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Estonian Competition Authority

ESTONIAN ELECTRICITY AND GAS MARKET

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1. Foreword

The present document has been prepared by the Competition Authority in order to report to the European Commission on the electricity and natural gas markets in the Republic of Estonia as required by the electricity (2003/54/EC) and natural gas (2003/55/EC) directives. The presented report is the seventh in turn after the adoption of the mentioned directives.

The general economic development in 2010 is characterised by the preparations for introduction of the common European currency and the recovery of export industry from the economic downfall. Although, a slowdown in domestic demand continued also in 2010. The low level of income and only partly employed resources were to blame for both private consumption and investment indicators staying low. In spite of this in the second half of the year first signs of a seize in the decrease of domestic demand became apparent. A recovery of domestic demand is most of all affected by the situation on the labour market. An average unemployment rate of 16,9% was the highest after the regaining of independence.

Major important events took place in the electricity market. Large scale amendments were introduced in the Electricity Market Act in January 2010. Among others the ownership unbundling of the transmission system operator (TSO) was undertaken. This resulted in the establishing of an independent TSO in January 2010. By the amendments the following steps were also made towards market opening. Namely, from 1 April 2010 eligible customers may not buy electricity at the regulated market and instead they shall buy from the free market. In April 2010 the Nordic power exchange *Nord Pool Spot* extended to Estonia through creation of the *Nord Pool Spot* Estlink price area with the day ahead trading (Elspot) power exchange. On 1 October 2010 the Estlink price area was renamed to *NPS Estonia*. Thus, since 2010 the Estonian market participants are trading also on the Finnish and other Baltic countries' markets.

The price for the electricity sold to non-eligible market increased by 1%, while the network service charges rose by 1,5% in average. An average price of the free market electricity was 50,8% higher than an average price of the non-eligible market electricity. Regarding market opening Estonia has a transitional period lasting until 2013. Pursuant to the exemptions provided by relevant European Union directives Estonia should have opened its electricity market by 35% by 2009 and for all consumers by 2013. In 2010 the market opened for eligible customers (ones with an annual consumption of 2 GWh) and the latter cannot buy electricity at the regulated price any more. On 1 January 2013 the entire electricity market will open and the price regulation will end.

In 2010 28,4% of electrical energy was sold through the free market. Along with the upturn of the economy the electricity consumption of eligible market will rise and according to present projections in 2011 Estonia shall fulfil its obligation to open its electricity market by 35%.

The natural gas price for household customers fell by 11% in 2010, while at the same time for business customers it rose by 16,5% in average. The latter was caused by the increase of oil products prices on the world market. Based on those the gas price for businesses is adjusted accordingly. From 2007 the natural gas market is opened for all market participants. This means that all consumers have the right to choose their seller. Although, no real competition takes place as gas is imported to Estonia only by a single undertaking AS Eesti Gaas.

The economic recession and the high fuel price related reduction in consumption brought into increase of available transfer capacity of the infrastructure (electricity networks and gas pipelines) due to a fallen consumption peak load along with an improved security of supply. Nevertheless, along with the new economic growth also the consumption will start growing. That is why the efforts towards constant security of supply improvements shall continue.

New directives that regulate electricity and gas markets, commonly referred to also as *the third package*, were adopted by the European Parliament and by the Council in 13 July 2009. The directives are mandatory to Estonia and this provides for changes in the Estonian legislation.

In conclusion, by this report we intend to provide best possible overview of the energy market functioning and its security of supply and we hope that through it the readers can clarify the organisation of market and the principles of its regulation as well.

With best wishes,

Märt Ots
Director General of the Estonian Competition Authority

2. Main developments in the electricity and natural gas markets in 2010

2.1. Developments in the electricity market

2.1.1. Electricity wholesale market

Pursuant to the exemptions provided by relevant EU directives Estonia should have opened its electricity market in the extent of 35% by 2009 and for all consumers by 2013. In order to open the market in time eligible customers got the right to buy electricity from an open market since 2009. An eligible customer was defined as one with an annual consumption of at least 2 GWh in a calendar year through one or several connection points. Thereby an annual consumption of all eligible customers constitutes 35% of the annual total consumption in Estonia. By law the eligible customers were continuously allowed to buy electricity also at regulated tariffs. As the regulated tariffs were lower than the market price, the eligible consumers did not exercise the possibility to buy from an open market. Thus, not a single eligible customer changed its supplier, although it was encouraged by law. In January 2010 comprehensive amendments were adopted in the legislation and this is expected to contribute to a real 35% market opening. Among others the eligible customers were deprived from the right to buy electricity at regulated prices. In other words, they were directed to an open market and a regulation was created for the functioning of a power exchange in Estonia. From the aspect of introduction of legal acts and their validation the opening of market was quite rapid. Therefore, retrospectively it can be realised that relevant parties had a little time for thorough preparation as only on 28 January 2010 the parliament adopted amendments which made market opening possible (the amendments entered into force on 27 February 2010).

In April the power exchange of Nordic countries Nord Pool Spot (hereinafter *NPS*) extended to Estonia by creating the *NPS* Estlink price area with day-ahead (D-1) trading (Elspot) in the power exchange. On 1 October the Estlink price area was renamed to the *NPS* Estonia. By this a trading place was created for the Estonian electricity producers, sellers and eligible customers where electricity can be traded in free market conditions. In the *NPS* Estonia price area also market participants from Latvia, Lithuania and third countries (non-EU) can trade with electricity.

In addition to aforesaid on 22 April 2010 the three Baltic TSOs (Elering, Litgrid and Augstspriema Tikls) signed a Memorandum, which sets out the common principles of cross-border transmission capacity allocation. It was also trilaterally agreed that the Baltic TSOs shall apply maximum effort in order to fulfil the preconditions for opening of price areas in all the three Baltic countries (Estonia, Latvia and Lithuania) so that *NPS* can open those price areas by 1 January 2011 at the latest. As by now the *NPS* has not opened price areas in Latvia and Lithuania, the methodologies agreed upon in the Memorandum and intended for 2010 are followed until all three Baltic price areas are opened.

In 20 October 2010 also the *NPS* intra-day market Elbas was opened. Elbas enables trading with electricity within a day and the trading area involves all countries which have joined the *NPS* power exchange from the Nordic countries to Germany. While the day-ahead market is intended and used first of all for sale and purchase of electricity, the intra-day market gives a possibility for market participants to buy and sell deficit or surplus electricity during a day according to the rules agreed upon. It is important to point out that beginning from October 2010 the Estlink 1 cable surplus capacity, which is the rest of day-ahead trading, is given for allocations and usage by the market participants trading in the Elbas market. In connection with that the functioning of the Estlink as a commercial connection has ended and now it is in

free utilisation by all market participants. Differently from the day-ahead market the Latvian and Lithuanian market participants have no right to trade in the *NPS* Elbas market.

The first year of the *NPS* power exchange operations in Estonia brought in an active trading. There are 16 traders that operate through *NPS* and in total there are 204 eligible customers in Estonia which buy electricity either upon bilateral contracts or from the power exchange. Actual electricity market openness in 2010 was 28,4%. In total during 12 months 5,2 TWh of electricity was sold in the *NPS* Estonia price area, of which 67% or 3,5 TWh was sold in Estonia. 3,6 TWh was bought in total from the power exchange during the year. An annual average price was 46,29 €/MWh, which is lower than in neighbouring areas. The *NPS* Finland average price was 55,16 €/MWh and in the Baltpool it was 47,65 €/MWh. The higher price in the Finnish price area caused the fact that almost during the whole year the demand for the Estonian produced electricity was higher than the 350 MW transfer capacity of the Estlink 1 submersible cable. Also the flow of power was directed from Estonia to Finland during 79% of the time in the first year of the power exchange operation. Beginning from October 2010 the full 350 MW Estlink 1 cable capacity was at the service of electricity market.

On 24 August 2010 a situation occurred in the *NPS* Estonia price area when during 5 hours the sales price was 2000 €/MWh. In the electricity market a situation occurred when there were more buying bids than sale bids and in the price formation the demand and offer curves did not cross during 5 hours until the system limitation or maximum price was reached. The reason was that market participants did not note in their bid sheets the maximum price at which they would have agreed to buy electricity. Due to that the maximum price of 2000 €/MWh fixed by *NPS* was applied. The Authority carried out an analysis of the competition situation in order to investigate the case. In the analysis the information from undertakings, Technical Supervisory Authority and *NPS* was used. *NPS* also itself evaluated the situation and respective report was submitted to the Authority. *NPS* did not reveal bad faith actions by market participants nor manipulations with the market. Nonetheless, the Authority additionally analysed the purchase and sale bids data and came to a conclusion that the 24 August 2011 dramatic jump of prices was caused by a coincidence of several circumstances and no evidence which could refer to of an abuse of market dominant position by some market participants was present.

Thus, the development of the power exchange to an active market place in which many producers sell electricity to local consumers, will take some time. Preconditions for that are: extension of the power exchange to Latvia-Lithuania, entering of the Russian electricity producers in the market on the basis of the principles of fair competition, as well as the possibility of our producers to sell to the third countries, construction of new production capacities in Estonia and additional connections to the Nordic countries.

2.1.2. Electricity retail market

In 2010 Estonia was going through the transition period towards the opening of its electricity market. That is why non-eligible customers were obliged to buy electricity from the servicing network operator or from the seller which is designated by the network operator. As well they had no possibility to change their supplier. An eligible customer was defined as one with an annual consumption of at least 2 GWh in a calendar year through one or several connection points. As the regulated electricity price was lower than the free market price by 50,8%, some cases took place where eligible customers attempted the interpretation of law in a way that they could have bought electricity from the closed market at regulated prices. Several persons who were defined as eligible customers submitted complaint to the Authority presenting quite

many reasons for qualifying them as non-eligible customers. It is important to note that the Authority resolved only one case in the favour of non-qualification. In all other cases the distribution network operator and the seller acted pursuant to the Electricity Market Act in the cancelling of the contract. A single eligible customer challenged the Authority's decision with Tallinn Administrative Court, whose verdict was in favour of the Authority in this dispute.

In the retail market the undertaking with the biggest market share is Eesti Energia AS, whose market share in 2010 was 88,2%.

In March 2010 the Authority approved for Eesti Energia the maximum weighted average price limit for electricity sold to final consumers under the selling obligation of 3,07 €cent/kWh. In 2010 an average final consumer price including network service, excise tax and subsidy for renewable energy sources (without VAT) for household customers was 8,52 €cent/kWh and for businesses (all except households) 7,72 €cent/kWh.

Consumer price regulation and the selling obligation are dealt with in Chapter 3 below.

2.1.3. Electricity networks

The Estonian electricity system has been built up as part of the north-western common power system of the former Soviet Union. Currently the Estonian electricity system works among the united synchronised system of the CIS and Baltic countries IPS/UPS and is connected through alternating current (AC) lines with Latvia and Russia, as well as with Finland through a direct current (DC) line. The transfer capacity of the AC lines between Belarus, Russia, Estonia, Latvia and Lithuania is high, which assumes close cooperation between TSOs in the planning and management of the common synchronised parallel operation.

Estonia has a single transmission network service provider Elering AS, who is also the system operator (TSO). The number of distribution network service providers is 37. In total there are 5200 km of the 110-330 kV lines belonging to the TSO and approx. 79 000 km of low and medium voltage lines belonging to the distribution operators.

Network charges

In the evaluation of price increase the rate of inflation must be considered. In 2010 the consumer price index changed by 3% (source: Bank of Estonia). In 2010 the transmission tariff was 0,89 €cent/kWh while the distribution tariff for large customers was 1,40 €cent/kWh and for households 4,02 €cent/kWh.

In 2010 the distribution network charges of Eesti Energia Jaotusvõrk that belongs to the Eesti Energia group rose by 1,5%.

The transmission network charges of the TSO (Elering AS) increased by 7,7% in 2010. This was caused by the need to cover the cost of investments.

Cross-border interconnections

The Baltic TSOs started negotiations on the implementation of a cross-border transmission capacity allocation market based mechanism between the Baltic power systems. The Baltic TSOs Elering AS, Litgrid and Augstsprieguma Tīkls signed a memorandum, which sets out

general methodologies for capacity allocations and congestion management. It was trilaterally agreed that for inter-country transmission capacity allocations the principle of implicit auctions will be applied beginning from 2011, which provides best possibilities for producers and sellers for trading, as well as the lowest prices for consumers in the region. For supplies resulting from the trade between Estonia and Latvia in the NPS Estlink price area for the period from 1 April 2010 to 2011 the transmission capacity is ensured using the power optimisation mechanism, where at least 80% of the total transmission capacity is allocated through the NPS trading platform. The rest of capacity is allocated through week based explicit auctions, where the transmission capacity bought in advance can be used in the two-days-ahead (D-2) planning phase for trading upon bilateral purchase-sales contracts.

First of all in connection with the closing down of Ignalina NPP the transits of electricity increased and a shortage of transmission capacity came apparent in 2010 in both Finland–Estonia and Latvia-Estonia connections. In the Estonia-Latvia direction a capacity deficit is recorded only during unfavourable circumstances (repair works in the connection, transmission capacity reductions in bad weather conditions) while in the Finland-Estonia direction a congestion is almost permanent. Due to an obvious necessity it is planned to strengthen the connections between Latvia and Estonia. Besides, in 2014 it is planned to commission the Estlink 2 connection. As a result, the capacity of connection between Estonia and Finland shall total 1000 MW.

The Estonian and Finnish TSOs Elering AS and Fingrid signed a contract with Eesti Energia AS on the rental of the Estlink 1 submersible DC cable, according to which the entire cable capacity was given to the dispose of market participants in September 2010. Therewith the allocation of available capacity between Estonia and Finland takes place using the method of implicit (power and energy) auctions. In the result electrical energy between areas always moves from the lower price area to the area where the price is higher. The transmission capacity between Estonia and Latvia given for allocation to *NPS* is allocated using the method of capacity optimisation. This is because there is no *NPS* price area opened in Latvia. Giving the total capacity of Estlink 1 to market forces remarkably increases the liquidity of electricity market and widens possibilities for electricity trading between regions.

2.1.4. Unbundling of transmission network

Beginning from 1 July 2010 the Electricity Market Act sets out the requirement that the transmission network undertaking cannot at the same time be also a distribution network undertaking, nor belong to the same group with an undertaking who is acting in the fields of activity related to production or sale of electricity. In Estonia the TSO (Elering AS) is separated by ownership from all other electricity production and sale undertakings from 27 January 2010. 100% of its shares belong to the Estonian state.

More deeply the activity unbundling and equal treatment issues are dealt with in chapter 3.1.3.

2.1.5. Security of electricity supply

According to the statistics of 2010 the load of the Estonian power system peaked in 2009/2010 winter period at the level of 1587 MW while the actual production capacity at the same time was 2222 MW. Thus, in general the country covered its electricity demand with the own installed capacity.

In 2010 there was 2474 MW of installed capacity in the Estonian power system. In 2010 114,9 MW of generation capacity was added. 74 MW out of this are cogeneration plants, while 70,9 MW represents windmill parks' capacity.

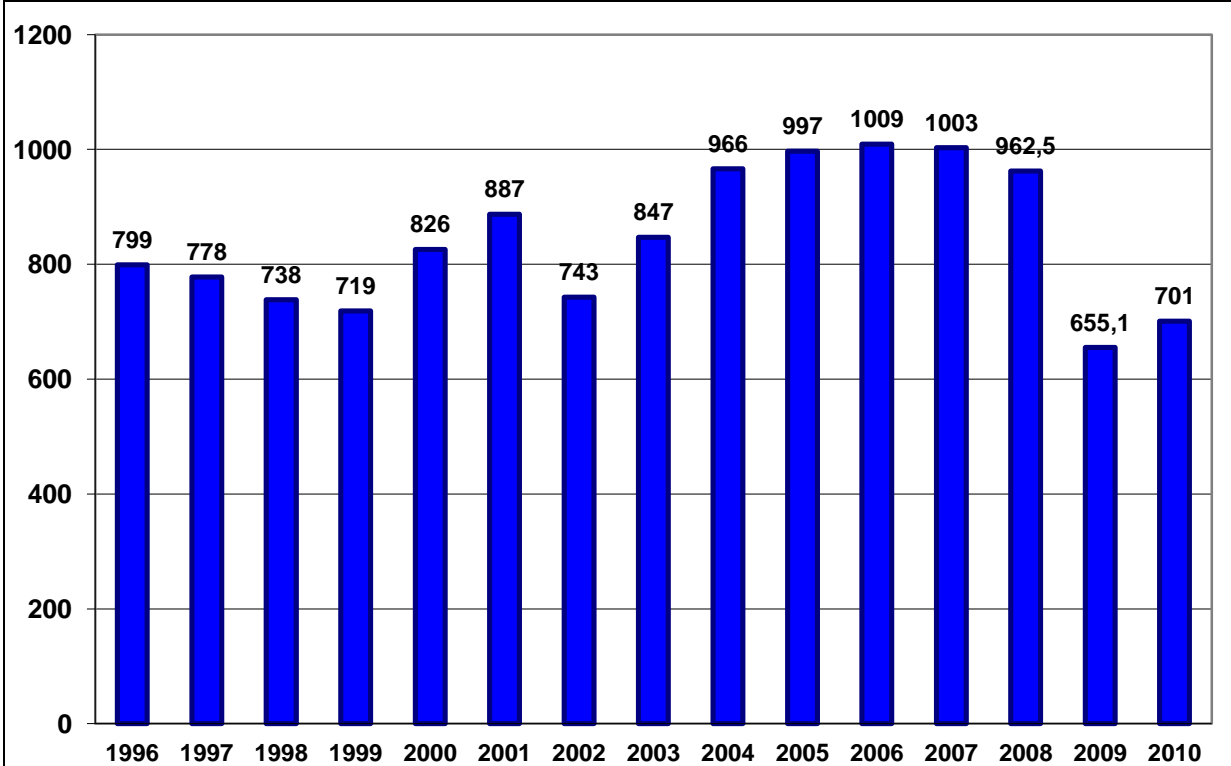
In October 2010 the TSO Elering AS arranged procurement for the construction of a quick start emergency power plant to be used for securing of supply during possible emergencies in the power systems. When the production capacity will be implemented the ability of additionally self-supply electricity significantly improves security of supply in Estonia. The first stage of the new power plant with the capacity of 100 MW shall be commissioned in 2013 while the 150 MW second stage shall be ready in 2014.

Conclusively it can be said that electricity supply in Estonia is secured also in a longer perspective, if investments in production capacity and network development are implemented according to the existing investment plans. In greater detail the security of supply issues in Estonia are dealt with in chapter 5.1.

2.2. Developments in the natural gas market

2.2.1. Wholesale market of gas

In 2010 the total consumption of natural gas in Estonia was 700,9 million m³ (6,52 TWh = 0,5 Mtoe). 363,6 million m³ (3,38 TWh = 0,3 Mtoe) out of this was used for energy production (electricity and heat). Compared to 2009 the consumption rose by 7,1%, but compared to 2008 it was lower by 27,1%.



Drawing 2.2-1 Consumption of gas in million m³.
Source: AS EG Vörguteenus

On the wholesale market of gas no competition exists, as only one undertaking is active on it. AS Eesti Gaas is the only importer of gas in Estonia and therefore has a dominant position on the market. Preconditions for emerging of competition are practically nonexistent under the current circumstances, where besides only a single importer there is also only a single source of supply - Russia.

The import price of gas is calculated by a price formula that considers six months (from 2011 nine months) heavy and light fuel oil average prices in USD/ton proceeding to the accounting month, taking into account the USD/EUR exchange rate. The wholesale prices and the prices for eligible customers are not subject to approval and Eesti Gaas as the only wholesaler sells gas at negotiated prices both to the eligible customers connected to its own network, as well as to other network undertakings.

2.2.2. Retail market of gas

Similarly to the wholesale market also in the retail market AS Eesti Gaas is in market dominant position. In 2008 the share of AS Eesti Gaas on the retail market was 89%, and the rest 11% of the retail market gas is purchased by other network undertakings from AS Eesti Gaas.

The price for gas sold by other network undertakings on the retail market cannot be significantly higher than the price of AS Eesti Gaas, as then customers would change their supplier to AS Eesti Gaas. At the same time the network operators cannot sell also at the prices which are lower than those of AS Eesti Gaas, as the wholesale purchase price is at the level which do not allow cheaper re-selling during longer time periods.

Differently from the wholesale market the competition on the retail market has been activated. Various gas sellers (network undertakings) buy gas from AS Eesti Gaas and are competing in its re-selling. A concrete fact about the activation of the retail market is that if in 2008 there were 1109 cases of the change of gas seller, in 2009 the figure was 1576 while in 2010 there were already 1674 cases of change.

2.2.3. Gas networks

There are approx. 880 km of gas transmission lines (with the pressure level of above 16 bar) and 2035 km of distribution lines in Estonia. In 2010 16,1 km of new natural gas pipelines were built. In Estonia there is no gas storages nor liquefied gas terminals.

2.2.4. Unbundling of transmission network

There is a market dominant operator AS EG Võrguteenus which provides both transmission and distribution services and 100% belongs to the dominant gas trader AS Eesti Gaas.

The system operator is obliged to work out an action plan in which provisions are made for equal treatment of other gas undertakings and customers together with the obligations imposed on the undertaking's employees for the implementation of the provisions. AS EG Võrguteenus has undertaken an advancement of their market participants' equal treatment action plan and submitted it for consideration to the Authority in May 2010.

Presently the Government of the Republic considers ownership privatisation of the transmission network, which would diversify the suppliers (LNG terminal) and activate competition.

2.2.5. Security of gas supply

The economic situation in Estonia and the steep rise of gas purchase price resulted in substantial changes in gas consumption in 2008 and 2009. During 2007-2009 the consumption decreased by 35%. One of the reasons was the suspension of operation of AS Nitrofert, whose consumption comprised about 20% of the total consumption in Estonia. In 2010 the consumption rose by 7,1% compared to 2009, but compared to 2008 it was lower by 27,1%. Thus, no transmission capacity congestion exists in Estonia and it is not anticipated also in the future.

AS Eesti Gaas has concluded a contract with Gazprom for the supply of gas until the end of 2015 with a daily volume of 7 million m³. Such gas quantity is sufficient for securing strategic supply of gas to Estonia. For storing of gas Gasprom uses the Inčukalns underground storage facilities in Latvia. It is filled up in summer period, in order to ensure necessary winter period gas for Estonia, Latvia and Lithuania.

Estonia has sufficient transmission capacity and connections in order to ensure the fulfilment of the N-1 criterion in gas transmission. No saturation of the transmission capacity is expected. It is known yet that problems can arise with the Latvian side gas supplies during peak load periods. Namely, there can be disturbances in gas supply if the Estonia-Latvia connection through Karksi, which delivers gas from the Inčukalns storage, interrupts or, when the pressure in the storage is insufficient (in spring time). In such an event the connection coming from Russia through Värška should be utilised. Although the connections with Russia through Narva and Värška have a transfer capacity that is sufficient for supplying the quantities consumed in Estonia, the Narva connection capacity is limited anyway, because of the limitation on the Russian territory. At the same time it is not clear what kind of impact to the region's gas balance will have the Nord Stream gas pipeline.

According to the information available to the Authority several investors have indicated an interest in building of a liquefied natural gas (LNG) terminal in the northern shores of Estonia. Although, no decisions have been made to date, as assessment of environmental impact is not finished yet. The Authority is in an opinion that a LNG terminal in conjunction with the Balticconnector would improve security of supply both in Estonia and Finland and would also activate competition on the wholesale market.

Conclusively, the Authority is in a position that gas supply risks are related to the supply from a single source - Russia. For possible crisis situation a plan has been elaborated in Estonia on the basis of which the consumption of gas can be significantly reduced (cease of electricity production in Tallinn, Narva and switching over to using of reserve fuels in bigger centres).

2.3. Main conclusions

2.3.1. Present legal framework

The Electricity Market and the Natural Gas Acts entered into force in 2003. After that the acts have been several times amended according to the needs of society and pursuant to the directives of the European Parliament and of the Council. In January 2010 the amendments to the Electricity Market Act were enforced, which among others created a legislation for the acting of a power exchange, set out unbundling of the transmission system operator by ownership, obliged eligible customers to buy electricity from open market (not allowed to buy at the regulated prices) and changed the system of subsidies paid to energy producers. In July 2009 amendments to the Natural Gas Act entered into force, which changed the regulation of the price of gas sold to household consumers.

Changes in subsidies paid to electricity producers

In May 2007 a scheme of subsidizing of renewable sources and cogeneration was changed. According to the scheme producers had two options: either to sell electricity at a fixed purchase obligation price or receive a subsidy and sell electricity at a market price.

According to the system established in 2007 the subsidies for production from renewable sources were paid only in cases if the production equipment capacity was below 100 MW. In July 2009 the amendments to the electricity Market Act removed the capacity limitation. As a result of this, also Narva Power Plants got the subsidy, when they used wood chips in addition to oil shale fuel in electricity production. The amendment had a substantial effect on the subsidy payments, raising the total subsidy amount in 2009 to 25,9 million €. 4,7 million out of it, or 18% was paid to Narva Power Plants (NPP, source: Elering AS). In 2010 the same figures were respectively 45 million €, or 26% (source: Elering AS).

Subsidy related issues were further amended in February 2010. The most significant change in the system of subsidies payable to producers was the abandoning of the purchase obligation. At the same time the circle of undertakings eligible to subsidies was enlarged. Beginning from 27 February 2010 producers have the right to receive subsidy in the following cases and amounts:

- beginning from 1 July 2010 for the electricity produced from renewable sources, excluding biomass, 5,37 €cent/kWh;
- beginning from 1 July 2010 for the electricity, if it is produced from biomass in cogeneration process, 5,4 €cent/kWh. If the electricity is produced from biomass in condensing process then it is not subject to the subsidy. In this case it is a new stipulation that is intended for the limitation of inefficient use of renewable resources;
- for the electricity produced in an efficient cogeneration process from waste as defined in the Waste Act, from peat or from the pyrolysis gas of oil shale processing 3,2 €cent/kWh;
- for the electricity produced in an efficient cogeneration process with a production equipment with the capacity not exceeding 10 MW, 3,2 €cent/kWh;
- for the utilization of installed net capacity of an oil shale using production equipment, if the production equipment has started operation within the period from 1 January 2013 to 1 January 2016, depending on the CO₂ quota price, 1,4-1,6 €cent/kWh.

Furthermore, the quantity of electricity produced from wind energy in Estonia and eligible to subsidy was increased from the earlier 400 GWh to the limit quantity of 600 MWh in a calendar year.

In May 2010 the Authority began an analysis of the subsidy paid pursuant to paragraph 59 of the Electricity Market Act. The following issues were analysed: impact on the competition situation, justification of the economic burden for electricity consumers caused by the subsidy and justification of the subsidy rates.

In 2007 consumers paid for the support of renewable energy 0,14 €cent/kWh, in 2008 0,19 €cent/kWh, in 2009 0,39 €cent/kWh and in 2010 already 0,81 €cent/kWh. Thus, the subsidy has increased from 0,14 €cent/kWh to 0,81 €cent/kWh, or about 6 times. If in 2009 in total for 619 GWh of electricity 25,9 million euro was paid, then in the projection for 2010 respective figures were 1202 GWh and 62,9 million euro (source: Elering AS). Thus, in 2009 for 7,9% of the produced electricity the subsidy was paid (in total 7 884 GWh of electricity was produced in Estonia). If not to assume increase in production, then respective share shall be already 15,2%. In the situation where subsidies in Estonia are constantly growing their share on the bills issued to customers have reached very important value. Considering the planned subsidies to new windmill parks (the subsidised capacity limit was raised from 400 to 600 MW) and the increasing number of cogeneration plants the share of renewable energy subsidy will increase even more.

On the basis of the foregoing the Authority analysed whether the subsidies paid pursuant to paragraph 59 of the Electricity Market Act are economically justified both from the producer's and the consumer's point of view and how big impact the subsidies have to the competition situation. In the analysis the following undertakings were analysed: four windmill parks, two cogeneration plants that use wood and peat, two cogeneration plants that use natural gas and five hydro stations. The selection of the plants was random. In addition, a separate analysis was carried out for unit no.11 of the Balti Power Plant which belongs to the Narva Power Plants of Eesti Energia.

From the analysis it was concluded that pursuant to present law:

- the subsidy paid to windmills of 5,37 €cent/kWh is too high and with today's electricity price a subsidy of 1,5-2,9 €cent/kWh can be considered justified in order to achieve a motivating rate of return on invested capital for investors of 10%; herewith medium size and large windmills (with a capacity of above 5 MW) are more profitable than small ones
- so high subsidies paid to cogeneration plants which produce electricity from renewable sources is not justified, as investing is profitable for undertakings without a subsidy
- the gas motor based cogeneration plants are extremely sensitive to the price of natural gas; that is why it was difficult to evaluate whether the present subsidy of 3,2 €cent/kWh is sufficient, as the income from the project is affected much more by the price of gas rather than the subsidy
- the subsidies for hydro stations are not justified as investing is profitable for investors without a subsidy or with a much lower subsidy
- the subsidy of 5,37 €cent/kWh paid to the unit no.11 of Eesti Energias Balti Power Plant is too high

If the target is increasing of the share of renewable sources, the subsidy to the unit no.11 at the current price for CO₂ is necessary, but the present subsidy rate of 5,37 €cent /kWh is too

high. It can be assumed that beginning from 2013 when the new CO2 trading period begins and the electricity market opens in full, the combustion of wood shall be competitive also without subsidising.

Through the present subsidy scheme new cogeneration plants, windmills and hydro stations are added, but this comes through a distorted market situation which should be avoided. Because of the subsidy the investors are not considering the price resulting from supply-demand relation, but the entire business project is built up on the basis of the subsidies to achieve as short payback time as possible. The cogeneration plants, whose thermal output exceeds actual demand in the area, may serve as an example. The reason for such disproportion is that it is expected to get as high as possible electrical capacity in order to receive the subsidy. Therewith the produced electricity is sold to open market where also producers from other countries (Finland, Latvia, Lithuania) participate in the conditions where the market price is substantially higher than the production price of a subsidised producer. The investor is earning unjustified high profit, which consumers are forced to pay for through the renewable energy charge. Thus, some producers have remarkable competition advantage secured by the state and their economic risks are substantially lower compared to the producers which are not receiving subsidies. So the situation, in which new production capacities are erected only thanks to various subsidy schemes, is worrying, as when this continues most producers will receive subsidy and the subsidised electricity production in Estonia will substantially increase. In doing so consumers, in addition to the charge for renewable energy, have to also pay for the price for the electricity which originates from open market.

Resulting from the analysis the Authority came to a conclusion that consumers have to more and more pay for the financing of the subsidy pursuant to and dealt with in paragraph 59 of the Electricity Market Act. Although fulfilment of the targets set forth in the *Estonian Electricity Sector Development Plan until 2018* is important, the customers expect to fulfil the targets at justified cost, without carrying groundless economic burden. The subsidy system established by paragraph 59 of the Electricity Market Act does not ensure fulfilment of the rightful expectations of consumers, as it gives unjustified high return to some producers and unjustified cost to consumers.

The Authority forwarded the conclusions of the analysis to the Minister of Economic Affairs and Communications with the position that the subsidy scheme established in the paragraph 59 of the Electricity Market Act is not sustainable in longer perspective and proposed a revision of the rates of the subsidies, correcting them according to the real situation in order to stop giving groundless competition advantages for selected producers and forcing consumers to pay for unjustified high charge for renewable energy. The proposal was guided by the wish of improving competition situation on the Estonian electricity market and lowering unjustified high economic burden on electricity consumers.

In addition the Authority points out that also in the 2011 coalition agreement the mentioned problems are highlighted and an improvement of the competition situation is set out as the target.

Changes in natural gas consumer price regulation

Earlier the Natural Gas Act set out a regulation of the price of the gas sold to household consumers, which is continuing also after complete opening of the market. From July 2009 the amendments entered into force which are more liberal compared to the earlier ones. The changes that were introduced in relation to household price regulation are the following:

- Only the market dominant undertaking has to approve the sales marginal, as a component of the price for households. Small gas sellers (that are not in a dominant position on the market) are exempted from approval.
- The Authority approves the sales marginal of AS Eesti Gaas, who is in a market dominant position. The approved sales marginal is added to their import price of gas.
- The undertaking itself forms its sales price on the basis of the import price.
- At the end of each calendar year the undertaking makes a settlement of accounts (equalisation).
- Household consumers have to be notified about changes in the price 1 month in advance (earlier a 3 months preannouncement was required).

The Authority is in a position that the introduction of the new regulation in 2010 better ensures the compliance of prices with the import price and thereby the price is cost-based and customer interests are protected. The amendment of law contributes to the advancement of competition on retail market, as for small gas sellers there is no limit price approval requirement which hinders competition.

2.3.2. Implementation of the 3rd package in Estonian legislation

The new electricity and natural gas regulatory directives enforced by the European Parliament and by the Council on 13 July 2009, also known as *the 3rd package*, are mandatory also for Estonia. Proceeding from the directives the Estonian legislation had to be amended correspondingly.

In January 2010 comprehensive amendments were entered into force in the Electricity Market Act. Among other things ownership unbundling of the transmission network operator (the TSO) was predetermined. As the Estonian natural gas market is a small one and similarly to Finland, Latvia and Lithuania pipeline interconnections with the central Europe do not exist, the Directive 2009/73/EC, that treats of common rules for the internal market, sets forth an exemption for Estonia in Article 49, which do not apply to Estonia the ownership unbundling obligation of the transmission system from the producer and/or seller until any of the Baltic countries and Finland is directly connected to the interconnected system of any Member State other than Estonia, Latvia, Lithuania and Finland.

In 2011 it is planned to amend both the Electricity Market Act and the Natural Gas Act in order to harmonise also other additional requirements arising from *the 3rd package* into the Estonian legislation.

Both natural gas and electricity directives put additional obligations to the regulators. First of all the regulators are obliged to monitor the market, including the functioning of competition. Under monitoring it is assumed an extensive collection and processing of data. Although the Authority has an obligation of supervising over the functioning of the electricity market and over the activities of market participants and the right to request data from market participants necessary for supervision, the Authority has no direct obligation of continuous data collecting and processing.

In order to ensure independence of the regulator *the 3rd package* stipulates that members of the board or director of the regulator are appointed to office for a 5-7 years period for a maximum of two terms. Pursuant to the currently valid legislation the director of the Estonian Competition Authority is appointed without a specified term. However, currently there amendments to the Electricity Market Act and to the Natural Gas Act under preparation which

stipulate that the deputy of the Director General of the Authority responsible for the energy sector is appointed to office for seven years. The right for a one time re-appointment will be validated. Through adoption of this amendment harmonisation with *the 3rd package* will be ensured.

3. Functioning of the electricity market and regulation

3.1. Regulation related issues

3.1.1. Cross-border power interconnections, available transfer capacity and its allocation, congestion management (pursuant to EC Directive 2003/54/EC Article 23(1) excl. (h))¹

With neighbouring countries Estonia has power connections with Russia, Latvia and Finland. The map of the Estonian power system is given in drawing 3.1-3 below. The map of the power systems of Baltic countries and north-western part of Russia is given in drawing 3.1-1. It should be clarified yet that Finland is part of the Nordic power system Nordel, which is not synchronised with the CIS and the Baltic countries' system IPS/UPS which Estonia belongs to.



Drawing 3.1-1 Power systems of Baltic countries and north-western part of Russia

The transmission capacity of the network for electricity export and import through alternating current lines in Estonia-Latvia-Pskov direction is not always sufficient, most of the time being in the range of 500-900 MW. In an event when a lack of production capacity is simultaneous in all Baltic countries then the transmission capacity to the whole of Baltics (together with Kaliningrad) is limited – from Russian and Belarusian power systems up to 1800 MW and from Finland up to 350 MW, in total with about 2100 MW. This is correct during normal operation of the network. Due to network repair works and ambient air temperature the transmission capacity to the Baltic region may be significantly reduced.

By statistics of 2010, the peak load from Narva to the direction of Russia was 630 MW, while from south Estonia in the direction of Russia it was 190 MW. The peak load in the Latvian direction was 811 MW.

¹ h) transparency and competition level

In March 2010 AS Eesti Energia and Latvenergo made a joint decision to hand over to the use of electricity market a large part of their cable capacity: in Estonia-Finland direction 262 MW and in Finland-Estonia direction 252 MW. From October 2010 the total capacity of the Estlink 1 cable of 350 MW is fully at the service of electricity market. The decision gave a strong positive signal about activation of electricity market in the Baltic systems and its further integration into electricity markets of the Nordic countries.

After expiration of the exemption period in 2013 the acquisition cost of the cable will be included in the regulatory asset base of the TSOs and the Estlink 1 will lose its status as the so-called commercial connection. However, already today the third party access to its full capacity is applied.

Together with the construction of Lithuania-Sweden and Estonia-Finland additional connections the power systems of Baltic countries will integrate into the market of Nordic countries (Nordel). Thereat the Estlink 2 connection is planned to be commissioned already in 2014, bringing the capacity between Estonia and Finland to a total of 1000 MW. The Lithuania-Sweden connection NordBalt with a capacity of 700 MW is planned to be built by 2016.

Rules for determination of available transfer capacity

On 13 August 2009 the Authority accepted the general plan prepared by the TSO (Elering) pursuant to the EC Regulation No 1228/2003 Article 5 (2) for the calculation of the total transfer capacity and the transmission reliability margin based upon the electrical and physical features of the network.

The total transfer capacity and the transmission reliability margin are found in the following steps:

1. The total transfer capacity (TTC) is found upon the technical parameters of the network with respect to the reliability requirements pursuant to the Grid Code. From the mentioned requirements most important ones are the so-called N-1 and N-2 criteria. According to the criteria the calculation of the transfer capacity shall consider the possibility of an emergency switch off of respectively one or two elements significantly influencing the reliability of the power system. Then the TTC is calculated under which thermal parameters do not exceed the limit values and the static and dynamic stability of the system is not compromised.
2. The transmission reliability margin (TRM) is a reserve capacity which is found considering unforeseeable circumstances like uncontrollable circulating currents, metering errors of the measuring system and emergency supplies between system operators. In the determination of the margin it is important to consider the information received from the neighbouring systems' operators and earlier planning experience. The concrete TRM values are preliminary agreed upon with the neighbouring systems' operators on daily basis.
3. The TRM is subtracted from the TTC to get the Net Transmission Capacity (NTC). The NTC is the capacity which is given to market participants for the use in cross-border energy trading.

Congestion management

Until the closing down of Ignalina Nuclear Power Plant (NPP) on 31 December 2009 there were no congestion of transmission capacity on the Estonian interconnectors, i.e. there were no the so-called bottlenecks. The Ignalina closing down changed the status of Lithuania from an exporter to an importing energy system. As no congestion was recorded, there were no need in the regional Baltic electricity market for congestion management and capacity allocations through auctions as it was required from 1 January 2007 by the EC Regulation No 1288/2003 (amended by the Commission Decision of 9 November 2006 (2006/770/EC) Annex paragraph 3.2 (g)). In order to manage limitations occurring in some special events there were methodologies for the management of congestion. In essence the idea was the proportional limitation of contractual supplies.

In connection with the extension of *NPS* into Baltic countries in the end of the last year Elering AS (the Estonian TSO) started negotiations with the Latvian and Lithuanian TSOs on the application of a common market based cross-border transmission capacity allocation mechanism between the Baltic power systems. In the result of the negotiations the Baltic TSOs Elering, Litgrid and Augstspriema Tikls signed a Memorandum, which sets out the application of a common methodology for capacity allocations and congestion management between the Baltic power systems. It was trilaterally agreed that beginning from 2011 in the inter-country allocation of transmission capacity the principle of implicit auctions will be applied, which provides best possibilities for producers and sellers for trading, as well as the lowest prices for consumers in the region. For the supplies resulting from the trade between Estonia and Latvia in the *NPS* Estonia price area for the period from 1 April 2010 to 2011 the transmission capacity is ensured using a power optimization mechanism, where at least 80% of the total transmission capacity is allocated through the *NPS* trading platform. The rest of capacity is allocated through week based explicit auctions, where the transmission capacity bought in advance can be used in the two-days-ahead planning phase of trading. As *NPS* has not opened price areas in Latvia and Lithuania by now, then the methodologies agreed upon in the Memorandum for 2010 are applied until the opening of price areas.

Allocation of transfer capacity on Estonia-Finland and Estonia-Latvia borders in NPS Estonia price area

On 1 April 2010 the power exchange of Nordic countries *NPS* opened the new *NPS* Estonia price area. *NPS* allocates according to its rules both the transfer capacity of Estlink 1 rented by the cable owners to Elering and Fingrid and partly (80%) also the transmission capacity available between Estonia and Latvia. The transmission capacity between Estonia and Russia is also allocated through *NPS*, as the electricity imported from Russia can be sold only through auctions.

The Estlink 1 cable capacity between Estonia and Finland is allocated by using the method of implicit (power and energy) auctions. In the result of it energy always moves from the areas with lower prices to the areas with higher prices. 20% of the capacity between Estonia and Latvia is allocated by using the method of week-based explicit (power) auctions. Therewith the allocating takes place using the auction rules agreed upon between Elering AS and Augstsprieguma Tikls.

For the allocation of the transmission capacity between Estonia and Latvia, and as well between Estonia and Russia in the *NPS* system the following four so-called bidding areas are formed:

- in the **NPS Estonia** bidding area all market participants which act in Estonia can make bids
- the **Latvian export** area can be used by those Latvian and Lithuanian market participants, who want to purchase electricity from the NPS Estonia price area
- the **Latvia import** area can be used by those Latvian and Lithuanian market participants, who want to sell electricity to the NPS Estonia price area
- in the **Russian import** area all those market participants can make bids who want to import Russian electricity to the power exchange

In the *NPS Estonia* price area the price is calculated according to the *NPS* rules, therewith the bids made and accepted in all four bidding areas are taken into account.

Provision of transfer capacity information and securing transparency pursuant to EC Regulation 1228/2003 and its Annex

The EC Regulation No 1228/2003 and its Annex provides guidelines (hereinafter the Guidelines) on the management and allocation of available transfer capacity of interconnections between national systems, sets out fair rules for cross-border electricity trade taking into account the specificities of national and regional markets.

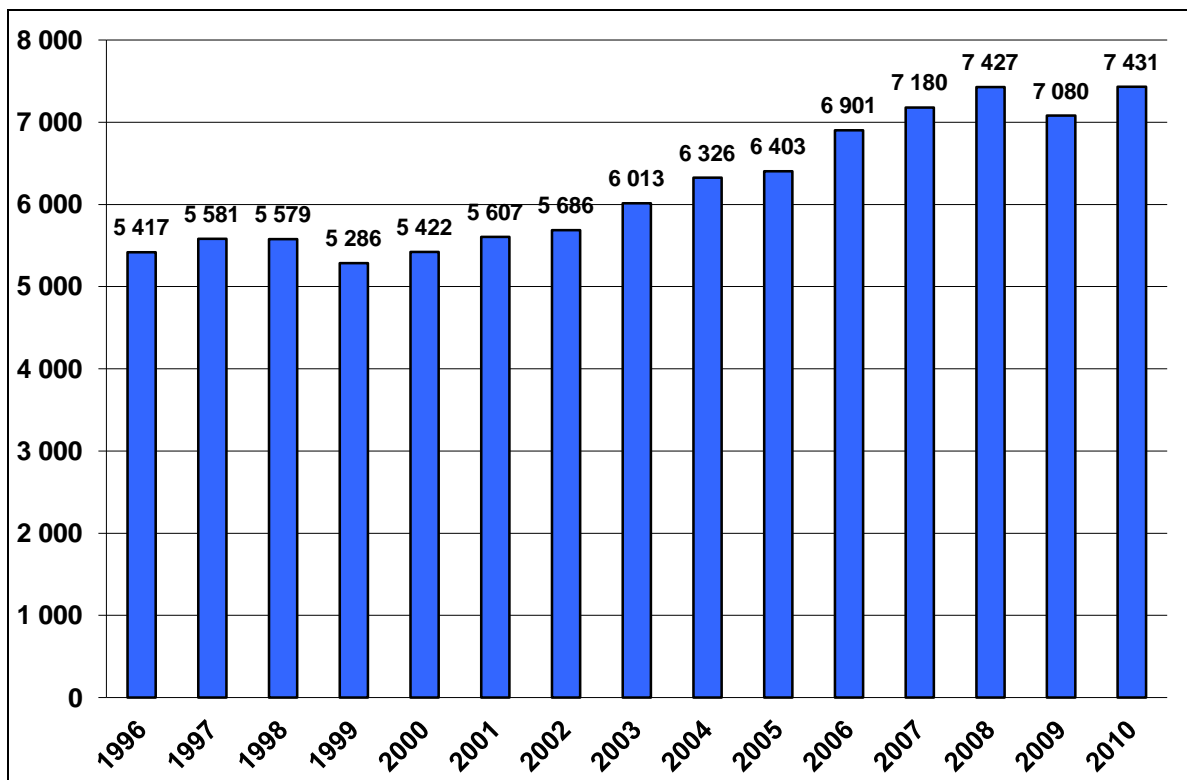
Pursuant to Article 5 “Provision of information on interconnection capacities” of the Regulation No 1228/2003 and respective clauses of the Guidelines the transmission operator has disclosed on his web site (<http://www.elering.ee>) the rules for allocation of available capacity; as well as the information from the governmental regulation Grid Code, which sets out safety standards, operational and planning norms, security standards and information on the availability of the network, its using and accessibility. The web site also presents information on available transmission capacity, utilised total capacity, demand and production, presenting both actual data and annual, month-ahead, week-ahead and/or daily estimates pursuant to the Guidelines.

In addition to above the TSO publishes on its web site the planned and emergency interruptions of the production units in the Estonian power system with a rated capacity of over 100 MW and the report on sufficiency of the production capacity in Estonia, which among other things covers long-term infrastructure development issues.

The Guidelines set on TSOs an obligation to make the information public in due time and in an easily accessible format.

3.1.2. Regulation of the electricity transmission and distribution undertakings

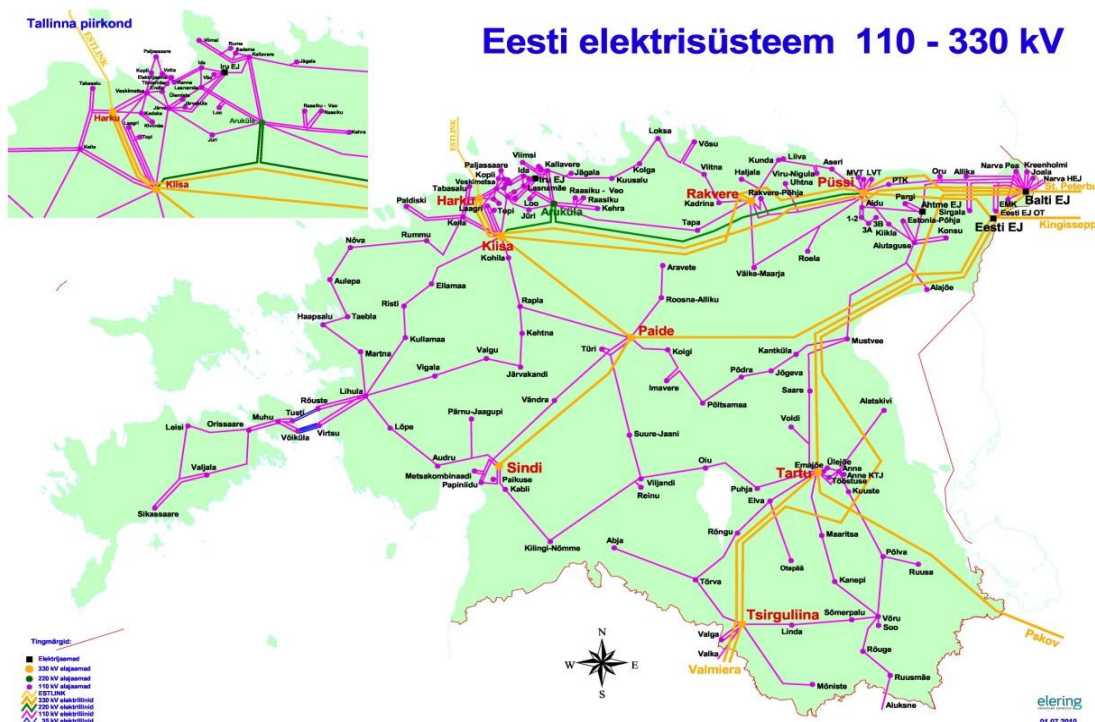
Compared to other EU Member States the Estonian electricity market is small. According to the statistics of 2010 the load peaked at the level of 1587 MW and annual production totalled 11,7 TWh, supplemented by import of 1,1 TWh. The domestic consumption (without losses) was 7,4 TWh and 4,4 TWh was exported.



Drawing 3.1-2 Consumption of electricity in Estonia in 1996-2010, GWh

Source: Statistical Office

In Estonia there is one undertaking providing transmission network service named Elering AS, which is at the same time also the system operator (TSO), and 37 undertakings providing distribution network service. The length of the transmission lines (110-330 kV) that belong to the TSO is 5228 kilometres and the length of medium and low voltage lines belonging to the distribution networks is 78 800 kilometres. The map of Estonian power system is presented in the following drawing 3.1-3.

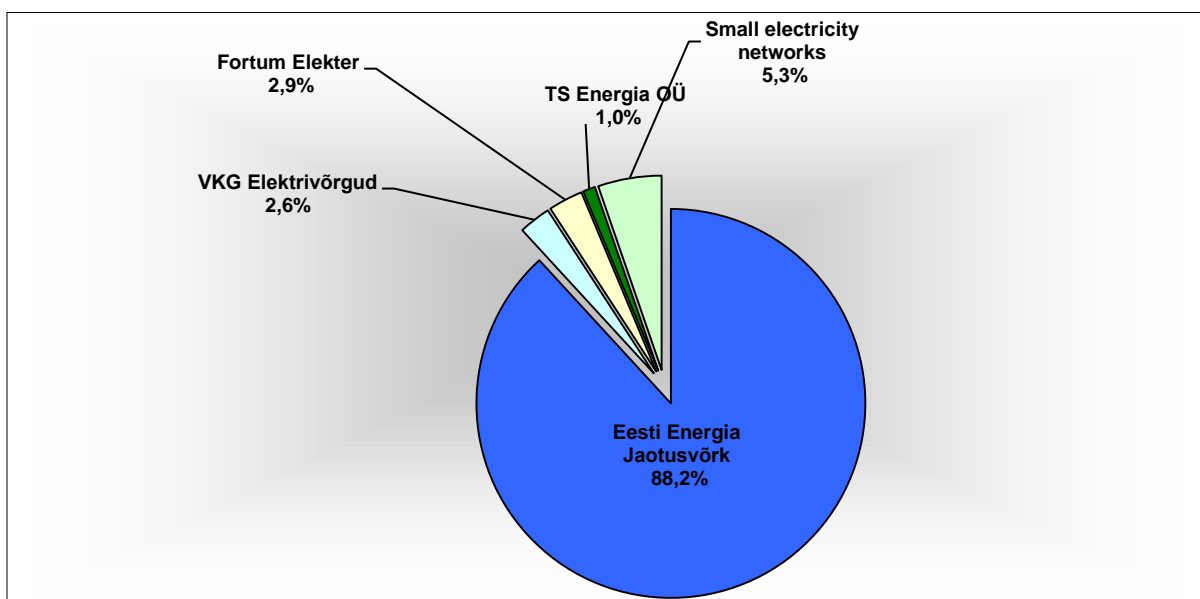


Drawing 3.1-3 Estonian power system; Source: Elering AS

Pursuant to the currently enforced Electricity Market Act for electricity networks the so-called exclusive right principle or, what is the same, the principle of concession is applied to. This means that the transmission system operator (TSO) has an exclusive right to perform power transmission and system services. The same principle is applied to distribution network operators as well, whereas for the operators an individual service area, determined by geographical coordinates, is assigned to. Within the area respective operator has exclusive rights to provide network services. Thereby neither competition between lines nor parallel lines is allowed. The principle of concession minimizes business risk for network operators, since the status of a natural monopoly originates not only from the actual situation but also from the provisions of law. Reasoning from the exclusive right the network operators have also an obligation of developing their networks in a manner that secures supply to already connected customers and to new customers that wish to connect as well.

Concentration of the distribution service market is extremely high. The largest undertaking is Eesti Energia Jaotusvõrk AS that belongs to Eesti Energia AS. Its annual sale in 2010 was 6 552 GWh, the number of customers was 642 666 and their share on the market 88,2%. The second and the third largest distribution enterprises have more or less the same sale volume. VKG Elektrivõrgud OÜ, which belongs to the Estonian private capital (the sole holder of shares is the largest Estonian shale oil producer Viru Keemia Grupp AS). It has 34 755 customers and an annual sales of 197 GWh. The third largest network operator is Fortum Elekter AS with a sales volume of 213 GWh annually and the number of customers 24 316 customers. An annual sale of the rest 34 distribution undertakings is below 500 GWh altogether. The largest among those are TS Energia OÜ (the networks owned by Port of Tallinn), AS Sillamäe SEJ (CHP plant in Sillamäe) and AS Loo Elekter. An annual sale of smallest networks is below 2 GWh.

The market share of distribution undertakings is presented in drawing 3.1-4. In spite of the quite marginal market share of individual small network operators their 11,8% total share is considerable. That is why also in this segment a strong regulation must apply, similarly to the regulation of large ones.



Drawing 3.1-4 Market share of electricity distribution networks in 2010

Network service price regulation

Law provides for equal price regulation for all network enterprises regardless of their size. There is quite high number of distribution undertakings (37). This adds an extra workload to the Authority, as the volume of work with price approval primarily depends on the number of undertakings and almost does not depend on the size of an undertaking.

In the regulation of the transmission network undertaking the EC Regulation No 1228/2003 brings some differences into the regulation of the transmission network undertaking (the inter-transmission system operator compensation mechanism). In December 2010 Elering AS signed agreement on compensation mechanism, which sets out unified principles of compensation for transits of electricity. On 23 September 2010 the European Commission adopted the Regulation No 838/2010 which stipulates the principles of compensation for transits of electricity. In March 2011 Elering AS signed updated agreement on inter-transmission system operator compensation mechanism which is dealt with below in this chapter.

Pursuant to law, the Authority approves separately the following network charges and methodologies:

- network charges (for electricity transmission and for using a network connection)
- ancillary services provided by network operator (e.g. replacement of main protective fuse or sealing of meters at the customer and some others)
- methodology for calculation of a charge for connecting to the network
- balancing energy pricing methodology

The prices for balance energy and the charges for transits of electricity are not subjects to approval, but the Authority is obliged to monitor the justification of the prices. That means *ex-post* regulation is applied to these charges.

The Regulation No 1228/2003 Article 4, clause 2 and the Guidelines on Transmission Tarification allows charging of producers for transmission, but Estonia has not applied it and respective charge has so far been 0 €/MWh.

Network charges

The Authority has elaborated unified methodologies for the formation of charges and their approval as well. The methodologies are disclosed at the Authority's web site. The site also includes specially elaborated tables for collection of input data to be filled in for approval process. The tables are relatively comprehensive and include technical data and detailed accounts: profit and loss statement and balance sheet, and data on assets. Undertakings shall also submit a detailed investment plan and separately the expected sale volumes of individual network services. The price may be approved by a formula for a 3-year regulation period or, upon an undertaking's application. Thus, it is required to fill in the tables accordingly: once in three years or, along with an application. In the meantime an indexation takes place according to the methodology using a price formula. If necessary, the Authority is entitled to request additional information about economic performance and technical indicators.

Submission of input data is an obligation stipulated by law. The Authority has the right to request any information needed for price approval and for performing of supervisory proceedings. The Authority employees also have the right carry out on-site monitoring any

time and require data and copies of the documents. The practice so far has shown that undertakings do not refuse to submit information.

In the regulation of network prices the Authority has a determining role in the selection of methodologies. Law sets out only the following principles:

- The level of network charges must enable an undertaking to fulfil their obligations determined by legal acts and the market license conditions, as well as to ensure a justified return on invested capital.

- The Authority elaborates and discloses unified methodologies for the calculation of network charges, which serve as the basis for approval.

The Authority has prepared and disclosed on its web site the following methodologies: “Standard Methodology for Calculating of Electricity Network Charges”, “Guidelines for approval of charges for connecting to the network and change of consumption or production conditions” and “Guidelines for the determination of weighted average cost of capital (WACC)”.

In the price regulation of network charges of large undertakings the so-called long-term RPI-x indexation method is applied, by which the charges are approved for a 3-year period and adjusted annually. The formation of network charges is first of all based on the projected sales revenue for a 3-year regulation period.

As a rule, for the regulation period a development obligation is set forth in order to improve efficiency. In the previous regulation period (2008 to 2010) the power losses in the distribution network of Eesti Energia Jaotusvõrk OÜ were reduced from 8% to 7%. For the next 3-year regulation period that begun in 2011 a target is set to reach to a 5,5% losses by 2017. Also a target for fixed cost savings is imposed, which should not rise at a faster rate than the RPI-x. Generally in the regulation practice the fixed cost saving obligation is set to 1,5%. In connection with a massive cost reduction by the enterprises that operate in the free market conditions (due to the economic recession) also the Authority is in a position that in the applying for new price approval the regulated enterprises shall follow similar policies of cutting the cost.

The basis for the determination of both the capital expenditure and the justified return (operating profit) is a regulatory asset base. In accounting of the regulatory assets its continuity is of an extreme importance. The accounting of assets takes place in a principle that to an initial value of assets investments are added and a regulatory capital expenditure is subtracted. In the accounting of regulatory depreciation the principle is used where capital expenditure is included in the network charges according to the life span of fixed assets. Similarly to other regulatory authorities a model, in which for the calculation of the justified return a weighted average cost of capital (WACC) and regulatory asset base is used.

The Regulation of the European Parliament and of the Council No 1228/2003 brings some differences into the regulation of the network service prices of the transmission network undertaking. Similarly to other network operators the charges established by the transmission undertaking must be transparent, take into account the need of ensuring security of the network and reflect all actually incurred costs to the extent of conforming to efficiency criteria and other network operators with comparable structure. The charges have to be non-discriminatory. As the transmission network undertakings incur additional costs and revenues as a result of hosting cross-border flows of electricity the Regulation provides for the

establishment of a so-called compensation fund between EU Member States (ITC fund). All transmission system operators contribute to the ITC fund and from the fund, costs are compensated for all transmission operators participating in the transits of electricity. Amongst other things Article 4, paragraph 3 of the Regulation sets out that when setting the charges for network access the payments to and receipts from the ITC fund shall be taken into account. As the following of the Regulation is mandatory to Estonia the Authority will take into account the costs incurring from the ITC fund in approval of network charges.

The basis for the formation of the ITC fund is the European Commission Regulation No. 838/2010 of 23 September 2010. Pursuant to it the transmission system operators have established the ITC mechanism fund for compensation for energy losses in national transmission systems resulting from hosting cross-border flows of electricity and for costs incurring in making respective infrastructure available to host cross-border flows.

For the implementation of the foregoing the transmission system operators participating in the ITC mechanism have concluded mutual *ITC Clearing and Settlement Multi-Year Agreement*, which regulates in detail the principles of payments to and from the ITC fund. The principles of the mechanism can be shortly concluded as follows:

- a) the sum paid to the ITC fund equals to the sum received from it
- b) for the export and import of national market participants respective transmission system operator pays to the fund
- c) for the transits of electricity through a national system respective transmission system operator receives compensation payments from the fund
- d) in the calculation of the payments to and from the fund the energy flows of both the countries belonging and not belonging to the mechanism (e.g. the Russian Federation) are taken into account

The calculations of the ITC fund (how much shall be paid to and received from by individual transmission system operators) may take months, are made in Zürich by so-called *Data Administrators*. To that end complex computer models have been prepared, which model the whole Europe's so-called horizontal electricity network.

The approved network service charges in 2010 are presented in table 3.1-4.

Table 3.1-4 Transmission and distribution service prices in electricity networks in 2010

	Number of operators	Average price for transmission or distribution €cent/kWh		
		Large industrial customer	Commercial customer	Household customer
Transmission network	1	0,89		
Distribution network	37	1,40	3,10	4,02

Notes:

According to Eurostat definitions:

- large industrial customer, one with an annual consumption of 24 GWh, max capacity 4000 kW
- commercial customer, one with an annual consumption of 50 000 kWh, max capacity 50 kW
- household customer, one with an annual consumption of 3 500 kWh

Pursuant to the Electricity Market and Public Information Acts network undertakings are obliged to maintain a web site and to disclose on it the information, which is important to market participants, like charges for network services, standard terms and conditions for network service contracts and for balance provision contract, the price for balancing energy, conditions for establishing a network connection, and other essential information. The network charges shall be published at least 90 days prior to their entry into force. In addition

to web site the tariffs have to be disclosed also in at least one daily national newspaper. The standard terms and conditions for provision of network services and for the selling of electricity shall be disclosed at least 30 days before becoming valid.

The Authority's opinion is that Elering AS fulfils all legislative public information requirements and during the last year has disclosed the information important to market participants, like system peak load, transmission capacity of the lines, planned network repairs, level of power losses in the network and other relevant information. According to their action plan, from 14 August 2009 Elering started a full-scale implementation of the public information requirements pursuant to EC Regulation No 1228/2003. On their web site it is also possible to get information about their economic performance: annual accounts, action plans for equal treatment, and others.

Connecting to network and connection fees

The process of connecting to the grid is regulated by the Electricity Market Act, paragraph 42 (2) and by the Grid Code enforced by the governmental regulation No 184. Chapter 5 of the Grid Code sets out requirements for the connecting of a customer electrical appliance to the distribution network of a network undertaking. For connecting to the transmission network a connection application must be submitted to the TSO (Elering AS) and during 90 days an offer for connection shall be issued.

The connection offer shall contain an electrical flow diagram for connecting to the transmission network, parameters, quotation of the connection related costs and an estimation of the charges payable for the connection. In case if the customer wants to connect to the network in an area where the transfer capacity is limited by connection offers of other connectees, the network undertaking shall keep a chronological order records for the implementation of the connection offers. The network undertaking issues a connection offer when the transfer capacity becomes available. Applications are recorded in a waiting list as of the date of their reception. If the data submitted in an application are insufficient or do not fulfil the requirements the network undertaking notifies the customer about it in 10 days from the reception of his application.

For connecting a customer appliance to the network, or for amending of the consumption or generation conditions, the network undertaking concludes with the connectee a connection contract. The following shall be set in the contract:

- location of connection and measurement points;
- the charges payable for connecting or for the change of conditions and payment condition;
- conditions for provision of the connection or for the change of consumption or production conditions, including the deadline;
- conditions for amending and termination of the connection contract;
- other conditions.

The charges for connecting to the transmission network are determined on the basis of actually incurred costs on the principles laid down in the Grid Code. In the calculation of the charge for connecting to the network justified costs necessary for making the connection are taken into account, like: the cost for construction of new electrical appliances or the re-building of existing ones necessary for connecting of a new consumption capacity or changing of the existing consumption conditions. It should be explained herewith that the charge for

connecting to a distribution network is calculated on the basis of the connection fees calculation methodology approved by the Authority.

Quality of electricity supply

Quality of supply requirements are based on the Electricity Market Act. Pursuant to it, the requirements are established by the Minister of Economic Affairs and Communications. Following of the requirements is obligatory and penalty payments can be imposed by misdemeanour proceedings in case of violation of the requirements. Quality of supply requirements contain requirements for customer service, and acceptable duration of supply interruptions, separately for those caused by faults and those caused by a planned activity. The functions of the Authority are to monitor undertaking's performance in the fulfilment of the quality requirements, the adequacy of keeping records on quality indicators and in the case of violation, to initiate misdemeanour proceedings. The disclosure of relevant quality indicators on the web site is obligatory for all undertakings.

Requirements for the quality of customer service determine the maximum acceptable time, during which certain operational procedures have to be accomplished. Undertakings have to submit to the Authority information about the extent of compliance with the service quality requirements. Based on the information it is possible to calculate the percentage of compliance with the service quality requirements. As well, it is possible to analyse the trend: whether it is improving or worsening. In case of failure to comply with the requirements customers have the right to file a complaint with the Authority. The Authority may initiate a misdemeanour proceeding in each specific case and impose a fine (penalty payment) in an amount of up 3 200 € for a single violation. Therefore, possible level of the punishment can be quite remarkable. The money is to be transferred to the state budget.

As regards network service quality both supply interruptions caused by faults (not planned) and planned interruptions are regulated. Supply interruptions lasting less than 3 minutes are not considered as interruptions. According to the quality requirements the time limits (maximum acceptable durations) are stipulated, during which customers shall be re-supplied. The time limits are distinguished for summer and winter period (table 3.1-5). Beginning from 1 January 2011 the network service quality requirements will become stricter, i.e. the acceptable durations of interruptions caused by faults will become shorter.

If undertakings fail to comply with the acceptable time limits they are obliged to pay compensation to customers. As well the Authority may initiate a misdemeanour procedure in each specific case and impose a fine (penalty payment) in an amount of up 3 300 €.

Table 3.1-5 Network service quality requirements

	Summer period from April to September	Winter period from October to March
Transmission network		
Acceptable duration of an interruption caused by faults	2 hours*/ 120 hours **	
Acceptable annual accumulated interruption duration	200 hours (150)***	
Distribution network		
Acceptable duration of an interruption caused by faults	16 hours (12)	20 hours (16)
Acceptable duration of a planned interruption	10 hours	8 hours
Acceptable annual accumulated interruption duration by faults	100 hours (70)	
Acceptable annual accumulated planned interruption duration	64 hours	

Notes: *Power is supplied through two or more 110 kV transformers or lines

** Power is supplied through single 110 kV transformer or a line

*** In brackets the requirements from 1 January 2011 are presented

The Authority has elaborated a specific form for reporting. Undertakings are required to fill in and to disclose it. In addition, it is required to disclose how many times and in how many grid connection points they failed to comply with the quality requirements. In connection with customer service requirements undertakings shall submit data on how many times they failed to fulfil the service quality requirements. Network operators shall disclose the following network quality (continuity of supply) indicators:

- average fault caused interruption frequency per consumption point per year (CI; SAIFI)
- average fault caused interruption time per consumption point per year (SAIDI)
- average fault caused duration of an interruption (CAIDI)
- average planned interruption frequency per consumption point per year
- average planned interruption time per consumption point per year
- average duration of a planned interruption

All above-mentioned data on network quality are disclosed on the Authority's web site.

Below table 3.1-6 presents the data submitted by the TSO (Elering AS) on the time spent for creation of connections between networks and for with an accuracy of 30 minutes.

Table 3.1-6 Timing of creating and repairing connections between networks by the TSO in 2009 and 2010

Line	Interruption duration (hours), 2009 ¹	Interruption duration (hours), 2010 ¹
L301 Tartu - Valmiera	437	6
L354 Tsirguliina - Valmiera	202	41
L358 Tartu - Pihkva	331	87
L373 Eesti PP - Kingissepp	442	508
L374 Balti PP - Leningradskaja	810	718
L677 Tsirguliina - Valka	137	510
L683 Ruusmäe - Aluksne	264	951
Total	2623	2821

¹The duration includes also interruptions ordered by neighbouring systems

Table 3.1-7 presents the quality of electricity supply indicators for 2008, 2009 and 2010 of Elering AS (the TSO) and of the largest distribution operator Eesti Energia Jaotusvõrk OÜ.

Table 3.1-7 Elering Electricity supply quality indicators in transmission and distribution networks

Security of supply indicators	Unit	Transmission Elering AS (TSO)			Distribution Eesti Energia Jaotusvõrk OÜ		
		2008	2009	2010	2008	2009	2010
Total number of consumption points	pcs	245	247	250	633 438	633 147	636 762
Fault caused annual accumulated interruption duration	minutes	1200,8	883	2973	280 441 590	129 203 537	283 935 405
Planned annual accumulated interruption duration	minutes	6608	51344	3336	132 911 353	98 915 064	82 486 977
Average fault caused interruption frequency per consumption point per year (CI) (SAIFI)	pcs	0,160	0,126	0,172	2,450	1,995	2,218

Average interruption time per consumption point per year (SAIDI)	minutes	4,922	3,575	12,000	443,000	204,066	446,000
Average duration of an interruption (CAIDI)	minutes	30,791	28,484	69,000	180,000	102,303	201,000
Average planned interruption frequency per consumption point per year	pcs	1,000	0,053	0,040	1,000	0,612	0,533
Average planned interruption duration per consumption point per year	minutes	438,000	207,870	13,300	210,000	156,228	129,500
Average planned duration of an interruption	minutes	438,000	3949,538	333,600	304,000	255,308	255,308

Balance responsibility

The Electricity Market Act and the Grid Code stipulate the regulation of balance responsibility in detail. According to it every market participant is responsible for its balance. The balance period is one full hour and the balance day begins at 00:00. A balance provider shall provide the system operator with a preliminary balance plan for a calendar month, week and day. The final balance plan is provided at 16:20 at the latest in the preceding day. Detailed information on the conditions of the balance responsibility of balance providers is given in the standard terms and conditions for balance contracts which are approved by the Authority and disclosed on the TSO (Elering AS) web site.

The market is organised on the principle that the transmission network operator (TSO) is responsible for the balance of the whole system and there can be many balance providers operating on the market. For providing the balance the transmission network operator buys and sells balancing energy. The methodology for calculating of the balancing energy price and standard terms and conditions of balance contracts are subject to approval by the Authority. In formation of balancing energy price the TSO is obliged to buy and sell electrical energy at best possible price. The balancing energy prices are disclosed on the web site of Elering (<http://www.elering.ee/bilansienergia-osta-ja-muuk/>).

Balance is determined by the means of remote reading devices (*on-line*) in case the customer's electrical connection capacity exceeds 63A. For determination of other customer's balance standard load curves are used. This means that for household customers an *on-line* metering is not necessary.

Until the amending of the Electricity Market Act on 1 May 2007 the wind turbines were exempted from balance responsibility. According to the amendments wind turbines are also responsible for their balance from 1 January 2009, similarly to other producers.

Eligible customers conclude with their seller the so-called open supply contracts, which designate the balance provider who has taken the responsibility to provide balance of the eligible customer. For holding non-eligible consumer's balance their distribution network operators are responsible for. The biggest balance provider is Eesti Energia AS. In spite of the partially closed market still three independent balance providers have appeared besides Eesti Energia. Due to the partial opening of the market in April 2010 the situation has improved from the competition point of view. New balance providers are coming to the market and it is clear that after full opening of the market the competition in this service provision gets stronger.

3.1.3. Unbundling of activities

Beginning from 1 July 2010 the Electricity Market Act sets out the requirement that the transmission network undertaking may not at the same time be also a distribution network undertaking, nor belong to the same group with an undertaking who is acting in the area of activity related to the production or sale of electricity. In Estonia the TSO (Elering AS) is separated by ownership from all other electricity production and sale undertakings from 27 January 2010. This ensures separation of the areas of activity and the independence of the transmission network operator, who is the TSO as well.

A distributing network shall form a separate business entity if the number of customers exceeds 100 000 and shall not operate in other area of activity than the provision of network service. The latter applies in reality only to the distribution network of Eesti Energia Jaotusvõrk which belongs to the Eesti Energia group, as all other distribution undertakings have less than 100 000 customers.

If a distribution network undertaking has less than 100 000 customers it shall separate its accounts as follows:

- provision of network service
- sale of electrical energy
- ancillary activity

All distribution network operators, regardless of their size, shall keep their accounts on the same principles, as separate undertakings operating in the same area of activity should have kept. Therefore, a distribution network operator that is not required to form a separate business entity is obliged to keep its accounts similarly to a business entity and shall submit in its accounts balance sheet, profit and loss account, management report and other reports provided for in the Accounting Act separately for network services, electricity sales and ancillary activities. Respective information shall be submitted in their annual report and made public. The separation of accounts shall be audited and the auditor's opinion attached.

The Authority has elaborated and disclosed on its web site respective guidelines and a reporting form, which can serve as the basis for separation of activities for undertakings. In addition to the separation of network services, sale of electricity and ancillary activity undertakings shall also separate their accounts by different services (so-called regulatory stipulated activity separation).

The transmission network operator shall separate its accounts as follows:

- sale of network service (*ex-ante* regulation, the Authority approves network charges prior to their entry into force)
- transit of electrical energy (*ex-post* regulation, the Authority has the right to monitor justification of prices)
- charges paid by customers for connecting to the network (*ex-ante* regulation, the Authority approves the methodology for calculation of connection charges separately for every undertaking)
- sale of balancing energy (*ex-post* regulation, the Authority has the right to monitor justification of prices)
- ancillary activity

A distribution network operator, who is required to form a separate business entity, shall also separate its accounts as follows:

- sale of network service (*ex-ante* regulation, the Authority approves network charges prior to their entry into force)
- charges paid by customers for connection to the network (*ex-ante* regulation, the Authority approves the methodology for calculation of connection fees separately for every undertaking)
- ancillary activity

A distribution network operator, who is not required to form a separate business entity, shall separate its accounts as follows:

- electricity sale to non-eligible customers (the Authority approves weighted average price)
- electricity wholesale, including to eligible customers (the Authority has the right to monitor whether cross-subsidizing is avoided in the sale of electricity to eligible and non-eligible customers)
- sale of network service (*ex-ante* regulation, the Authority approves network charges prior to their entry into force)
- customers' paid charges for connecting to the network (*ex-ante* regulation, the Authority approves the methodology for calculation of connection charges separately for every undertaking)
- ancillary activity

Securing of equal treatment

Pursuant to the Electricity Market Act all network operators are obliged to elaborate an action plan with the measures for equal treatment of other electricity undertakings and customers, including duties of employees in the implementation of these measures. The Authority has elaborated guidelines for the preparation of such plan, which is disclosed on the Authority's web site. According to the guidelines, it is recommended to compile the plan for a 3-year perspective. Annually, a report shall be submitted to the Authority on the implementation of the plan. Both the plan and the report are public documents and all interested parties have the right be acquainted with them. If the Authority is in an opinion that the plan is not sufficient and does not comply with the requirements, a revision of the plan and its changing may be required, if needed.

As in Estonia there is only one transmission network undertaking who is also the TSO, a special attention shall be paid to the analysis of its equal treatment action plan. On the other hand the Authority pays special attention also the largest distribution operator Eesti Energia Jaotusvõrk which has about 90% share on the distribution market and belongs to the Eesti Energia group

Unbundling of activities and equal treatment in the transmission network (Elering AS)

As regards unbundling of activities and independence of management Elering (the TSO) completely fulfils the requirements of the Directive No 2003/54 EC of the European Parliament and of the Council and of the Estonian Electricity Market Act. Beginning from 27 January 2010 Elering is ownership unbundled from all other undertakings acting in the production or sale of electrical energy. Previously Elering belonged to the Eesti Energia group. 100% of their shares belong to the Estonian state. The management board of the company has three members, while their supervisory board comprises five members.

The only activities of the TSO are limited to the provision of network services and the sale of balancing energy, and from 1 May 2007 also the administering of the fund for supporting of producers using renewable energy sources. In addition, the undertaking has separated its accounts their cost components according to the requirements elaborated by the Authority.

Independence of Elering is especially important in free market conditions where the undertaking has information on bids of various electricity producers and traders and possible leakage of this kind of information would be equal to insider dealings at stock exchange which can give advantages to certain traders before the others.

From the point of view of equal treatment of market participants it is extremely important to secure confidentiality of information. The information system of Elering in a very little extent still connected to the system of Eesti Energia group. As of September 2011 the following systems have been separated from the group: network control and data reading systems, balance administering software, accounting and bookkeeping software, electronic messaging and the system group calendars, file and printer service, local network, security solutions (antivirus and data scripting). Already before the end of 2011 the document administering system will be separated. Only the operational network administering software remains connected with the Eesti Energia's information system. The separation of it is planned in 2012. According to the company's internal administrative regulations the Eesti Energia group's undertakings have no access to the confidential information of Elering.

As one of the competences of Elering is securing of supply and balance in the power system, equal treatment of market participants is extremely important also from this aspect. Pursuant to the Electricity Market Act the transmission operator can give orders to consumers, producers, network operators and other market participants for adjusting their consumption-production regime, in order to safe-guard security of supply in the entire system. It is extremely important that market participants are treated equally. Safeguarding of security of supply is based on respective internal documents established by Elering, including the Procedures of Operational Control of the Estonian Power System. For improving cooperation with larger clients relevant agreements on technical cooperation on security of supply are concluded or, are under conclusion. In order to secure cooperation with neighbouring power systems agreements on parallel operation will be concluded.

An important issue is the availability of a plan for actions in possible crisis situation where limitations of consumption may become necessary. In emergency situations the guidance is the instruction for liquidation of emergency consequences elaborated by the Ministry of Economic Affairs and Communications, as well as the plan for consumption limitations, which is adjusted annually. The orders issued by the system operator proceed from security of supply needs. In order to follow the requirements Elering has validated documents that describe the actions required by the system operator.

Elering AS constantly develops the network and monitors sufficiency of the transfer capacity of existing transmission lines. If congestion still appears, then Elering will limit consumption by distribution networks in accordance with the limitation plan agreed upon with the network operators in beforehand. Respective plan is adjusted annually. The transmission dispatch centre operator has the right to decide upon actual situation, which consumer to interrupt first, in order to have the highest corrective effect under specific circumstances. Elering has an agreement with the owner of Estlink 1 according to which in case of a congestion the electrical energy transmitted to Estlink 1 can be limited as well.

Connecting of market participants to the transmission network of Elering is important from the equal treatment point of view, first of all in relation to producers, as consuming customers connect to a distribution network, as a rule. That is why equal treatment of producers is especially important. During the last years Elering has issued biggest number of specifications for connecting of windmill parks. As regards connecting of producers a situation can appear that the transmission operator Elering has to allocate a “source of shortage” or saying it in other words, existing network may have not enough capacity in a specific area/territory for connecting all potential applicants which want to connect. The Electricity Market Act provides for refusal, first of all in cases where existing network structure has lack of transmission capacity for the network service. Elering uses a common form in concluding connecting contract agreements with all connectees. The form is disclosed on their web site. In order to secure equal treatment for all customers an internal procedure for connecting has been established, the following of which is obligatory for all employees dealing with connection issues. The charges/fees for connecting to the network are calculated on the principles laid down in the Grid Code, i.e. on the basis of actually incurred costs. In case of refusal to connect Elering follows the principles stipulated in the Electricity Market Act, its paragraph 65. In situations where connecting is related to a congestion of transfer capacity the customer can get a connection offer for a maximum possible capacity. If no connection offers can be issued, because the necessary capacity is unavailable, the connectees are added to a waiting list. Applications in the waiting list are processed, when requested capacity becomes available, on the principle of a chronological priority – earliest application in the list gets the connecting offer first.

In conclusion, the activities of Elering AS (the TSO) related to equal treatment of market participants can be considered satisfactory and the Authority has not observed cases of unequal treatment. The Authority is in an opinion that a positive circumstance is that the information system of Elering has only very limited connection to the system of Eesti Energia AS group (the operational network administering software) and it is planned to separate from in 2012.

Unbundling of activities and equal treatment in distribution networks of Eesti Energia Jaotusvõrk OÜ

The largest distribution operator Eesti Energia Jaotusvõrk OÜ belongs to the Eesti Energia AS group. Eesti Energia group is a vertically integrated energy company that integrates oil shale and electricity production, distribution network, electricity trading company and undertakings the deal with ancillary activities. 100% of the group’s shares belong to the Estonian state. In May 2009 the business titles of undertakings within Eesti Energia group were changed together with the replacement of their logos.

In relation to the unbundling of activities, the Eesti Energia distribution operator completely fulfils the requirements of the Directive No 2003/54 EC of the European Parliament and of the Council and of the Estonian Electricity Market Act. By its legal unbundling it is guaranteed that the undertaking is not active in other electrical energy related fields than in so-called supporting services – i.e. all services needed for provision of distribution service and/or operation of the distribution network. The services particularly include carrying out electrical works, provision of operational dispatch services, supervision on behalf of the owner and a reserve production of electrical energy.

The only activity of the undertaking is the provision of distribution service. In addition, the undertaking has separated in its accounts all cost based on the requirements elaborated by the Authority.

Pursuant to the Electricity Market Act a member of the management board of another network operator of the group may not at the same time be a member of the management board of the distribution operator, nor be in charge of it. However, it is allowed to be a member of the management board of an undertaking of the group and at the same time a member of supervisory board of the undertaking. Currently the supervisory board has five members, all of them from Mother Company. The management board has one member but according to their action plan it is intended to enlarge the board. Law does not stipulate the number of members of the board of the distribution operator but the Authority agrees that an enlargement of the board would be a positive development. Eesti Energia Jaotusvõrk is the owner of the network assets which ensures the fulfilment of the requirements of the Electricity Market Act.

For ensuring equal treatment of market participants the network services are provided in cases stipulated in the Electricity Market Act, while standard conditions for the services are approved by the Authority. In other cases certain customer groups are serviced on principles of equal treatment and the standard conditions of contracts elaborated by the undertaking itself. The charges for services are approved by the Authority as well. The charges for the services, which are not subject to approval, are calculated by the undertaking using uniform methodology for all market participants. Refusal to provide a network service is allowed only in the cases stipulated by law.

According to the action plan Eesti Energia Jaotusvõrk implements the measures upon orders by the transmission operator Elering AS. Respective cooperation agreement has been concluded between the two operators in order to secure technical stability of the grid and security of supply as well.

The distribution network operator buys a number of essential goods and services from the undertakings of the Eesti Energia group. This is an important circumstance first of all from the price formation point of view. Therewith prior to the purchasing of services negotiations are kept on the price and on other conditions. The prices of goods and services bought by the distribution network operator are reflected in the tariffs for network services which are approved by the Authority. That is why the Authority analyses in the approval process the prices of goods and services and monitors whether prices inside of the group are not higher than market prices.

In order to ensure equal treatment of market participant and for the fulfilment of the confidentiality requirement the distribution operator has concluded with the Eesti Energia group an authorization agreement and an Annex to it which sets out clear rules for the limitation of access to confidential information. The authorization agreement lays down the procedure how the group's employees involved in the provision of the authorization related services should treat the information in their possession. Access to the data base of other undertakings of the group is regulated by technical and organizational measures including limitations of access to the information systems. The headquarters is located in the same building with Mother Company, on an individual floor, separately from other structural units. The Authority is in a position that the provision of confidential information related services (for example the conclusion of contracts, invoicing and payments) should be arranged either inside the undertaking or through an information system and a data base which is separated from the group.

Pursuant to both the Electricity Market Act and the Public Information Act network operation undertakings are obliged to maintain a web site and to disclose on it the information which is important to customers and market participants, like the charges for network services, standard terms and conditions for network service contracts, conditions for connecting to the network and other essential information. The Authority has observed that whilst earlier the distribution operator had its own communication personnel that organised communication with media then currently Eesti Energia Jaotusvõrk outsources this service from the mother company Eesti Energia AS. It feels like there is a willingness to present to the public an integration of the undertakings to the united brand of Eesti Energia group. In May 2009 the business titles and logos of the undertakings of the group were changed. Jaotusvõrk OÜ was changed to Eesti Energia Jaotusvõrk OÜ and all undertakings of the group started using the group's logo. By this the belonging of the distribution undertaking to the group is stressed out and a separation of the daughter company is minimized. **Although the distribution undertaking has updated its web site and access to the information necessary to market participants has improved, using of the same logo and similar title with Mother Company may confuse market participants and complicate the availability of information.**

3.2. Competition in the electricity market

3.2.1. Description of wholesale market

The Estonian electricity market is first of all characterised by the transition period for market opening until 2013 and by the high concentration. In 2010 the market was opened by 28,4%, while in 2011 Estonia shall achieve the required 35% market opening.

In 2010 there were four independent electricity traders operating on the market. In April 2010 power exchange started its activity in Estonia.

In essence the whole electricity production in Estonia is controlled by the largest electricity undertaking Eesti Energia AS, which possesses 90% of the installed net capacity (2 237 out of 2 474 MW- Elering AS 2010th data). They produced 89% of total Estonian electricity generation in 2010. Herewith it deserves mentioning that practically all production of electrical energy is based on domestic energy sources and thereby Estonia is independent from import of fuels.

Compared to other EU Member States the Estonian electricity market is characterised by its little volume. In 2010 the domestic consumption was 8 478 GWh (incl. losses 1 047 GWh) and the system's load peaked at 1 587 MW. According to the data presented in table the electricity consumption in Estonia has gradually increased since 2001, but due to the economic downfall in 2009 the consumption decreased by 4,7%. Estonia exported 4 354 GWh and imported 1 100 GWh. Some general electricity market indicators are presented in table 3-2-1 below.

Table 3.2-1 General indicators of electricity wholesale market**Sources: Statistical Office and TSO**

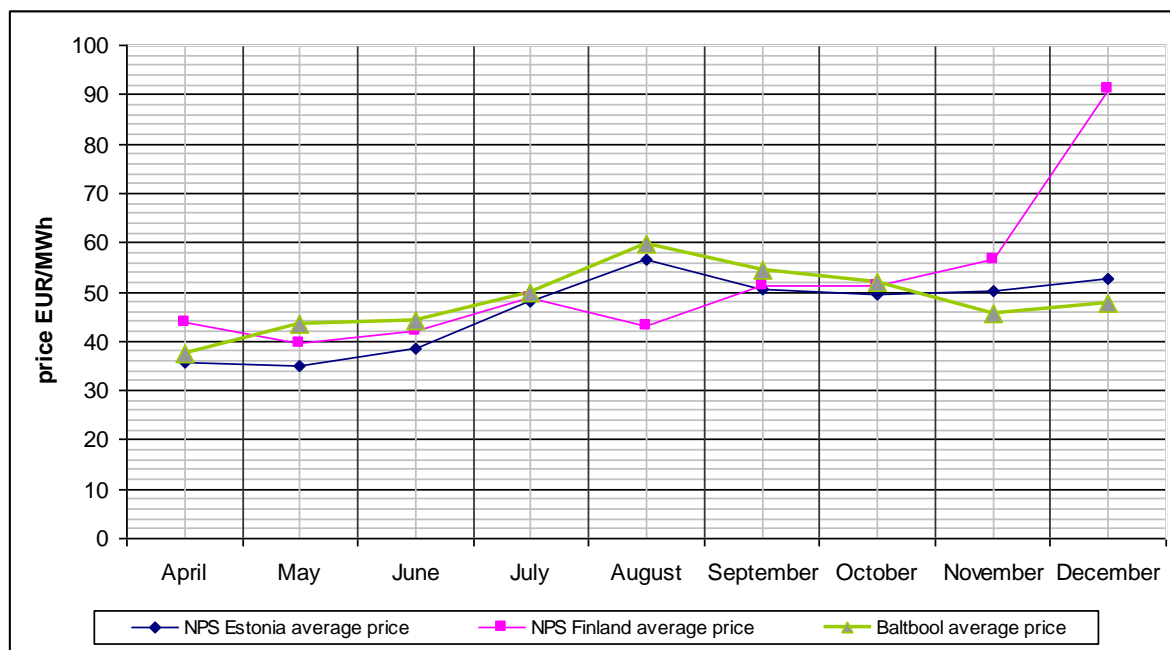
Year	Electricity consumption on GWh ²	Import GWh	Export GWh	Peak load MW	Installed capacity MW ³	No of producers with more than 5% market share	Market share of 3 largest producers	Average market price €/kWh ¹
2001	6970	496	1118	1321	2876	1	99	
2002	6940	412	1102	1336	2726	1	99	
2003	7210	93	1989	1475	2723	1	99	
2004	7440	347	2141	1318	2675	1	99	
2005	7510	345	1953	1331	2433	1	99	2,62
2006	7978	251	1001	1555	2059	1	99	2,62
2007	8534	345	2765	1537	2052	1	99	2,62
2008	8557	1369	2310	1637	1960	2	99	2,85
2009	7966	3025	2943	1513	1888	2	99	3,17
2010	8478	1100	4354	1587	2002	2	99	2,94

Notes: ¹ production price of Narva Power Plants² incl. network losses³ possible production capacity during peak load

Due to the partial opening of the market the emerging of an effectively functioning market is restrained as the electricity sold to non-eligible customers has to be produced in a legally stipulated way. However, on 1 April 2010 the next step towards market opening was made, according to which eligible customers may not buy electricity at the regulated price, but need to buy it in an open market. This is an important milestone in creating competition on the wholesale market. Therewith, according to the general organisation of the market, until 1 January 2013 non-eligible customers may buy electricity only from the serving network operator or from seller designated by the operator. Network operators in turn shall purchase electricity for compensation of network losses or for re-selling to non-eligible customers produced either in the Narva PP, in cogeneration process or produced by small producers (of below 10 MW capacity). Essentially, the majority of the Estonian producers comply with these criteria and are in equal conditions with the Narva plants. Network operators have the right to buy electricity for compensation of network losses at the regulated price. This has been done by the operators, as the regulated price is lower than the market price. Essential competition in the electricity purchased for the compensation of network losses will take place after the full opening of the market in 2013, when the regulation of electricity production and sale price will be abandoned and among others also the network operators start buying electricity in open market conditions.

In order to adequately evaluate the activity of electricity producers and wholesale traders it is appropriate to consider their market share in the regional wholesale market together with other Baltic electricity market regulators. Through the Estlink 1 connection the electricity system of Baltic countries is integrated with Finland. In Latvia and Lithuania the market is opened and with the planned Estlink 2 connection the Estonian and the whole Baltic system will more and more integrate with the Nordic countries' power exchange *NPS*. Since 1 April 2010 1,8 TWh of electricity has been purchased from *NPS* for the Estonian domestic consumption. This constitutes 32% of the total consumption for the same period. In total 2,8 TWh of energy has been bought in nine months period. Almost one third of it (1 TWh) moved to Latvia. In the Estonian price area of the *NPS* 3,8 TWh of electrical energy was sold in total during nine months. 3,5 TWh out of this was sold by Estonian market participants. 47 GWh was imported from Lithuania while import from Latvia was 261 GWh. An average price for the nine months period in the *NPS* power exchange was 46,35 €/kWh.

Drawing 3-2-1 presents the comparative average prices of *NPS Estonia*, *NPS Finland* and the Lithuanian power exchange *Baltpool*. The reasons for difference in prices are: high export ability of Estonian producers, deficit of electricity in Latvia and Lithuania, low water reserves in hydro reservoirs, congestion in the Estonian-Latvian cross-border. Although the *NPS Estonia* and the Lithuanian power exchange *Baltpool* prices are relatively close, the exchange rules and environment are different and that is why it direct conclusions cannot be made.



Drawing 3.2-1 Comparison of *NPS Estonia*, *NPS Finland* and *Baltpool* monthly average prices

CO₂ impact on electricity price

As 88,6% of electricity is produced from oil shale (see drawing 5.1-2), the price for electricity is essentially influenced by the CO₂ emission reduction policy. It can also be stated that the impact of CO₂ policy to price formation in Estonia is considerably higher than in other EU countries. This is because the production of electricity from oil shale has a higher CO₂ emission level: the production of 1 MWh of electrical energy is accompanied by approx. of 1 ton of CO₂ emissions. Thus, if all needed CO₂ quantity should be bought at a market price it would considerably increase the electricity price. For example, if the CO₂ ton price is 10 €, it adds the same sum to the MWh price of electrical energy, i.e. 10 €/MWh.

For the previous period (2005 to 2007) sufficient CO₂ quota/allowances were allocated for Estonia, including for the possessor of Narva PP Eesti Energia AS, which satisfied both domestic consumption and export needs as well. For the ongoing period (2008 to 2012) the European Commission by its decision essentially cut the CO₂ quota. Estonia contested the judgment in the Court of First Instance. The Court of First Instance made a favourable decision for Estonia which was in return appealed by the European Commission with the European Court of Justice. Although the litigation is ongoing the Estonian government validated its internal quota allocation plan for 2008-2012. The plan sets out a permissible annual CO₂ quantity of 13,3 million ton, which includes a state reserve of 1,04 million tons. Whereas, the allocation for the Eesti Energia group is 9,2 million tons. Due to the essential cuts in quota a question rises - whether Eesti Energia has enough CO₂ quotas for the coming 5-year period for supplying domestic non-eligible customers or instead, some extra quota has to be purchased. Obviously, purchasing an extra quantity of quota shall influence the price for

electricity. The Authority ordered calculations from Tallinn Technical University of CO₂ quantities emitted by Eesti Energia. If to assume that for the export of electricity and for the production of shale oil the quotas will be purchased and if also to consider the decrease in electricity consumption, then Eesti Energia has necessary CO₂ quota to cover domestic consumption.

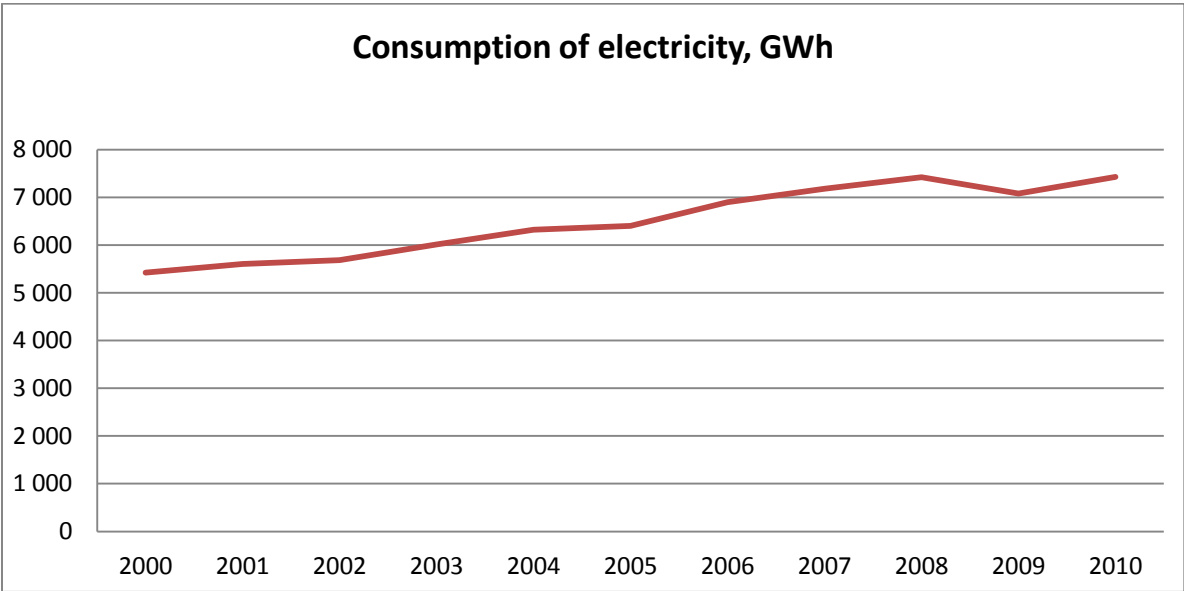
3.2.2. Description of retail market

Estonia is going through a transitional period towards market opening. The share of consumption by eligible customers in 2010 was 28,4% of the final electricity consumption, corresponding to 2110 GWh. Respective data is presented in table 3.2-2 below. In the column of bilateral contracts the quantity of electricity purchased by eligible customers is given.

Table 3.2-2 Electricity consumption in Estonia

Year	Total consumption (without network losses) GWh	Sold to eligible customers upon bilateral contracts GWh
2002	5 686	670
2003	6 013	760
2004	6 326	880
2005	6 403	850
2006	6 902	875
2007	7 180	985
2008	7 427	1089
2009	7 080	2015
2010	7431	2110

The past decade trend of electricity consumption (GWh) in Estonia is presented in below diagram 3-2-2.



Drawing 3.2-2 Consumption of electricity in Estonia 2000-2010, GWh

Source: Statistical Office

As non-eligible customers are obliged to buy electricity from the servicing network operator they have no possibility to change the supplier. Similarly to the wholesale market also in the

retail market the undertaking with the biggest market share is Eesti Energia AS with its actual share of 93,7%. The information related to the retail market is presented in below table 3.2-3.

Table 3.2-3 General data on retail market

	Total consumption (without losses) GWh	No of undertakings with more than 5% market share	No of independent electricity sellers	Market share of three biggest sellers			Switch of the seller		
				Large and very large industries	Medium and small industries	Small undertakings and household customers	Large and very large industries	Medium and small industries	Small undertakings and household customers
2001	5 607	1	0	100	93	93	0	0	0
2002	5 686	1	0	100	93	93	0	0	0
2003	6 013	1	0	100	93	93	1	0	0
2004	6 326	1	0	100	93	93	1	0	0
2005	6 403	1	0	100	93	93	1	0	0
2006	6 902	1	3	100	92	92	1	0	0
2007	7 180	1	3	100	92	92	0	0	0
2008	7 427	1	3	100	92	92	n/a	n/a	n/a
2009	7 080	1	4	100	93	93	n/a	n/a	n/a
2010	7431	1	4	100	94	94	80	n/a	n/a

* Does not include network operators

Data on final customer price formation (network services + electricity) are presented in the following table 3.2-4 below. The consumer price regulation and the selling obligation are dealt with in Chapter 6.1-5.

Table 3.2-4 Final consumer prices of electricity in 2010

	Unit	Business customer	Household customer
Network service charges	€cent/kWh	3,10	4,02
Taxes included in network charges		0	0
Price of electricity without network service (main tariff approved by the)	€cent/kWh	2,82	3,24
Excise tax on electricity	€cent/kWh	0,45	0,45
Subsidy for renewable energy	€cent/kWh	0,81	0,81
Final consumer price without VAT	€cent/kWh	7,18	8,52
VAT 20%	€cent/kWh	1,44	1,70
Final consumer price incl. VAT	€cent/kWh	8,62	10,22

Notes:

Under business customers all customers are considered which are not households.

Prices according to Eesti Energia AS and Eesti Energia Jaotusvõrk OÜ price list.

3.2.3. Competition supervision and measures for avoiding abuse of market dominant position

The Competition Act provides definitions for undertakings with market dominant position, for undertakings having special and exclusive rights and for undertakings possessing and controlling essential facility. An undertaking, or several undertakings operating in the same goods market, has dominant position if the position enables it/them to operate in the market to an appreciable extent independently from competitors, suppliers and buyers. Dominant

position is presumed if an undertaking or several undertakings operating on the same goods market account for at least 40% of the turnover in the goods market.

Pursuant to the Competition Act, any direct or indirect abuse by an undertaking or several undertakings of the dominant position in the goods market is prohibited, including:

- 1) directly or indirectly imposing unfair purchase or selling prices or other unfair trading conditions;
- 2) limiting production, service, goods markets, technical development or investment;
- 3) offering or applying dissimilar conditions to equivalent agreements with other trading parties, thereby placing some of them at a competitive disadvantage;
- 4) making entry into an agreement subject to acceptance by the other parties of supplementary obligations which have no connection with the subject of such agreement;
- 5) forcing an undertaking to concentrate, enter into an agreement which restricts competition, engage in concerted practices or adopt a decision together with the undertaking or another undertaking;
- 6) unjustified refusal to sell or buy goods.

Special or exclusive rights are deemed the rights granted to an undertaking by the state or a local government which enable the undertaking to have a competitive advantage over other undertakings in a goods market or to be the only undertaking in the market. An undertaking is deemed to control essential facilities or to have a natural monopoly if it owns, possesses or operates a network, infrastructure or any other essential facility which other persons cannot duplicate or for whom it is economically inexpedient to duplicate but without access to which or the existence of which it is impossible to operate in the goods market.

The Competition Act stipulates obligations of undertakings with special or exclusive rights or in control of essential facilities pursuant to which above mentioned undertakings shall:

- 1) permit other undertakings to gain access to the network, infrastructure or other essential facility under reasonable and non-discriminatory conditions for the purposes of the supply or sale of goods;
- 2) keep clear separation of accounts for different primary and secondary activities (e.g. production, transmission, marketing and other areas of activity) enabling thereby transparency of economic performance;
- 3) maintain separate records on revenue and expenditure related to each product or service based on consistently applied and objectively justified principles of calculation, which shall be clearly specified in the internal rules of the undertaking; the calculation of revenue and expenses must enable to assess whether the price of a product or service is in a reasonable ratio with the value of the product or service.

An undertaking with special or exclusive rights or in control of an essential facility may refuse to grant other undertakings access to the network, infrastructure or other essential facility if the refusal is based on objective reasons, including cases where:

- 1) the safety and security of equipment connected with the network, infrastructure or other essential facility or the efficiency and security of the operation of such network, infrastructure or facility are endangered;
- 2) maintenance of the integrity or the inter-operability of the network, infrastructure or other essential facility is endangered;
- 3) equipment to be connected to the network, infrastructure or other essential facility is not in conformity with the established technical standards or rules;

- 4) the undertaking applying for access lacks the technical and financial capability and resources to provide services efficiently and safely to the necessary extent through or with the assistance of the network, infrastructure or other essential facility;
- 5) the undertaking applying for access does not hold the permit prescribed by law for the corresponding activity;
- 6) as a result of such access, data protection provided by law is no longer ensured.

Pursuant to the Competition Act all network operators are the undertakings with special and exclusive rights, as well as the undertakings possessing essential facility. Exclusive right is granted also by the concession principle, as described in section 3.2 above, by which every distribution network has a service area assigned to it and in which only one operator may provide network services. The Electricity Market Act regulates the activities of network operators in detail and assigns the supervisory function as well. That is why supervision of the activities of network operators is regulated primarily by the Electricity Market Act.

Based on the Electricity Market Act, the Authority is obliged to approve the price of electricity sold to non-eligible customers and together with this also the production price of Narva Power Plants. The Authority has also the right to monitor the prices of a market dominant seller and of the electricity sold by a producer.

If a market dominant undertaking or an undertaking in control of an essential facility abuses its position then pursuant to the Competition Act a precept may be issued or a misdemeanour proceedings may be initiated (punishable by a fine/penalty payment of up to 32 000 €). Repeated abuse may be subject to punishment by way of criminal procedure.

From 1 January 2008 the Authority as the institution with new functions has an obligation to supervise market functioning pursuant to both the Electricity Market Act and the Competition Act. The Electricity Market Act regulates in detail electricity network undertakings' activities – their rights and obligations. Although the Competition Act stipulates the obligations of electricity network undertakings as ones in control of an essential facility it is practical to apply in networks regulation the specialised act - the Electricity Market Act. On the contrary, the activities of producers and traders are regulated in the Electricity Market Act quite broadly speaking. Hence it may be more practical to apply here primarily the Competition Act.

Impact of changes in the system of subsidies paid to electricity producers on electricity market

The Authority agrees that the impact of subsidies on security of supply is positive, as the investment risks of producers are reduced and in the result new production capacities are built in Estonia. First of all this is related to new oil shale units and to cogeneration plants using wood, peat or other fuels. On the other hand the Authority is in a position that from the competition point of view it is worrying, as a situation may occur that after some period of time all producers are receiving subsidies and thus only a subsidised electricity production remains in Estonia. Among other things the Authority means the situation in the neighbouring Latvian and Lithuanian markets where electricity producers are getting subsidies only for the production sold in their domestic markets. Herewith the Estonian producers have an advantage, because pursuant to the Estonian law the subsidy payments do not depend on the place of marketing.

The January 2010 amendment to the legislation raises the total amount of payable subsidies and the number of producers eligible to the subsidy as well. In 2010 the total of paid subsidies

was close to 45 million euro. Compared to 2009 the subsidies have grown by 76%. The subsidies for windmills totalled 8,2 million euro and for the electricity produced from biomass 28,9 million euro. The subsidised quantity of electricity produced from hydro power has remained in the same level while the subsidy for biogas based electricity was 0,6 million euro, increasing during the year by 40%. According to the estimations by Elering AS in 2011 already 57,7 million euro will be paid for the producers which use renewable energy sources cogeneration process (source: Elering AS).

In the situation where the subsidising is ever increasing its share in the customer bills becomes very essential. Taking into account the planned subsidies, like new wind mill parks (because the supportable production capacity was raised from 400 to 600 MW), CHP plants and new oil shale blocks the share of subsidy in the electricity price will be a yet higher.

Conclusively the Estonian Competition Authority is in a position that from the competition point of view the situation is worrying, because Estonia is moving towards continuously increasing share of subsidies in the price of electricity. Due to the tendency the Authority has started a thorough analysis of the subsidy payments, their effect to the competition situation and to consumers was evaluated, as well as a justification of the actual subsidy levels. In more detail the results are reflected in subsection 2.3.

4. Natural Gas market functioning and regulation

4.1. Regulatory issues [EC Directive 2003/55/EC Article 25 (1) excluding „h“]²

4.1.1. Cross-border gas connections, available transfer capacity and its allocation, congestion management

Estonia has network connections with Russia and Latvia. Altogether there are three connections: from Narva and Värskä to Russia and from Karksi to Latvia (drawing 4.1-1) with the total theoretical transfer capacity of 11 000 thousand m³ daily (4 276 MW). There are approximately 880 km of gas transmission lines (with the pressure level of above 16 bar) and about 2 035 km of distribution lines in Estonia. Estonia has neither gas storing facilities nor liquefied natural gas (LNG) terminals. The necessary pressure level in the Estonian gas system is maintained either by the Russian transmission system's compressor stations or from the Inčukalns underground gas storage in Latvia.



Drawing 4.1-1 Natural gas transmission network in Estonia

Source: AS EG Võrguteenus

As a rule, only the Värskä and Karksi connections are operational. The Narva connection is typically closed because of limitations (congestion) in the Russian side network. Although its theoretical transfer capacity is 4000 thousand m³ daily (1555 MW) the actual practically possible flow does not exceed 500 in winter time and 1000 thousand m³ daily in summer period. The cross-border transfer capacities are presented in table 4.1-2.

² h) transparency and competition level

Table 4.1-2 Transfer capacity of cross-border interconnections

	Technical flow capacity						Actual peak flow					
	Narva connection with Russia		Värskä connection with Russia		Karksi connection with Latvia		Narva connection with Russia		Värskä connection with Russia		Karksi connection with Latvia	
	K m ³ per day	MW	K m ³ per day	MW	K m ³ per day	MW	K m ³ per day	MW	K m ³ per day	MW	K m ³ per day	MW
2008	500	194	4000	1555	7000	2721	940	365	3110	1209	4610	1792
2009	500	194	4000	1555	7000	2721	230	89	2480	964	4350	1691
2010	500	194	4000	1555	7000	2721	690	268	2620	1018	4450	1730

* Theoretical flow capacity is 4000 thousand.m³ per day but practically limited because of congestion in the Russian network.

The 2010 peak load was 4 350 thousand m³ daily (1 730 MW), which is much lower the maximum available transfer capacity. Natural gas annual peak consumptions are presented in table 4.1-3. The data illustrate that there is no shortage of transmission capacity.

Table 4.1-3 Natural gas peak consumption and transfer capacity of transmission system

	Peak load		Available (max) system transfer capacity	
	1000 m ³ per day	MW	1000 m ³ per day	MW
2001	5 400	2 099	7 000	2 721
2002	5 000	1 944	7 100	2 760
2003	5 500	2 138	7 800	3 032
2004	5 100	1 982	8 300	3 226
2005	5 200	2 021	10 400	4 043
2006	6 700	2 604	10 500	4 081
2007	6 400	2 488	10 700	4 159
2008	5 200	2 021	10 900	4 237
2009	4 350	1 684	10 900	4 237
2010 prognosis	5 300	2 060	10 900	4 237
2011 prognosis	4 500	1 749	10 900	4 237
2012 prognosis	4 800	1 866	10 900	4 237
2013 prognosis	4 800	1 866	10 900	4 237
2014 prognosis	4 800	1 866	10 900	4 237
2015 prognosis	5 000	1 944	10 900	4 237
2016 prognosis	5 300	2 060	10 900	4 237

Note: Prognosis is a projected estimation by AS EG Võrguteenus (TSO)

Congestion management rules

There is no lack of capacity in the transmission network and according to an estimation by the system operator (TSO) EG Võrguteenus there shall be no capacity deficit until 2016. That is why there is no need for specific congestion management rules.

4.1.2. Regulation of gas transmission and distribution network undertakings

Dissimilarly with electricity networks in issuing activity licenses the so-called exclusive right principle is not applied for gas networks and according to the Natural Gas Act building of parallel networks is allowed. In practice so far no cases of parallel network building have been recorded.

In issuing activity licenses to distribution network operators the Authority determines the service area for an undertaking on map. Network operator is obliged to develop the network in their service area in a manner that ensures gas supply to all already connected customers and to new connectees.

AS EG Võrguteenus possesses both the transmission network and the largest distribution network. 100% of its shares belong to AS Eesti Gaas, which is also the largest seller of gas in the Estonian gas market. Its major shareholders are DWPBANK RE DRESDNER BANK, GAZPROMPANK and Fortum Heat and Gas OY. Together with AS EG Võrguteenus the total number of distribution network operators is 25 which is a relatively big number. The list of gas distribution operators is given on the Authority's web site.

Regarding distribution networks the market is extremely concentrated. Thus, AS EG Võrguteenus has a market share of about 92% and the number of its customers is 43 500. Other distribution operators have relatively little sale volume, typically of less than 10 000 thousand m³ annually and the number of customers below 1000. The market share of small networks' distribution service is only 8%.

Network service price regulation

According to law price regulation is uniformly applied to all network operators regardless of their size. This adds significant amount of work to the Authority, as the volume of work first of all depends on the number of undertakings and not on their size.

According to law the Authority approves separately the following network services and methodologies:

- price of transmission service
- price of distribution service
- methodology of calculation of the charge for connecting to the network

The price for balancing gas and the charge for gas transit are not subject of approval. For these prices the Authority applies *ex-post* regulation, i.e. a supervision of the price.

The principles which are applied in the regulation of gas network operators are the same in the regulation of electricity networks. The Authority elaborates a unified methodology for the calculation of network service prices that forms the basis for both the transmission and distribution service regulation and price approval. The methodology is disclosed on the Authority's web site. The site also includes specially elaborated tables for collection of input data to be filled in for approval process. The tables are relatively comprehensive and include technical data and detailed accounts: profit and loss statement, balance sheet, and data about fixed assets. The undertakings shall also submit a detailed investment plan and separately the expected sale volumes of network services. Since the tables are comprehensive, it is required to fill them in only for price approval purpose. Regular updating of the tables is not required, but the Authority is entitled to request additional information about economic performance and technical indicators and in case of necessity require filling in the tables disclosed on the web site. Therewith the undertakings are obliged to separate in their annual accounts network services and sale of gas. The annual accounts are public documents and all interested parties can study them.

Submission of input data is an obligation stipulated by law. The Authority can request any information needed for price approval and executing of supervisory proceedings. The Authority employees can also visit enterprises any time and request data and copies of

documents. The practice so far has shown that undertakings do not refuse submitting information and the established procedures for data acquisition work without problem.

In the regulation of gas network charges, the Authority has a decisive role in the elaboration of detailed regulation methodologies. However, the following is stipulated by law:

- The Authority has to approve all individual network charges and the methodology for the calculation of the fees for connection to the network prior to entry into force;
- The prices for network services shall be justified, based on the expenses necessary for the operation and development of the network, reliability and security of supply, metering of the gas distributed through the network, transmitting and computation of meter readings and earning of a justified profit to ensure uninterrupted supply of gas to final customers;
- The tariffs for network services shall be set in a manner which ensures:
 - that necessary operating expenses are covered
 - that investments for the operational performance and meeting of development obligations are made
 - that environmental requirements are met
 - that quality and safety requirements are met
 - justified profitability
- The Authority elaborates and discloses unified methodologies for the calculation of network charges, which serve as the basis for the approval of network charges.

The Authority has prepared and disclosed on its web site the following documents: “Standard methodology for gas network service tariff calculation”, “Guidelines for preparation of methodologies for natural gas network connection charges”, “Guidelines for the determination of weighted average cost of capital (WACC)”. Among the rest it should be explained here that the basis for accounting of both the capital expenditure and a justified return is the regulatory asset base. In the accounting of the regulatory assets continuity is of an extreme importance. Accounting of the regulatory assets is based on the principle according to which to an initial value of assets the investments are added and a regulatory capital expenditure is subtracted. Similarly to other regulatory authorities for the calculation of a justified return a model is used, which considers a weighted average cost of capital (WACC) and the regulatory assets. Besides other factors, a weighted average cost of capital depends on the risks involved in individual undertakings.

In the regulation of network charges a principle is used by which an undertaking submits an application for price approval according to necessity and the approved prices are valid until the approval of new prices.

The concentrated main data on gas network undertakings are given in table 4.1-4 below. The gas transmission service is provided only by AS EG Vörguteenus who is also the biggest distribution operator and the table presents its distribution service prices. The prices of all undertakings are disclosed on the Authority’s web site.

Table 4.1-4 Summary data on gas network undertakings

Customer	No of regulated undertakings	Network service tariff in 2010		
		€/MWh		
		Large industry (I4)	Commercial (I1)	Household (D3)
Transmission	1	0,96		
Distribution	25	1,92	1,92	5,76

Notes:

According to Eurostat definitions:

- large industrial customer (I4) with an annual consumption of 116 300 MWh or 12 600 thousand m³
- commercial customer (I1) one with an annual consumption of 116,3 MWh or 12,6 thousand m³
- household customer (D3) one with an annual consumption of 23 260 kWh or 2,5 thousand m³

Prices of network services according to AS EG Vörguteenus (EG Network service) price list.

The network service charges of AS EG Vörguteenus in 2010 did not change.

As a rule, smaller network operators have established a uniform distribution service price category for all customers regardless of neither from the gas pressure level nor other consumption specific indicators like the volume of consumption. In 2010 the network service prices of smaller network undertakings were in the range of 2,39 to 8,1 €/MWh. A remarkable difference is caused also by the price of the purchased network service. Namely, part of the distribution companies have connected directly to the EG Vörguteenus transmission network, who has the transmission service rate which is significantly cheaper than the aforementioned company's distribution service tariffs.

The charges for network services shall be disclosed at least 90 days prior to their entry into force. In addition to the web site the prices shall be disclosed at least in one national daily newspaper. If a gas undertaking sells both network services and gas, it is obliged to separate in customer bills the price for the network service and for the gas. Besides network service prices an undertaking has to disclose on its own web site also the methodology for connection charge calculation and standard terms and conditions for the contracts.

Quality of gas supply

The gas supply quality requirements were established by the amending of the Natural Gas Act in the beginning of 2007. Pursuant to the amendments a fault caused sequential duration of a disruption of gas supply may not last longer than 72 hours and an annual total duration of disruptions may not be longer than 130 hours. The records on duration of disruptions shall be kept by network operators, while the Authority's responsibility is the monitoring of fulfilment of the quality requirements.

According to the data by EG Vörguteenus in 2010 there were in total 699 interruptions. 220 from them were planned during the works, 401 at a request of the sales department while 49 cases were emergency disruptions. None of the disruptions lasted over 12 hours.

Balance responsibility

In March 2007 amendments to the Natural Gas Act were enforced, which improved the balance responsibility related regulations so that every market participant was made responsible for its balance. The trading period is one 24-hour period and for household

customers' balance their balance provider - seller is responsible for. Balance is determined by the Act as the balance between the quantity of gas agreed upon by sale contract of a market participant and the quantity of gas consumed or re-sold by the market participant. This means in essence that all market participants except households are responsible to secure that their 24-hour consumption quantity corresponds to the quantity agreed upon by the contract.

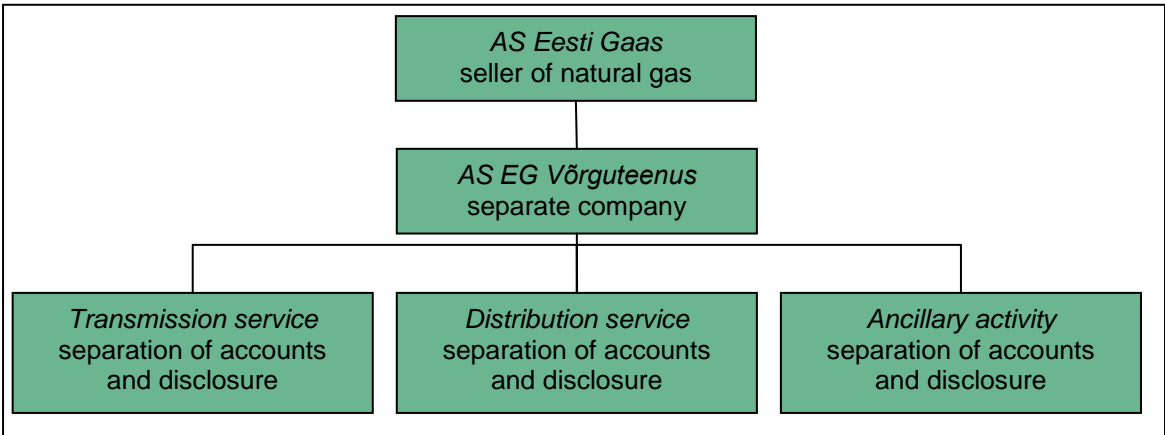
Balance responsibility is organised in a principle that the system operator – the TSO (AS EG Võrguteenus) is responsible for the balance of the whole system and there may be several balance providers which act on the market. Unfortunately, the Estonian gas market is characterised by an extreme concentration where Eesti Gaas imports gas upon long-term contracts from a single supplier – Gazprom. That is why Eesti Gaas provides for consumers and for other network operators besides selling of gas also the service of a balance provider, i.e. the balancing service is included in the sale price of gas. Thus, no competition takes place also in the balance service market and the Authority is in a position that competition can activate only if more gas importers come to the market.

In 2008 the Authority approved the methodology for the pricing of balancing gas and standard conditions of its application for AS EG Võrguteenus.

4.1.3. Unbundling of activities

Pursuant to the Natural Gas Act legal unbundling of the sales and of the provision of distribution is required if the number of customers is over 100 000. Therewith it is also stipulated that the network undertaking who provides transmission service may also the provider of distribution service, but may not be the seller. Following this only the network operator belonging to Eesti Gaas is legally unbundled and from the beginning of 2006 the separate business entity of AS EG Võrguteenus has been established. The latter is also the system operator.

Therefore, AS EG Võrguteenus is the so-called combined network operator where transmission, distribution and ancillary activities are separated by accounts and disclosed. In doing so the undertaking is obliged to establish accounting rules for allocation of assets and liabilities, revenue and cost. The annual report shall be supplemented by an auditor's evaluation of justification of the cost allocation. The structure of AS Eesti Gaas is presented in the following drawing 4.1-2.



Drawing 4.1-2 Structure of AS EG Võrguteenus

The Authority has elaborated and disclosed on its web site respective guidelines and reporting forms, which are helpful for undertakings in separation of accounts. Therewith the undertakings are obliged to establish accounting rules for allocation of assets, liabilities, revenue and cost. Their annual report shall be supplemented by an auditor's evaluation of justification of the cost allocation.

In addition to the separation of accounts for network service, for the sale of gas and ancillary activities the undertakings shall separate their accounts also by different services (the so-called regulatory stipulated activity separation).

The combined network operators (EG Vörguteenus) is obliged to separate its accounts as follows:

- sale of transmission service (*ex-ante* regulation, the Authority approves network charges prior to their entry into force)
- sale of distribution service (*ex-ante* regulation, the Authority approves network charges prior to their entry into force)
- transits of gas (*ex-post* regulation, the Authority has the right to monitor justification of the prices)
- charges paid by customers for connecting to network (*ex-ante* regulation, the Authority approves methodology for calculation of connection fees separately for every undertaking)
- sale of balancing energy (*ex-post* regulation, the Authority has the right to monitor justification of the prices)
- ancillary activity

A distribution network operator, who is not required to form a separate business entity, shall separate its accounts as follows:

- sale of natural gas
- sale of network service (*ex-ante* regulation, the Authority approves network charges prior to their entry into force)
- charges paid by customers for connecting to the network (*ex-ante* regulation, the Authority approves the methodology for calculation of connection charges separately for every undertaking)
- ancillary activity

Action plan for equal treatment of market participants

The TSO is obliged to elaborate an action plan with measures for equal treatment of other gas undertakings and customers including duties of the network operator's employees in the implementation of these measures. The Authority has prepared guidelines for the elaboration of such plan. It is disclosed on the Authority's web site. According to the guidelines it is recommended to compile the plan for a 3-year perspective. The Authority is in an opinion that both the action plan and the report on its implementation are public documents and all interested parties can examine them. If the Authority considers the plan is insufficient and does not comply with requirements, a revision of the plan and its changing may be required.

EG Vörguteenus has started an advancement of their plan for equal treatment of market participants and submitted it to the Authority for a review in May 2009. In May 2011 an improved action plan was submitted to the Authority.

From the point of view of activity separation, most important is the separation within the Eesti Gaas group, as in addition to the network service provision it is in market dominant position also in the wholesale and retail of gas. As already explained above AS EG Võrguteenus is a separate business entity with 100% shares belonging to Eesti Gaas.

Similarly to the Electricity Market Act the Natural Gas Act also sets out limitations for the management board staffing. Namely, the person in charge of the TSO may not at the same time be a member of the board of another gas undertaking nor in other way be responsible for daily activities of another gas undertaking. In essence, the mother company's competence should only be limited to investments into productivity of assets, approval of the annual budget and the long-term business plan. In the rest the networks should be independent.

The management board of EG Võrguteenus has two members, while the supervisory board has three members. However, all members are the employees of the mother company AS Eesti Gaas. According to the company's action plan daily management of the network operator, incl. the services of the TSO, are exceptionally the competence of the management board.

An important issue regarding AS EG Võrguteenus as the system operator is to have an action plan for possible crisis situation in which limitation of consumption may become necessary. Pursuant to the Regulation no. 994/2010 of 20 October 2010 of the European Parliament and of the Council, which deals with the measures of security of gas supply, amongst other things the activities of the system operator in possible crisis situation in which natural gas consumption limitations may become necessary, are regulated. AS EG Võrguteenus has a plan for actions in a crisis situation. The plan has been submitted to the Ministry of Economic Affairs and Communications.

In the promotion of networks' independence and their price regulation it is important to supervise the price formation for the services purchased from mother company and from other undertakings belonging to the group. Regarding services purchased from mother company the Authority has followed the principles that the prices may not exceed competitive market ones and all procurement rules have to be followed. Pursuant to the Public Procurement Act, the gas network undertakings as natural monopolies have to fulfil in their procurement procedures certain requirements, stipulated in the Act.

In conclusion it can be realized that Estonia completely fulfils the requirements for separation of areas of activity pursuant to Directive 2003/55/EC of the European Parliament and of the Council. AS Eesti Gaas has less than 100 000 customers and according to that the combined network operator AS EG Võrguteenus that provides both transmission and distribution services has been established. Other distribution network operators have separated accounts for the distribution service and sale. Pursuant to Directive 2009/73/EC of the European Parliament and of the Council (its requirements were enforced on 03 March 2011) Member States have to establish a separate transmission system operator. For separation the following three options can be considered: to set out a requirement for a transmission system operator (TSO) which is separated by ownership, to set out a requirement for designation of an independent system operator of transmission system which is separated by ownership (ISO) or, to set out a strong regulation of the owner of the transmission network. Therewith the owner may belong to an economic group (ITO). The Directive gives an exemption for Estonia regarding ownership separation, as we have a network connection only with Russia and there are no other suppliers. In spite of the exemption Estonia has made a choice towards liberalisation of the gas market.

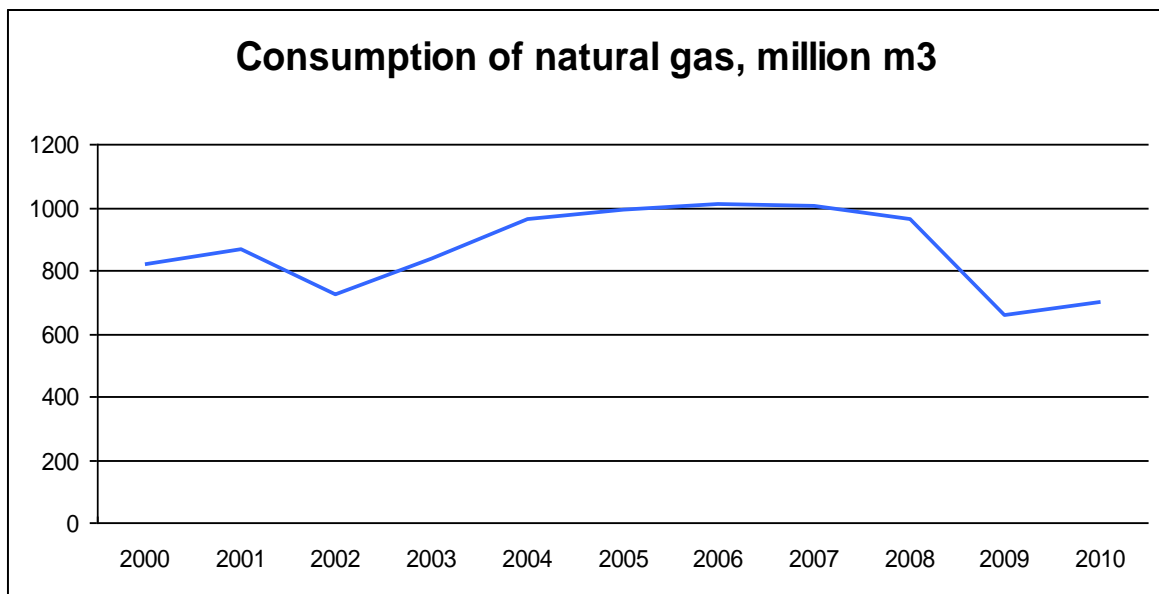
4.2. Competition in gas market[EC Directive 2003/55/EC Article 25 (1) „h“]

4.2.1. Description of wholesale market

From 1 July 2007 the market is opened in the whole. There is no real competition in the wholesale market as all the gas on market is imported by AS Eesti Gaas. By law the import of gas is allowed for all market participants but in reality competitive wholesalers do not exist. Pursuant to the Natural Gas Act an activity license is required for the import of gas from outside of the EU but the application of it is not complicated, in essence only some formal requirements have to be fulfilled.

In 2010 the natural gas consumption in Estonia totalled 700,9million m³ (6,52 TWh = 0,5 Mtoe). 50,5 million m³ (0,47 TWh = 0,04 Mtoe) out of it was used for electricity generation, 313,1 million m³ (2,91 TWh = 0,22 Mtoe) for heat production in power plants and boiler houses, 197,4 million m³ (1,84 TWh = 0,14 Mtoe) by households and businesses for space heating purpose and the rest 140,9 million m³ (1,31 TWh = 0,10 Mtoe) was used for industrial process needs. In 2010 the consumption of gas increased by 7,1% compared 2009. However, compared to 2008 it was lower by 27,1%.

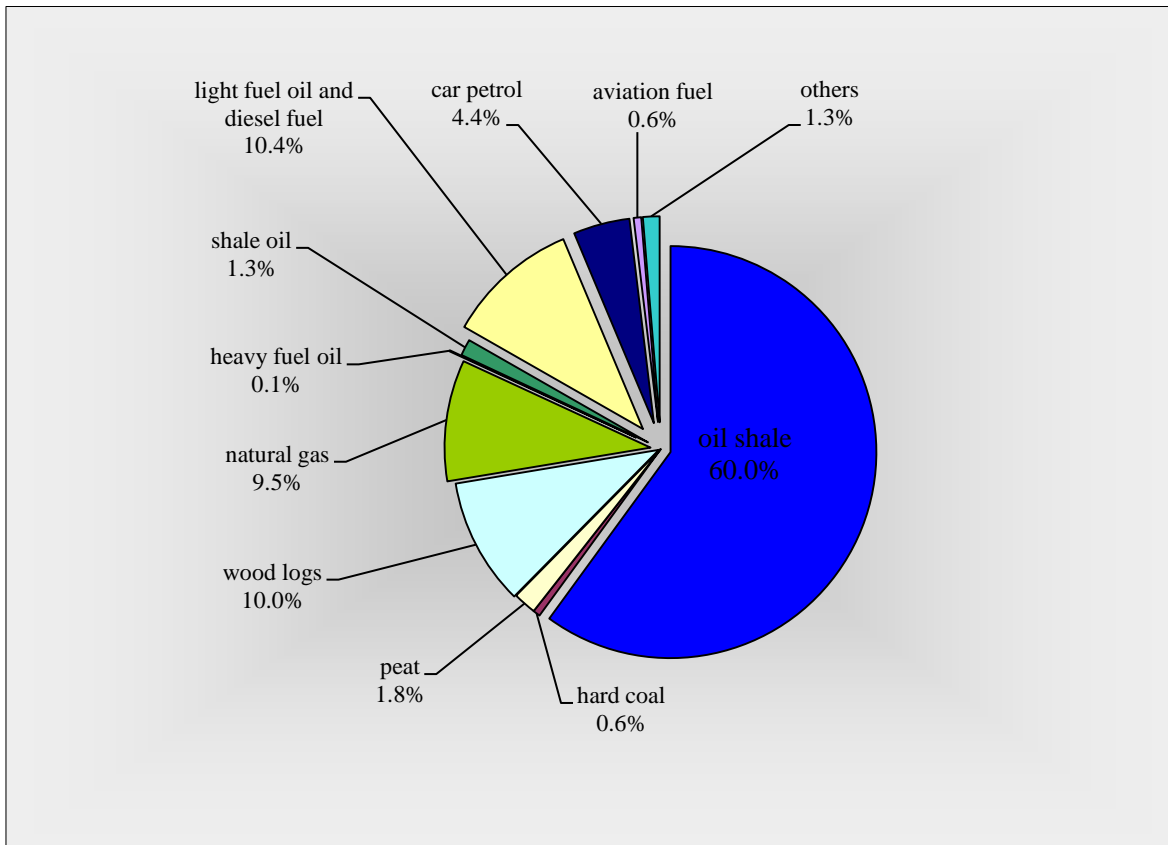
The trend of gas consumption is illustrated in the following drawing 4.2-1.



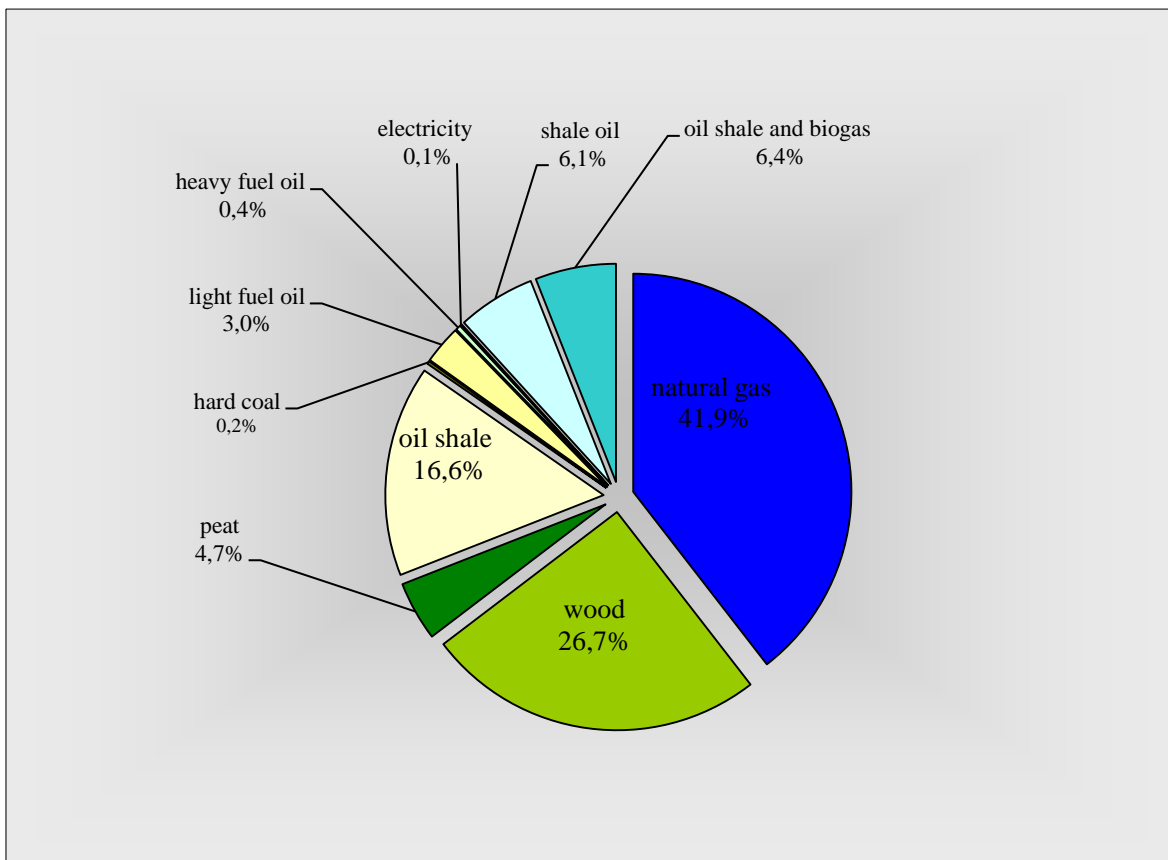
Drawing 4.2-1 Consumption of natural gas in 2000-2010.

Source: Statistical Office

The share of natural gas in the Estonian fuel balance in 2010 was 9,5% (drawing 4.2-2). Thus, the share is not very big and as already mentioned above, first of all gas is used for industrial and heating purpose. Therewith in 2010 the share of natural gas in electricity production was only 2,3% (drawing 5.1-2), but in heat production it was even as high as 41,9% (drawing 4.2-3).



Drawing 4.2-2 Estonian domestic consumption of fuels in 2010 based on calorific heat value. Converted from the quantity data by the Statistical Office



Drawing 4.2-3 Using of fuels for heat production in 2010
Source: Statistical Office

Besides the AS Eesti Gaas group there are 24 smaller independent gas network operators on the market which in addition to the provision of network service also sell gas in the retail market. The small network operators buy gas from AS Eesti Gaas. The prevailing majority of their customers are households connected to their network.

Some general indicators of the gas wholesale market are presented in below table 4.2-1. As illustrated by the table data the Estonian gas market is essentially under control of one undertaking - AS Eesti Gaas group.

Table 4.2-1 Review of gas wholesale market

Year	Consumption of as	Incl. import	Whole sale market volume**	Consumption peak		Transmission system transfer capacity		Number of gas importers	Market share of three largest wholesalers %
	million m ³ /year	million m ³ /year	million m ³ /year	thousand m ³ /per day	MW	thousand m ³ /per day	MW		
2001	865	865	78	5 400	2 099	7 000	2 721	2	100
2002	724	724	53	5 000	1 944	7 100	2 760	2	100
2003	838	838	113	5 500	2 138	7 800	3 032	2	100
2004	962	962	228	5 100	1 983	8 300	3 227	2	100
2005	991	991	240	5 200	2 022	10 400	4 043	2	100
2006	1008	1008	249	6 700	2 605	10 500	4 082	2	100
2007	1003	1003	272	6 400	2 488	10 700	4 160	2	100
2008	963	963	286	5 200	2 022	10 900	4 237	2	100
2009	655	655	71	4 350	1 691	10 900	4 237	2*	100
2010	701	701	77	5 100	1 984	10 900	4 237	1	100

* A real gas importer is AS Eesti Gaas as another importer, because AS Nitrofert suspended activity in February 2009 and they imported gas for its own needs only.

** Under the wholesale market it is considered the sales for other traders or own consumption (import by Nitrofert).

The import price of gas is determined by a price formula that considers six months (from 2011 nine months) heavy and light fuel oil average prices in USD/ton preceding to the accounting month, taking into account the USD/EUR exchange rate.

The wholesale prices and the prices for eligible customers are not subject to approval and AS Eesti Gaas as the only importer sells gas at a negotiated price both to the eligible customers connected to its own network, as well as to other network undertakings for re-sale. The amendments to the Natural Gas Act that were enforced in March 2007 specified the obligations of market dominant gas sellers. Pursuant to the amendments a market dominant gas undertaking has to disclose conditions of gas sale and the principles of gas price formation, as well as be guided in elaboration of them from the equal treatment and transparency principles. The sale price of gas shall ensure the coverage of operational cost, needed investments and a justified return. In essence the amendments mean that AS Eesti Gaas as the market dominant undertaking has to sell gas at equal price and conditions to all similar eligible customers, and to all network operators as well. The Authority has a legal obligation to supervise the activities of AS Eesti Gaas. In case of incompliance with above described conditions the Authority is entitled to require actions in order to fulfil the legal requirements.

In addition AS Eesti Gaas as the market dominant undertaking shall fulfil requirements derived from the Competition Act. The Act prohibits from any direct or indirect abuse of the dominant position on a goods market, including offering or applying dissimilar conditions to

equivalent agreements with other trading parties, thereby placing some of them at a competitive disadvantage. The regulation pursuant to the Competition Act is in more detail explained in section 4.3.

In 2008-2009 the Authority carried out supervisory proceedings based on the Competition Act in connection with the fact that AS Eesti Gaas was selling gas to similar customers at unequal prices. In the result of the proceedings AS Eesti Gaas change the formation of prices to eligible customers and to other gas undertakings transparent and started selling gas to consumers at equal conditions. The Authority has also later monitored the activities of Eesti Gaas and found that the undertaking fulfils the requirements of both the Competition Act and the Gas Market Act and sells gas to all customers at equal conditions.

4.2.2. Description of retail market

Similarly to the wholesale market AS Eesti Gaas is in market dominant position also in the retail market. Its retail market share 2010 was 89% and also the rest 11% of retail sold gas is also purchased from AS Eesti Gaas. Its retail sales total is about 624 million m³ per annum. As it was described in the previous chapter, besides AS Eesti Gaas there are 24 smaller network operators that sell both network service and gas to customers connected to their network. There are no sellers, which are independent from the gas network operators, i.e. no undertakings that deal only with the sale of gas. Table 4.2-2 below presents a retail market overview, which, similarly to the wholesale market, is characterised by an extreme concentration.

Table 4.2-2 Review of gas retail market

Year	Retail market consumption million m ³	No of undertakings with market share of over 5%	No of sellers independent from network operators	Market share of three largest undertakings				No of customers that changed supplier
				Power plants	Large industries	Medium industries	Small business and households	
2001	789	1	0	100	100	100	100%	0
2002	675	1	0	100	100	100	99%	0
2003	732	1	0	100	100	100	99%	0
2004	749	1	0	100	100	100	98%	0
2005	774	1	0	100	100	100	97%	0
2006	794	1	0	100	100	100	97%	0
2007	796	1	0	100	100	100	93%	28
2008	748	1	0	100	100	100	91%	1109
2009	635	1	0	100	100	100	92%	1539
2010	701	1	0	100	100	100	89%	1674

Pursuant to the Natural Gas Act a seller of gas has to enable the termination of the contract in one month period since submission of an application in case of the switch of the seller, provided that the obligations related to the contract that is to be terminated are fulfilled. Although the consumers choose AS Eesti Gaas as their new seller as a rule, there are still consumers, which have terminated their contract with AS Eesti Gaas and have chosen another seller. The following table 4.2-3 reflects the changes of seller in 2010.

Table 4.2-3 Change of gas seller

Natural Gas Act § 6 (3) and for eligible customers § 5 (2)		2010	
		pcs	Sales volume, 1000 m ³
Household customers	Connections to AS Eesti Gaas	1629	5382,1
	Terminations of contract	1	153,1
Eligible customers	Connections to AS Eesti Gaas	30	15 320,30
	Terminations of contract	14	38 938,00
Total no. of customers		1674	59 790,50

The data on an average final consumer prices in 2010 are given in the following table 4.2-4.

Table 4.2-4 Final consumer gas price in 2010

	Unit	Business customer	Household customer
Network service	€/MWh	1,92	5,76
Taxes incl. in the network charges		0	0
Nat gas price without network service	€/MWh	24,07	25,33
Excise tax on gas	€/MWh	2,55	2,55
Final consumer price without VAT	€/MWh	28,54	33,64
VAT 20%	€/MWh	5,71	6,73
Final consumer price incl. VAT	€/MWh	34,24	40,36

Notes:

As business customers all customers are considered except households.

Network service prices are given according to the EG Võrguteenus price list.

An average price for gas is based on the data of the Statistical Office.

4.2.3. Competition supervision and measures for avoiding abuse of market dominant position

Similarly to the electricity market the gas market is regulated besides the Natural Gas Act also by the Competition Act. The Competition Act provides definitions for undertakings with market dominant position, undertakings having special and exclusive rights and undertakings possessing and controlling essential facility. An undertaking, or several undertakings operating on the same goods market, has dominant position if the position enables it/them to operate in the market to an appreciable extent independently from competitors, suppliers and buyers. Dominant position is presumed if an undertaking or several undertakings operating on the same goods market account for at least 40% of the turnover in the goods market.

When it comes to the wholesale and retail of gas, Eesti Gaas is indisputably in the market dominating position, as it is essentially the only gas importer and trader/re-seller (AS Nitrofert has so far imported gas merely for its own needs and has never acted as a trader of gas). There are no alternative gas importers and it is unlikely that in the wholesale market a real competition can appear in the neat future. In addition to Russia gas can be imported also from Latvia but the situation there is similar, i.e. where the major owner of the market dominant trader is the exporter of gas Gazprom. As from 1 July 2007 the gas market is opened for all customers the entire retail market can be considered a common market and here Eesti Gaas has a market share of 89%. As the market dominant undertaking, Eesti Gaas has to fulfil the requirements of the Competition Act according to which any direct or indirect abuse by an undertaking or several undertakings of the dominant position on a goods market is prohibited, including:

- 1) direct or indirect imposing of unfair purchase or selling prices or other unfair trading conditions;
- 2) limiting of production, service, goods markets, technical development or investment;
- 3) offering or applying dissimilar conditions to equivalent agreements with other trading parties, thereby placing some of them at a competitive disadvantage;
- 4) making entry into an agreement subject to acceptance by the other parties of supplementary obligations which have no connection with the subject of such agreement;
- 5) forcing an undertaking to concentrate, enter into an agreement which restricts competition, engage in concerted practices or adopt a decision together with the undertaking or another undertaking;
- 6) unjustified refusal to sell or buy goods.

The Competition Act also stipulates obligations for undertakings with special or exclusive rights or in control of essential facilities. All gas network undertakings are in control of essential facility and according to the Act they are obliged to:

- 1) permit other undertakings to gain access to the network, infrastructure or other essential facility under reasonable and non-discriminatory conditions for the purposes of the supply or sale of goods;
- 2) keep clear separation of accounts for different primary and secondary activities (e.g. production, transmission, marketing and other areas of activity) enabling thereby transparency of economic performance;
- 3) maintain separate records on revenue and expenditure related to each product or service on the basis of consistently applied and objectively justified principles of calculation which shall be clearly specified in the internal rules of the undertaking; the calculation of revenue and expenses must enable to assess whether the price of a product or service is in a reasonable ratio with the value of the product or service.

An undertaking with special or exclusive rights or in control of an essential facility may refuse to grant other undertakings access to the network, infrastructure or other essential facility if the refusal is based on objective reasons, including cases where:

- 1) the safety and security of the equipment connected with the network, infrastructure or other essential facility or the efficiency and security of the operation of such network, infrastructure or facility are endangered;
- 2) maintenance of the integrity or the inter-operability of the network, infrastructure or other essential facility is endangered;
- 3) equipment to be connected to the network, infrastructure or other essential facility is not in conformity with the established technical standards or rules;
- 4) the undertaking applying for access lacks the technical and financial capability and resources to provide services efficiently and safely to the necessary extent through or with the assistance of the network, infrastructure or other essential facility
- 5) the undertaking applying for access does not hold the permit prescribed by law for the corresponding activity
- 6) as a result of such access, data protection provided by law is no longer ensured.

From 1 January 2008 the Authority as the merged agency has an obligation to supervise the functioning of the gas market based on both the Natural Gas Act and the Competition Act. The Natural Gas Act regulates in detail the activities of network undertakings – their rights and obligations. Although, the Competition Act also stipulates obligations to networks as to undertakings in control of essential facility, it is practical to apply the special law, i.e. the

Natural Gas Act. In the contrary, in the regulation of the sale of natural gas an *ex-post* regulation on the basis of the Competition Act appears to be more rational.

In conclusion it should be realized that in spite of good legislative base there is no operational gas market in Estonia. As there is only one importer of gas AS Eesti Gaas then practically no preconditions for competition activation on the wholesale market exist. Competition may develop on the retail market where various traders buy gas from Eesti Gaas and competing on the re-selling of it on the market. Eesti Gaas can also compete by selling gas to the customers of other network undertakings. A concrete example of an activation of the retail market is the fact that in 2008 in 1109 cases a switch of supplier took place, in 2009 the number was 1576 and 2010 1674 customers changed their supplier.

The situation on the wholesale market and security of supply as well could considerably change if a liquefied natural gas terminal were built in the Baltic-Finnish region. Therewith it is reasonable to consider the size of markets and the similarity of the situation in all three Baltic countries and in Finland where all gas supply comes from Russia. Further it would be reasonable to interconnect the gas systems through an Estonia-Finland gas pipeline.

In order to promote competition in the gas market and improve security of supply an important step would be establishing of a gas transmission network undertaking independently from the seller and the importer of gas. The Directive 2009/73/EC, that treats of common rules for the internal market, sets out an exemption for Estonia in Article 49, which do not apply to Estonia the ownership unbundling obligation of the transmission system from the producer and/or seller until any of those Member States is directly connected to the interconnected system of any Member State other than Estonia, Latvia, Lithuania and Finland. However, currently a rationality of the exemption from the point of view of the development of the gas market has been put under question. In spring 2010 the topic was discussed in the parliamentary Commission of Economic Affairs and the government coalition has made respective decision towards the ownership separation of the gas transmission network. **The Authority's position is that ownership unbundling would be an essential step which supports market development. That would right consider a more clear separation of the transmission operator from market participants both for the advancing of competition in the gas market and for the improving of security of supply as well.**

5. Security of supply

5.1. Security of electricity supply

In the present security of supply chapter an analyses of the coverage of consumption capacity (load) until 2020 is given. In the analysis the Authority has been taken into account the following two documents: *Development Plan of the Estonian Energy Sector Until 2018* prepared by the Ministry of Economic Affairs and Communications (hereinafter the Ministry), the report titled *Security of Supply of the Estonian Power System*, prepared by the TSO (the transmission system undertaking Elering AS).

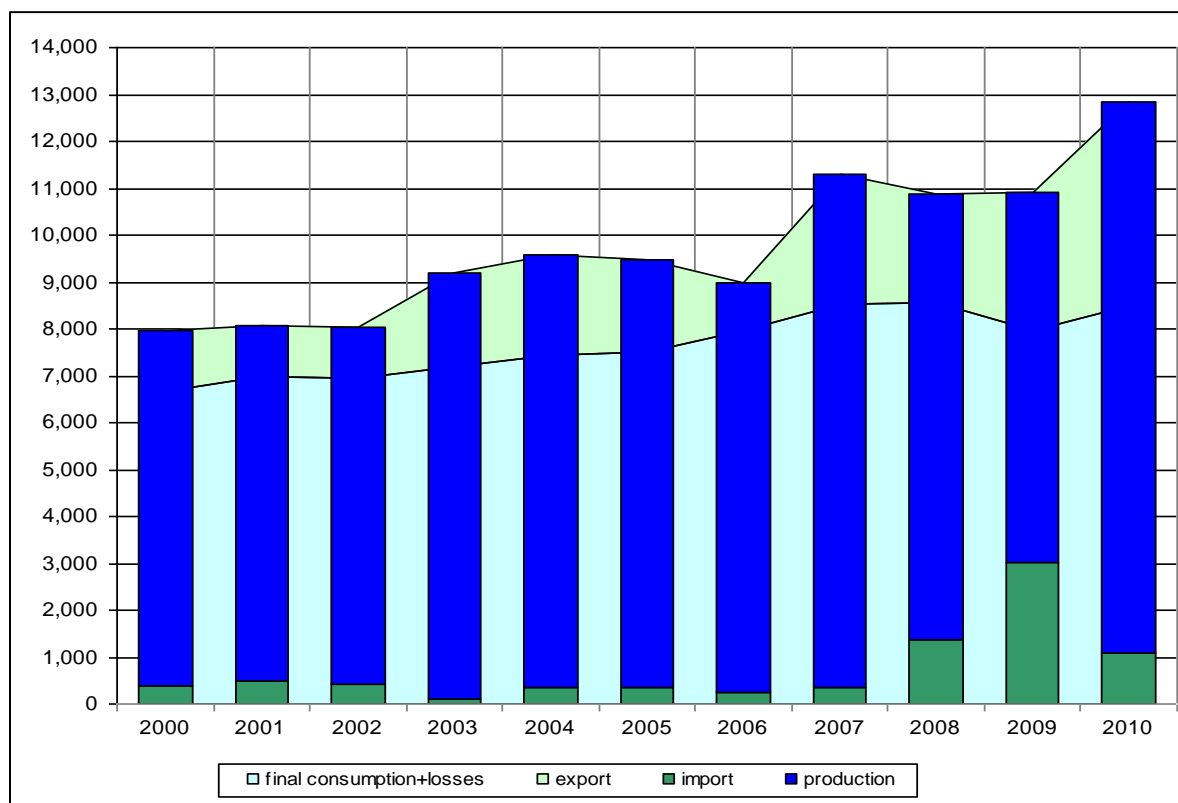
According to the statistics of 2010 the load in the Estonian electricity system peaked at 1587 MW and the annual production was 11,7 TWh, supplemented by an import of 1,1 TWh. The domestic consumption (without losses) of electricity was 7,4 TWh and 4,3 TWh was exported. The domestic consumption including losses was 8,5 TWh.

Table 5.1-1 presents the Estonian electricity balance from 2000 to 2010. Drawing 5.1-1 shows graphically the share of export, import and the domestic consumption in the total production of electricity.

Table 5.1-1 Estonian electrical energy balance in GWh

Source: Statistical Office

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
production	7 591	7 590	7 634	9 101	9 232	9 114	8 728	10954	9 498	7 884	11732
final consumpt	5 422	5 607	5 686	6 013	6 326	6 403	6 901	7 180	7 427	7 080	7 431
losses	1 240	1 361	1 258	1 192	1 112	1 103	1 077	1 354	1 130	886	1 047
import	374	496	412	93	347	345	251	345	1 369	3 025	1 100
export	1 303	1 118	1 102	1 989	2 141	1 953	1 001	2 765	2 310	2 943	4 354

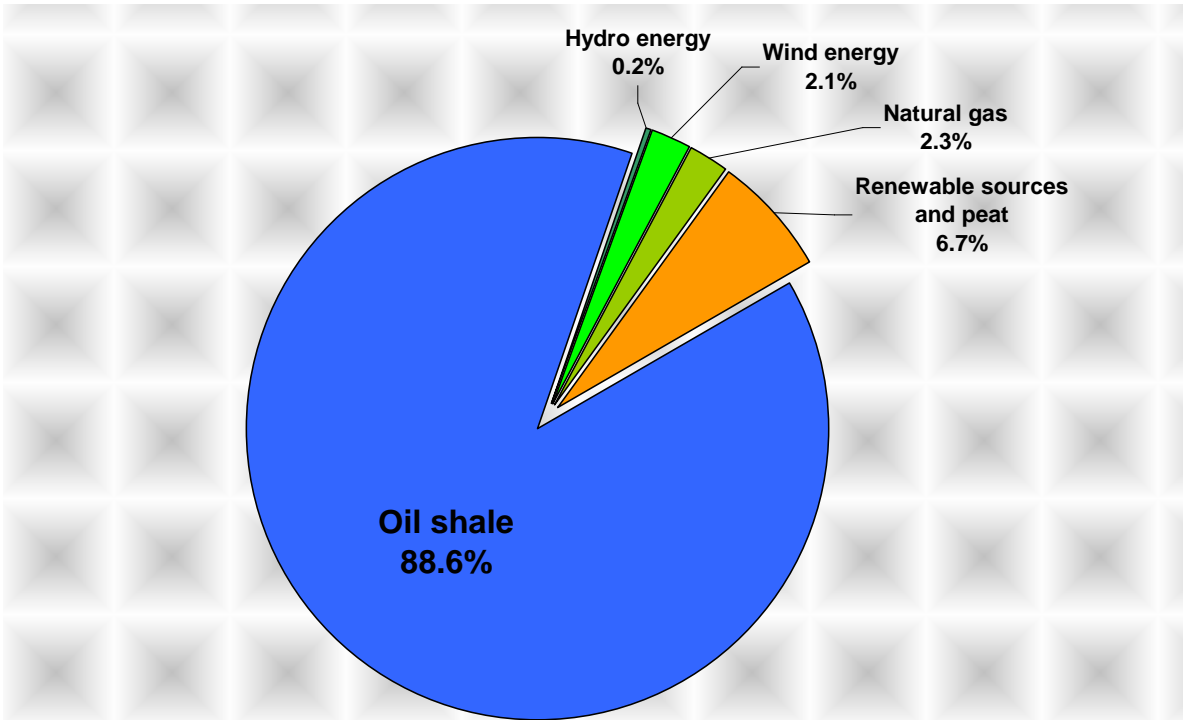


Drawing 5.1-1 Share of domestic consumption , export and import in electricity production in GWh; Source: Statistical Office

As seen from the drawing, historically Estonia has covered all of its domestic consumption with domestic production and is it not dependent on import of electricity.

Security of supply in Estonia is higher also because the production of electricity is independent from fuel import as all electricity supplies can be covered by domestic fuels and energy sources. As regards electricity production the most important fuel in Estonia is oil shale. According to 2010 statistical data 88,6% of electricity was produced from it. Therewith the share of other fuels is very modest. The share of natural gas is 2,3%, the share of renewable energy sources, wind and hydro energy altogether constitute 9,0%. It should be noted that compared to the last few years, the share of renewable energy sources (biomass, peat) has grown from 0,5 % to 6,7%.

Drawing 5.1-2 presents the structure of fuels and energy sources used for electricity production in 2010.



Drawing 5.1-2 Energy sources used for electricity production
Source: Statistical Office 2010

An additional very important fact regarding electricity supply is that existing production capacities cover the system peak load (which was 1567 MW in 2010).

Regarding installed capacity the oil shale burning power plants have the biggest share. In 2010 144,9 MW of generating capacity was added. 74 MW out of this are cogeneration (CHP) plants, while 70,9 MW represents windmill parks' capacity.

The following table 5.1-2 gives the Competition Authority data on installed capacity.

Table 5.1-2 Installed net capacity in 2011 (without own consumption)
Source: Competition Authority

	Capacity MW	Fuel
Narva Power Plants	2 013	oil shale
Iru Power Plant	161	natural gas
Ahtme CHP plant	24	oil shale
VKG Northern and Southern power plants	68	oil shale

Tartu CHP plant	22	biomass, peat
Tallinn CHP plant	22	biomass, peat
Pärnu CHP plant	22	biomass, peat, natural gas
Small CHP plants	47	oil shale , peat, natural gas
Hydro power plants	4	water
Wind mills	158	wind
Total without windmills	2383	
(Total incl. windmills)	2541	

5.1.1 Supply security planning and obligations of the regulator

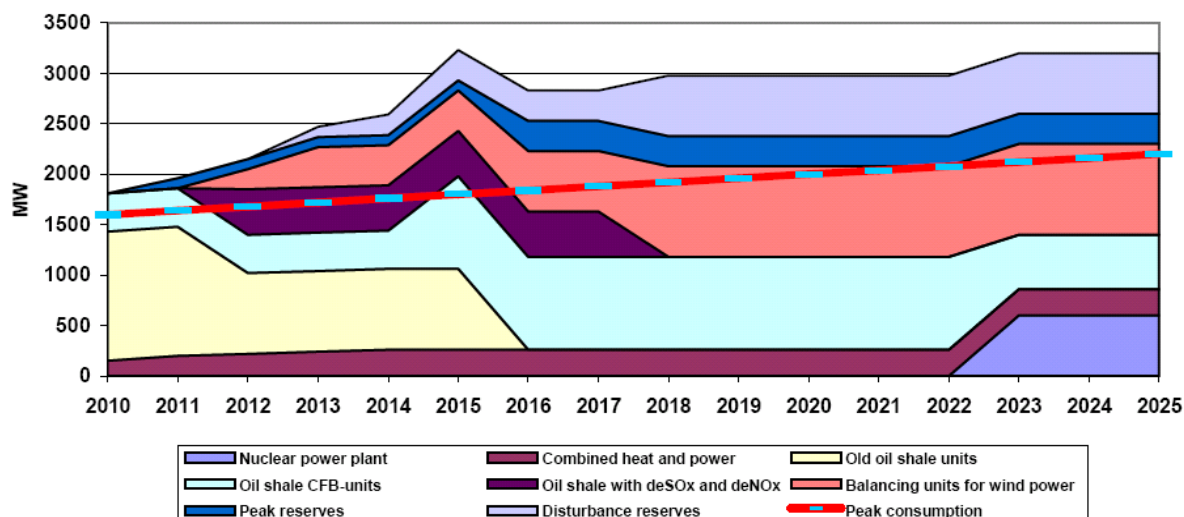
For the planning of security of supply measures in Estonia the Electricity Market Act stipulates obligations for the Ministry, for the Authority and for the TSO (Elering AS). The Ministry has an obligation to prepare after each three years an electricity sector development plan in 10-years perspective. The TSO prepares and submits to the European Commission, to the Ministry and to the Authority an annual report which deals with the estimates of supply and demand of electricity for the next five year period, existing supply possibilities, production installations that are planned or under construction, quality of the networks and the level of their maintenance, measures for satisfying the maximum estimated (peak) demand and the measures undertaken in case of capacity deficit, operational security of the networks, anticipated security of supply situation in the period from 5 to 15 years, the TSOs and known to him relevant investment plans in the neighbouring countries for the next five calendar years for construction of cross-border interconnections between networks. Thus one of the objectives of the report prepared by the TSO is to provide estimates of the needed investments into production capacities. The Authority has the right to oblige the TSO to arrange tendering for the procurement of new production capacity or creation of demand-side management measures that improve energy efficiency, if according to the report prepared by the TSO the production equipment capacity reserve in the system is below the reserve necessary for satisfying consumption demand as set out in the Grid Code or, if this is needed from environmental protection point of view or promotion of technologies at their initial stage.

Pursuant to the Electricity Market Act and in order to increase the share of renewable energy and cogeneration a system of subsidies has been established for producers who use renewable energy sources in electricity production or do it in the process of heat and power cogeneration. The effect of the new subsidy system was analysed in chapter 3.2.3 above.

5.1.2 Electricity sector development plan

The Ministry's *Development Plan of the Estonian Energy Sector Until 2018* among other things also deals with different security of supply scenarios. A scenario, which is deemed most likely and useful for Estonia is presented in drawing 5.1-3. It is planned to increase the consumption of electricity produced from renewable energy sources by 2010 to the level of 5,1% and by 2015 to 15%. The share of cogeneration should increase to 20% by 2020. Amongst other things it is considered that since 2016 the Eesti Energia group's Narva Power Plants must fulfil the SO₂ and NO_x emission limitation requirements set out by the Large Combustion Plants directive. The problem is that the existing old blocks do not meet the requirements of the mentioned directive. However the emission limitation requirement does not mean an immediate closing down of the blocks as together with the technology developments it may become possible to renovate the blocks in a way that the EU directive's requirements will be met.

Development of net capacity in Estonian power system 2010-2025



Drawing 5.1-3 Development scenario of Estonian power production net capacity in 2010-2025. Source: Ministry of Economic Affairs and Communications, Development Plan of the Estonian Electricity Sector until 2018.

In order to implement the Plan the Ministry estimates that the capacity of CHP plants shall be increased up to 300 MW (net capacity during peaks 260 MW), by 2015 to erect the first 300 MW (net capacity 270 MW) and by 2017 the second new fluidized bed oil shale block with the same capacity. In addition in the period of 2012 to 2015 it is necessary to install flue gas desulphurization and de-nitrification equipment in four of the existing old oil shale blocks (net capacity 4x150 MW) and the capacity of on-shore (land-based) wind turbines shall be increased to 400 MW by 2013. Further increase of the wind mill parks' capacity is practical to do with off-shore located parks, according the Ministry's suggestion.

Table 5.1-3 presents the Ministry's electricity production net capacity development estimates in a table form. It can be concluded that if the plan will be implemented then at the system's peak load of 1694 MW in 2016 there will be sufficient production capacity and no deficit is foreseen.

Table 5.1-3 Electricity production net capacity development in Estonia 2010-2025

Source: Development Plan of the Estonian Electricity Sector Until 2018 , Ministry of Economic Affairs and communications

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Cogeneration plants	150	200	220	240	260	260	260	260	260	260	260	260	260	260	260	260
Oil shale plants	1660	1660	1630	1630	1630	2170	1520	1520	920	920	920	920	920	920	920	920
- old	1280	1280	640	640	640	640										
- fluidised bed	380	380	380	380	380	920	920	920	920	920	920	920	920	920	920	920
-with purification equipment			600	600	600	600	600	600								
On-shore wind farms*	150	200	200	400	400	400	400	400	400	400	400	400	400	400	400	400
Off-shore wind farms*							200	200	500	500	500	500	500	500	500	500
Balancing units for wind power			200	400	400	400	600	600	900	900	900	900	900	900	900	900
- including gas turbines based on shale oil							200	200	500	500	500	500	500	500	500	500
Peak reserves**		100	100	100	100	100	300	300	300	300	300	300	300	300	300	300

Disturbance reserves**				100	200	300	300	300	600	600	600	600	600	600	600	600
Nuclear power plant														600	600	600
Total guaranteed production capacity	1810	1960	2150	2470	2590	3230	2980	2980	2980	2980	2980	2980	2980	3580	3580	3580
Taking account of criterion n-1	1620	1800	1990	2310	2430	3070	2710	2710	2710	2710	2710	2710	2710	2980	2980	2980
Taking account of criterion n-2	1430	1580	1830	2150	2270	2910	2440	2440	2440	2440	2440	2440	2440	2710	2710	2710

* - The capacities are not taken into account in the total guaranteed production capacity.

** - Unit capacities of up to 100 MW

The TSO Elering AS has prepared the report *Security of Supply of the Estonian Power System* which deals with electricity supply and demand estimates for the next five years period, existing supply possibilities, production installations that are planned or under construction, quality of the networks and the level of their maintenance, measures for satisfying the maximum estimated (peak) demand and the measures undertaken in case of capacity deficit, operational security of the networks, anticipated security of supply situation in the period of 5 to 15 years, the TSOs and known to him relevant investment plans in the neighbouring countries for the next five calendar years for construction of cross-border interconnections between networks. The report is submitted to the European Commission, to the Ministry and to the Authority. Thus, one of the objectives of the report prepared by the TSO is to provide assessment of the needed investments into production capacities. On the basis of the report the Authority has the right to oblige the TSO to arrange competitive tendering for the procurement of new production capacity

5.1.3 Security of supply report prepared by Elering AS (the TSO)

In 2011 Elering AS submitted a report *Security of Supply of the Estonian Power System*. In comparison with the previous 2010 report the new report presents Narva Power Plants (Narva PP) an updated production capacity estimation in connection with the LCP and 5 other directives recasted into the new Industrial Emissions Directive. As well it expresses concerns with the uncertainty related possible state aid in connection with the new production units which are under construction. The new Industrial Emission directive was entered into force in January 2011. It allows certain derogations which in addition to permanently operating production capacities enable the Narva PP to use production capacities during limited operation hours in the period from 2016 to 2023. Due to this Narva PP can use the old units which are not refurbished in the period from 1 January 2016 until 31 December 2023 in total during 17 500 operating hours. The Authority has analysed existing production capacity of Narva PP particularly in section 5.1.4 below.

In accordance with the TSO's (Elering AS) 2010 report there are installations which are planned or are already under construction adding of the following production capacities:

- 37,5 MW – Enefit oil production plant by 2011
- 17 MW – Municipal waste combustion plant in Iru PP by 2012
- 30 MW - VKG Põhja (*Northern*) power plant by 2012
- 22 MW – New CHP unit in Ahtme Power Plant by 2013
- 270 MW Narva Power Plant's first new unit by 2015
- 270 MW – Narva Power Plant's second new block by 2020
- 200 MW – other new plants (primarily CHP plants) in years 2011-2010

A number of technical facilities for connecting of wind mill parks have been prepared but the windmills are partly uninstalled in the range of 30,1 MW (Tooma, Esivere, Aulepa) and

completely uninstalled in the range of 394,9 MW (Paldiski, Sillamäe, Püssi, Aseri, Balti ja Lõpe).

To the extent known to Elering AS the production capacity will be reduced as follows:

- 2011 - closing down of the Ahtme CHP plant, 24 MW
- 2012-2015 - mothballing of two units in the Narva PP, 302 MW
- 2012-2015 - installation of DeSOx/DeNOx equipment on four units in Narva PP, resulting in greater own consumption by 22 MW
- 2016 – closing down two units in Narva PP, which were mothballed, 302 MW

The Authority has continuously analysed the reports prepared by Elering AS. Compared to previous reports the situation has considerably changed. If earlier a significant shortage of capacity has been estimated, then according to the latest reports there is sufficient production capacity in Estonia. Due to the remarkable change of views of Elering AS the Authority carried out an analysis of production capacities on its own. The results are reflected in section 5.1.4 below.

Investments in transmission networks

Whilst so far the Estonian TSO has primarily been dealing with network reconstruction works then in the next years the emphasis is put on investments that improve security of supply and the interconnections with neighbouring countries. Most important projects are the second HVDC connection between Estonia and Finland - Estlink 2, which is to be commissioned in 2014 and two quick-start emergency and reserve power plants with the capacities of 100 MW and 150 MW, which shall be commissioned in 2015 and the Tartu-Viljandi-Sindi 330 kV line, to be commissioned in 2015.

National transmission network

According to an assessment by the TSO (Elering AS) the condition of the national 110-330 kV electricity network is satisfactory. The available transmission capacity is sufficient to supply domestic electricity consumers at peak loads.

The Estonian domestic power flows move mainly in Narva-Tallinn and Narva-Tartu direction, where the majority of consumption centres are located. In the Narva-Tartu direction the transfer capacity is sufficient. These lines are basically used for the export to Latvia, Lithuania and for the transits from Russia to Latvia, Lithuania and Kaliningrad. The main Estonian load areas are Tallinn and Harju county (surrounding Tallinn). In order to secure reliable transmission in the Narva-Tallinn direction new 330 kV lines and substations are planned to Tallinn, Harju county and also Pärnu according to the approved investment plan of the TSO.

In accordance with the Estonian 110-330 kV electricity network development plan the new transmission lines would stronger link with each other the southern and northern 330 kV networks and ensure higher security in supplying Tallinn and Pärnu regions. At the same time the new lines would create better possibilities for connecting of wind mills to the network and facilitate to possible construction of a new, the third 330 kV transfer line between Estonia and Latvia (Sindi-Riga). A necessity for this line will increase even more after the implementation of the Estlink 2 interconnection because of higher power flows in the direction of Püssi-Harku (Kiisa)–Sindi–Latvia.

Considering the electricity network development plan in it is assumable that in a 15 years perspective the supply security of power networks shall be good.

Interconnections with neighbouring countries

According to the TSO-made analysis congestion between Estonia and other EU countries currently occurs only in the directions of Estonia-Latvia-Pskov and in the Estonia-Finland direction. The Estonia-Latvia-Pskov direction congestions take place not only during repair and maintenance scheme operations but also during normal-scheme operations, especially in summer period when Lithuania and Latvia import the major part of their consumed electricity and the transfer capacity is significantly reduced due to higher ambient air temperatures and worsened cooling down conditions. Higher power flows in the Estonia-Latvia-Pskov direction often occur during night time when the Lithuanian hydro-accumulation power plant in Kronju works in the pumping regime (may consume up to 880 MW). In the Estonia-Finland direction there are limitations because in certain market situations the cable's transfer capacity gets exhausted.

In the end of 2010 the Estonian and Finnish electricity system TSOs Elering and Fingrid signed a contract for the construction of 145 kilometre long submersible cable and almost 12 kilometre long ground cable acquisition and installation. A rated capacity of the direct current connection to be constructed will be 650 MW with a rated voltage of 450 kV. Along with the Estlink 2 emerging the *bottleneck* between Estonia and Finland shall disappear. However, in case of a large scale import by the Baltic countries from the Nordic system limitations in the Estonia-Latvia-Pskov direction may take place also in a longer perspective.

Estlink 2 will almost triple the electricity transfer capacity between Baltic and Nordic countries. To the existing 350 MW capacity 650 MW is added and this will connect the Baltic power market to much larger extent with the power market of Nordic countries. Estlink 2 enables Nordic countries' producers to trade with their electricity in the Baltic countries and thereby to decrease the potential need of importing electricity from Russia for the compensation of the production capacity deficit in the Baltics. After the commissioning of the Estlink 2 in 2014 one can talk about the common Nordic-Baltic electricity market which will be beneficial to all producers and consumers in the region. The project is co-financed by the European Union.

The TSO Elering AS has prepared in 2011 the report *Security of Supply of the Estonian Power System* which deeply deals with security of supply issues considering sufficiency of production capacities, network connections, developments of the regional market, control of the electricity system in real time and measures in emergency situations.

Elering AS mentions in the report that until 2020 a production reserve which complies with the requirements is secured. The most important change compared to 2010 has taken place in connection with the production capacity estimates for the years after 2015. In the 2010 report it was considered that pursuant to EU directives 6 out of 12 units in Narva Power Plants (Narva PP) shall have to be closed down since 2016. According to the report this would bring in a situation in which the consumption is not covered by domestic production. The new Industrial Emissions directive which entered into force in January 2011 allows certain derogations which in addition to permanently operating production capacities enable the Narva PP to use production capacities during limited operation hours in the period from 2016 to 2023. In addition to production capacities Estonia has AC connections with Russia and Latvia, as well as the DC connection with Finland to which another DC connection will be added in 2014. For the control and planning of the power system in real time Elering AS uses

high quality control systems and it has a plan to implement a special balance control software. The reliability of the system is increased by the reserve control centre and close cooperation with the ENTSO-E and BRELL committees.

For ensuring security of supply in special situations (emergencies which may require a re-activation of the system) Elering AS has elaborated various action plans: the plan for re-activation of the system, possibilities for frequency regulation for the case when the Estonian system separates from other frequency-controlling systems and the plan for consumption limitations in emergency situations.

5.1.4 Authority's evaluation of electricity production capacity of Narva Power Plants

The Authority has analysed security of supply situation in 2016 and 2020 perspective considering the production capacities which exist presently or are under construction. An evaluation of reduction in production capacity which is likely to occur has been taken into account.

In the two power plants (Eesti PP and Balti PP of AS Narva Power Plants – Narva PP) currently there is altogether 12 operational units with their total installed net capacity of 2013 MW. From the mentioned capacity the units no.8 and no.11 are reconstructed fluidised bed based energy units with net capacity of respectively 194 MW and 192 (170)³ MW and these units fully comply with the environmental requirements. However, several new environmental requirements will be enforced which apply limitations on full usage of existing units of Narva PP for electricity production.

- Since 1 January 2012 the total emission of sulphur dioxide (SO₂) from oil shale using Narva Power Plants may not exceed 25 000 tons in calendar year;
- Since 1 January 2016 the NO_x emission concentration in the flue gas from large combustion plants may not exceed 200 mg/Nm³(the limit value);
- Since 1 January 2016 oil shale using large combustion plants shall ensure 96% rate of desulphurisation instead of the currently required 65-70% rate. The latter is the derogation provided by the Industrial Emissions Directive (IED) for existing combustion plants which use local solid fuel with high sulphur content. This applies to the oil shale on to the Eesti and Balti Power Plants which use it;
- Since 1 January 2016 the dust and fly ash emission concentration in the flue gas from large combustion plants may not exceed 30 mg/Nm³ (the limit value).

In order to fulfil the listed environmental requirements the Narva Power Plants has made or is carrying out investments to put their electricity production units into relevant condition.

- **Eesti PP** units no. no. 3, 4, 5 and 6 will be equipped with desulphurisation plants (DeSO_x) by the end of this year, which results in substantial reduction of SO₂ emissions. In 2012-2015 the units will be further modified so that by 1 January 2016 the NO_x emissions will not exceed 200 mg/Nm³.
- To **Eesti PP** units no.no. 1, 2 and 7 no investments will be made and since 2016 those units should no be used for electricity production, as they do not comply with environmental requirements.

³ 170 MW it the capacity when the unit is running in maximum cogeneration mode while supplying district heat to Narva town

However, the new IED which entered into force in January 2011 provides for some derogations which allow Narva PP using of production capacities with limited operation hours in the period of 2016-2023 in addition to permanently operating capacities. Thus, pursuant to the IED the units no. 1, 2 and 7 which do not comply with the requirements for large combustion plants, can be used up to 17 500 hours in the period from 1 January 2016 to 31 December 2023. The production ability per unit during 7 years shall be approx. 400 GWh/unit.

- To **Balti PP** units no. 9, 10 and 12 no investments are planned. The units will be mothballed for the period of 1 January 2012 to 31 December 2015. Afterwards, in 2016 the units will be closed down. Thus since 2016 these units will not be a part of the capacity balance (-462 MW).
- In June this year a decision was made to invest into at least one new production unit with a net capacity of 270 MW. The new unit shall be commissioned during 2015. In 2012 it will be decided whether to build another new unit or not.

Thus, according to the data available to the Authority in 2016 it is possible to use the following capacities of the Narva PP:

- units no. 3, 4, 5 and 6 reconstructed and equipped with DeSOx/DeNOx filters by 2015 with a net capacity of **686 MW**
- existing reconstructed fluidised bed units (no. 8 and no. 11) with a net capacity of **364 MW**
- units no. 1, 2 and 7 pursuant to the Industrial Emissions Directive with a limited number of operation hours with a net capacity of **501 MW**
- new unit with a net capacity of **270 MW** (a decision was made and building has started)

Below a conclusive table of Narva Power Plants' production capacity until 2020 is presented.

Table 5.1-4 Production capacity of Narva Power Plants until 2020 (excl. own consumption)

Source: Competition Authority

Eesti PP	Year of construction	Net capacity MW			Limitations
		2011	2016	2020	
Unit 1	1969	167	167	167	2016-2023
Unit 2	1969	167	167	167	2016-2023
Unit 3	1970	167	162	162	no
Unit 4	1970	167	162	162	no
Unit 5	1971	176	171	171	no
Unit 6	1972	176	171	171	no
Unit 7	1972	167	167	167	2016-2023
CFB unit 8	1973/2003	194	194	194	no
New CFB unit	2015		270	270	no
Balti PP					
Unit 9	1963	151	0	0	2012-2015
Unit 10	1964	151	0	0	2012-2015
CFB unit 11	1965/2004	192/ 170 ¹	192/ 170 ¹	192/ 170 ¹	no
Unit 12	1963/1965	160	0	0	2012-2015
Total		2013²	1801²	1801²	

Notes: 1 The Balti PP unit no. 11 net capacity of 170 MW is in maximum cogeneration mode

In the following the Authority's analysis of the Narva Power Plants unit by unit production capacity is presented.

Eesti Power Plant

Unit 1 was built in 1969, its net capacity today is 167 MW. For the time being it is not planned to equip it with a desulphurisation plant. In order to comply with the Large Combustion Plant Directive it is necessary to build a separate stack for the unit. Today the undertaking is planning this investment which would prolong its operating life time until 2023 (with limited operation hours in the period of 2016-2023). No demolition of the unit is planned and the undertaking estimates its remaining life time until 2025. By then it will have life time of already 55 years and will be completely worn out and outdated. That is the deadline and the planning of further prolonging of its operation is not realistic. If the new stack will not be built then the unit will still remain physically and under a shortage of capacity it can be started up in 24 hours.

Unit 2 was built in 1969, its net capacity today is 167 MW. For the time being it is not planned to equip it with a desulphurisation plant. In order to comply with the Large Combustion Plant Directive it is necessary to build a separate stack for the unit. Today the undertaking is planning this investment which would prolong its operating life time until 2023 (with limited operation hours in the period of 2016-2023). No demolition of the unit is planned and the undertaking estimates its remaining life time until 2025. By then it will have life time of already 55 years and will be completely worn out and outdated. That is the deadline and the planning of further prolonging of its operation is not realistic. If the new stack will not be built then the unit will still remain physically and under a shortage of capacity it can be started up in 24 hours.

Unit 3 was built in 1970, its net capacity today is 167 MW. The unit will be equipped with a desulphurisation plant. Due to the own consumption of the plant the net capacity of the unit will decrease to 162 MW. Thus no operational limitations will be set for the unit. The undertaking estimates its remaining life time until 2025. By then it will have life time of already 55 years and will be completely worn out and outdated. That is the deadline and the planning of further prolonging of its operation is not realistic.

Unit 4 was built in 1970, its net capacity today is 167 MW. The unit will be equipped with a desulphurisation plant. Due to the own consumption of the plant the net capacity of the unit will decrease to 162 MW. Thus no operational limitations will be set for the unit. The undertaking estimates its remaining life time until 2025. By then it will have life time of already 55 years and will be completely worn out and outdated. That is the deadline and the planning of further prolonging of its operation is not realistic.

Unit 5 was built in 1971, its net capacity today is 176 MW. The unit will be equipped with a desulphurisation plant. Due to the own consumption of the plant the net capacity of the unit will decrease to 171 MW. Thus no operational limitations will be set for the unit. The undertaking estimates its remaining life time until 2025. By then it will have life time of already 54 years and will be completely worn out and outdated. That is the deadline and the planning of further prolonging of its operation is not realistic.

Unit 6 was built in 1972, its net capacity today is 176 MW. The unit will be equipped with a desulphurisation plant. Due to the own consumption of the plant the net capacity of the unit

will decrease to 171 MW. Thus no operational limitations will be set for the unit. The undertaking estimates its remaining life time until 2025. By then it will have life time of already 53 years and will be completely worn out and outdated. That is the deadline and the planning of further prolonging of its operation is not realistic.

Unit 7 was built in 1972, its net capacity today is 167 MW. For the time being it is not planned to equip it with a desulphurisation plant. In order to comply with the Large Combustion Plant Directive it is necessary to build a separate stack for the unit. Today the undertaking is planning this investment which would prolong its operating life time until 2023 (with limited operation hours in the period of 2016-2023). No demolition of the unit is planned and the undertaking estimates its remaining life time until 2025. By then it will have life time of already 55 years and will be completely worn out and outdated. That is the deadline and the planning of further prolonging of its operation is not realistic. If the new stack will not be built then the unit will still remain physically and under a shortage of capacity it can be started up in 24 hours.

Unit 8 was built in 1973. In 2003 the boiler was replaced with a fluidised bed combustion technology boiler, but the turbine was not replaced. The rated capacity of the unit is 194 MW. The unit has no operational limitations and no year for closing down of it is planned. A life time of the boiler is at least 30 years, in reality even longer. It is possible to replace the turbine, as in 2013 it reaches the age of 40. Thus, the unit will stay in the energy balance indefinitely.

The new unit using fluidised bed combustion technology with a net capacity of 270 MW shall be commissioned according to plans in 2015. The decision on its building has been made. It will not have operational limitations and will stay in energy balance indefinitely.

The second new unit using fluidised bed combustion technology with a net capacity of 270 MW shall be commissioned according to plans in 2017. The decision on its building will be made in summer 2017. As there is no final decision, it cannot be included in energy balance yet.

Balti Power Plant

In Balti Power Plant extensive demolition works have been carried out and by there are the following units remained in the plant: no. no. 9, 10, 11 and 12. The rest are dismantled.

Unit 11 was built in 1965. In 2004 the boiler was replaced with a fluidised bed boiler, but the turbine was not replaced. The rated capacity of the unit is 192 MW, but while operating in winter period in maximum cogeneration mode the capacity is 170 MW. This capacity was used as the basis in the accounting of power balance. The unit has no operational limitations and no year for closing down of it is planned. A life time of the boiler is at least 30 years, in reality even longer. It is possible to replace the turbine, as in 2015 it reaches the age of 50. Thus, the unit will stay in the energy balance indefinitely..

Unit 9 was built in 1963 and its net capacity is 151 MW. In 2013 it reaches the age of 50. A unit with such age is outdated and with natural wear and tear. The undertaking is planning mothballing of the unit by 2012-2015. This would enable a start up of the unit in 24 hours. No final decision on demolition of the unit is made. However, considering its age it may be reasonable to write it down from the capacity balance since 2016.

Unit 10 was built in 1964 and its net capacity is 151 MW. In 2014 it reaches the age of 50. A unit with such age is outdated and with natural wear and tear. The undertaking is planning mothballing of the unit by 2012-2015. This would enable a start up of the unit in 24 hours. No final decision on demolition of the unit is made. However, considering its age it may be reasonable to write it down from the capacity balance since 2016.

Unit 12 was built in 1965 and its net capacity is 160 MW. In 2015 it reaches the age of 50. A unit with such age is outdated and with natural wear and tear. The undertaking is planning mothballing of the unit by 2012-2015. This would enable a start up of the unit in 24 hours. No final decision on demolition of the unit is made. However, considering its age it may be reasonable to write it down from the capacity balance since 2016.

In the compilation of the capacity balance it should be kept in mind that for the production volume sulphur emission limitations have been set out and due to that it is reasonable to keep less effective units in reserve. However, these units can be started up in 24 hours and therefore they should still be considered in the capacity balance.

Thus both 2016 and 2020 the net capacity of Narva Power Plants will be 1801 MW. In case if also the second new 270 MW fluidised bed unit will be built the net capacity will total 2071 MW which is sufficient to cover the Estonian estimated peak load until 2020.

5.1.5 Authority's assessment of security of electricity supply in Estonia until 2020

Currently Estonia has 2 383 MW of production capacity (see table 5.1-2). 553 MW out this will definitely be closed down by 2020: 3 units in Narva Power Plants (462 MW) and unit 1 in Iru PP (67 MW). Some smaller capacities will be added to this list. At the same building of the following new capacities have already been started:

Narva Power Plants' new unit 270 MW

Iru waste incineration plant 17 MW

Eesti Energia's Enefit oil factory power plant 8 MW

Additionally Elering AS (the TSO) will build the first 100 MW emergency reserve plant by 2013 and the second similar one with a capacity of 150 MW by 2015.

Table 5.1-5 Installed net capacity estimation for 2020 (excl. own consumption) based on Competition Authority data

	Capacity MW, 2020	Fuel
Narva Power Plants	1801	oil shale
Iru Power Plant	111	natural gas, waste
VKG Northern and Southern power plants	68	oil shale
Tartu CHP plant	22	biomass, peat
Tallinn CHP plant	22	biomass, peat
Pärnu CHP plant	22	biomass, peat, natural gas
Small CHP plants	47	oil shale, peat, natural gas
New power plants (CHPs in majority)	50	biomass, peat, waste, natural gas
Hydro power plants	4	water
Wind mills	750	wind
Emergency reserve plants	250	gas
Total	3147	
Total without windmills and emergency reserve plants	2147	

In addition to the production capacity Estonia has the AC interconnections with Russia 500-650 MW and with Latvia 500-900 MW, and also the 350 MW DC connection with Finland. In 2014 the second DC interconnection between Estonia and Finland the transfer capacity of 650 MW will be constructed. Therefore, in 2016 Estonia will have interconnections with neighbouring countries in a total capacity of 2000-2550 MW. It is important to remember that due to temperature, electricity transits and repair works the transfer capacity may considerably decrease. In addition a situation shall be taken into account that there may a simultaneous shortfall in all Baltic republics and in Kaliningrad. Therefore in the evaluation of security of supply it should be reasonable to consider only half of the capacity of the Russian and Finnish connections, i.e. 750 MW (in addition to the interconnections through Estonia the Baltic countries have also the connections Lithuania-Poland and Lithuania-Belarus, see drawing 3.1-2).

According to a projection by the TSO the 2011 peak demand shall be 1501 MW and in 2020 the demand should peak at 1767 MW. Thus, today Estonia has no shortage of production capacity. Based on the data known today also in 2020 there will be no shortage of production capacity. If we add here also the transfer capacity with Finland and Russia in a total of 750 MW (considering that the capacity may essentially be reduced under some circumstances) then the Estonian utilisable capacity estimation can be raised altogether up to 2897 MW (2147 + 750 MW = 2897 MW).

Conclusively the Authority is in a position that proceeding from the known data on the production capacity and on the cross-border interconnections and as well from the consumption projections made by the TSO today Estonia has no security problems in electricity supply. To the contrary, the installed capacity exceeds the Estonian domestic consumption peak. On the same assumptions also until 2020 the production capacity will be sufficient and the domestic consumption demand is covered by the domestic production capacity.

5.2. Security of gas supply

The economic situation in Estonia and in the world resulted in substantial changes in gas consumption in the past years. In comparison with 2007 the consumption in 2009 fell from 1003 million m³ to 635 million m³ (6,10 TWh= 0,5 Mtoe). That is a 35% decrease. Nitrofert AS, as one of the biggest gas consumers in Estonia, suspended its production indefinitely. Wood and peat fired cogeneration plants in Tallinn (Väo), in Tartu (Anne Soojus) and in Pärnu started commercial operation, contributing to the decrease in gas consumption. In 2010 the economy grew compared to the two previous years and the consumption of gas increased as well.

Table 5.2-1 presents general data on the supply of gas. The quantities imported to Estonia and consumed by AS Nitrofert are given separately. In 2008, for example, their quantities comprised 22% of the total consumption in Estonia. In February 2009 they suspended their operations and the Authority has no information on continuation of their operation.

Table 5.2-1 General data on supply of gas

	Import by Eesti Gaas bcm	Import by Nitrofert bcm	Total consumption bcm	Peak load		Max transfer capacity of the system	
				1000 m ³ per day	MW	1000 m ³ per day	MW
2001	0,789	0,076	0,865	5 400	2 099	7 000	2 721
2002	0,675	0,048	0,723	5 000	1 944	7 100	2 760
2003	0,732	0,106	0,838	5 500	2 138	7 800	3 032

2004	0,749	0,213	0,962	5 100	1 982	8 300	3 226
2005	0,774	0,216	0,990	5 200	2 021	10 400	4 043
2006	0,794	0,215	1,009	6 700	2 604	10 500	4 081
2007	0,796	0,208	1,004	6 400	2 488	10 700	4 159
2008	0,748	0,215	0,963	5 200	2 021	10 900	4 237
2009	0,635	0,020	0,655	4 350	1 691	10 900	4 237
2010	0,701	0,000	0,701	5 100	1984	10 900	4 237
2011 proj	0,680	0,000	0,680	4 500	1 749	10 900	4 237
2012 proj	0,690	0,000	0,690	4 800	1 866	10 900	4 237
2013 proj	0,710	0,000	0,710	4 800	1 866	10 900	4 237
2014 proj	0,715	0,000	0,760	4 800	1 866	10 900	4 237
2015 proj	0,720	0,000	0,720	5 000	1 944	10 900	4 237
2016 proj	0,730	0,000	0,730	5 300	2 060	10 900	4 237

Note: Projection made by Eesti Gaas AS in 2011

bcm= 100 000 000 m³

The share of natural gas in the Estonian primary energy balance is 9,5% (drawing 4.2-2). Therewith in electricity production the share was only 2,3% (drawing 5.1-2), as Estonia is an exporter of electricity then all electricity supply may be covered without using natural gas (the consumption issues are dealt with in greater detail in chapter 4.2).

From security of supply point of view gas is very important fuel in district heat supply systems where its share is as high as 41,9% (drawing 4.2-3). In bigger towns like Jõgeva, Rapla, Põlva and some others district heat supply bases 100% on natural gas. The share of gas is high also in the heat supply of Tallinn, Viljandi, Sillamäe and other towns. In 2010 also Kohtla-Järve starts partly using of gas in their heat production. For this purpose the 100 MW_{th} gas boiler house was built and commissioned in 2009.

Compared to Western Europe local gas heating is relatively little spread in Estonia. The share of natural gas sold to household customers by the largest retail seller Eesti Gaas in 2010 was only 8,9% from the total sale of gas. Whilst in most district heat supply systems it is possible to use also alternative fuels then in local gas heating systems such possibilities do not exist and in possible gas supply malfunctioning the consumers would be left without heat supply.

AS Eesti Gaas has concluded a contract with Gazprom for the supply of gas until the end of 2015 with a daily supply volume of 7 million m³ (guaranteed gas pressure 35 bar). This is by 11% higher than the maximum daily consumption so far. In 2006 the maximum daily consumption or, the peak consumption of the clients of Eesti Gaas was 6,2 million m³ (without AS Nitrofert consumption). Therefore, such gas quantity is sufficient for securing strategic supply of gas to Estonia. For storing of gas Gasprom uses the Inčukalns underground storage facilities in Latvia with an active volume of 2300 million m³, which secures necessary gas reserve for both Estonia and Latvia and partly also for Russia and Lithuania.

The storage is filled up in summer period from April to October and Eesti Gaas can monitor the filling up process. A failure to fill up the storage, poses possible gas supply risk as the winter time peak consumption is covered with the stored gas. In case of problems the TSOs can undertake timely measures in order to ensure the winter time peak supply in a way other than from the Latvian Inčukalns storage through Karksi.

Regarding security of supply Estonia completely depends on the Russian gas supplies. Estonia has two transmission interconnections with Russia: one in Narva (in eastern direction) and the other one in Värskä (south-eastern direction) and a single connection with Latvian in Karksi. In normal situation only the Latvian connection and the Värskä connections with Russia are operational. The Narva connection is typically closed because of limitations (congestion) in the Russian side. This connection is opened only in special cases. In the period from May to

October the supply of gas takes place mainly directly from Russia. From November to April the gas is supplied mainly from the Latvian Inčukalns storage through the Karksi gas metering station or from Russia through the Värška metering station. In both of these metering stations the quantity of gas supplied to Estonia is metered and its properties are analysed. Through those two gas metering stations, 34 gas distribution stations and through the transmission pipelines gas is delivered to the Estonian gas distribution system.

The pressure level of gas that is necessary for transmission is secured either by the compressor stations in the Russian transmission system or by the Latvian Inčukalns gas storage.

According to an assessment by EG Võrguteenus there are problems with security of supply and fulfilment of the N-1⁴ criterion. Under the N-1 criterion a situation assessment is considered where one biggest connection goes out of service. If in the case of a failure the supplies can be re-arranged without having supply disturbances, then the N-1 criterion is fulfilled. Theoretically Estonia has sufficient infrastructure and connections for fulfilment of the N-1 criterion in relation to transmission and therefore there are no problems with an exhaustion of the transfer capacity. At the same time it is known that problems may appear with coverage of consumption peaks because of the Latvian side supplies. Namely, there can be disturbances in gas supply if the Estonia-Latvia connection through Karksi, which delivers gas from the Inčukalns storage interrupts or, when the gas pressure in the storage is insufficient. Most critical time with the today's gas supply regime to Estonia is the spring time when the quantity of gas in storage and as a result the pressure decrease. Then the pressure level at the Estonian border becomes insufficient in order to secure the desired gas quantities for all customers. Therefore, the importer shall have a possibility to buy gas directly through the pipeline. Although the connections with Russia through Narva and Värška have a transfer capacity that is sufficient for supplying the quantities consumed in Estonia, but the Narva connection capacity is limited anyway, because of the limitation on the Russian territory. In emergency situations outside the Estonian territory there are no possibilities to raise the pressure in the inlets of the pipelines which supply Estonia, as estimated by AS EG Võrguteenus. Even now the capacity of the Latvian gas storage is insufficient in order to secure gas supplies to the customers in Estonia, Latvia, Lithuania and Pskov region of Russia. Thus the main question is not in the technical capabilities of the Estonian transmission network, but possible disturbances in neighbouring gas systems outside the Estonian territory during peak loads in the region.

The Authority is in a position that as the whole gas is supplied from a single source of supply, this obviously involves security of supply risks. However, the supply sources from the Latvian gas storage through Karksi and from Russia through Värška and Narva can be interpreted as independent sources of supply. Namely, the storage is located in the EU territory and the filling up process is monitored by EG Võrguteenus. The security of supply situation would be essentially improved by building of a liquefied natural gas (LNG) terminal in the Baltic-Finnish region. Security of supply is could be improved if a natural gas pipeline connecting the gas systems of the Baltic countries and Finland is laid up.

⁴ EG Võrguteenus positions on technical infrastructure risks in the Estonian gas supply system (April 2010).

In the end of 2010 the preparation of a risk analysis of the common Baltic gas supply was started in cooperation with the BEMIP⁵. The analysis should be finalised by December 2011. In the risk analysis the whole Baltic region is analysed, but also separately the gas market situation in each of the countries (Estonia, Latvia, Lithuania) and its functioning, condition of the infrastructure, its shortcomings and possible development directions, as well as political and economical risks are analysed.

5.2.1 Measures of securing natural gas supplies

For the first time the measures for securing of natural gas supplies were stipulated in the Natural Gas Act in 2007, pursuant to the EU Directive 2004/67. In 20 October 2010 the Directive was repealed and the Regulation No. 994/2010 was adopted by the European Parliament and the Council. The Regulation establishes provisions aimed at safeguarding the security of gas supply by ensuring the proper and continuous functioning of the internal market in natural gas (gas), by allowing for exceptional measures to be implemented when the market can no longer deliver the required gas supplies. The new rules of the Regulation shall ensure that the Member States and gas market participants undertake timely and effective measures in order to avoid and ease possible gas supply disruptions. The Regulation provides for preparation of a preventive action plan and emergency situation resolution plan in the future. Presently amendments to the Natural Gas Act are under preparation, based on the stipulations of the Regulation and other EU directives.

For safeguarding security of gas supplies the following measures are set out by the current Natural Gas Act.

In the period from 1 October to 1 May a household customer's supply with gas may not be interrupted nor limited. In the same period, gas supply may not be interrupted nor limited to an undertaking supplying residential space heating and which has no possibility to use fuel other than gas. Gas supply may be interrupted if there is a danger for people's life, health, property or environment is endangered, as well as upon an agreement between parties. A heat supply undertaking with an annual estimated production volume over 500 000 MWh per network area is required to facilitate a possibility of using a reserve fuel since 1 July 2008, in order to secure heat supply during 3 days.

In case of occurrence of factors that can jeopardise security of supply, endanger people's life and health or the integrity of network, the system operator shall inform the Ministry of Economic Affairs and Communications and the Authority, and make proposal for implementation of measures which can ensure security of supply. The Ministry in cooperation with the Authority shall analyse the proposal received from the system operator and if necessary, make proposal to the Government of the Republic for an implementation of the following measures for ensuring security of supply:

- limitation of gas supply to the persons which use gas other than for heating purpose
- allowing gas supply limitations to the undertakings that produce heat
- allowing lowering the temperature of water supplied for space heating
- oblige heat supply undertakings to using of a reserve fuel

As in Estonia most important is to ensure natural gas supply for heat supply undertakings and households, it is intended to impose limitations of supply first of all to heat producers in

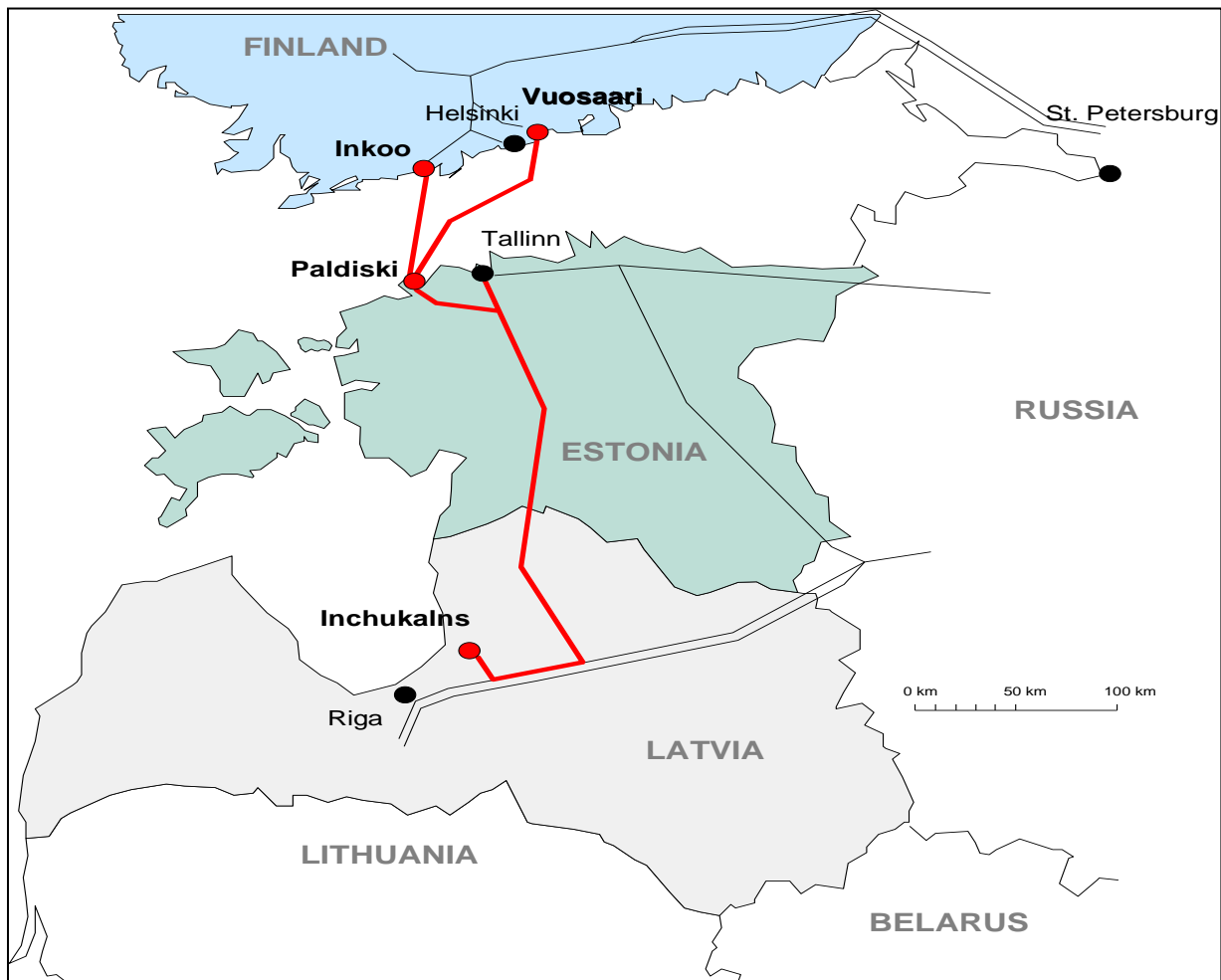
⁵ Baltic Energy Market Interconnection Plan

Tallinn and Narva. In essence, the amendments stipulate a requirement for Tallinn and Narva district heat supply undertakings to facilitate a possibility of using a reserve fuel and in case of gas supply disturbances switch over to the reserve fuel. In case of Iru Power Plant, that belongs to Eesti Energia group, it is possible to run the plant in heat only mode instead of cogeneration mode, in order to reduce gas consumption. In Estonia it is acceptable, as the share of gas in electricity generation is extremely modest and the electrical load can be covered with oil shale fired boilers of Narva Power Plants. It should also be considered that the gas using power plants constitute less than 10% of the total installed capacity.

Pursuant to the enforced amendments the system operator (EG Võrguteenus) is obliged to prepare a description of emergency situations which can hinder normal operation of the gas system, as well as a plan for resolving emergencies. The plan shall be submitted to the Ministry of Economic Affairs and Communications. The plan is to be applied in situations when the balance provider fails to ensure gas balance and limitation of consumption by certain customer groups becomes necessary.

5.2.2 New investments in raising security of gas supply

Drawing 5.2-1 presents the planned Balticconnector gas pipeline connecting Finland and Estonia. The connection would contribute to the fulfilment of the N-1 criterion by the Estonian gas network, facilitate to improvement of security of supply both in the Estonian and Finnish gas systems and as well in the Finnish-Baltic system. However, the described project has not yet got final approval. Currently a detailed plan preparation together with environmental impact assessment is ongoing. According to the developers' Gasum OY and AS Eesti Gaas estimation the final decision on the project will be made in 2011-2012.



Drawing 5.2-1 The planned Balticconnector (source: AS EG Vörguteenus)

According to the information available to the Authority several investors have indicated an interest in building of a liquefied natural gas (LNG) terminal in the northern shores of Estonia (either in Pakri peninsula, Muuga, Paldiski or Sillamäe) although, no concrete investment decisions have been made. One of the reasons is the circumstance that the European Union agrees to partly finance the construction of a LNG terminal in the Baltic countries, i.e. either in Estonia, Latvia or Lithuania. Negotiations in the question are ongoing, but no agreements have been reached yet between the countries on common activities. This affects also possible other LNG related decisions. The Authority is in an opinion that a LNG terminal independently in conjunction with the Balticconnector would improve security of supply both in Estonia and Finland and would also activate competition in the wholesale market of gas.

In conclusion the Authority is in a position that gas supply risks are related to the supply from a single source - Russia. Based on the consumption and transmission capacity projections made by EG Vörguteenus there shall be no shortfalls in capacity until 2016 and very likely also not in a longer perspective. The gas supply risks are essentially mitigated by the fact that in winter period gas is supplied predominantly from the Latvian gas storage. As the latter is located in the EU territory then it can be interpreted as an independent source of supply in addition to the supplies coming directly from Russia. In doing so there is still a risk element involved as the filling up of the storage also goes from Russia. Therewith the gas supply risks cannot be ignored in connection with heat supply which is greatly dependent on gas supplies. For possible crisis situation there is an action plan elaborated in Estonia on the basis of which the consumption of

gas can be significantly reduced (cease of electricity production) and switching over to using of reserve fuels (Tallinn, Narva and other towns).

6. Universal service related issues, incl. protection of vulnerable customers

6.1. Electricity sector

6.1.1 General obligations of market participants

The obligations of market participants are stipulated in the Electricity Market Act. In addition to law stipulations the Authority issues an activity license with conditions set forth in it. An activity license is required for the following activities:

- termination the operation of a generating installation with a net capacity of over 1 MW
- generation of electricity, except for generation by one producer using generating installations having a total net capacity of less than 100 kW
- provision of network services through a distribution network
- provision of network services through the transmission network
- transmission of electricity through a direct current line crossing the state border
- transmission of electricity through a direct line
- transmission of electricity through a producer's line
- selling of electricity

An activity license together with conditions thereon is issued by the Authority. After issuing the license, the Authority may change the conditions or validate new conditions if this becomes necessary due to amendments of legislation, for maintaining of security of supply or in order to ensure fulfilment of obligations in compliance with the Electricity Market Act or other legal acts.

Most thoroughly the Electricity Market Act regulates the activities of network operators, with their main obligations stipulated below. A network operator shall provide the following network services to the customers, producers, line possessors or any other network operators within its service area:

- on the basis of a corresponding request, connect any electrical installation conforming to the requirements and located in its service area to the network at the connection point
- on the basis of a corresponding request, amend the consumption or generation conditions
- enable a network connection to be used at the connection point
- transmit electricity through its network to the connection point or from the connection point
- ensure the installation of a metering device conforming to the requirements of legislation to determine the amounts of electricity transmitted through its network
- ensure the collection and processing of measurement data
- provide ancillary services directly related to the network services

A network operator shall observe the principle of equal treatment of market participants when providing network services. A network operator has the right to refuse to provide network services if:

- electrical installations of the user of network services do not conform to the requirements of legislation or to the technical conditions established by the network operator for connection to the network
- the provision of network services is not possible for any other circumstance dependent on the user of network services
- the provision of network services is not possible for reasons independent of the network operator
- network of the network operator lacks the necessary transmission capacity for provision of network services
- such right originates from other legal bases set out in the Electricity Market Act

A network operator shall provide grounds for any refusal to provide network services. In the reasoning, the legal basis for refusal shall be indicated and the Authority shall be notified of refusal to provide network services. A network operator is obliged to develop the network within its service area such that the continued provision of network services is ensured to all customers, producers, line possessors and any other network operators connected to the network, in accordance with their justified needs, legislation and conditions of the activity license.

In essence the described regulation ensures provision of network services to all market participants and third party free access to the network. Possibilities of refusal to provide network services are extremely limited and in practice no cases of refusal have been recorded.

Compared to network operators the Electricity Market Act sets much less obligations to producers of electricity. Pursuant to the Act the generating installations of producers shall conform to the technical requirements established by the Grid Code. Producers' actions shall comply with the orders issued by the system operator. A producer shall notify the system operator promptly of any emergency situation, accident or other circumstance that endangers or could endanger security of supply or the performance of any contractual obligations.

In addition to law the Authority has set forth an obligation to the market dominant producer Narva Power Plants (Narva PP) to secure uninterrupted supply of electrical energy to customers. Since Narva PP and Iru PP are extremely important plants for securing of district heat supply to Narva and Tallinn city respectively, the Authority has set forth in their activity licenses an obligation of an uninterrupted supply of district heat to the cities.

An electricity selling license is required for both the network operators that sell electricity to the customers connected to their network and for undertakings trading with electricity.

6.1.2 Rights and obligations of the Competition Authority

From a supervisory authority point of view the Estonian legislative basis can be considered as a solid one, as it gives the Authority enough possibilities for performing market regulation.

The Authority has the right to get necessary information from a market participant and from state and local municipal authorities, right to enter their territory, rooms and facilities for the purpose of on-site inspection, examine the documents necessary for supervisory activities and other information and circumstances and make extracts, transcripts and copies thereof. The Authority can also inspect the accounts and price formation practices applied by market dominant producers or sellers, establish development obligations for undertakings through license conditions. For example, it can impose an obligation for operators to invest into the

network which has not secured stable electricity supply for customers in accordance with requirements.

At the same time the Authority is obliged to carry out general supervision over the fulfilment of the Electricity Market Act stipulations by market participants and to make precepts in case of violation. In addition, market participants (consumers or undertakings) can record complaints on activities or inactivity of other market participants and the Authority has to re-settle them by its decisions. Both the precepts and decisions are administrative acts that can be challenged with an administrative court, which has the right to invalidate an Authority's decision or a precept.

Additionally the Electricity Market Act also stipulates that in case of certain violations of law the Authority has the right to initiate misdemeanour proceedings. The following violations of law are defined as misdemeanours:

1. violation of the obligation (failure) to provide network services
2. violation of the quality requirements for provision of network services
3. sale of electricity to non-eligible customers at a price which is not approved or which is higher than the approved price limit
4. violation of the rules of cross-border electricity trade
5. illegal use of the network and electrical energy
6. failure to submit information
7. restriction of the right of access
8. disclosure of information with limited access

The violations defined in above positions 6 and 7 are punishable by a fine of up to 1 278 EUR, in other cases of up to 3 200 EUR.

The merger of the former Competition Board and the energy market regulator gave broader rights to the new Competition Authority for market supervision and for regulation in case of necessity. Namely, the Authority has the rights and obligations for market supervision based on both the special acts (Electricity Market and Natural Gas Acts) and as well on the Competition Act. If an abuse of market dominant position or other competition related violations cannot be proceeded on the basis of the special acts (Electricity Market and Natural Gas Acts) these can be proceeded based on the Competition Act.

If a market dominant undertaking or an undertaking in control of an essential facility abuses its position then pursuant to the Competition Act a precept may be issued or a misdemeanour proceedings may be initiated (punishable by a fine of up to 32 000 EUR). Repeated abuse may be subject to punishment by way of criminal procedure.

In this connection beginning from January 2008 the merged Authority has several concrete examples where problems of the energy market have been effectively resolved pursuant to the Competition Act.

6.1.3 Customer contracts and information (implementation of customer protection measures pursuant to Directive 2003/54 Annex A)

Network operators are obliged to maintain a web site and disclose on it the following information:

- 1) principles of formation of the fees for connecting to the network
- 2) data reflecting efficiency, quality and profitability of the network operations
- 3) data on the sale undertaking in case the network operator has designated another undertaking to execute the selling obligation
- 4) charges for network services
- 5) standard terms and conditions for provision of network services

A seller of electricity has to disclose on its web site:

- 1) tariffs for the electricity sold within the framework of the selling obligation (to non-eligible customers)
- 2) standard terms and conditions for sale of electricity
- 3) data about environmental impact during previous reporting year: CO₂ and SO₂ emissions, disposed oil shale ash and radioactive waste caused in the production of electricity

The network charges and the tariffs for electricity sold within the framework of the selling obligation shall be published at least 90 days prior to their entry into force. In addition to a web site the tariffs have to be disclosed also in at least one daily national newspaper. The standard terms and conditions for provision of network services and for the selling of electricity shall be disclosed at least 30 days before becoming valid.

If a network undertaking sells both network service and electrical energy, it is obliged to separate on customer bills respective related indicators. All sellers of energy are obliged to inform customers about the share of energy sources used in production. Respective information shall be attached to the customer bills.

As regards customer contracts the Authority is in a position that this is a well-regulated field and customer interests are sufficiently protected. Pursuant to the Electricity Market Act standard terms and conditions of contacts for provision of network services, for electricity sale to non-eligible customers under the selling obligation and connection to network shall be approved by the Authority. In approval of above mentioned standard contract conditions the Authority follows the principle of proportionality, aiming balance of rights and obligations of both undertakings and customers. An important criterion in approval of standard terms and conditions is also their compliance with the Law of Obligations Act.

A network contract is entered into in a written form, an electricity contract can be also verbal provided that both parties agree with that.

In the network contract the following data shall be included:

- name of the undertaking, its registry code, address and other contact information
- description of the service
- service related main quality indicators or a reference to an available documents which presents the main indicators
- term for the connection activation in case of a contract for change of consumption or production conditions
- description of the maintenance services to be provided
- way of submitting of relevant information on the contractual payments
- conditions for a change or cancellation of the contract or services purchased upon it
- how repayments or other ways of compensation is arranged in case of failure to meet the contractual quality level of the electrical service
- way of initiation and resolution of disputes
- term of the contract

In the electricity contract the following data shall be included:

- name of the undertaking, its registry code, address and other contact information
- main physical parameters of the electrical energy
- electrical energy main quality indicators or a reference to an available documents which presents the main indicators
- way of submitting of relevant information on the contractual payments
- conditions for a change or cancellation of the contract or services purchased upon it
- how repayments or other ways of compensation is arranged in case of failure to meet the contractual quality level of the electrical energy
- way of initiation and resolution of disputes
- term of the contract

The contract with customers for provision of network services may be both with a specified term or termless. As a rule, termless contracts are concluded. Both network operators and sellers of electricity may change conditions of contract only if there is an objective reason for that in order to take into account changes of circumstances and only if the Authority has granted approval to a change of standard conditions. A network operator shall give notice of the cancellation of a network contract at least 30 days in advance. The notice shall set out the grounds for cancellation and the date of the termination of the contract.

A network operator may cancel a network contract and disconnect the place of consumption from the network if: the network connection has been interrupted by the network operator due to a breach of the network contract and the interruption has lasted for at least 180 consecutive days and the customer has failed, during that period, to eliminate the circumstances which were the grounds for the interruption or commence the consumption of electricity; and the customer has materially breached obligations arising from the network contract and the breach has not been remedied within a reasonable period of time granted by the network operator meaning that, as a result, the network operator cannot reasonably be expected to continue executing the contract.

A seller or a network operator has the right to cancel an electricity contract if:

- (1) the customer has materially breached obligations arising from the contract and has not remedied the breach within a reasonable period of time granted by the seller or network operator
- (2) the network connection through which electricity was sold on the basis of the electricity contract has been disconnected on the grounds that the customer has failed to pay the amount payable; the customer has materially breached an obligation arising from the contract in another manner and the interruption has lasted for at least 60 days
- (3) the customer has used electricity or network services without authorisation or has intentionally or due to gross negligence caused damage to the property of the network operator or the seals or verification marks placed on the metering devices by the network operator or the seller.
- (4) electrical energy is sold within the framework of the selling obligation and the market participant does not comply with all the conditions stipulated by law

The customer shall be notified of the cancellation of an electricity contract at least 30 days in advance. The notice shall indicate the grounds for cancellation of the contract and the date of contract termination.

6.1.4 Supply interruptions and extra-judicial proceedings

Interruption of network connection is regulated very detailed and the Authority is in a position that the protection of socially vulnerable customers in possible case of failure to pay in time is sufficient. A network operator may interrupt the connection of a customer to the network if the customer has failed to pay the amount payable on the basis of the contract entered into with the network operator or seller or, has in another manner materially breached an obligation arising from the contract. Before interruption of a network connection a notice concerning the planned interruption of the network connection shall be sent to the customer. The notice shall set out the grounds for interrupting the network connection and the planned time of the interruption. The network connection of a customer may be interrupted after at least 15 days have passed since the notice was sent and if, during that period, the customer has failed to eliminate the circumstances which were the grounds for interruption of the network connection and has not notified the network operator or seller, as appropriate, thereof.

If a network connection is interrupted on the grounds that a customer who is a natural person has failed to pay an amount payable according to the contract due to the temporary insolvency of the customer because of his or her serious illness or unemployment, the customer may notify the network operator or seller thereof in writing. Evidence of those circumstances shall be annexed to the notice. On receiving the notice and evidence, a network operator may interrupt the network connection of a customer who is a natural person after at least 30 days have passed since the notice was sent and if, during that period, the customer has failed to eliminate the circumstances which were the grounds for interruption of the network connection and has not notified the network operator or seller, as appropriate, thereof.

If a network connection is interrupted on the grounds that the amount due has not been paid, the connection may be interrupted during the period from 1 October to 30 April in a building or a part thereof which is residential space, used as a permanent residence and heated in full or primarily by electricity only when at least 90 days have passed since the notice and if, during that period, the customer fails to remove the circumstances which were the grounds for the interruption and has not notified the network operator or seller, as appropriate, thereof. A network operator may also limit the capacity of the network connection of a customer. The customer shall be notified of such limitation at least 15 days in advance.

A network operator may promptly interrupt the network connection of a customer if the customer increases, without authorisation, the limited capacity, uses electricity or without authorisation (steals electricity), uses electrical installations which do not meet technical requirements, are dangerous or interfere with the operation of the network as a whole or prejudice security of supply.

All market participants, both undertakings and customers have the right to refer to the Authority as to an extra-judicial body. A market participant may record a written complaint with the Authority against an action or an omission of another market participant that is in conflict with the Electricity Market Act or legislation established on the basis thereof. The Authority reviews the complaint and makes a decision thereon within 30 days as of the receipt of the complaint. If the Authority requests information necessary for resolving the complaint, the passage of the term shall be suspended, but not for longer than 60 days. The Authority's decisions can be challenged with an administrative court in 30 days since receiving of the decision.

6.1.5 Selling obligation, vulnerable customers and final consumer price regulation

Until 2009 the Estonian electricity market was opened only by 13%. Beginning from 2009 the market is opened by 35% and since 1 January 2013 it will be 100% opened. Thus, until 2013 the electricity sold to non-eligible customers shall be produced either in Narva Power Plants (Narva PP), in heat and power cogeneration process or produced by small producers (with a capacity of below 10 MW). Both Narva PP and Iru CHP plant belong to the Eesti Energia group, while the market share of Narva PP in production is 90%. Narva plants use oil shale fuel mined in Estonia. Oil shale is mined by Eesti Põlevkivi, which also belongs to the Eesti Energia group and is also in a market dominant position. Pursuant to the Electricity Market Act, the Authority shall approve prices for the following:

- maximum price for oil shale, which is an important input in formation of production cost of Narva PP
- production price for Narva PP, which is an important input in the formation of the tariffs for electricity sold to non-eligible customers
- tariffs of electricity sold to non-eligible customers under selling obligation

In addition to price/tariff approval the Electricity Market Act also stipulates a selling obligation, according to which network operators are obliged to sell electricity to all customers connected to their network. Network operators have obligation to perform the selling obligation themselves or, they have also the right to designate another seller to perform the selling obligation. For example, Eesti Energia Jaotusvõrk OÜ, the largest distribution network operator belonging to the Eesti Energia AS group, has designated Eesti Energia AS, as the seller of electricity.

The principles of approval of both the prices for oil shale, for production and for sale by Narva PP are similar to those for the network services price regulation. The price is formed of justified costs, depreciation of fixed assets and a justified return. In the evaluation of justified costs the Authority considers technical efficiency indicators, cost saving principles and monitors whether a cross subsidising is avoided. The main difference compared to the regulation of network operators is that in production and sale price regulation there is no regulation period and the regulatory authority monitors prices upon undertaking's application, while network charges are approved for a certain fixed regulation period and are indexed by changes of consumer (retail) price index and cost saving obligation (so-called RPI-x regulation).

Regarding the sale price the Authority approves a weighted average limit price and an undertaking has the right to form different tariffs for different customer groups within this weighted average limit. The above-described regulation leaves a flexible possibility for undertakings for formation of different prices within the weighted average. Pursuant to the Electricity Market Act the Authority has elaborated and disclosed unified methodology for calculation of a justified weighted average price limit for performing of selling obligation. The methodology determines the tariff period, which is one year. If during the tariff period the actual price appeared higher than the Authority approved weighted average price limit, it shall be compensated for to customers during the next price period. This means the next period tariff shall be decreased. If the actual price appeared lower than the Authority approved weighted average price limit, it is considered as an undertaking's risk and shall not be compensated for by customers.

Beginning from September 2008 the limit price for oil shale is 10,55 EUR/ton.

In July 2009 the Authority approved for the Narva PP the new limit price of 2,94 €cent/kWh.

In March 2010 the Authority approved for Eesti Energia a weighted average price limit for electrical energy sold to final consumers under the selling obligation of 3,07 €cent/kWh, which serves as the basis for formation of a new detailed price list.

It can be said that both production and final consumer price regulations are cost-oriented price regulations. The price reflects coverage of justified operational cost and a reasonable return (profit) on invested capital. The investments made into new capacity are also included in the price. Thus, the current price regulation prevents from a situation of selling electricity below production cost. For example, for the Narva PP, as the producer in a market dominant position, a return on invested capital (assets) of 8,0% is accepted. Such level shall be deemed justified, considering its market dominant position.

The Electricity Market Act prevents also from occurrence of a situation in which in case of a sharp rise of production cost it is impossible to transfer it to final consumers. In case of rapid changes in electricity market and if the approved weighted average price limit does not cover all incurred costs the undertaking may, at its own initiative, apply prices exceeding the limit and after that submit a new weighted average price limit for approval to the Authority. If the price appears not justified, the undertaking is obliged to compensate for the difference to customers.

The regulation of sale price to non-eligible customers is both practical and necessary as customers have no alternative possibilities and the seller is in a market dominant position in relation to non-eligible customers. The situation with the Narva PP production price and oil shale price regulation is similar. As the Narva plants' market share is about 90% it is obviously in a dominant position on the market. The same is fully true for the mining industry Eesti Põlevkivi with its market share of close to 100% and the price for oil shale is the determining input for Narva plants' production price. Without their production price and oil shale sale price regulation customers are likely to pay unjustified high price for electricity.

Thus, under the closed market conditions the regulation of both production and sale price is necessary and justified, in order to protect customers and to avoid earning of an unjustified super-profit by market dominating undertakings.

Pursuant to the regulation that was valid until 1 April 2010 also eligible customers had the right to buy electricity at the regulated price. Thus, an eligible customer could buy electricity either directly from the Narva PP or from Eesti Energia AS, who is at the same time the seller designated by Eesti Energia Jaotusvõrk OÜ. From 1 April 2010 the eligible customers can not any more buy at the regulated price neither directly from the Narva PP, nor from Eesti Energia. In essence this means that only non-eligible customers (65% of the market) can buy electricity at the market price. Eligible customers can buy either from the power exchange that started operations in Estonia or by direct contracts from producers or traders/sellers. The Authority considers the latter as a step towards an open electricity market and it is welcomed in every way.

The full opening of the market from 1 January 2013 will bring an end to the regulation of both oil shale, the Narva PP and as well of the final consumer price. The idea is laid down also in the Electricity Market Act. From the Authority point of view it is the only principal option as along with the full market opening all customers will have the right to choose the trader and no regulation will be necessary.

Conclusively, the Authority is in opinion that electricity customers are quite well protected and the Authority has good possibilities for supervision of the market. The tariff for electricity sold to non-eligible customers is regulated, the costs forming it is under control of the regulatory authority and for undertakings justified return on invested capital is ensured. Sufficient information is available to customers about the formation of prices, standard terms and conditions of contracts, energy sources used for production, etc. Most network operators have well-shaped web sites that contain sufficient information. The standard terms and conditions of contracts for provision of network services and sale of electricity under selling obligation are subject to approval by the Authority and possible interruption of network connection or the termination of sale contracts are regulated in detail by law.

6.1.6 Issuing guarantees of origin to producers

Pursuant to the Electricity Market Act the system operator Elering issues at the request of a producer, a guarantee of origin certifying that the producer generates electricity from renewable energy sources.

In order to issue a certificate of origin a producer shall comply with the following conditions:

1. A producer shall not subsidise generation from renewable energy sources at the expense of generation from other sources and vice versa.
2. By the third day of each calendar month, a producer shall submit information to the network operator specified in § 59 of the Electricity Market Act on the amount of electricity that it generated from renewable energy sources during the preceding month per generating installation and the amount of electricity so produced which was sold exercising the purchase obligation specified in § 59.
3. If electricity is generated from a combination of renewable energy sources and other sources, the producer may only sell such amounts of electricity as are generated from renewable energy sources by exercising the purchase obligation set out in § 59 of the Electricity Market Act.

The system operator verifies compliance of the data submitted in a producer's application to the above conditions and issues the guarantee of origin in certifying that the producer generates electricity from renewable energy sources.

A guarantee of origin shall set out the following:

- the name, address of the seat and details of the producer;
- the name of the energy source used for the generation of electricity and the place of generation;
- the amount of electricity generated in megawatt-hours, the period of generation, the time for generation in hours and the date of issue of the guarantee of origin;
- the amount of electricity in megawatt-hours, which is sold during the period specified in clause 3) of this subsection exercising the purchase obligation provided for in § 59 of the Act;
- the capacity of generating installations if electricity is generated in a hydroelectric station;
- other information established by the system operator.

A guarantee of origin for the electricity produced in the process of an efficient cogeneration shall set out the following:

- the name, address of the seat and details of the producer;
- lower calorific heat value of the used fuel;
- way of using of the produced heat;
- quantity of the produced electrical energy in MWh, period of production, production time in hours, location of production and time of issuing of the guarantee of origin;
- quantity of electrical energy in MWh which is sold during the period specified in section 4 using the subsidy or the purchase obligation pursuant to § 59 of the Act;
- other information established by the system operator.

The information on the issued guarantees of origin is published by the TSOs on its web site.

6.2. Natural gas sector

6.2.1 General obligations of market participants

Obligations of market participants are stipulated in the Natural Gas Act. Besides obligations stipulated by the Act the Authority issues activity licenses together with the conditions included in the license. An activity license is required for the following activities:

- import of gas (from outside the EU)
- sale of gas
- provision of gas transmission service
- provision of gas distribution service

In most detail the Natural Gas Act regulates the activities of network operators. Their main stipulated obligations are described as follows:

- a network operator is required to ensure that persons who have a network connection are supplied with gas in accordance with this Act, the conditions of the activity license and contracts entered into
- a network operator is required to enable third party access to the network, which for the purpose of the Act means the right of market participants to connect with the network or to use network services
- a network operator is responsible for the functioning and maintenance of the network which it owns or possesses
- a network operator is required to develop the network in a manner which ensures that all consumer installations located within its network area are connected to the network
- a network operator shall organise the metering of gas consumed from the network and maintain corresponding records, unless agreed otherwise
- a network operator is required to provide other network operators with all the necessary information to ensure the distribution and sale of gas in a manner which enables interconnected networks to be used securely and effectively
- a network operator may not disclose the information gained in connection with performing of its duties and obligations to third parties, except if disclosure is provided for by law or, information shall be submitted for carrying out of duties and obligations provided for by this Act
- a network operator may terminate its activities only if it transfers its obligations arising from this section to another network operator
- a network operator shall give the Authority at least 12 months' advance written notice of the termination of its activities, specifying the date and schedule for termination,

and provide a sufficiently detailed overview of the circumstances which ensure that the requirements provided for shall be met

- a network operator is obliged to follow the principle of equal treatment of market participants in provision of network services

In essence the described regulation ensures the provision of network services to all market participants and a third party free access to the network. Possibilities of refusal to provide network services are extremely limited.

For gas sale undertakings law stipulates the following obligations:

- a gas undertaking shall ensure that final customers are supplied with gas in compliance with the Natural Gas Act, the conditions of the activity license and contracts entered into
- a gas undertaking that performs both provision of network services and sale of gas shall keep separate accounts for the activities

6.2.2 Rights and obligations of the Competition Authority

From a supervisory authority point of view the Estonian legislative basis can be considered as a solid one, as it gives the Authority enough possibilities for performing market regulation.

The Authority has the right to get necessary information from a market participant, as well as from state and local municipal authorities, the right to enter their territory, premises and facilities for the purpose of on-site inspection, examine the documents necessary for supervisory activities and other information and circumstances and make extract, transcripts and copies thereof. The Authority can also inspect the accounts and price practices applied by gas undertakings and obtain necessary information concerning their economic activities. The Authority can establish temporary prices for the transmission and distribution of gas for no longer than two months in situations where those prices are not justified or the gas undertaking fails to follow a precept issued by the Authority. The Authority can establish development obligations for undertakings through license conditions. For example, it can impose an obligation to invest for gas network operators in case their performance has not secured stable gas supply for customers in accordance with requirements.

At the same time the Authority is obliged to supervise the fulfilment of the Natural Gas Act and to make precepts in case of violation. In addition, market participants (consumers or undertakings) can record complaints on activities or inactivity of other market participants and the Authority has to re-settle them by its decisions. Both the precepts and decisions are administrative acts that can be challenged with an administrative court, which has the right to invalidate a decision or a precept.

The Natural Gas Act also stipulates that in case of certain violations of law the Authority has the right to initiate misdemeanour proceedings. The following violations of law are defined as misdemeanours:

- 1) failure to give notice to the Authority about changes in data required by law
- 2) failure to comply with the conditions of activity license
- 3) sale of gas or provision of network services at non-approved sales marginal limit and failure to compensate the price difference to customers
- 4) provision of network service at non-approved price or at a price that is higher than the approved price

- 5) violation of the obligation to connect to the network and collection of unjustified connection charges
- 6) failure to provide third party access to the network

The penalty payment (fine) that can be imposed in case of violation of the above section 1) is up to 2 000 EUR, violations described in sections 3) and 4) are punishable with up to 32 000 EUR and in other cases up to 3 200 EUR.

If the market dominant undertaking or an undertaking in control of an essential facility abuses its position then pursuant to the Competition Act a precept may be issued or a misdemeanour proceedings may be initiated (punishable by a fine of up to 32 000 EUR). Repeated abuse may be a subject of initiation of a criminal procedure.

6.2.3 Customer contracts and provision of information (implementation of consumer protection measures pursuant to Directive 2003/55/EC Annex A)

Both gas network operators and gas sellers are obliged to maintain a web site and disclose the following information on it as the minimum:

- 1) charges for network services
- 2) maximum (limit) prices for gas
- 3) method of calculating the charge for connecting to the network
- 4) standard terms and conditions of contracts

The charges for network services shall be disclosed at least 90 days and the household customer gas prices 30 days prior to their entry into force. In addition to the web site the prices shall be disclosed at least in one national daily newspaper. Besides undertakings also the regulatory authority shall disclose all the approved prices on its own web site.

In March 2007 amendments to the Natural Gas Act were enforced. The amendments pay more attention to customer protection. In addition to the standard terms and conditions for selling gas to household customers now also similar standard conditions have to be approved also for the provision of network services. Pursuant to the Act the standard conditions of selling to household customers among other things shall include:

- sellers' name and address
- service provided
- limit values for the quality level of provided service
- customer information about the tariffs and prices
- contract duration, conditions of updating and termination of the contract
- possibility of change of supplier for free
- possibilities of payment for the service
- possible compensations and pay-back procedures
- settlement of complaints

The contract for selling gas to household customers may also include stipulations from the network contract that deal with the provision of network services necessary for the distribution of sold gas.

As mentioned above, standard conditions have to be approved also for the provision of network services. In doing so the Authority has to monitor whether network service user's

rights and obligations are balanced in the contract, as this forms a basis for the approval of prices for network services.

Standard terms and conditions for the sale of gas to eligible customers are not subject to approval by the Authority. However, according to the Natural Gas and the Competition Acts the market dominant seller (AS Eesti Gaas) shall ensure equal treatment of all market participants.

Pursuant to the Natural Gas Act the seller of gas has to enable to terminate a sales contract in connection with a change of supplier during one month since the receipt of a customer's application provided that the contractual obligations are fulfilled.

6.2.4 Selling obligation, vulnerable customers and final consumer price monitoring

The Estonian Natural Gas Act do not give a definition separately for a vulnerable customer, but sets forth stronger regulation conditions for all household customers. Estonia has also not established so-to-say social tariffs.

According to the Act a seller of gas possessing the biggest market share within its network area is required to sell gas, within the technical limits of the network, to all household customers who have a network connection and are willing to buy. In addition to above the Natural Gas Act provides that a market dominant producers applies a principle in setting up prices for the gas sold to household consumers that a weighted average price for gas contains the import price and a sales marginal added to it.

In purchasing of gas an undertaking shall base on good business practice and buy gas at most favourable price and the sales marginal added to the purchase price is subject to approval by the Competition Authority.

A limit level of the sales marginal should cover the costs incurred in sales and ensure a justified return. The Authority has elaborated and disclosed in its web site a unified methodology for the calculation of a limit value of the sales marginal and bases on it in approval process. According to section 6.3 of the methodology the sales marginal consists of the total of non-controllable costs, operating costs, capital expenditure and a justified return, which is divided by the sales volume.

Aforesaid principle was established from July 2009 and it provides more liberal organisation of the market compared to the earlier one. Namely, smaller gas sellers (which are not in a dominant position on the market) do not have to approve with the Authority any more their price of the gas sold to household consumers. Amongst other things the new system provides for undertakings some degree of flexibility in price formation, as the import price changes almost permanently. Thus, the new system is less bureaucratic but at same time protects consumers against excessively high prices as through the sales marginal the Authority is able to control the formation of price of the market dominant undertaking. The Authority applies *ex-post* regulation to the gas sold to households. If during a calendar year a weighted average price for sold gas differs from the weighted average purchase with the added sales marginal for the same period, then at the end of each calendar year the undertaking makes a settlement of accounts (equalization) with its customers during three months period and submits a relevant report to the Authority each year by 1 May at the latest. The equalization shall be reflected on the sales bill in a separate line.

6.2.5 Gas supply limitations, disruptions and extra-judicial proceedings

The Natural Gas Act provides for suspension of gas supply. According to it network operators have the right to suspend a network connection without giving advance notice thereof to the final customer if there is a danger to the life, health or property of persons or to the environment. A network operator has the right to suspend a network connection immediately after it is established if there has been an unauthorised consumption of gas. Besides, a network operator has the right to suspend gas supply, giving at least 7 days' advance notice, if:

- 1) the consumer installation is adversely affecting the supply of gas to another final customer or damaging the technical parameters of the network
- 2) the network operator is prevented from accessing a metering system located within territory owned or possessed by a final customer in order to inspect or replace the system or to perform necessary work for the gas installation to operate
- 3) any conditions provided in the contract for the purchase and sale of gas or stipulated conditions are violated

A new customer protective aspect in the amendments is the clause related to household customers that fail to pay in time and a network operator intends to suspend gas supply to them. In such case, if a customer has a permanent residential space, which is heated by gas, supply may be suspended during the period from 1 October to 1 May only when at least 45 days have passed since the notice.

According to the data of EG Vörguteenus in 2010 there were altogether 699 suspensions of gas supply, 401 of them were ordered by sales department because of the failure to pay in time.

Before the gas supply is suspended in cases described above, the network operator shall give the final customer a reasonable term to eliminate the deficiencies and shall notify the final customer of the pending suspension in writing. The notice shall set out the grounds for suspension of gas supply, the term for elimination of the deficiencies. A network connection or gas supply that has been suspended for the reasons explained above shall be restored after the customer has paid for the justified costs of suspension and reconnection, unless the contract has been terminated.

All market participants, both undertakings and customers have the right to refer to the Competition Authority as to the extra-judicial body. A market participant may record a written complaint against an action or omission of another market participant that is in conflict with the Natural Gas Act or legislation established on the basis thereof. The Authority reviews the complaint and makes a decision thereon within 30 days as of the receipt of the complaint. If the Authority requests information necessary for resolving the complaint, the passage of the term shall be suspended, but not for longer than 60 days. The Authority's decisions can be challenged with an administrative court in 30 days since receiving of a decision.

Conclusively, the Competition Authority's opinion is that consumers of natural gas are reasonably well protected and obligations of market participants are clearly determined. Sufficient information is available to consumers on standard conditions of contracts and the rights for the change of supplier. Also the Authority has good possibilities for performing market supervisory tasks.