations are required to enter the market.

Currently, there are 21 suppliers offering natural gas products to Danish end consumers. Two of the suppliers are obliged to supply gas to consumers who do not have an agreement with a gas supplier.

4.2.2.1 Monitoring the levels of prices, transparency and effectiveness of market opening and competition

In October 2011, the Danish Ministry of Energy, Utilities and Climate implemented new rules on monitoring of the electricity and natural gas markets. However, DERA had already begun monitoring the market prior to this date.

The Natural Gas Supply Act assigns the task of promoting transparency in the retail market of natural gas to DERA. DERA has appointed (cf. § 8 paragraph 3 in BEK 771 from 8 August 2015) the consumer homepage www.gasprisguiden.dk to Energinet.dk where information on products and prices are available and comparable – and to which all suppliers are obliged to report prices and terms. DERA has the regulatory oversight of the price comparison tool which is operated by Energinet.dk. When monitoring prices and the transparency of contractual obligations, DERA makes use of the price comparison tool. All gas suppliers are represented at the price comparison tool www.gasprisguiden.dk.

DERA publishes quarterly statistics for retail gas prices for Danish households. The statistics include prices for a representative Danish household (with a yearly consumption of 20 MWh equivalent to 1,700 m^3). The statistics are composed of private consumer prices, where the weights corresponding to the suppliers' market shares are applied. The quarterly average is a consumption volume-weighted average. Consumer prices increased slightly during 2016, but from a very low level, cf. table 10. The quarterly retail prices for 2016 ranged from 71.7 to 75.4 EUR/MWh

Table 10 | Gas retail prices for households in Denmark, in euros, 2016

EUR/m^3	Q1 2016	Q2 2016	Q3 2016	Q4 2016
Gas price	0.21	0.21	0.22	0.25
Distribution	0.14	0.14	0.14	0.14
Taxes	0.35	0.35	0.34	0.34
PSO	0.00	0.00	0.00	0.00
VAT	0.17	0.17	0.18	0.18
Total price (EUR/m^3)	**0.87**	**0.87**	**0.89**	**0.92**
Total price (EUR/MWh)	**71.78**	**71.71**	**72.84**	**75.35**

Source: DERA

Supervision of prices

The amendment of the Natural Gas Supply Act in 2011 changed DERA's supervision of the regulated default prices for gas customers who do not actively choose a gas supplier. Since May 2013, DERA has supervised the price of the regulated default products (also known as *supply obligation products*), which are decided through tenders of supply obligation licenses. The amendment of the Natural Gas Supply Act also introduced a *basic product* which acts as gradual phase-out of regulated gas products. At the end of the supply obligation license period, customers who have received a supply obligation product and who have not actively chosen a new supplier are automatically trans-

ferred to a basic product. The price and conditions of the basic product must correspond to those of the previously delivered supply obligation product. Furthermore, the basic product must be available to the customers during the following period of supply obligation licenses, however, not more than three years. DERA oversees prices and conditions of the basic product. In general, DERA's supervision has found that suppliers of both supply obligation products and basic products comply with the rules.

Licenses for the right to supply a *supply obligation product* are granted by the DEA. Until now, two auctions of licenses have been completed; one commenced in 2013 and one 2016. As a license applies for 3 year, licenses granted in 2016 expire in 2019.

20 companies are registered as gas suppliers in the Danish natural gas system, and two suppliers have affiliated connections to the DSOs (NGF Nature Energy and HMN Natusgas). Until May 2016, a third supplier had an affiliated connection to a DSO (DONG Salg & Service) before DONG Energy's gas distribution was sold to the Danish TSO Energinet.dk and is now called DGD (Danish Gas Distribution).

Box 1 | The supply obligation product and the basic product

Supply obligation product: *The supply obligation product is a default product which is supplied to gas customers who have not actively chosen a gas supplier. The price of the supply obligation product must not exceed the wholesale price of natural gas with an additional charge to cover a number of costs (storage and other flexibility costs, costs of transmission outside Denmark, contribution margin and subscription) plus transmission costs within Denmark. The price is determined on a monthly basis.*

Suppliers of supply obligation products are found through tenders of supply obligation licenses. The current license period started 1 May 2016 and ends 31 March 2019.

Basic product: *Customers, who have previously received a supply obligation product customer and have not chosen a new supplier before 1 May 2016, will receive a basic product from their existing supplier. The price and conditions for the basic product must correspond to the price and conditions of the now abolished regulated supply obligation product. The basic product must be available to the customers during the following period of supply obligation licenses, however, not more than three years. The price is determined on a monthly basis.*

The data exchange in the natural gas market takes place at non-discriminating terms, and all suppliers have access to relevant data. At the moment, there is no process of implementing smart meters on the natural gas market.

Complaints by household consumers due to inquiries resulting in a formal case are monitored and handled in cooperation with the Energy Supplies Complaint Board.

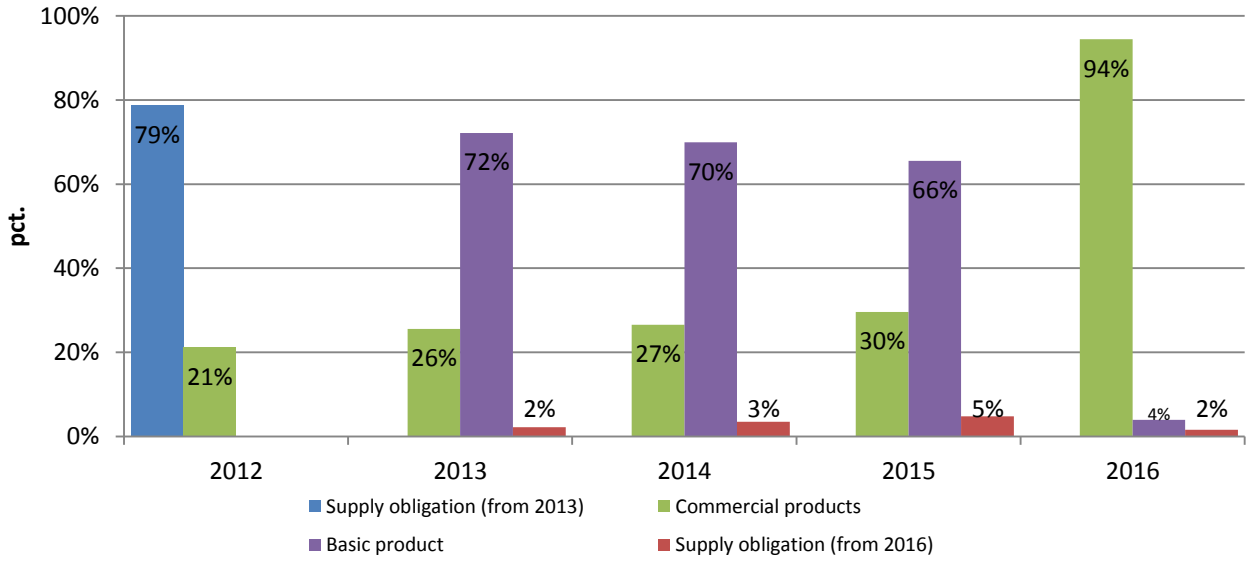
4.2.3 Recommendations on supply prices, investigations and measures to promote effective competition

Recommendations on supply prices

The Danish gas retail market is fully liberalised. Accordingly, all gas customers in Denmark have access to a competitive gas market. However, the customer must actively choose a commercial supplier and accept a supply contract to enter this market.

As of May 2016, the majority (around 94 pct.) of Danish gas customers are supplied at unregulated prices which are not supervised by DERA. The remaining 6 pct. are supplied at supply obligation products and basic products, cf. figure 12. The supply obligation products and the basic products are currently supplied by two gas suppliers, and DERA is continuously supervising the prices of these products.

Figure 12 | Distribution of consumers on various types of products



Source: DERA numbers based on data from gas suppliers

Investigations and measures to promote effective competition

Analysis of the competition in the gas retail market

In the fall of 2014, DERA published an analysis about the competition in the gas retail market. The analysis concluded:

- Gas consumers do not have sufficient incentive to make an active choice of suppliers or products.
- The price of the supply obligation product (and some of the basic products) is so low that it is difficult for independent suppliers to compete in the gas retail market.
- The low prices reinforce the lack of consumer activity in the retail market in relation to choice of supplier and product.

The low price levels could pose as a risk to the incentive to be a gas supplier in the retail market for gas. If suppliers choose to exit the market, this could increase market concentration and result in higher prices in the long run. The market concentration in the Danish gas retail market, measured using the Herfindahl-Hirschmann Index (HHI), is high, but has slightly decreased compared to 2014, cf. table 11. Table 11 shows the current market situation as well as scenarios where small suppliers exit the market.

Table 11 | Market concentration index (HHI) for the retail gas market

	2016	2015	2014
HHI, volume	3,745	3,484	3,648
HHI, number of customer	3,924	3,782	4,161

Source: The DERA secretariat
Note: A market with a HHI above 1,800 is considered a concentrated market

The analysis pointed to a number of challenges in the Danish retail gas market related to the DSOs and the relationship with the suppliers:

- Billing: Two bills if the consumers choose a supplier not connected to the DSO
- Data exchange: Different data setup amongst the DSOs
- Vertical integration of suppliers and DSOs: Consumers have difficulties identifying whether they communicate with the supplier or the DSO

Finally, the analysis resulted in a number of recommendations related to competition and regulation of consumer prices, which have been included in the work of a Governmental Committee investigating the regulation of the gas market:

- The regulation of prices (i.e. the prices of the supply obligation and the basic products) should be abolished
- The introduction of a supplier centric model
- The introduction of standardised demands concerning data exchange between DSOs and suppliers
- Rebranding of the Danish DSOs

4.3 Security of supply

The Danish Energy Agency (DEA) is the competent authority for security of supply, including the monitoring of national network and planning and approval of major infrastructure investments etc.

In 2016, there have been no disruptions in the physical supply of natural gas to the Danish (and Swedish) gas market and therefore no national declarations of early warning, alert or emergency.

In March 2017, the Danish government reached an agreement with the Danish Underground Consortium (DUC) which will facilitate future oil and gas investments in the Danish North Sea. The agreement supports a two-figure billion DKK to be invested in oil and gas extraction in the North

Sea by rebuilding the major Danish production platform for gas, the Tyra facilities. This allows for the possibility to generate up to 26 billion DKK for Denmark when looking to 2042. A full redevelopment will restore the current infrastructure, including the gas processing hub and five surrounding satellites.

However, Tyra will have to close down for maintenance, and during the shutdown period (December 2019 until March 2021) all gas for the Danish (and Swedish) market will have to be imported from Germany via the IP Ellund. Under normal conditions, the capacity at Ellund (see above) will be sufficient to cover the combined Danish and Swedish consumption, and the import capacity together with the total Danish storage capacity (withdrawal rate of approx. 16 million m3/day and total capacity of approx. 1 bcm) will be sufficient to cover also shorter periods of extremely high demand or extreme temperatures. So only in case of prolonged cold winter spells should the Danish and Swedish supply situation be endangered by the platform shutdown.

5. REMIT

DERA is a national regulatory authority in relation to Regulation (EU) No 1227/2011 of the European Parliament and of the Council on wholesale energy market integrity and transparency (REMIT). REMIT establishes a sector-specific market monitoring framework to detect and prevent market abuse in European wholesale energy markets. It provides for the monitoring of wholesale energy markets by ACER in close collaboration with national regulatory authorities, hereunder DERA.

In 2016, DERA contributed to this collaboration by its participation in various ACER working groups. Moreover, DERA participates on an ad hoc basis in REMIT related task force work.

Regional cooperation

Regionally, DERA focused on collaboration with the Nordic and Baltic regulators to ensure a coordinated and consistent regional approach to the enforcement of REMIT and regional monitoring.

Through 2016, DERA continued its formalised cooperation with the Danish Gas Exchange, Gaspoint Nordic, and the Nordic power exchange, Nord Pool. DERA also continued to participate in a REMIT related working group under Nord Pool Regulatory Council which primarily deals with specific issues in relation to REMIT and the general cooperation between regulators and the power exchange. DERA has an established cooperation with Nord Pool Market Surveillance which monitors trading activities and price formation within their market areas. In accordance with Article 15 of REMIT, Nord Pool notifies DERA when having reasonable suspicion that a breach of Article 3 (insider trading) or Article 5 (market manipulation) of REMIT has occurred. DERA has the investigatory and enforcement powers necessary to ensure that the prohibitions set out in Articles 3 and 5 are applied.

Table 12 | REMIT investigations closed in 2016

Investigations closed by DERA	2016
Electricity	2
Natural Gas	

Source: The DERA secretariat
Note: Number only includes investigations carried out and closed by DERA in 2016.

Both cases were investigated with reference to the prohibition on market manipulation in Article 5 of REMIT and were closed after investigations by DERA. No further actions were commenced.

Actions in 2016

On 7 October 2015, ACER began its first phase of data collection. This phase of reporting encompassed reporting of all orders and trades that arise from activity on organised market places (OMPs) and fundamental data from ENTSO's central transparency platforms. Due to the second phase of

data reporting, which started on 7 April 2016 with the reporting of remaining over the counter (OTC) standard and non-standard supply contracts, transportation contracts and reportable fundamental data from TSOs, LNG system operators (LSOs) and storage system operators (SSOs), DERA received more inquiries from market participants during the spring of 2016 than usual.

On 22 November 2016, DERA invited interested parties to join the 4th seminar on REMIT in Copenhagen. Through regular seminars DERA aims to share with all interested parties the latest REMIT developments. One of the main topics of the seminar was the intraday markets. DERA had the pleasure of welcoming the team leader of the ACER Market Conduct and Policy, Mr. Antonio Santos to give a presentation on market abuse in the intraday market, focusing on specific areas of concern.

Another important focus was the new section 9 of the *ACER Guidance on the application of REMIT*, focusing on the obligations of persons professionally arranging transactions (PPATs) in wholesale energy products. Being PPATs, energy exchanges are to proactively monitor the wholesale energy markets and thereby contribute to their proper functioning. To speak on this topic, DERA had the pleasure of introducing Nord Pool and EPEX Spot to present their approach to market surveillance and REMIT Article 15 compliance.

DERA finds it essential that market participants are informed about any REMIT requirements and obligations on their end. A market participant, DONG, was invited to do a presentation on REMIT compliance from the perspective of a large market participant.

DERA did a presentation on REMIT in Denmark, focusing on the cooperation and coordination of tasks, investigation and enforcement – and the current state of affairs in regards to REMIT activities. The attendance of stakeholders reveals an increasing market interest in REMIT.

National regulatory authorities are to meet ACER IT requirements in order to gain access to the information reported to ACER. After having placed high priority on collaboration with ACER on IT security in 2016, DERA was granted access to data reported to ACER in spring 2017.

6. Consumer protection and dispute settlement in electricity and gas

6.1 Consumer protection

Consumer protection

The consumer protection is implemented in executive order No. 1233 of 2015 regarding consumer protection on electricity and executive order No. 1354 of 2014 regarding consumer protection on gas.

The executive orders on consumer protection also contain rules regarding the obligations and limitations of the right to modify contractual conditions. Every end-user has the right to change supplier free of charge (with respect to the contractual obligations between the parties). Moreover, the supplier is prohibited by law to bind consumers contractually longer than six months.

The supplier centric model

The supplier centric model (SCM) has been in force since 1 April 2016. Prior to the implementation of the SCM, electricity suppliers could be licensed as the default supplier of a certain network area. The universal service obligation obliged default suppliers to supply electricity to all consumers (within their licensed area) who did not exercise the right to actively choose a supplier. The licensed default supplier provided the inactive consumers with electricity at regulated prices approved by DERA.

Following the implementation of the SCM, the licensed default supplier mechanism is no longer in force, and the universal service obligation has been substituted by a supply obligation.

Consumers must now actively choose their supplier. Correspondingly, all suppliers are obligated to provide electricity to consumers – within the network area where the supplier operates – upon request and payment by the consumer.

There are only limited exceptions to the main rule that consumers must actively choose their supplier. In case of e.g. a supplier's bankruptcy, a certain mechanism regulated in detail in the Danish Electricity Supply Act ensures the continued supply of electricity to consumers affected by the bankruptcy of a supplier.

The supply obligation of electricity companies applies only to household consumers and therefore not companies or public authorities.

Vulnerable consumers

Vulnerable consumers are handled in the social security system. DERA continuously works with securing general safeguards for the consumers through approving the methods applied by the DSOs.

Access to information: Consumer data

Consumers are ensured the right to receive their consumer data free of charge.

The DataHub is an IT platform owned and operated by the Danish TSO, Energinet.dk. The DataHub handles all data communication between market participants in the Danish electricity market. The conditions for access to the DataHub are set according to general rules which must be approved by DERA.

All consumer data is registered in the DataHub. Consumers have the right to access their data in the DataHub, e.g. meter readings, and no additional costs shall be charged to the consumer for that service. They can do this on the public Danish website *Eloverblik.dk*.

Billing information
The requirements regarding billing information is implemented in executive order No. 1400 of 2015 on electricity billing and executive order No. 937 of 2006 on gas billing.

Following the implementation of the supplier centric model, electrical suppliers are responsible for all communication with the consumers, including billing. Now consumers only receive one electricity bill, and only from the supplier. The bill is simplified, free of charge and is based on data extracted from the DataHub.

The objective of the rules regarding *a single bill* is to make market access for companies not vertically integrated less burdensome. The simplified bill provides the consumer with a better overview of the different price elements. This includes an overview of price elements that vary depending on the consumer's consumption, which are fixed, and which are subject to competition.

Hence, there is only one bill containing net tariffs, supplier service etc. The focus of the bill's design is to increase consumer awareness and flexibility by giving a better overview of the price elements, and thereby providing an incentive for consumers to be active on the energy market.

Furthermore, on the public website *Elpris.dk*, consumers have access, free of charge, to a tool comparing the prices on electricity products offered by suppliers. The website is by law operated by DERA.

Energy sources, environments impact etc.
The specific requirements concerning consumers' right to receive information on energy sources, environmental impact and comparison of consumption have been implemented in the executive orders No. 830 of 2016 and No. 1322 of 2010. Consumers have the right to receive the information in clear and understandable terms once a year.

6.2 Dispute settlement

Complaint handling
The Energy Supplies Complaint Board handles all consumer complaints relating to energy. This includes consumer complaints regarding trade and delivery of electricity, heating and gas.

The Board has a mandate to handle disputes arising from the contractual relationship between an energy consumer and an electricity supplier, a natural gas supplier or a district heating supplier.

The Energy Supplies Complaint Board is an official alternative dispute resolution body pursuant to Directive 2013/11/EU of the European Parliament and of the Council of 21 May 2013 on alternative dispute resolution for consumer disputes and amending Regulation (EC) No 2006/2004 and Directive 2009/22/EC (Directive on consumer ADR).

There are no thresholds as regards the value of the dispute. The Board does not handle disputes settled by court judgment. On the other hand, a case which has been brought before a court of law must be postponed and transferred to the Board.

Before submitting the complaint, the consumer must have attempted to contact the supplier and tried to resolve the dispute bilaterally. Otherwise, it constitutes a ground for refusal for the Board to take the case.

The Energy Supplies Complaint Board is established in cooperation between the Consumer Council and the Association of Danish Energy Companies, DONG (Danish Oil and Natural Gas), HMN Natural Gas, Nature Energy Funen and the Danish District Heating Association.

The Board is composed of a neutral chairperson and four members. The chairperson is a city court judge. The Consumer Council appoints two members and two members are appointed to represent the respective energy trade areas.

When submitting a complaint to the Board, the consumer must pay a fee of DKK 160 (approximately EUR 22). The fee is refunded if the Board upholds the consumer's contention. The energy company has to pay a fee of DKK 8.500 (approximately EUR 1.140) if the case ends in favour of the consumer. However, if the case ends in a settlement facilitated by the Secretariat of the Energy Supplies Complaint Board, the company shall pay DKK 3.800 (approximately EUR 510).

All case proceedings are conducted in writing. The Secretariat of the Energy Supplies Complaint Board has to ensure that all relevant information is presented and that the defendant is given the opportunity to comment on the case. The Secretariat has to take a neutral attitude. It may take an initiative to an amicable solution or present an opinion based on previous decisions made by the Energy Supplies Complaint Board.

In cases brought before the Board, the Secretariat presents a summary with an adequate overview of the case and the comments of the parties. The Board states its reasons for the decision and whether the decision is unanimous. If the decision is split, it is indicated which representative(s) dissented and the reason for the dissent.

The average complaint processing time is approximately three months. When the Board has reached

a decision, it will be possible for either party to bring the matter to court. Decisions of the Board are not binding or enforceable. Nevertheless, there is a high compliance percentage in cases decided by the Board.

In 2016, energy companies complied with the decisions of the Board in 88 pct. of the cases according to the 2016 Annual Report from the Energy Supplies Complaint Board.

If the Board's decision is not complied with, the Secretariat has an opportunity to send the case to the Consumer Rights Division of the Danish Competition and Consumer Authority. The Division will then bring the matter to the court, at the request and on behalf of the consumer.

If the consumer has not initiated court proceedings, the Board will publish the decision on its website with name and address of the energy company.

If a complaint does not fall within the competence of the Board, DERA has the power to make decisions regarding the obligations of the DSO and TSO, whenever the complainant has an individual and significant interest in the matter.

These complaints must be processed by DERA within two months, according to the executive order No. 1216 of 2011. If further information is necessary in order for DERA to render its decision, the period can be extended with two additional months. After four months, a further extension is contingent upon the complainant agreeing to it.

The decisions of DERA have binding effect and can only be appealed to the Energy Board of Appeal, which is an independent appeal board under the Danish Ministry of Energy, Utilities and Climate.

Investigation and information
DERA has the authority to request any kind of information from both DSOs, TSOs, suppliers with a license to supply, electricity production companies, electricity suppliers and their associated companies along with consumers and other buyers of electricity or natural gas. The authority to request information is provided when addressing an issue, monitoring the market, in connection with a case initiated by DERA or on the basis of an enquiry by an enterprise or a consumer.

Furthermore, the authority to request information provides the users of the collective grid the information necessary for a secure and effective use of the grid. DERA also has the power to perform, if needed, dawn-raids, as part of an investigation or a monitoring exercise.

Strengthened cooperation

Although the Consumer Ombudsman,[15] the Energy Supplies Complaint Board and DERA have different roles and purposes, consumer protection is a shared common ground.

Since the implementation of the supplier centric model, the cooperation between the Consumer Ombudsman, the Energy Supplies Complaint Board and DERA has been further strengthened. This is in part due to DERA's new tasks regarding the retail market, following the implementation of the SCM.

DERA is e.g. obligated to conduct an analysis on electricity suppliers' compliance with the supply obligation. On this basis, the Energy Supplies Complaint Board has been asked to provide information to DERA on the type and number of consumer complaints received by the Board concerning electricity disconnections; so far none.

The cooperation between the Consumer Ombudsmand, the Energy Supplies Complaint Board and DERA is a case-by-case collaboration, just as knowledge and experience sharing in general within the field of consumer protection. DERA will seek to continue strengthening the cooperation.

[15] The Consumer Ombudsman institution is an independent public authority, and its field of responsibility is regulated in the Danish Marketing Practices Act No. 426 of 2017. The Consumer Ombudsman supervises compliance with the Danish Marketing Practices Act within i.a. the energy market.