Annual Report 2006

BALTSO

LIETUVOS ENERGIJA

LATVENERGO AUGSTSPRIEGUMA TĪKLS

EESTI ENERGIA PÕHIVÕRK

About BALTSO

Historical Development

For several decades the Baltic Interconnected Power System (Baltic IPS) was part of the Unified Power System of the North-Western region of the Soviet Union and was known as the Northwest Interconnected Power System of the Unified Power System (NW IPS of UPS). It connected the power systems of Belarus, Lithuania, Latvia and Estonia, and the power systems of six administrative regions of Russia. The system was supervised and controlled by the Control Centre of the NW IPS of UPS in Riga, Latvia.

On 7th of January 1992, the three Baltic States – Estonia, Latvia and Lithuania – concluded the Treaty on Parallel Operation of Power Systems. To supervise and control the system, the DC Baltija Control Centre was established in Riga using the assets and human resources of the former Control Centre of the NW IPS of UPS.

From the 7th of February 2001 the operation of Belarus, Russian, Estonian, Latvian, and Lithuanian power systems is based on the Agreement on parallel operation of these five power systems. The responsibilities of the different operators, control of power exchange between areas and other rules of synchronous operation of power systems were disclosed in the BRELL Agreement and in its amendments.

In the beginning of 2006 as a response to the changes in the energy market, the Baltic parties agreed to revoke the Treaty on Parallel Operation of Baltic Energy Systems. The three Baltic Transmission System Operators decided to liquidate DC Baltija by the end of 2006 and The Foundation Agreement of the Estonian, Latvian and Lithuanian Transmission System Cooperation Organisation BALTSO was signed on 30th of March 2006 in Riga, Latvia by the representatives of OÜ Põhivõrk from Estonia, Augstsprieguma Tīkls AS from Latvia and Lietuvos Energija AB from Lithuania.

The main aim behind the establishment of the non-profit BALTSO was to promote cooperation between transmission system operators in Estonia, Latvia and Lithuania as the member organisations had all been granted a power transmission license in Estonia, Latvia or Lithuania.

On 28th of December 2006, AS Augstprieguma Tīkls, Lietuvos Energija AB and OÜ Põhivõrk signed the Agreement on the Parallel Operation of the Power Systems of Lithuania, Latvia and Estonia.

The reporting period of BALTSO is one calendar year; the Organisation does not have its own financial budget or financial resources. The working language of the Organisation is either English or Russian at the discretion of the governing body of the Organisation

BALTSO

The Main Objectives of the BALTSO Foundation Agreement

- to create and maintain the conditions necessary for development and assure the reliable operation of the Power Systems of Estonia, Latvia and Lithuania;
- to support the coordinated and safe operation of the electric energy markets of Estonia, Latvia and Lithuania;
- to promote cooperation between the Organisation and its Members on one hand, and the energy companies of non-Member countries on the other;
- to handle public relations of the Baltic energy system and electricity markets;
- to promote relations with other organisations and institutions in the Baltic States, in Europe and in the rest of the world.

Governing Bodies of BALTSO

LEADERS' MEETING

The Leaders' Meeting is the highest governing body of the organisation and is held annually in rotation in each member country not later than on 30th June.

The main functions of the Leaders' Meeting are to approve the annual reports of the organisation and to take decisions on any issues raised by the Committee, the Working Groups or the Secretariat.

Resolutions taken by the Leaders' Meeting are binding, while recommendations are only advisory. For resolutions to be taken, it is necessary for each member to be represented, and each member has one vote.

THE COMMITTEE

The Committee is a collegiate executive body of the organisation and consists of two representatives from each member.

The Committee meets as frequently as practicable in each member country in rotation, and the meetings are convened by the Secretariat. All management representatives need to be present for decisions to be taken, and in total five Committee Meetings were held during the first reporting period (April 2006 until June 2007)

The functions of the Committee are to:

- prepare and draft the annual reports of the organisation;
- prepare and draft resolutions for the Leaders' Meeting and adopt recommendations taken in the meeting;
- establish ad hoc Working Groups to research and analyse specific matters which may arise;
- organise third-party consultants if specialists are required for specific research or other tasks on behalf of BALTSO, the costs being divided equally among the members;
- review and consider reports made by Working Groups.

During 2006 Committee members were:

- Vladas Paskevicius and Ramunas Bikulcius from Lietuvos Energija AB;
- Imants Zviedris and Varis Boks from Augstsprieguma Tīkls AS;
- Valeri Peterson and Mart Landsberg from OÜ Põhivõrk

BALTSO has three permanent working groups:

- Operation & Security – convener Voldemars Lapinskis from Augstsprieguma Tīkls AS
- Development – convener Mart Landsberg from OÜ Põhivõrk
- Information Technology & Communication – convener Ramunas Maksimovas from Lietuvos Energija AB

All working groups have had their plans for each reporting period approved by the Committee.

THE SECRETARIAT

The Secretariat is a permanent body of the organisation which ensures its day-to-day operations.
The functions of the Secretariat are performed by the members in rotation so that each member performs the functions of the Secretariat for one reporting period and is responsible for the Secretariat's expenses during that period.

The functions of the Secretariat are to:

- convene the Annual meetings and meetings of the Committee;
- perform secretarial, administrative, record keeping, accounting and other auxiliary clerical functions;
- handle the external communications of the Organisation;
- ensure that the permanent and current archives of the organisation are properly maintained.

In the 2006 reporting period the functions of the Secretariat of BALTSO were performed by OÜ Põhivõrk with Valeri Peterson as secretary, and Kätlin Kruus as staff.

Leaders' Foreword

Lithuania

For several decades, Lithuanian, Latvian and Estonian energy specialists have been working with one accord to secure the reliable supply of electricity to consumers, and the stable operation of the power system in the region.

Significant changes and challenges will be taken up in the Baltic power system to ensure the security of the power system, the reliability of electricity supply, and a decrease in dependence on primary energy resources. I am confident that BALTSO will play an immense role in handling the essential issues of the parallel operation of the power systems of the Baltic States, in promoting cooperation between the power companies and third parties, and in making useful contacts with other organisations and institutions in the Baltic States, Europe and other countries around the world.

However, at present the Baltic power system, and consequently the economies of all three countries, is facing a looming problem which casts a shadow over future development. In 2009 the biggest electricity producer in the Baltics – Lithuania's Ignalina Nuclear Power Plant – will be shut down, and it is clear that in order to satisfy growing demand for electricity in the region, this lost capacity will have to be replaced by new generation sources. A joint project being undertaken by Lithuania, Latvia, Estonia and Poland to construct a new nuclear facility in Lithuania will assume vital importance. According to the initial assessment, the new nuclear power plant could start operating around the year 2015.

In implementing joint projects we will make appropriate use of our streamlined cooperation and valuable experience, as we have before. The most obvious example of our joint achievements is the successfully completed Estlink interconnection cable between the power systems of Finland and Estonia. Our short term targets are to achieve the reliable integration of the Baltic power system into a single European market by interconnecting the transmission grids of Lithuania and Poland, and to complete the feasibility study for an interconnection between the grids of Sweden and Lithuania. These new interconnecting lines will enable the Baltic States to reduce significantly their energy dependence, will enhance the reliability of electricity supply, and will serve to fulfil a major precondition for entry to the European electricity market.

We will strive to make BALTSO an influential organisation, not only by achieving all these targets, by resolving the problems of the power companies of the Baltic States, and by facilitating technical solutions in system development or the joint operation of the Baltic power companies, but also by making an input in dealing with matters of common concern – the reliability of power systems, the optimisation of energy resources, and other similar subjects in the electricity industry – by representing the industry in international organisations and taking part in their activities as an equal partner.

Rymantas Juozaitis
General Director of Lietuvos Energija AB

Latvia

Augstsprieguma Tīkls AS is the Transmission System Operator of Latvia, and acts in accordance with the legislation, standards and licence requirements of the Republic of Latvia to fulfil the functions, obligations and responsibilities of the Transmission System Operator.

The aim of the integrated management system of the company is to increase the efficiency of high voltage network's work, to ensure that the needs and requirements of clients are satisfied to the maximum, to lessen the environmental impact, to increase the work safety of the personnel, and to reduce the risk of occupational health hazards to the employees. The management of the company sets high voltage network's policy of quality, environment and professional health and work safety, and ensures that the aims of the company are met, and that access to the service is provided by constantly developing technology.

When considering the safety of the electricity supply system, the most critical conditions should be demanded. Augstsprieguma Tīkls AS ensures that the results of safety evaluation are made available to the public in accordance with legislative requirements, guarantees undiscriminating conditions to all users of and applicants to the Transmission System and access to information for users of and applicants to the Transmission System concerning conditions and requirements for access and connection to the Electricity Transmission System.

Augstsprieguma Tīkls AS leads the Operation & Security Working Group of BALTSO. The objective of the above-mentioned Working Group is to organise and coordinate operational cooperation between Baltic Transmission System Operators with regard to operational planning, system control and operational reliability, in order to provide safe parallel operation. On top of this, Augstsprieguma Tīkls AS accepted the function of Coordinator of the Baltic TSOs, which was well-suited for our highly knowledgeable employees who constantly develop by increasing their qualifications at all levels.

As the Coordinator of the Bloc we coordinate the balance control in the Baltics to guarantee the quality of electricity (frequency, voltage, etc); we provide and supervise the security and stability of network operation in BRELL countries; we carry out calculations for network steady-state and dynamic stability in BRELL; we prepare and check the operational control documentation for BRELL; and we draw up and survey the documents for operational division regarding the network reliability in the BRELL loop and Latvia.

Imants Zviedris

CEO of Augstsprieguma Tīkls AS

Estonia

The need to create a single European Union marketplace for electricity is the driving force uniting the European and Baltic electric networks, giving wider freedom of choice to players in the market, enabling the efficient use of the potential energy of each country, and lowering risks to the security of supply. In connection with this, the most important event of the last year for OÜ Põhivõrk, the Estonian TSO, was undoubtedly the opening of the DC cable linking Estonia and Finland, and thus the Baltic States and Scandinavia.

The Estlink undersea cable represents a long-planned triumph for all in the energy industry. Not only does it permit energy trading, but it also enhances the network technically, most importantly for Estonia by allowing the restart of the Estonian power system in the event of a widespread outage, and also by improving the stability of the system by allowing converters to be used to regulate the frequency of the system.

One of our main goals for the forthcoming year is to tighten still further our integration with the European energy system, thus improving both Estonia's energy independence and our security of supply. The Estlink undersea cable was a very important step in this direction, but in order to strengthen the link, another connection is clearly needed, for which reason we are already working with the Finnish TSO on the preparations for a second undersea cable between Estonia and Finland.

Last year OÜ Põhivõrk joined ITOMS, the international consortium for comparing best practice in the transmission industry, which we believe will help us identify ways to use our assets, such as substations and transmission lines, more efficiently. Changes to the way we manage our assets resulted in the creation of a unified Asset Management division from the second quarter of 2007, bringing together the formerly independent departments of maintenance and network development.

To reinforce our Asset Management even further we are also developing software, in conjunction with Estonian biggest distribution network OÜ Jaotusvõrk, which is designed to help us and our clients by bringing together technical information about the whole network in one database. The roll-out of this programme during 2008 will be one of the most ambitious IT projects ever undertaken in Estonia.

To achieve our goals and carry out these projects will be a great challenge and will require devotion and commitment, but we are confident in the knowledge that we have with us the best specialists of several countries and their enthusiasm lets us believe that the difficulties we face will be turned into profitable learning experiences not only for Estonia, but for the energy systems of the whole Baltic region.

Lembit Vali
CEO of OÜ Põhivõrk

Report of the BALTSO Committee

The Changes in the Operation and Control of the Baltic Power Systems

> There were significant changes during 2006 as the transition to operation as a joint transmission network was addressed, as had been decided by the heads of the Baltic power companies, in order to suit better the actual situation in the Baltic power market.

At this time the Estonian and Latvian transmission system operators (TSO) were legally separated from their parent companies, while the Lithuanian electricity sector had already been completely reorganised in 2001 by full separation of production, distribution and transmission activities. The electricity market became more open and developed further towards joining the Nordic electricity market. The HVDC cable between Estonia and Finland, which was due to come into operation by the end of 2006, represents the first stage in connection with the Nordic market.

The aim of the Baltic power companies' decision was to create a new platform for cooperation, whereby each Baltic TSO must be fully responsible for the security of its own system and also for joint operation of the system within the Baltic and neighbouring power systems. For a long time this was the responsibility of the joint international dispatch centre DC Baltija in Riga.

In order to support and promote cooperation between the Baltic TSOs, a new agreement on cooperation was signed on 30 March 2006 and the non-profit organisation BALTSO was established.

Despite the divergent development of the power systems and electricity markets, the TSOs decided to continue to

adhere to the main principles of cooperation within the Baltic power system – coordinated system modelling and planning, continued synchronous operation monitoring, jointly coordinated operation in cases of disturbance, and system restoration – and to run a common personal training procedure. All the functions and many of the experienced people of the former dispatch company DC Baltija were taken over by Latvian TSO Augstsprieguma Tīkls AS, which was appointed by the other two TSOs to be the initial coordinator of the Baltic power systems' joint operation.

Later, on 28 December 2006, a new agreement on parallel operation of Baltic power systems was signed describing the principles of joint operation and the main responsibilities of the parties. The next step will be the appropriate revision of existing operation manuals and the writing of new ones.

The joint approach of the Baltic power systems was taken further in cooperation with Russia, Belarus and other CIS countries within the framework of the BRELL Committee. BALTSO is the coordinator of this work and the Latvian TSO is responsible for coordinating operational issues in the Baltic system. The main challenge in this work is to harmonise the system operation requirements and approaches to the provision of system services.

Security of supply of the Baltic Transmission Network

The question of security of supply is quite a hot topic for the Baltic power systems, particularly in regard to the 1300MW generating unit in Ignalina Nuclear Power Plant in Lithuania, which will cease operating at the end of 2009.

Behind this come steady state and transient stability issues that require continuous network and power plant monitoring, while the introduction of the new HVDC cable between Estonia and Finland with a transmission capacity of 350 MW creates a new challenge.

Together, the issues which BALTSO deals with, including maintaining voltage, power and frequency control, maintaining the transmission network, scheduling operations and developing appropriate security plans, provide a reliable space for the power trade and the development of the power market. At the same time it is necessary to accept reasonably strong rules regarding the use of the transmission network in order to ensure that flexible trading is possible.

The Baltic TSOs work together for implementing common guidelines. The guiding principle is that only the defective element of a network should be disconnected, and that this should be done as quickly as possible; in cases of overloaded system elements, the special automatic or manual control should change the balance of systems to restore the normal level. However, at the same time security measures must be reasonable, meaning that some predictable large disturbances which occur only very seldom must be handled with the assistance of the transmission system users, the customers.

For such cases the wide-spread load shedding systems are used, which means that network operators can keep a lower volume of operational power reserves at their disposal, and as a result transmission service is cheaper for the customer. However, significant changes in security measures and transmission prices will be required once a significant number of wind power generators have been built in the Baltic region.

BALTSO

International Cooperation

> Baltic TSOs play an immense role as founders and members of BALTSO in handling the essential issues of parallel operation of the power systems in BRELL countries, and in promoting cooperation between the five transmission system operators of BRELL Agreement.

Cooperation between the Baltic TSOs within BALTSO is useful, in collaboration with ETSO (European Transmission System Operators), in preparing various ETSO reports and in developing ETSO inter-TSO compensation methodology. The Baltic TSOs, through BALTSO, play an active role in ETSO.

BALTSO has played an important role in the creation of inter-TSO compensation mechanisms within ETSO and within BRELL. These two inter-TSO compensation methodologies should be taken separately because the Baltic TSOs are not in the same synchronous zone as other ETSO countries, but at the same time, the methodologies should be harmonised because the Baltic States are members of the European Union. BALTSO has encountered a lot of difficulties in conforming to both EU legislation and the technical peculiarities of the parallel BRELL power system operation.

In addition to the abovementioned, BALTSO actively cooperates with the TSOs of Finland, Sweden, Denmark, Norway and Poland.

New Interconnection via Estlink

In April 2006, the Estonian Minister of Economic Affairs and Communications, the heads of the power companies of the Baltic States and Finland, the ambassadors of the countries involved in the project and the representatives of constructor ABB formally laid the cornerstone for the Estlink undersea cable converter station. The event marked the launch of construction work on the mainland Estonian portion of the Estlink cable project.

The Estlink project has a long history and was first considered in the early 1990s at Estonian government level after the Baltic States regained their independence, but it did not proceed beyond the initial idea stage. However, the project started to progress more rapidly after the cold and dry winter of 2002/2003, which dramatically raised electricity prices in the Nordic electricity market and focused a new spotlight on the cable project. From then on it was just a question of when Estlink would be completed.

The Estlink project was the subject of a public open tender published at the end of 2004. There was considerable competition between conventional and VSC HVDC technologies, so in the subsequent feasibility studies and tender evaluation the following parameters were considered: investment cost, overload capability, electrical losses, circuit availability, maintenance cost, and construction time.

As a result of the evaluation, the VSC technology was declared to be the preferred technology. The VSC technology has been proven to be reliable, as there are similar projects operating successfully in the USA and Australia. As a turnkey supplier, the Baltic and Finnish partners chose Swedish-Swiss concern ABB with its environmentally friendly technology featuring oil-free cables, an absence of electromagnetic fields, compact converter stations and underground or undersea power lines.

The Estlink cable is made up of both underwater and ground cable. A total of 210 kilometres of cable was produced to establish the electricity connection between Estonia and Finland for the first time in history. Of this, 148 kilometres is undersea cable and 62 kilometres underground cable.

The connection, which has a nominal capacity of 350 MW, is owned and operated by AS Nordic Energy Link, a company established by the main power utilities of the Baltic countries and Finland. AS Nordic Energy Link is owned by Eesti Energia from Estonia (39.9%), Latvenergo from Latvia (25%), Lietuvos Energija from Lithuania (25%) and Pohjolan Voima and Helsingin Energia from Finland (10.1%). The operation of Estlink is planned in two phases – merchant project in 2006-2009 (or at the latest by 2013) and infrastructure project, 2010 at the earliest.

Estlink is designed to supply the Nordic electricity market with electricity generated in the Baltics. An estimated 2 TWh of electricity will be transported annually via the cable, and

BALTSO

the project will improve the security of the electricity supply in the Baltic States and reduce the dependence of the Baltic power systems on Russia. Estlink allows for electricity transit and provides an alternative electricity purchase channel to cover potential deficits in generating capacity.

The Estlink HVDC link offers also a variety of system services for the transmission grids of Estonia and Finland such as emergency power control, damping control, voltage or reactive power support, frequency control, and black-start capability. Therefore the cable will help Estonia should the state be left in darkness as a result of some major accident. Before the link was completed, the system could have been restarted with help from Latvia and Russia, but it is likely that following a large accident affecting the Estonia system, those systems themselves would be in a state of emergency.

Fortunately, Estonia has not experienced any large-scale electricity system problems. However, there have been recent widespread power cuts around the world, with large parts of Moscow, Western Europe and southern Sweden, a part of Denmark including Copenhagen, and a large part of Italy finding them without electricity. The black-start feature of Estlink cable will make it possible to start up parts of the Estonian network in only a few minutes after a total blackout.

The control and protection system is designed so that the National Control Centres for the Estonian and the Finnish power systems can operate Estlink remotely.

THE ESTLINK PROJECT FACT SHEET	
Connection point Estonia	Harku substation
Connection point Finland	Espoo substation
Ownership	Joint ownership between Baltic and Finnish power companies through AS Nordic Energy link, EST
Start of project	May 1st, 2005
Start of land cable installation	Beginning of 2006
Start of submarine cable lying	Late summer 2006
In-service (commercial operation)	January 2007
Transmission technology	HVDC Light® by ABB
Transmitted power	350 MW
DC voltage	+/- 150 kV
Cable length	Total 210 (2 times 105) km cables, including 148 (2 times 74) km submarine cable and 62 (2 times 31) km land cable
Maximum water depth	100 m
AC voltage Harku	330 kV
AC voltage Espoo	400 kV
Features submarine cable:	Extruded polymer insulated cable, conductor 1000 mm^2 copper, steel armouring, diameter 96 mm, weight 27 kg/m
Features land cable	Extruded polymer insulated cable, conductor 2000 mm^2 aluminium, diameter 93 mm, weight 11 kg/m
HVDC Light® converter stations	Convert alternative current (AC) to direct current (DC) and on the other side DC to AC
Power direction	Power can be transmitted in either direction

Development of BALTSO

Energy Policy in the BALTSO Countries

Strategic Objectives of the Lithuanian Electricity Sector

Lithuania will play a decisive role in integrating the regional power system with the power systems of Western Europe. In the forthcoming decade, the power system of Lithuania will face significant challenges in maintaining its security and the reliability of its electricity supply, and in decreasing its dependence on primary energy resources. It is projected that until 2025 electricity demand from various industries will grow by approximately 3.7% annually, and that at the end of the projected period electricity consumption will be twice its present level.

Because the 1300 MW unit of Ignalina Nuclear Power Plant, the biggest electricity producer, will be shut down in 2009 and this lost capacity will have to be replaced, the power systems of the Baltics, and consequently the economies of the Baltic States, are encountering a pending problem with regard to their further development. The results of the Feasibility Study completed in 2006 showed that the most efficient solution would be to construct a new nuclear power plant with modern and safe generation technologies in Lithuania. This will be beneficial in ensuring diversification of the fuel mix used for electricity production, and will enable the region to achieve compliance with the requirements of the Kyoto Protocol to cut CO2 emissions. According to the preliminary assessment, the maximum capacity of the new nuclear power plant would be approximately 3000 MW, and its first reactor could be brought into operation in around 2015.

The short-term target of Lietuvos Energija is the efficient integration of the Lithuanian power system with the European Union electricity market and its interconnection with the transmission grids of Poland and the Nordic Countries.

It is expected that the interconnection of the Lithuanian and Polish grids will be finalised in 2012 with the construction of a double circuit 400kV line of 1000 MW transmission capacity and a back-to back converter. According to the pre-feasibility study, the transmission systems of Lithuania and Sweden could be interconnected by an undersea cable of 700-1000 MW as early as 2011. The Baltic States have already started operation of the 350 MW interconnection with Finland, and new interconnection lines would allow a decrease in the energy dependence of Lithuania and the other Baltic States and an increase in the reliability of the energy supply, and would make participation in the single European electricity market feasible.

A lot of attention is also being given to the development of renewable energy resources. Their share in the primary energy balance is about 9%, and, in accordance with its commitment to the European Union, Lithuania will reach a set target of 12% in a diversified and balanced energy mix by 2010. With the commissioning of windmills which are presently under construction together with power plants fired with bio-fuels, more than 7% of the total consumption of electricity will be produced from renewable energy resources in 2010.

With a view to attaining the development objectives of the electric power sector, namely ensuring the reliability of electricity supply, it is necessary to reconstruct and restore physically worn electricity transmission and distribution networks with a view to serving increasing loads and complying with the requirements for electricity supply reliability and quality; to construct new 330 kV electricity transmission lines; and to co-operate with the neighbouring countries to provide reserve capacity.

Guidelines in Latvia for the Power System Development in 2007-2016

Development planning should be based on the new principles of the European Union's energy policy and should aim for diversification of energy sources and power supply. Energy policy should be coordinated with foreign and environmental policies, and should become receptive to investment. Development should be guided through market liberalisation and the promotion of competition.

THE GOALS OF ENERGY POLICY IN LATVIA ARE AS FOLLOWS:

- to increase the security of the power supply, which will entail increasing local generation, including renewable resources, and encouraging diversification of supplies of primary resources;
- to prevent the isolation of the Baltic energy market;
- to accomplish energy efficiency on the demand side;
- to increase the effective use of renewable resources and energy production in the co-generation process.

The local energy supply should reach 80% by 2012 and 100% by 2016, which will require at least 700 MW of new generation, including about 400 MW of generation using solid fuel. By 2010, local primary renewable energy resources should increase to 49.3% of the total level of consumption of the year 2000. Co-generation power should increase to 300 MWth in major Latvia cities and to 100 MW_{th}. in the rest of Latvia by the year 2016.

The incentive for this is to develop interconnections between the Baltic and European power networks. With the aim of securing supply to match power demand, and also of promoting the use of renewable resources and the development of local power generation, the government will start up a new co-generation power plant project during the initial phase, carrying out a feasibility study, identifying a location and securing the required approvals. A part of the investment, up to 20%, will come from the state, while private investment will be sought to raise the rest and to run the project.

To achieve this, it will be necessary to increase the capacity of state institutions and to establish an Energy Agency.

Development Objectives of Estonian Electricity Sector

The visions and needs of the power sector have changed significantly since the middle of the last decade as accession to the European Union has created many new opportunities and many demands and restrictions, while the technology of electricity production has developed. Economic planning in the power industry has changed from being technology-focused to become more nature-focused.

The power industry is the part of the strategic infrastructure of a country that has to assure the reliability and security of supply in the production, transmission, distribution and consumption of electricity with the lowest prices possible. This means that the power system has to be efficient enough to guarantee the sustainability of the electricity sector and to produce a supply of electricity of sufficient quality to ensure and foster the competitiveness of the Estonian economy and preserve the prosperity of the nation. The electricity sector also plays a significant role in ensuring regional development.

The strategic objectives of the Estonian electricity sector development plan for 2015 are to assure the optimal functioning and development of the Estonian electricity system within a market economy and to assure the proper supply of electricity to consumers over the long-term at the lowest price possible, while at the same time implementing all requirements concerning reliability and the environment.

TO FIT IN WITH THE STRATEGIC AIMS, THE GOALS OF THE ESTONIAN ELECTRICITY SECTOR ARE:

- to ensure the reliability of the Estonian electricity system and the security of supply to Estonian consumers;
- to ensure the availability of local generative power to cover domestic electricity power consumption;
- to develop technologies for the effective use of energy resources, including combined heat and electricity production technologies;
- to support an increase in the effectiveness of electricity production from oil-shale as the local primary resource in the open market economy and to preserve the competitiveness of the domestic market;
- to stimulate energy saving;
- to create and operate effectively new interconnections with EU electricity systems to increase reliability and to develop the energy trade;
- to ensure the availability of know-how in the energy sector, the efficient development and transfer of technology, and research and innovation in Estonia.

In implementing the strategic and other objectives and guiding the development of the electricity sector it is important to consider other domestic and international commitments and the different rights which impinge on the electricity sector. For the most part this is a question of European Union rules concerning the internal market, competitiveness and the environment, but these rules are also important in the Estonian domestic market. On top of that, it is important to consider regional, economic and social needs in order to avoid creating problems somewhere else.

IN DEVELOPING THE ELECTRICITY SECTOR WE HAVE TO CONSIDER THE FOLLOWING COMMITMENTS WHICH HAVE ALREADY BEEN UNDERTAKEN FOR THE PERIOD UNTIL 2015:

- to assure compliance with government environmental requirements;
- to cover 5.1% of gross electricity consumption from renewable energy resources by 2010;
- to cover 20% of gross electricity consumption from electricity and heat co-generation by 2020;
- to open 35% of the Estonian electricity market by 2009, and to open it for all consumers by 2013;
- to maintain the consumption of primary energy resources at the 2003 level;
- to take into account the impact of the programme to decrease the volume of greenhouse gases.

Transmission and future projects

Lithuania

CURRENT SITUATION

The transmission system operator of the Lithuanian power system owns 110-330 kV lines and substations. In the 110 kV substations the TSO is responsible for the equipment from 110 kV transformer feeders, while the power transformers and lower voltage equipment are operated by distribution network companies. Currently there are thirteen 330 kV transformer substations (TS) and switchyards with total installed capacity of transformers of 4050 MVA, and 210 transformer substations 110 kV with a total installed transformer capacity of 5921 MVA. The total length of 330 kV lines is 1670 km, while the total length of 110 kV lines is 4977 km. One of the drawbacks of the existing scheme is that there are 67 110 kV TSs with a single transformer, or about 32 % of all 110 kV TSs. In terms of reliability, some of the 110 kV substations are backed-up through the 10-35 kV grid.

There are three 330 kV TSs with a single transformer, Telšiai, Utena and Kruonis. The loads on busbars of these 110 kV TSs are backed-up through the 110 kV grid. All 330 kV lines and most 110 kV lines are overhead, although there are some 110 kV cable lines in the cities of Vilnius, Kaunas and Klaipėda. In the future it may be necessary to replace several 110 kV overhead lines in Vilnius with cable lines.

GRID DEVELOPMENT PLANS

The Lithuanian 330 kV grid currently constitutes one part of a large high voltage transmission grid "ring" which also includes the 330-750 kV grids of Estonia, Russia, Belarus, the Kaliningrad Region and Latvia. The development of 330 kV is subject to changes in power flows due to increased system demand and power transit to neighbouring energy systems.

The 330 kV grid analyses in the general grid study (Baltic Transmission Grid 2012 by Eesti Energia, Latvenergo and Lietuvos Energija in 2004) prepared in cooperation with neighbouring power systems shows that the construction of additional 330 kV interconnections between Lithuanian and neighbouring power systems which are already interconnected (Latvia, Belarus and the Kaliningrad Region) is not feasible until 2014 given the projected electricity demand. About half of all Lithuanian 330 kV lines are interconnections, meaning the grid is deeply integrated, and the tighter bottlenecks exist in other points of the ring.

In terms of reliability, the weakest point is the western part of the 330 kV grid. Klaipėda TS is connected to the system by two interconnections: Klaipėda-Sovetsk (Russia) and Klaipėda-Grobina (Latvia). It is part of a 330 kV transit route, which is comprised of the 330 kV Sovetsk-Klaipėda-Grobina-Broceni-Viskali lines (the existing Jelgava TS). If the Sovetsk-Klaipėda line is disconnected for repair purposes and if there is a short circuit in any remaining part of the 330 kV transit grid, Klaipėda TS will be left without power from the 330 kV network. The capacity of the parallel 110 kV grid in 2014 will be too small and there is a risk of a complete outage in the western part of the grid. The only effective solution to such a problem is the construction of the 330 kV line Klaipėda-Telšiai, which has previously been projected. The length of such a line would be about 82 km and for that purpose the reconstruction of Telšiai TS and Klaipėda TS should be envisaged.

Currently Telšiai TS is connected to the system through a 330 kV arm from the 330 kV line Šiauliai-Viskali with a connection point in the area of the Joniškis Region. During repairs, with the 330 kV line Kaunas-Šiauliai disconnected and in the case of a short circuit in the 330 kV line Šiauliai-Viskali, Šiauliai and Telšiai substations would be left without power. One of the improvements to the scheme is to construct 330 kV switchgear with a switch station at the connection point of the 330 kV line Telšiai-"Mėša" (Joniškis Region). The construction of the switch station with the presence of the 330 kV line Klaipėda-Telšiai will significantly improve the reliability of the Telšiai and Šiauliai substations, because modes are eliminated when at n-2 condition the two most heavily loaded 330 kV substations are disconnected.

The existing 330 kV grid scheme of the Lithuanian power system is such that if the two-circuit 330 kV line between Kruonis HPSP and Lietuvos Elektrinė power plant is disconnected, the system is split into parts, roughly equal by load, while the main power source, Lietuvos Elektrinė power plant, remains in the Eastern part of the system. The construction of a new 330 kV line Panevėžys-"Mūša"(~72 km) would provide a stronger link between the Eastern and Western parts of the 330 kV grid. Having assessed the financial possibilities of the system, this line could be constructed after 2014.

Experts from the Belarus power system have announced their intention to decommission the 330 kV line Vilnius-Molodechno and therefore the need to construct a new 330 kV line Vilnius-Neris may come into consideration. The new line would significantly improve the reliability of the electricity supply to the city of Vilnius, as it would form a ring in the transmission grid Vilnius-Neris-Lietuvos Elektrinė.

In 2007 the Ignalina NPP switchgear is to be equipped with a 180 MVar regulated shunt reactor, making it possible to stabilise the level of voltage now, and after the closure of the second nuclear reactor by the end of 2009.

In order to regulate the voltage level, in 2006 the Neris 330 kV substation was equipped with two 10 kV 30 MVar capacity shunt reactors and the Utena 330 kV substation with one 10 kV 30 MVar capacity shunt reactor.

In terms of generation development, a new 400 MW unit will be installed in the Lithuanian power plant in 2010, as well as in a few small CHP plants. Operation of the first stage of the new nuclear power plant could start in 2016. It is planned to have 200 MW of wind power plants at the end of 2010; about 47 MW of wind power plants are in operation now.

POLAND-LITHUANIA LINK

The interconnection Poland-Lithuania (total capacity 1000 MW) consists of the 400 kV line between the cities of Elk (Poland) and Alytus (Lithuania) and a back-to-back converter station in Alytus. Reinforcement of the Lithuanian power grid by constructing a double circuit 330 kV line Kruonis-Alytus and development of the energy system in the North-Eastern region of Poland is needed. The first stage of the Poland-Lithuania bridge with a capacity of 500 MW could be ready in 2012.

LITHUANIA–SWEDEN DC LINK

Svenska Kraftnät and Lietuvos Energija have engaged SWECO International to prepare a "Feasibility Study for an electrical interconnection between Sweden and Lithuania". Depending on the landing point the cable may connect to the 400 kV substation located in Hemsjö or in Nybro. On the Lithuanian side it will be the 330 kV substation in Klaipėda. The physical limit of the DC transmission capacity is located in the AC systems in both countries. Economic and technical studies of different capacities up to 700 MW will be analysed. The study is under preparation and will be finalised in 2007.

Latvia

CURRENT SITUATION

At the beginning of 2006, the 110 kV transmission network contained 3988 km of overhead lines, 33 km of cable lines and 116 substations, while the 330 kV transmission network contained 1248 km of overhead lines and 14 substations.

Latvia is connected with neighbouring countries via seven 330 kV lines, two tie-lines with Estonia, one tie-line with Russia and four tie-lines with Lithuania. The capacity of the transmission network is sufficient to provide normal operation of the power system at present.

According to the grid study "Baltic Transmission Grid 2012" there is no need to build new tie-lines with the neighbouring countries before 2012.

TRANSMISSION NETWORK DEVELOPMENT DURING THE PERIOD 2007-2016

The new unit of 400 MW at Riga CHP-2 is to be connected to the 330 kV substation which will be built at the site of CHP-2, and to the 330 kV OHL from Salaspils to Riga CHP-1.

There is a plan to create a 330 kV loop around Riga by building a new 330 kV cable line from Imanta to Riga CHP-1. This will facilitate the power outflow from the new 400 MW power unit at Riga CHP-2 and will also increase the security of supply in Riga. It is also planned to carry out a feasibility study for the 330 kV line Imanta-Tume-Ventspils.

According to our forecast, it will be necessary to build more than twenty new 110 kV substations in order to provide connections for new customers to the grid.

TRANSMISSION NETWORK DEVELOPMENT DURING THE PERIOD 2016-2020

It is calculated that the power flows in the Western part of Latvia may exceed the capacity of the transmission lines in this region during this period. The line Imanta-Tume-Ventspils, with future 330 kV substations in Tume and Ventspils, could be needed to bring about considerable improvement in the security of supply in the West of Latvia. The decision will also be influenced by the option of building a new coal-fired plant in Western Latvia.

In the long term, it will be necessary to reinforce cross-border links between Latvia and Estonia. The new line from Sindi in Estonia to Riga CHP-2 in Latvia will improve the dynamic stability of the grid and will also increase the transit capacity.

As demand grows, the need to reinforce the transmission network in the North-East of Latvia will appear. Building a 330 kV transmission line from Rezekne to Gulbene with a 330 kV substation in Gulbene could be an option.

If the power flow to Estonia and Latvia is more than 1300 MW after the commissioning of the new Ignalina NPP block, then the 330 kV lines Ignalina-Liksna and Liksna-Krustpils will have to be reinforced.

TRANSMISSION NETWORK DEVELOPMENT DURING THE PERIOD 2020-2025

To increase security of supply, it will be necessary to build a 330 kV OHL from Grobina to Venspils in the West of Latvia and from Gulbene to Valmiera in the East of the country.

Depending on the development of the Northern part of the Lithuanian Power System, the option of building a new 330 kV tie-line with Lithuania from Broceni to Telšiai could be considered.

Building a DC link (undersea cable) from Ventspils in Latvia to the island of Gotland off Sweden could be considered if made appropriate by market requirements and the development of wind energy.

The improvements to the grid and their timing are to be specified in the studies "Baltic Grid 2025" and "The Forecasts of the Latvian Power System Development up to 2025".

Along with the construction of new lines and substations, there will be the regular reconstruction and renovation of the transmission network. According to the Technical Policy of the Latvian TSO Augstsprieguma Tīkls AS, it is necessary to complete the reconstruction of all existing 330 kV substations during a 10-year period.

In order to counteract the ageing of substations, it is necessary to reconstruct two to three 110 kV substations each year.

The gradual replacement of wires with a cross-section of 95 mm^2 by lines with a bigger cross-section is under consideration for 110 kV lines, especially for the lines Gulbene-Balvi-Karsava-Rezekne (113 km) and Dagda-Zilupe (54 km).

LATVIA-SWEDEN DC LINK (GOTLINK)

At the present time discussions are underway between Latvenergo and the Economic Ministry of Latvia about the advisability of constructing a new DC link from Ventspils in Latvia to Ygne on Gotland, Sweden.

Assessments suggest the total length of the connection Ventspils-Ygne would be approximately 205 km with 35 km of land cable and 170 km of undersea cable, at a voltage of 400 kV and with a transmission capacity of 500-700 MVA.

Estimates of the investments required, based on similar projects, amount to approximately 170 million EUR. Reinforcement of the interconnection between Gotland and Sweden (Ygne-Västervik) and within Latvia (from Ventspils to Grobina or to Riga) might be necessary, which would add additional costs to this project.

The new DC link with Sweden would:

- perform a power exchange between the Swedish and Baltic power systems;
- make it possible to transmit the power generated by off-shore wind farms located in the Baltic Sea;
- increase the reliability of the electricity supply of the Ventspils region as well as of Western regions of Lithuania and Estonia;
- enable electricity market development;
- make it possible to use Baltic hydro power plants (Daugava HPP cascade, Kaunas HPP, Kruonio PPSP) for wind power equable regulation;
- exchange conventionally produced energy for green energy in order to meet Latvian obligations under the EU directive on Renewable Energy Sources;
- motivate the building of the Kurzeme coal power plant in order to participate in the NORDEL electricity market.

Estonia

CURRENT SITUATION

There are currently 144 110-220-330 kV substations in Estonia, 10 of which are 330 kV substations. The total length of 110-330 kV power lines is 5020 km and there are a total of 16 330 kV power lines, 11 of which supply domestic needs. Estonia and Russia are connected by three 330 kV lines, while Estonia and Latvia are connected by two lines. The majority of the 220 kV system is soon to be replaced with a 110 kV or 330 kV grid, and it is planned that all of the most necessary 330 kV grid renovations will be completed before 2010.

The Estonian 110-330 kV grid is currently in a satisfactory condition, and Estonia has good interconnections with Russia and a sufficient interconnection with Latvia. Estonia established also a new interconnection with Finland via the HVDC sea cable at the end of 2006.

The Estonian 330 kV transmission grid has been developed along two main axes:

- East-West (Narva-Tallinn) – bringing the power supply for Northern and Western Estonia and connecting to the Estonian-Finnish undersea cable Estlink,
- North-South (Narva-Tartu) – interconnecting with Russia and Latvia and carrying the main power supply for Southern Estonian regions.

The main problem in the 330 kV transmission grid is the drain of transmission capacity in the East-West direction stemming from increased demand in the Tallinn region and the undersea cable Estlink. Supplying domestic consumption alone, the existing transmission capacity in the East-West direction will be full by 2008, while the residual lifetime of the 220 kV transmission lines will expire by 2013-2014.

NEW 330 KV BALTI-KIISA OVERHEAD LINE

To increase transmission capacity in the East-West direction a new large-scale 330 kV transmission line has been constructed from Narva to Tallinn running between Balti power plant and Harku substation. As the first step, the double-circuit 330 kV power line from Kiisa substation to Harku substation was built in 2004, and in the next phase the 330 kV power line from Balti power plant to Kiisa substation was finished by the end of 2006.

FUTURE PLANS

New 330 kV power ring Tartu-Sindi-Harku
Due to a combination of economic growth, forecasts of demand, and different scenarios of the location of interconnections and power plants, it is necessary to increase transmission capacity to the major consumption regions of Tallinn, Tartu and Pärnu.

According to the development plan for Estonian 110-330 kV transmission grid, the next steps in the construction of the Tartu-Sindi-Harku 330 kV power ring will be:

- the Tartu-Viljandi section of 330 kV (with one 110 kV chain) by 2012
- the Viljandi-Sindi section of 330 kV by 2014
- the Sindi-Harku section following the foundation of power plants in Pärnu and Tallinn and the second interconnection between Estonia and Finland, estimated somewhere after 2017.

Construction of the Tartu-Viljandi-Sindi-Lihula-Harku 330 kV transmission line will allow the construction of 330 kV substations in Viljandi, Lihula and Paldiski if required, and the new line will enable full use of the export capacity of Estlink.

Major reconstruction plans

Of the existing substations, Aruküla 220 kV substation will be converted to 330 kV after the residual lifetime of the 220 kV transmission line expires in around 2012-2014.

After the residual lifetime of most of the existing 330 kV transmission lines has expired, they will be reconstructed with a larger cross-section (3x400 mm^2), which will ensure a substantially larger transmission capacity.

Due to demand growth in customer connections, it is necessary to install additional power transformers in the 330 kV substations in Harku, Aruküla, Sindi, Balti and Püssi and replace the existing power transformers with more powerful ones in Tartu and Sindi substations.

Estlink 2 project

Estonia's geographical location and very good cooperation with other Baltic States in energy matters have allowed it to establish profitable opportunities for energy trade with the Nordic countries and also with Russia. The quickest and easiest way for Estonia to develop and expand its energy system boundaries is to build new interconnections with Finland and through it, as we will then be able to find an even better contact point for entry to the Nordic energy market than now exists with Estlink.

It cannot be ruled out that in the future we might need to import electricity from the Nordic countries rather than exporting. Imports of Scandinavian electricity in the future are conceivable under circumstances such as:

- smaller emission quotas in the Baltic states than at present while the emission trading market is still in operation,
- increased construction of new nuclear power plants in Finland.

From this it is obvious that any new connection with Nordel will create a certain value, but it is still unclear who apart from OÜ Põhivõrk will be able to benefit from it. In the case of the Estlink 2 project, it is clear that it is a very important project for local infrastructure development and therefore it should not be looked at simply as a commercial benefit for the future owners of the cable and for traders. Presumably, Estlink 2 will help to create an energy market in the Baltic region where high Nordic energy prices would be carried directly into the Baltic market area, which could be beneficial for both sides.

Sindi-Riga 330 kV overhead line project

The Tallinn-Sindi-Riga 330 kV overhead line (OHL) will be an important part of the energy link between Northern and Central Europe and is planned as a new connection between the Estonian and Latvian power systems.

The new Tallinn-Sindi-Riga 330 kV OHL will enable:

- an increase in power trade between the Baltic States, Central Europe and Scandinavia (via the Estlink HVDC link between Estonia and Finland)
- more wind-farms to be connected into the grid, ensuring better transmission capacity in the North-South direction of the Estonian power system.

Currently, the Tallinn-Sindi-Riga 330 kV OHL study, with co-financing from the TEN-E, is in progress.

Main Events of the Year

Lithuania

- Commissioning of the Jaku 110/10 kV substation
- Commissioning of the Vėjas 110/20 kV substation
- Reconstruction of five 110/10 kV substations (Amaliu, Panemunėlio, Kino studijos, Garliavos, Ketaus)
- Reconstruction of the Vilkaviškio 110/35/10 kV substation
- Commissioning of the 60 MVar shunt reactors in the Neris 330/110/10 kV substation
- Commissioning of the 30 MVar shunt reactors in the Utenos 330/110/10 kV substation
- Wiring of the 110 kV OHL Taika I-Taika II
- The signing of the Memorandum of Understanding on the Preparation to Develop a New Nuclear Reactor in Lithuania between the Baltic Energy Companies and the beginning of a feasibility study
- The establishment of BALTSO, an organisation for cooperation between transmission system operators of the Baltic power system
- The signing of an Agreement for a Feasibility Study into the Construction of a Transmission Line between Lithuania and Sweden
- Completion of the Feasibility Study for construction of the new nuclear power plant in Lithuania
- Commencement of the 110/330 kV Vilnius TS rehabilitation project, the third largest substation within the national power transmission system.
- The Board approval of the structural and legal reorganisation of Lietuvos Energija with regard to its strategic goals, the assignment of strategic projects, and its future role in Lithuanian Power System.
- The signing of an agreement with Polskie Sieci Elektroenergetyczne on establishing a joint venture with the aim of implementing the project to interconnect the Lithuanian and Polish Power Systems.
- Inauguration ceremony of the first power link Estlink between the Baltic States and the Nordic countries.

BALTSO

Signing of the Memorandum of Understanding on the Preparation to Develop a New Nuclear Reactor in Lithuania
From left: CEO of Latvenergo Karlis Mikelsons, CEO of Eesti Energia Sandor Liive and Geneal Director of Lietuvos Energija Rymantas Juozaitis

Latvia

- Commencement of the construction of the 330 kV Riga TEC-2 substation;
- Completion of the first stage of the reconstruction of the Aizkraukle 330 kV substation;
- Completion of the reconstruction of the 330/110 kV Grobiņa substation;
- Completion of the reconstruction of the 330/110 kV Rezekne substation;
- Completion of the reconstruction of the 110 kV Keguma HPP 1 substation;
- Completion of the reconstruction of the 110 kV Madona substation;
- Completion of the reconstruction of the 110 kV Sarkandaugava substation;
- Construction of the new Zunda substation and its connection to the 110 kV grid.
- Replacement of the Plavinu HPP hydrogenerators Nr. 1,6,9 quick-response excitation, and installation of a modern control system.
- On 13 September 2006, the foundation for the new generation block of the Riga TEC-2 was laid. This event marked the start of the Riga TEC-2 reconstruction, which is the largest industrial investment project since the declaration of Latvian independence. This project aims to reduce Latvian dependence on energy imports and to increase efficiency. Under the two-year reconstruction project, Latvenergo AS and the Spanish company Iberdrola will build a combined energy block, including equipment production and montage with a two-year warranty period, and train qualified personnel, and Iberdrola will also provide a twelve-year plant demand service. The Riga TEC-2 reconstruction project will cost 177 million Euros for construction and 95 million Euros for service. During 2008 Riga TEC-2 will become the most modern electrical plant in the Baltic region both as an electricity producer and a heating provider. The new block will noticeably improve Latvian energy independence and guarantee power quality for Latvenergo customers.

Estonia

- Commissioning of the 216 km long 330 kV overhead line from Balti PP to Harku SS;
- Completion of the extension of Harku SS by connecting the new Estlink 380 MVA transformer to the Harku 330 kV bay;
- Commissioning of two new 110 kV conventional substations and 110 kV GIS substations with total transformer capacity of 150 MVA;
- Installation of two 200 MVA 330/110 kV system transformers in Tartu substation;
- Partial refurbishment of Püssi SS and commissioning of new 110 kV switchgear. The old 330/110 kV 125 MVA transformer from Tartu SS was transferred to Püssi SS;
- Commissioning of the 110 kV Viru-Nigula SS for a 24 MW wind park connection;
- The Estonian Power System island operation test (islanding the Estonian Power System) between 23:05 on 10 November 2006 and 00:28 on 11 November 2006.

The purposes of the test were:

- To verify the frequency control capability of the two new generating units of Narva TPP;
- To determine the characteristics of the Estonian power system frequency response;
- To determine the droops for all running generating units;
- To determine the static (voltage dependent) characteristics of load in the Tartu (South Estonia) region.

The Estonian Power System islanding was performed by opening the breakers of the three 330 kV tie-lines between North-West Russia and Estonia and the two 330 kV tie-lines between Latvia and Estonia. The Tartu SS 330 kV busbars were split and synchronous parallel operation between the Russian and Latvian Power Systems, through the 330 kV OHLs Pskov SS-Tartu SS and Tartu SS-Valmiera SS, was ensured via one section of the busbar.

During the test, four sub-tests were carried out:

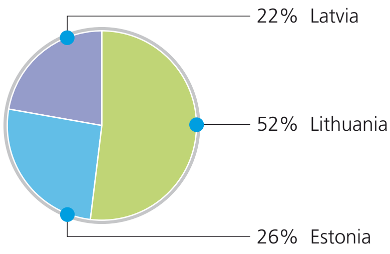
- To test the over-frequency response in the area, the 330 kV OHL loaded with 53 MW was tripped: the frequency rose to 50.16 Hz;
- To test the under-frequency response in the area, a boiler with a 70 MW load was tripped;
- A generating unit with a 100 MW load was tripped, and the frequency dropped to 49.62 Hz;
- To test the regional load static (voltage dependent) characteristics, the 110 kV voltage in the Tartu 110 kV SS was changed from 120 to 108 kV and vice versa. The voltage was varied using the tap changer of one of the Tartu 330/110 kV transformers.

Statistics

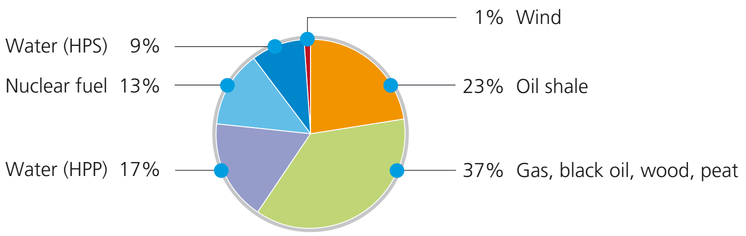
Installed capacity in the Baltic Interconnected Power System

The total installed capacity of the Baltic Interconnected Power System was 9399.2 MW as at 01.01.2007. This comes from a wide range of different sources of generation: a nuclear power plant (NPP), hydro power plants (HPP), Thermal power plants (TPP), and combined heat and power plants (CHP), as well as a pumped storage power plant (HPS) and wind power (WP). The share of renewable energy has thus far been negligible. However there is clear growth in the volumes of this category of energy, especially from wind turbines, when compared to the previous year, 2005. The major fuel types utilised are oil shale, gas, (black) heavy oil and nuclear fuel.

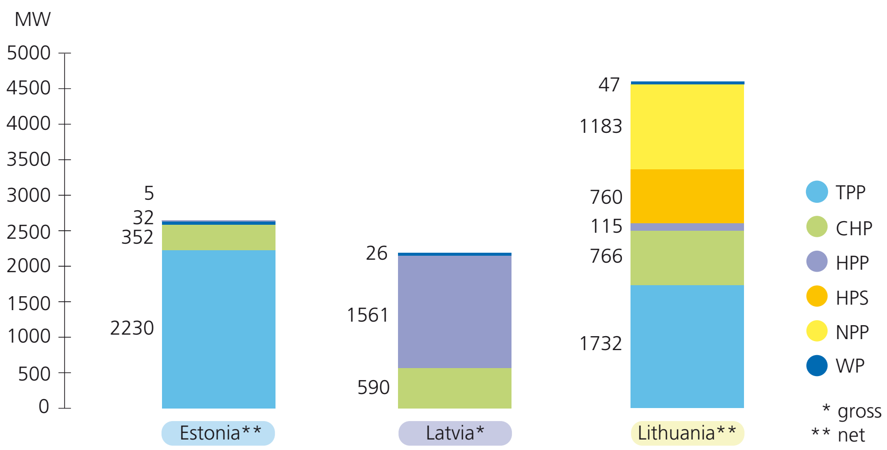
THE DISTRIBUTION OF THE INSTALLED CAPACITY AMONG THE POWER SYSTEMS AS AT 01.01.2007



SOURCES OF GENERATION AS AT 01.01.2007



CAPACITY OF DIFFERENT TYPES OF PLANTS AS AT 01.01.2007



Installed capacity available	Measure	Estonia**	Latvia*	Lithuania**	Baltic IPS
TOTAL	MW	**2619.1**	**2177.1**	**4603.0**	**9399.2**
	%	**26.0**	**22.0**	**52.0**	**100.0**
TPP	MW	2230.0	0	1732.0	3962.0
	%	22.5	0	18.2	40.7
CHP	MW	351.9	589.9	766.0	1707.8
	%	3.6	6.0	9.4	18.9
HPP	MW	4.9	1560.8	115.0	1680.7
	%	0	15.7	1.3	17.1
HPS	MW	0	0	760	760
	%	0	0	9.1	9.1
NPP	MW	0	0	1183	1183
	%	0	0	13.1	13.1
WP	MW	32.3	26.4	47.0	105.7
	%	0.3	0.3	0.5	1.1

* gross
** net

BALTSO

The Transmission Grid in the BALTSO countries

Length of 330 kV OHL, km

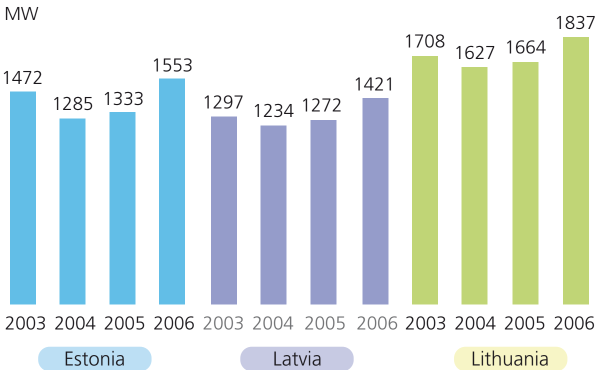
TSO	Amount as at 01.01.2006	Built in 2006	Amount as at 01.01.2007
Estonia	1297.4	217.6	1515.0
Latvia	1247.9	0	1247.9
Lithuania	1670.4	0	1670.4
Baltic IPS	4215.7	217.6	4433.3

Number and capacity of transformers in the 330 kV grid, MVA

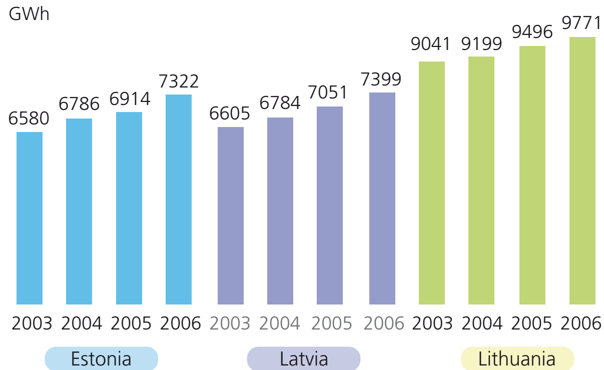
TSO	Amount as at 01.01.2006		Built in 2006		Amount as at 01.01.2007	
	number	MVA	number	MVA	number	MVA
Estonia	14	2510	-	+45	14	2555
Latvia	19	2825	-	-	19	2825
Lithuania	22	3450	-1	-125	21	3325
Baltic IPS	55	8555	-1	-80	54	8705

Consumption and Production

TREND OF ANNUAL PEAK LOAD (2003 – 2006)



TREND OF POWER CONSUMPTION (2003 – 2006)



Main operational indicators of the Baltic IPS in 2006

Index	Measure	Estonia**	Latvia*	Lithuania**	Baltic IPS
Installed capacity as at 01.01.07	MW	2619.1	2177.1	4603.0	9399.2
	Share of Baltic IPS, %	26.0	22.0	52.0	100.0
	Increase in comparison with 2005, %	4.2	-2.3	-7.3	-5.3
Peak load	MW	1553.0	1421.0	1837.0	5074.0
	Increase in comparison with 2005, %	16.5	11.7	10.3	13.0
Share of maximum generation	MW	1602.0	854.0	2142.0	4598.0
	Share of Baltic IPS, %	35.0	19.0	47.0	100.0
Output of PP	GWh	8442.5	9264.0	12498.4	30204.9
	Share of Baltic IPS, %	28.0	31.0	41.0	100.0
	Increase in comparison with 2005, %	-8.0	-49.6	-3.8	-11.5
Consumption	GWh	7322.1	7398.8	9771.3	24492.1
	Share of Baltic IPS, %	30.0	30.0	40.0	100.0
	Increase in comparison with 2005, %	5.9	4.9	2.9	4.4
Export of electric power	GWh	977.1	222.5	1922.3	
Import of electric power	GWh	226.6	2730.9	1677.7	
Transit of electric power	GWh	1058.2	2125.0	1523.2	
Losses in main grid	GWh	283.3	281.6	328.3	893.2
	% of output of PP	3.4	3.0	2.6	3.0
	Increase in comparison with 2005, %	9.6	-9.0	-13.3	-3.2

* gross
** net

Consumption of energy by month, GWh

Month	Estonia**	Latvia*	Lithuania**
January	771.6	766.2	989.5
February	715.8	691.7	897.6
March	741.4	711.9	916.0
April	595.8	586.7	759.4
May	537.6	536.3	740.9
June	483.3	505.7	711.9
July	443.9	512.0	709.1
August	498.2	534.5	750.0
September	527.9	536.6	752.3
October	617.3	619.3	804.5
November	692.6	690.3	862.1
December	696.6	707.6	877.9
Total	7322.1	7398.8	9771.3

* gross
** net

Maximum and minimum load in the Baltic IPS by month in 2006

It was the coldest of times and the hottest of times in the Baltic States, with weather records being set in 2006 all year round compared to the milder weather of the previous year 2005. 2006 started out with record lows, which by the summer had turned into record highs. The year ended in a similarly topsy-turvy manner with December being the warmest on record.

The trend in energy consumption was clearly upwards in 2006 due to growing demand for domestic electricity all over the Baltic region. For 2006 the peak load increased to an average of 200MWh, which represents an increase of approximately 10% over the previous year.

The main data of peak load for each of the Baltic Power Systems and their share in the Baltic winter peak are shown in the following table:

TSO	Peak load	Date	Time	Ambient temperature at the time of maximum	Increase of annual peak load in comparison with 2005
	MW		hh:mm	°C	%
Estonia**	1553.00	20.01	18-00	-24.0	+16.50
Latvia*	1421.00	23.01	18-00	-18.4	+11.71
Lithuania**	1837.00	23.01	19-00	-16.8	+10.27
Baltic IPS*	5074.00	23.01	18-00	-16.8	+12.97

* gross
** net

The share in the Baltic winter peak 23.01.2006 18:00:00

TSO	Load, MW (gross)	Generation, MW			
		TP Plants	NP Plants	HP Plants	Wind turbines
Estonia	1536.00	1589.00	-	-	13.00
Latvia	1421.00	439.00	-	412.00	3.00
Lithuania	2117.00	527.00	1359.00	259.00	
Baltic IPS	**5074.00**	**2555.00**	**1359.00**	**671.00**	**16.00**

The following table shows the main data of the peak load in the Baltic Power Systems by month.

Peak load for Estonian, Latvian and Lithuanian Power System by month in 2006

	Power System	01	02	03	04	05	06	07	08	09	10	11	12
Estonia	Peak load (MW), net	1553	1462	1318	1163	1041	967	837	941	981	1224	1306	1309
Estonia	Increase in annual peak load in comparison with 2005 (%)	22.7	15.6	2.4	6.0	4.1	4.0	-1.7	7.2	0.5	7.6	5.5	-1.8
Estonia	Average ambient temperature (°C)	-4.6	-7.8	-4.9	+4.6	+10.3	+15.7	+18.9	+17.6	+14.3	+9.2	+3.3	+4.3
Estonia	Normal temperature (°C)	-5.5	-5.7	-2.1	+3.4	+9.8	+14.5	+16.4	+15.5	+11.1	+6.5	+1.4	-2.8
Latvia	Peak load (MW), gross	1421	1331	1217	1100	967	996	908	957	993	1173	1253	1269
Latvia	Increase in annual peak load in comparison with 2005 (%)	20.6	11.5	2.4	5.1	-6.3	10.3	6.7	7.6	1.0	5.7	2.5	-0.2
Latvia	Average ambient temperature (°C)	-5.9	-6.6	-2.9	+6.4	+12.0	+16.6	+26.6	+18.1	+14.8	+9.7	+4.3	+4.3
Latvia	Normal temperature (°C)	-4.3	-4.3	-0.9	+5.3	+11.0	+15.2	+17.1	+16.5	+12.0	+7.0	+1.6	-2.0
Lithuania	Peak of load (MW), net	1837	1738	1593	1418	1275	1282	1256	1323	1338	1478	1621	1645
Lithuania	Increase in annual peak load in comparison with 2005 (%)	20.3	14.0	5.0	5.1	-5.2	7.1	7.5	7.4	-0.1	-9.3	-0.9	-1.1
Lithuania	Average ambient temperature (°C)	-6.6	-5.9	-2.7	+6.7	+12.6	+17.3	+21.5	+18.5	+15.0	+10.0	+7.7	+4.4
Lithuania	Normal temperature (°C)	-5.3	-4.9	-1.4	+5.4	+11.4	+15.4	+16.8	+16.2	+12.1	+6.7	+1.9	-2.2

The following tables show the main data of the peak load and of the minimum load in the Estonian, Latvian and Lithuanian Power Systems.

Peak load

TSO	Date	Load max, MW	Generation, MW				
			TP Plants	NP Plants	HP Plants	Others	
						Small power plants***	Wind turbines
Estonia**	20 january 2006 18:00	1553.08	1499.71	-	-	43.60	3.43
Latvia*	23 january 2006 18:00	1421.00	440.00	-	400.00	25.00	2.00
Lithuania**	23 january 2006 19:00	1836.80	601.00	1248.00	242.00	52.00	0.00

* gross
** net
*** WP, HPP, CHP

Minimum of load

TSO	Date	Load max, MW	Generation, MW				
			TP Plants	NP Plants	HP Plants	Others	
						Small power plants***	Wind turbines
Estonia**	16 july 2006 6:00	424.95	556.29	-	-	22.63	2.44
Latvia*	25 june 2006 5:00	383.00	71.00	-	177.00	35.00	0.00
Lithuania**	16 july 2006 6:00	617.40	76.00	1219.00	20.00	44.0 0	0.00

* gross
** net
*** WP, HPP, CHP

Consumption and production of PP with installed power of 50 MW and more and of small PP (WP, HPP, CHP) on day of peak load in Estonia (net), MWh

Date	Hour	Consumption	Generation	Generation				
				Eesti Power Plant	Balti Power Plant	Iru Power Plant	Small Power Plants	Wind Turbines
20 january 2006	1	1189.53	1363.35	1104.26	165.45	59.35	42.04	0.95
20 january 2006	2	1144.23	1288.87	1011.45	183.06	60.40	41.74	0.90
20 january 2006	3	1125.56	1259.19	963.21	201.48	59.85	41.46	1.19
20 january 2006	4	1121.06	1275.14	967.13	212.37	60.00	42.68	1.22
20 january 2006	5	1124.86	1296.40	969.25	229.53	61.92	43.51	0.91
20 january 2006	6	1156.50	1348.20	1017.85	232.33	62.78	43.45	0.79
20 january 2006	7	1257.46	1459.42	1124.82	237.15	62.76	42.61	1.74
20 january 2006	8	1392.42	1489.42	1153.16	237.12	62.94	44.36	0.96
20 january 2006	9	1483.50	1509.92	1156.87	254.96	62.50	44.30	1.37
20 january 2006	10	1518.66	1521.71	1139.94	284.10	62.01	44.94	1.09
20 january 2006	11	1528.63	1566.94	1180.68	288.30	62.02	44.98	1.68
20 january 2006	12	1518.63	1586.35	1192.22	296.19	62.31	44.82	0.91
20 january 2006	13	1491.73	1584.47	1187.98	296.39	64.01	45.17	0.83
20 january 2006	14	1502.10	1573.86	1178.90	295.80	63.19	44.90	1.04
20 january 2006	15	1491.77	1556.76	1159.75	296.40	64.16	44.07	1.79
20 january 2006	16	1492.90	1536.43	1139.34	296.62	63.84	44.28	1.76
20 january 2006	17	1522.24	1538.84	1140.47	297.01	64.23	44.08	3.41
20 january 2006	18	1553.08	1536.58	1140.08	295.99	63.64	43.60	3.43
20 january 2006	19	1541.04	1539.09	1142.76	295.74	63.69	43.91	2.61
20 january 2006	20	1495.07	1539.63	1141.63	297.01	64.13	43.85	2.70
20 january 2006	21	1452.64	1542.53	1143.08	298.12	64.90	43.56	3.92
20 january 2006	22	1394.49	1542.89	1145.51	295.61	65.85	43.00	3.42
20 january 2006	23	1316.90	1514.84	1117.06	295.41	66.23	43.19	4.19
20 january 2006	24	1249.46	1478.06	1082.05	295.78	65.40	42.10	4.18
Total MWh		33064.46	35448.89	26699.46	6377.91	1512.11	1046.60	46.99

BALTSO

Consumption and production of PP with installed power 50 of MW and more and of small PP (WP, HPP, CHP) on day of minimum load in Estonia (net), MWh

Date	Hour	Consumption	Generation	Generation				
				Eesti Power Plant	Balti Power Plant	Iru Power Plant	Small Power Plants	Wind Turbines
16 july 2006	1	532.72	687.26	503.62	168.65	0	22.27	2.10
16 july 2006	2	500.78	688.55	505.01	168.54	0	22.42	2.41
16 july 2006	3	481.91	685.24	501.54	168.68	0	22.40	2.30
16 july 2006	4	465.18	663.19	479.11	168.82	0	22.77	2.47
16 july 2006	5	426.68	618.34	435.64	167.45	0	22.65	2.87
16 july 2006	6	424.95	571.57	406.84	149.45	0	22.63	2.44
16 july 2006	7	450.81	580.55	416.04	149.52	0	22.50	1.53
16 july 2006	8	487.09	608.73	443.85	149.69	0	22.66	1.24
16 july 2006	9	534.89	680.30	515.16	149.71	0	22.67	1.07
16 july 2006	10	581.90	696.47	531.74	149.45	0	22.21	2.24
16 july 2006	11	607.08	697.20	532.34	149.65	0	21.91	2.97
16 july 2006	12	614.45	706.15	541.27	149.67	0	22.17	3.99
16 july 2006	13	606.94	707.78	542.87	149.65	0	22.29	6.15
16 july 2006	14	615.58	712.87	548.05	149.52	0	22.23	5.28
16 july 2006	15	616.34	715.51	550.63	149.58	0	22.10	4.05
16 july 2006	16	610.93	721.25	556.26	149.71	0	21.62	4.16
16 july 2006	17	606.61	722.53	557.71	149.59	0	21.63	2.96
16 july 2006	18	606.73	718.78	554.02	149.42	0	21.63	2.39
16 july 2006	19	610.55	721.16	556.45	149.66	0	21.37	2.59
16 july 2006	20	606.76	722.93	557.91	149.67	0	21.59	2.68
16 july 2006	21	601.59	723.55	558.69	149.53	0	21.65	1.45
16 july 2006	22	596.31	722.78	557.75	149.55	0	21.81	1.56
16 july 2006	23	591.65	704.61	539.50	149.63	0	21.83	1.49
16 july 2006	24	593.87	703.60	538.96	149.65	0	21.30	0.96
Total MWh		13372.28	16480.92	12430.95	3684.43	0	530.33	63.35

Consumption and production of PP with installed power of 50 MW and more and of small PP (WP, HPP, CHP) on day of peak load in Latvia (gross), MWh

Date	Hour	Consumption	Generation	Generation			
				CHP	Smol	WP	HPP
23 january 2006	1	900.00	455.30	430.00	25.00	0.30	0
23 january 2006	2	849.00	455.00	430.00	25.00	0	0
23 january 2006	3	835.00	454.10	429.00	25.00	0.10	0
23 january 2006	4	829.00	454.10	429.00	25.00	0.10	0
23 january 2006	5	845.00	454.10	429.00	25.00	0.10	0
23 january 2006	6	887.00	453.00	428.00	25.00	0	0
23 january 2006	7	1018.00	456.10	431.00	25.00	0.10	0
23 january 2006	8	1205.00	500.10	430.00	25.00	0.10	45.00
23 january 2006	9	1324.00	633.10	428.00	25.00	0.10	180.00
23 january 2006	10	1370.00	672.10	435.00	25.00	0.10	212.00
23 january 2006	11	1382.00	718.50	439.00	25.00	0.50	254.00
23 january 2006	12	1366.00	700.30	438.00	25.00	0.30	237.00
23 january 2006	13	1335.00	672.50	437.00	25.00	0.50	210.00
23 january 2006	14	1339.00	650.30	437.00	25.00	0.30	188.00
23 january 2006	15	1337.00	640.20	437.00	25.00	0.20	178.00
23 january 2006	16	1329.00	641.90	438.00	25.00	0.90	178.00
23 january 2006	17	1363.00	711.80	440.00	25.00	1.80	245.00
23 january 2006	18	1421.00	867.00	440.00	25.00	2.00	400.00
23 january 2006	19	1408.00	755.20	444.00	25.00	4.20	282.00
23 january 2006	20	1363.00	658.00	444.00	25.00	3.00	186.00
23 january 2006	21	1324.00	609.50	443.00	25.00	2.50	139.00
23 january 2006	22	1262.00	581.10	444.00	25.00	3.10	109.00
23 january 2006	23	1143.00	470.30	443.00	25.00	2.30	0
23 january 2006	24	1027.00	468.30	441.00	25.00	2.30	0
Total MWh		**28461.00**	**14131.90**	**10464**.00	**600**.00	**24.90**	**3043**.00

BALTSO

Consumption and production of PP with installed power of 50 MW and more and of small PP (WP, HPP, CHP) on day of minimum load in Latvia (gross), MWh

Date	Hour	Consumption	Generation	Generation			
				CHP	Smol	WP	HPP
25 july 2006	1	506.00	364.00	64.00	37.00	0	263.00
25 july 2006	2	455.00	330.10	58.00	32.00	0.10	240.00
25 july 2006	3	432.00	283.00	57.00	32.00	0	194.00
25 july 2006	4	408.00	276.00	60.00	33.00	0	183.00
25 july 2006	5	383.00	283.00	71.00	35.00	0	177.00
25 july 2006	6	384.00	302.00	82.00	43.00	0	177.00
25 july 2006	7	406.00	305.00	81.00	44.00	0	180.00
25 july 2006	8	444.00	320.00	83.00	44.00	0	193.00
25 july 2006	9	502.00	355.00	89.00	43.00	0	223.00
25 july 2006	10	562.00	434.00	97.00	43.00	0	294.00
25 july 2006	11	601.00	461.00	98.00	43.00	0	320.00
25 july 2006	12	616.00	465.00	98.00	43.00	0	324.00
25 july 2006	13	616.00	466.00	95.00	43.00	0	328.00
25 july 2006	14	609.00	464.00	93.00	43.00	0	328.00
25 july 2006	15	607.00	460.00	89.00	43.00	0	328.00
25 july 2006	16	596.00	469.20	88.00	43.00	0.20	338.00
25 july 2006	17	594.00	456.10	91.00	43.00	0.10	322.00
25 july 2006	18	597.00	458.00	94.00	42.00	0	322.00
25 july 2006	19	606.00	464.00	99.00	42.00	0	323.00
25 july 2006	20	607.00	444.10	103.00	43.00	0.10	298.00
25 july 2006	21	614.00	424.00	111.00	43.00	0	270.00
25 july 2006	22	619.00	426.00	114.00	43.00	0	269.00
25 july 2006	23	620.00	426.00	114.00	43.00	0	269.00
25 july 2006	24	614.00	415.80	112.00	43.00	0.80	260.00
Total MWh		12998.00	9551.30	2141.00	986.00	1.30	6423.00

Consumption and production of PP with installed power of 50 MW and more and of small PP (WP, HPP, CHP) on day of peak load in Lithuania (net), MWh

Date	Hour	Consumption	Generation	Generation				
				NPP	TPP	CHP	HPP	Small PP
23 january 2006	1	1215.50	1940.00	1249.00	257.00	364.00	20.00	50.00
23 january 2006	2	1164.80	1938.00	1250.00	255.00	365.00	20.00	48.00
23 january 2006	3	1144.30	1921.00	1246.00	255.00	352.00	20.00	48.00
23 january 2006	4	1139.50	1922.00	1249.00	253.00	351.00	20.00	49.00
23 january 2006	5	1155.50	1919.00	1246.00	251.00	351.00	20.00	51.00
23 january 2006	6	1222.60	1920.00	1247.00	251.00	352.00	20.00	50.00
23 january 2006	7	1415.90	1925.00	1248.00	252.00	354.00	20.00	51.00
23 january 2006	8	1621.30	1930.00	1248.00	257.00	354.00	20.00	51.00
23 january 2006	9	1742.40	2072.00	1246.00	257.00	354.00	162.00	53.00
23 january 2006	10	1776.90	2125.00	1245.00	255.00	353.00	219.00	53.00
23 january 2006	11	1783.50	2136.00	1247.00	258.00	353.00	226.00	52.00
23 january 2006	12	1778.00	2094.00	1248.00	237.00	354.00	204.00	51.00
23 january 2006	13	1757.20	2084.00	1246.00	246.00	352.00	187.00	53.00
23 january 2006	14	1749.40	2103.00	1248.00	249.00	353.00	201.00	52.00
23 january 2006	15	1725.50	2096.00	1242.00	250.00	351.00	200.00	53.00
23 january 2006	16	1714.50	2076.00	1242.00	248.00	352.00	183.00	51.00
23 january 2006	17	1719.00	2075.00	1241.00	249.00	351.00	181.00	53.00
23 january 2006	18	1831.00	2117.00	1244.00	251.00	350.00	218.00	54.00
23 january 2006	19	1836.80	2143.00	1248.00	249.00	352.00	242.00	52.00
23 january 2006	20	1791.90	2144.00	1249.00	249.00	351.00	241.00	54.00
23 january 2006	21	1730.50	2115.00	1244.00	249.00	351.00	219.00	52.00
23 january 2006	22	1646.10	1912.00	1244.00	244.00	351.00	20.00	53.00
23 january 2006	23	1483.80	1918.00	1244.00	249.00	351.00	20.00	54.00
23 january 2006	24	1360.20	1916.00	1245.00	249.00	349.00	20.00	53.00
Total MWh		37505.94	48541.00	29906.00	6020.00	8471.0 0	2903.00	1241.00

BALTSO

Consumption and production of PP with installed power of 50 MW and more and of small PP (WP, HPP, CHP) on day of minimum load in Lithuania (net), MWh

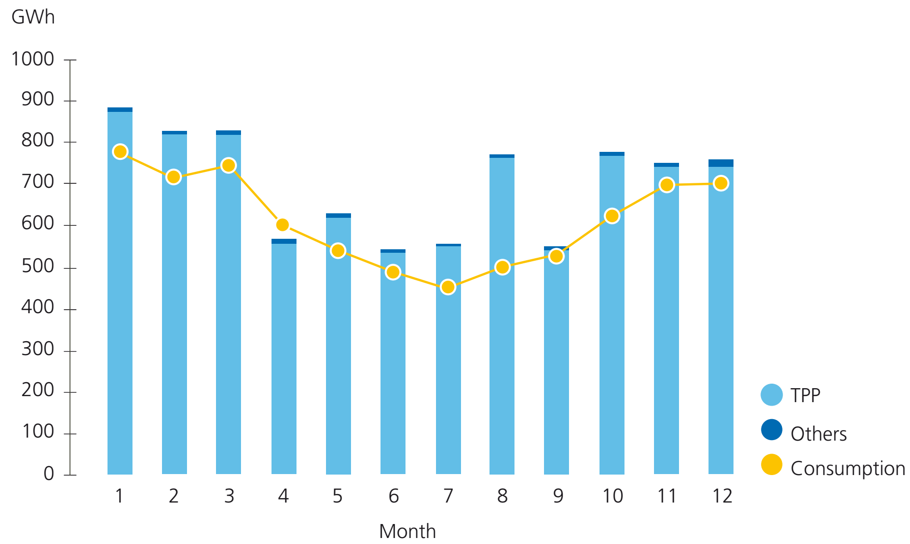
Date	Hour	Consumption	Generation	Generation				
				NPP	TPP	CHP	HPP	Small PP
16 july 2006	1	772.40	1352.00	1214.00	55.00	21.00	20.00	42.00
16 july 2006	2	715.50	1352.00	1215.00	55.00	21.00	20.00	41.00
16 july 2006	3	683.40	1353.00	1215.00	55.00	21.00	20.00	42.00
16 july 2006	4	667.20	1352.00	1214.00	55.00	21.00	20.00	42.00
16 july 2006	5	641.20	1354.00	1215.00	55.00	21.00	20.00	43.00
16 july 2006	6	617.40	1359.00	1219.00	55.00	21.00	20.00	44.00
16 july 2006	7	638.20	1357.00	1219.00	54.00	21.00	20.00	43.00
16 july 2006	8	696.40	1357.00	1221.00	54.00	21.00	20.00	41.00
16 july 2006	9	771.60	1360.00	1223.00	54.00	21.00	20.00	42.00
16 july 2006	10	837.00	1358.00	1224.00	54.00	21.00	20.00	39.00
16 july 2006	11	880.40	1361.00	1228.00	54.00	21.00	20.00	38.00
16 july 2006	12	892.10	1358.00	1224.00	54.00	21.00	20.00	39.00
16 july 2006	13	890.40	1356.00	1223.00	54.00	21.00	20.00	38.00
16 july 2006	14	890.30	1356.00	1222.00	54.00	21.00	20.00	39.00
16 july 2006	15	891.90	1355.00	1221.00	54.00	21.00	20.00	39.00
16 july 2006	16	885.90	1357.00	1222.00	54.00	21.00	20.00	40.00
16 july 2006	17	881.60	1354.00	1221.00	54.00	21.00	20.00	38.00
16 july 2006	18	875.90	1359.00	1226.00	54.00	21.00	20.00	38.00
16 july 2006	19	871.90	1361.00	1228.00	54.00	21.00	20.00	38.00
16 july 2006	20	868.30	1366.00	1231.00	54.00	21.00	20.00	40.00
16 july 2006	21	873.10	1364.00	1230.00	54.00	21.00	20.00	39.00
16 july 2006	22	869.80	1359.00	1225.00	54.00	21.00	20.00	39.00
16 july 2006	23	902.50	1360.00	1224.00	54.00	21.00	20.00	41.00
16 july 2006	24	861.80	1360.00	1224.00	54.00	21.00	20.00	41.00
Total MWh		**19375.90**	**32580.00**	**29328.00**	**1302.00**	**504.00**	**480.00**	**966.00**

Losses in main grid

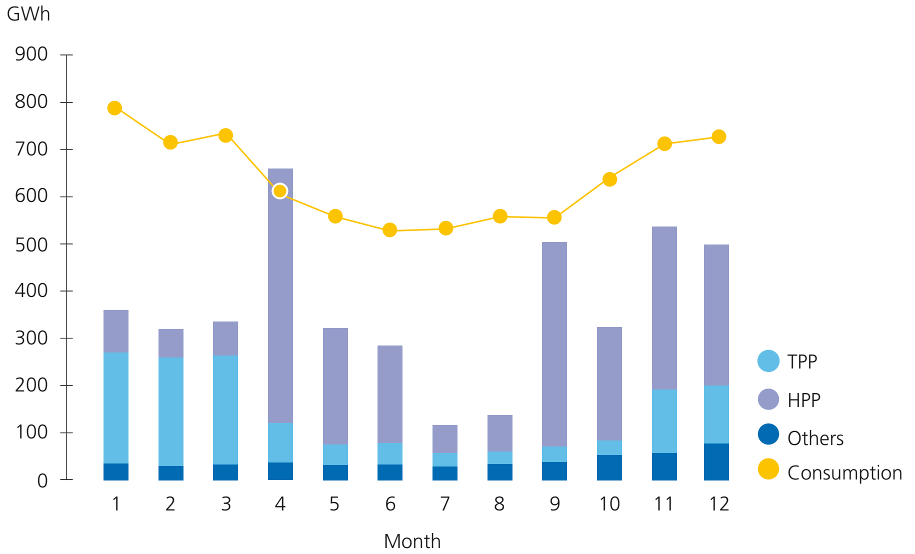
TSO	2005			2006		
	Output	Losses		Output	Losses	
	mln kWh	mln kWh	%	mln kWh	mln kWh	%
Estonia**	9178.0	288.8	3.1	8442.5	283.3	3.4
Latvia*	9717.6	320.3	3.3	9264.0	281.6	3.0
Lithuania**	12997.5	388.3	3.0	12498.4	328.3	2.6
Baltic IPS	**31893.1**	**997.4**	**3.1**	**30204.9**	**893.2**	**3.0**

* gross
** net

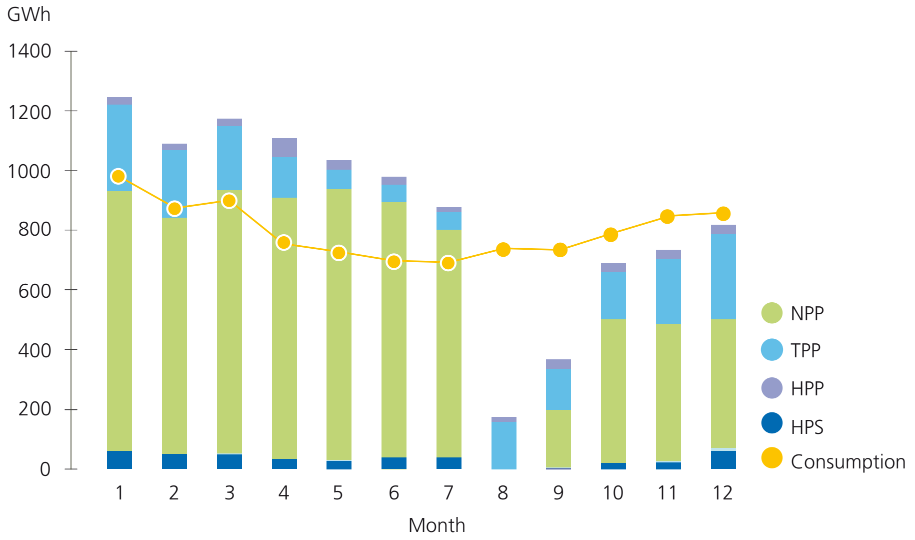
OUTPUT OF ENERGY FROM BUSBARS OF PP WITH INSTALLED POWER OF 50 MW AND MORE, OF SMALL PP (WP, HPP, CHP) AND CONSUMPTION IN ESTONIA (NET)



OUTPUT OF ENERGY FROM BUSBARS OF PP WITH INSTALLED POWER OF 50 MW AND MORE, OF SMALL PP (WP, HPP, CHP) AND CONSUMPTION IN LATVIA (GROSS)



OUTPUT OF ENERGY FROM BUSBARS OF PP WITH INSTALLED POWER OF 50 MW AND MORE, OF SMALL PP (WP, HPP, CHP) AND CONSUMPTION IN LITHUANIA (NET)



Output of PP with installed power of 50 MW and more, and of small PP (WP,HPP,CHP) by year and by month GWh in Estonia (net), GWh

Month	TP Plants		Others		Total	
	2006	As % of 2005 output	2006	As % of 2005 output	2006	As % of 2005 output
January	873.01	125.34	10.13	168.75	883.13	125.71
February	821.57	94.20	5.32	90.23	826.90	94.17
March	822.19	86.99	7.72	120.60	829.91	87.23
April	556.67	110.47	9.93	130.63	566.60	110.77
May	621.20	119.88	8.27	127.29	629.47	119.95
June	536.80	111.23	5.85	99.22	542.66	111.11
July	549.20	94.19	5.02	135.65	554.22	94.45
August	766.09	119.09	5.70	81.50	771.80	118.70
September	542.30	52.96	7.16	103.74	549.46	53.30
October	768.00	83.32	9.16	101.79	777.16	83.50
November	739.31	98.52	11.47	93.24	750.78	98.45
December	743.48	92.35	16.98	161.74	760.46	93.24
Total	**8339.83**	**95.36**	**102.72**	**117.26**	**8442.55**	**95.58**

Output of PP with installed power of 50 MW and more, of small PP (WP,HPP,CHP) by year and by month GWh in Latvia (gross), GWh

Month	TP Plants		HP Plants		Others		Total	
	2006	As % of 2005 output	2006	As % of 2005 output	2006	As % of 2005 output	2006	As % of 2005 output
January	270.03	246.15	89.87	20.40	35.23	111.12	395.12	71.80
February	260.54	156.29	59.32	33.57	30.40	135.11	350.26	102.00
March	263.55	138.78	71.59	42.77	33.13	144.04	368.27	103.07
April	121.85	194.96	538.47	80.45	36.55	143.91	696.87	95.23
May	76.29	157.95	245.69	32.98	31.82	140.19	353.80	44.60
June	78.36	450.36	206.67	51.68	32.90	175.00	317.93	76.19
July	58.61	270.07	58.36	31.98	29.05	198.98	146.02	71.51
August	61.22	218.64	76.75	59.92	34.06	184.10	172.03	110.21
September	71.81	232.39	432.80	541.68	38.83	250.51	543.44	490.47
October	84.70	133.38	239.46	399.77	53.92	256.78	378.08	306.39
November	192.49	114.99	343.83	401.67	56.96	215.77	593.28	234.50
December	200.39	89.74	298.32	308.18	77.54	265.55	576.25	180.02
Total	**1739.82**	**154.06**	**2661.13**	**82.35**	**490.40**	**182.10**	**4891.35**	**105.64**

BALTSO

Output of PP with installed power of 50 MW and more, of small PP (WP,HPP,CHP) by year and by month GWh in Lithuania (net), GWh

Month	TP Plants		HP Plants		HPS	
	2006	As % of 2005 output	2006	As % of 2005 output	2006	As % of 2005 output
January	289.80	84.76	23.24	62.31	60.72	237.19
February	226.15	64.58	20.43	94.15	49.09	211.59
March	212.49	58.59	24.89	65.16	50.71	188.51
April	136.08	89.41	63.54	134.90	32.77	94.71
May	65.37	64.72	31.19	65.25	27.49	92.87
June	58.00	73.98	25.35	70.81	37.37	147.13
July	61.14	88.10	15.86	76.25	37.53	123.05
August	157.62	126.40	16.17	44.67	0	0
September	134.65	50.21	31.55	135.99	3.92	150.77
October	160.49	84.25	26.81	119.69	19.96	53.23
November	219.61	81.16	28.31	129.27	22.97	44.78
December	285.09	74.34	30.06	106.22	62.53	147.48
Total	**2006.50**	**74.50**	**337.40**	**88.67**	**405.06**	**109.74**

Month	NP Plants		Others		Total	
	2006	As % of 2005 output	2006	As % of 2005 output	2006	As % of 2005 output
January	931.75	104.32	0.20	33.33	1419.72	109.33
February	843.46	100.76	0.03	6.00	1319.51	107.04
March	935.98	101.37	0.39	195.00	1367.01	101.16
April	909.94	101.24	0.19	95.00	1337.29	118.04
May	937.06	102.15	1.41	176.25	1257.43	114.69
June	894.51	100.53	0.31	31.00	1276.01	123.85
July	800.77	88.77	0.51	85.00	1142.74	111.66
August	0	0	0.60	150.00	61.44	6.24
September	200.00	308.17	0.50	62.50	830.90	231.00
October	502.37	83.67	1.04	31.52	806.77	94.46
November	486.05	54.26	2.88	192.00	768.52	61.93
December	502.70	53.64	8.40	2800.00	911.03	65.47
Total	**7944.59**	**83.24**	**16.46**	**162.97**	**12498.36**	**96.16**

Interconnections

OHL No301 Tartu SS – Valmiera SS
OHL No354 Tsirguliina SS – Valmiera SS
OHL No358 Tartu SS – Pskov SS
OHL No373 Estonian PP – Kingisepp SS
OHL No374 Baltic PP – Leningradskaja SS
OHL No305/457 Jelgava SS – Šiauliai/Telšiai SS
OHL No309 Velikoreckaja SS – Rezekne SS
OHL No316 Panevežys SS – Ajzkraukle SS
OHL No324 Klaipeda SS – Grobina SS

OHL No447 Kruonio HPS – Sovetsk SS
OHL No451 Ignalina NPP – Liksna SS
OHL No333 Vilnius SS – Molodechno SS
OHL No368 Alytus SS – Grodno SS
OHL No450 Ignalina NPP – Polotck SS
OHL No452 Ignalina NPP – Smorgon SS
OHL No705 Ignalina NPP – Belorusskaya SS
OHL No325 Klaipėda SS – Sovetsk SS
OHL No326 Jurbarkas SS – Sovetsk SS

BALTSO

Renewable Energy

Renewable energy in Estonia

Even though the share of renewable energy has thus far been negligible, we forecast significant growth in volumes for this category of energy, especially from wind turbines. In the European Union accession agreement, Estonia undertook to achieve a 5.1% share of output for renewable energy by 2010. The majority of this production comes from wind turbines, since wind conditions in Estonia are quite good and other renewable sources very limited.

Power plant	Net capacity, MW	Electricity produced in 2006, GWh
Wind turbines	32.30	75.63
Hydro power plants and Biogas PP	49.00	27.08

Renewable energy in Latvia

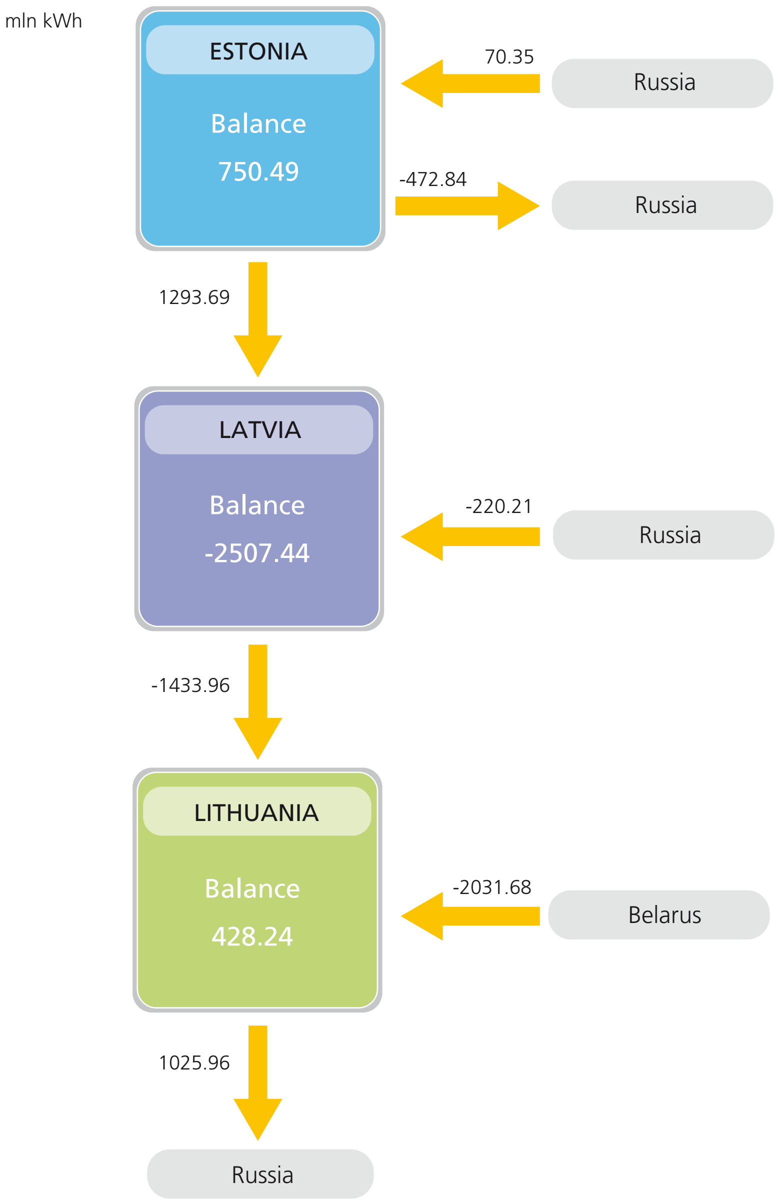
Power plant	Net capacity, MW	Electricity produced in 2006, GWh
Wind turbines	26.40	34.34
Hydro power plants	1560.80	2661.29

Renewable energy in Lithuania

Although indigenous and renewable resources are limited due to Lithuania's geographic location, terrain and natural features, a lot of attention is being paid to their development. Their share in the primary energy balance is about 9%, and according to its commitment to the European Union, Lithuania will reach a set target of 12% in a diversified and balanced energy mix by 2010. Once the windmills which are presently under construction are commissioned and taken together with power plants fired with bio-fuels, more than 7% of the total quantity of electricity consumed will be produced from renewable energy resources in 2010.

Power plant	Net capacity, MW	Electricity produced in 2006, GWh
Wind turbines	47.00	13.75
Hydro power plants	115.00	337.43
Small HPP	27.00	56.23
Biomass PP	12.00	19.35
Biogas PP	3.00	2.77

Exchange of electricity in 2006



Prognosis

Over 90% of electricity in Estonia is produced from domestic oil shale. The Eesti and Balti power plants (Narva PP) will remain the two major energy producers in Estonia and there is ongoing development of new technology for oil-shale combustion. In the near future four energy units in the Eesti and two in the Balti power plant will be modified, while in Iru power plant the installation of new generation units producing up to 500 MW is under discussion. There is a strong chance that a new private CHP unit will be built in Tartu producing approximately 20 MW in the near future.

Latvia is currently an electrical energy importer, with an average of 70% of total consumption covered by domestic production, of which 45% comes from Latvenergo HPP, 20% from the company's CHP and about 5% from independent plants. The technical and economic feasibility of the expansion of Latvenergo production is currently under investigation and involves several projects. In this context particular interest should be expressed for the new power plant construction in the Eastern region that would allow added security in the provision of services to customers.

Ignalina NPP dominates the electricity market in Lithuania with the output from one unit being sufficient to support almost all the domestic electricity demand. The first unit of INPP was decommissioned at the end of 2004, and the second unit will follow at the end of 2009. To compensate for the lost capacity of the Lithuanian power system after the closure of Ignalina NPP and to increase the competitive ability of electricity production in Lietuvos PP, the feasibility of installing two new combined cycle gas turbine units in Lietuvos Power Plant is under discussion.

Demand forecast

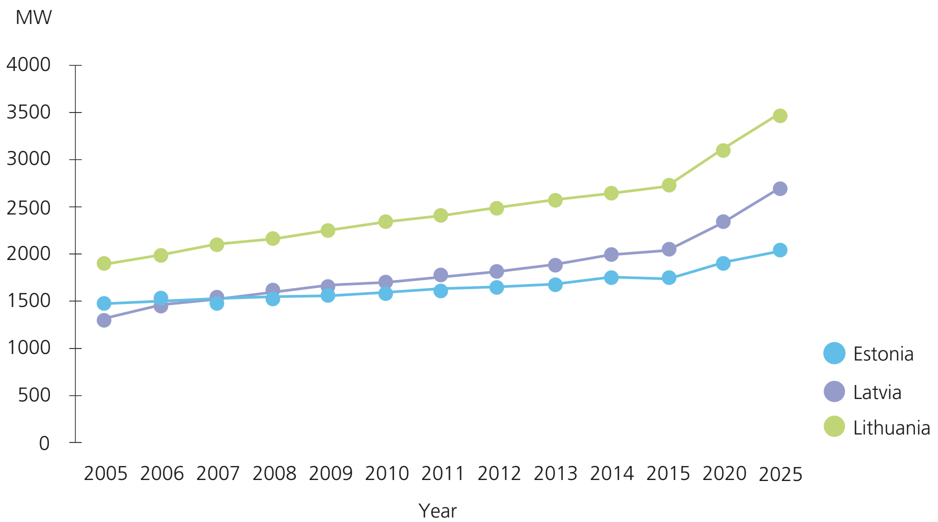
	Energy consumption, GWh					Growth, %	
	2006	2010	2015	2020	2025	2006-2010	2010-2025
Estonia	7322	8277	9378	10525	11813	+3.7	+3.7
Latvia	7399	8610	10614	12289	14148	+3.7	+3.4
Lithuania	9771	12206	14181	16206	18206	+3.2	+3.1
Baltic IPS total	**24492**	**29093**	**34173**	**39020**	**44167**	**+3.5**	**+3.4**

Peak load forecast

	Peak load, MW				
	2006	2010	2015	2020	2025
Estonia**	1553	1568	1712	1852	2004
Latvia*	1421	1651	2008	2402	2626
Lithuania**	1837	2303	2676	3058	3435
Baltic IPS total	**5074**	**5522**	**6396**	**7312**	**8065**

* gross
** net

PEAK LOAD FORECAST FOR BALTIC SYSTEMS



The Total Use factor of peak demand of Baltic systems for the period up to 2025 will slightly decrease.

Annual Report 2006

www.baltso.eu