Energy markets in the Baltic Sea Region

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Introduction

The area of this research, conducted under the auspices of the Swedish Institute during scholarship in Sweden 2012-2013, is an issue of the energy cooperation in the Baltic Sea Region. This Report – a study of energy market in the field of electricity sector in eight EU countries – is the result of it. The Report constitutes an attempt to present a complex market situation in the Baltic Sea Region and seeks to find answers to the challenges associated with this part of the internal European Union electricity market.

As underlined in the European Union Strategy for the Baltic Sea Region, the 8 European Union countries within the Baltic Sea Region – Denmark, Estonia, Finland, Germany, Latvia, Lithuania, Poland and Sweden – face several common challenges. One of them is energy with insufficient energy transmission and not adequately connected supply networks, can be identified. Furthermore, in the Strategy for the Baltic Sea Region 15 priority areas of activity have been established. One of them is to improve the access to energy markets and to boost their efficiency and security (10). In this field the following objectives have been set: 10.1 Monitor the implementation of the Baltic Energy Market Interconnection Plan (BEMIP), 10.2 Demonstration of coordinated offshore wind farm connection solutions, 10.3 Implement the Baltic Sea Region Bioenergy Promotion project, 10.4 Extend the Nordic electricity market model (NORDEL).

The implementation of the above aims must result in the development of cooperation links between Member Countries and realisation of joint energy projects. Moreover, as it was written in the Joint Declaration of the Eastern Partnership Summit[1], signed in September 2011 in Warsaw, "[r]ecalling their energy interdependence", the participants of the Warsaw Summit agree "to strengthen their energy partnership." The existing bilateral and multilateral cooperation on energy is welcomed. The participants of the Warsaw Summit agreed "to work further towards integrating their energy markets (…)." This means that the cooperation in the field of the energy market is one of the most important priorities for the European Union and its energy sectors.

[1] Joint Declaration of the Eastern Partnership Summit, Warsaw, 30 September 2011 Warsaw, 14983/11 PRESSE 341 http://ec.europa.eu/europeaid/where/neighbourhood/eastern_partnership/documents/warsaw_summit_declaration_en.pdf.

According to the Action Plan accompanying the European Union Strategy for the Baltic Sea Region (Strategy's Action Plan)[2] "fragmented electricity markets in the Baltic Sea Region lead to the following problems (a) difficult access to the power generation capacities in the region (insufficient cable linking producers and consumers, different electricity standards, etc.); (b) higher prices in the absence of economies of scales and competitors; and (c) few incentives or opportunities for infrastructure investment especially in renewable energies. Such a situation results in the lack of cross border trade and of market liquidity, higher prices and lower levels of diversification of energy sources." Despite the fact that all 8 European Union countries in the Region are a part of the European market for electricity, the electricity markets are still in different stages of liberalization. These factors cause the need to undertake actions aimed at enhancing the energy integration in the Region, together with the activities of the analytical quality.

In this context, the overall objective of the Report is to present the activity of 8 Baltic Sea Region Member States being carried out in the field of establishing common Baltic Sea energy market. The result of the study conducted offers an updated analytical basis for the Member States activity aimed at the improvement of the security of energy supply in the Baltic Sea Region, such as reducing prices, facilitating the diversification of energy sources and enabling the introduction of solidarity mechanisms.

With a view of the above factors, this Report offers a study on how each Baltic Sea Region Member State influences the energy market. The scope of the Report includes inter alia such areas as:

- the states policy, strategy, plans and programs relevant for the shape of energy sector;
- the level of market liberalization;
- the sector's ownership structure;

The Report elaborates also upon the shapes of the energy mix within the Baltic Sea Region Member States. The basis for the analysis presented are data derived from international and European statistics agendas (e.g. International Energy Agency[3], Eurostat[4]), or public

[2] Commission staff working document accompanying the Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions concerning the European Union Strategy for the Baltic Sea Region Action Plan, Brussels, 10.6.2009 SEC(2009) 712, January 2012 version, http://ec.europa.eu/regional_policy/sources/docoffic/official/communic/baltic/action2009.pdf.
[3] http://www.iea.org/.
[4] http://epp.eurostat.ec.europa.eu/portal/page/portal/eurostat/home/.

available documents and reports (e.g. "Strategy for the Baltic Sea Region's Action Plan", "BEMIP Progress reports", "World Energy Trilemma. 2012 Energy Sustainability Index" etc.).

In the Report problems and boundaries impeding the development of the energy market within the Baltic Sea Region are also identified. Within this context, each Baltic Sea Region Member State (Denmark, Estonia, Finland, Latvia, Lithuania, Germany, Poland and Sweden) energy market model is established. For the purpose of the analysis, each Member State's electricity portfolio has been elaborated (including energy consumption level, the volume of energy generation, the specification of the energy mix). This enables to present policy recommendations and to define a common energy policy model for the entire Baltic Sea Region.

I. State of the art

"The Baltic Sea Region [Denmark, Estonia, Finland, Germany, Latvia, Lithuania, Poland and Sweden] is a highly heterogeneous area in economic, environmental and cultural terms, yet the countries concerned share many common resources and demonstrate considerable interdependence. This means that actions in one area can very quickly have consequences for other parts, or the whole, of the region. In these circumstances, the area could be a model of regional co-operation where new ideas and approaches can be tested and developed over time as best practice examples." In these words, expressed in the European Union Strategy for the Baltic Sea Region[5], the European Union judges the potential of the Baltic cooperation.

Furthermore, as expressed in the European Parliament resolution on a Baltic Sea Region Strategy for the Northern Dimension[6], the Baltic Sea Region "has almost become an internal sea, a *mare nostrum*, of the European Union following the 2004 enlargement (…)." Moreover, it is "a historically significant gateway area uniting the West and the East (…)." In a symbolic understanding this shows strengths and possibilities of Baltic cooperation , composed of different approaches, different economies and different energy. However, a lot of common points can be found in this diversity. At the end of the day, the ambivalent nature of this multi-shaped cooperation may become its advantage.

One of the particular concerns indicated in the European Union Strategy for the Baltic Sea Region is the energy supply and security. What was emphasized in this Strategy, "some countries in the region have substantial indigenous sources of energy, most must rely on imports. Therefore, interconnections need to be further developed and diversified to offset possible interruptions or other shocks." It was explained that "[t]he energy markets lack appropriate infrastructures and are too nationally oriented instead of being linked across the region. This creates higher energy supply risks and prices. In addition, for the internal energy market to function well, countries need to be interconnected. However, Estonia, Latvia, and Lithuania remain, with the exception of the Estlink power cable between Estonia and Finland, essentially isolated from the wider energy networks of the European Union."

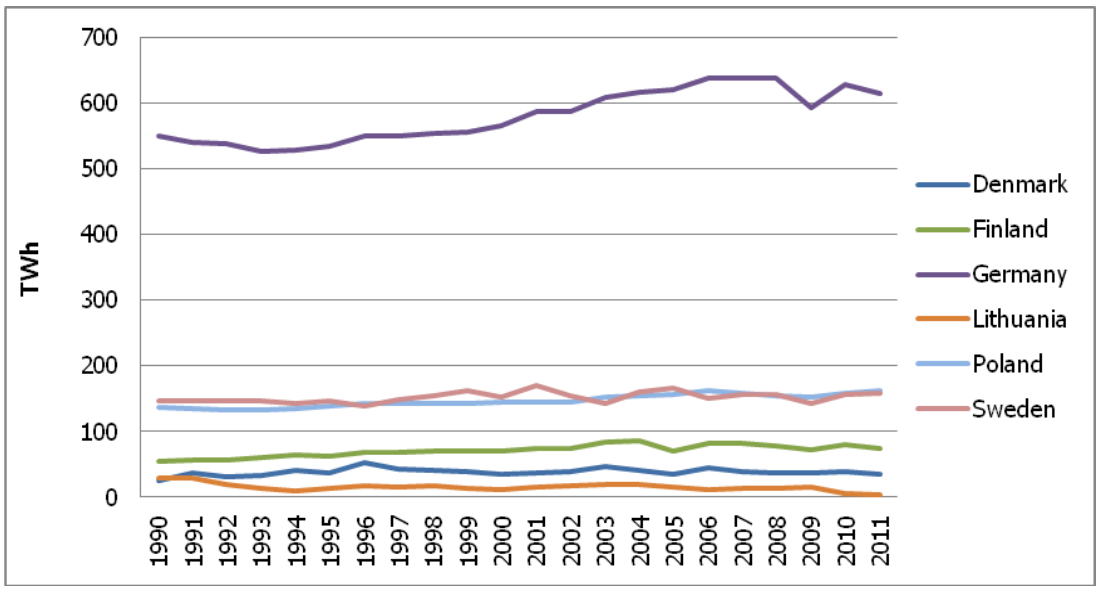
[5] Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions concerning the European Union Strategy for the Baltic Sea Region, Brussels, 10.6.2009 COM(2009) 248 final.
[6] Texts adopted: P6_TA(2006)0494.

At this point, the potential of the Baltic Sea Region energy sector should be described. The introduction – 'the state of art' – is an important background for further consideration, including joint initiatives of the 8 Baltic Sea Region's Member States. Therefore, some of the most important data concerning the European Union's and Region's energy situation are analysed here. A detailed description of the electricity market of each of the 8 Member States is presented in the next section of the Report: 'Country review'.

All figures which present the European Union's and the Baltic Sea Region's electricity data where elaborated on the basis of statistics of reputable and objective institutions: the British Petroleum, Eurostat, International Energy Agency. Detailed results of selected statistics are attached to the Report (see 'Annex').

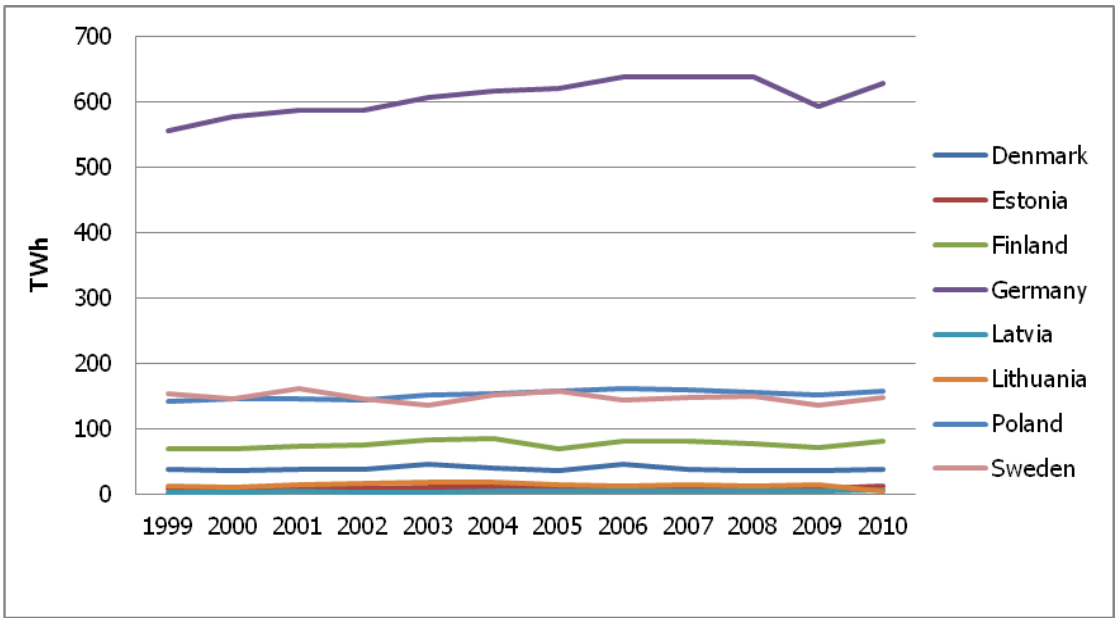
One of the most significant data enabling an appropriate description of the energy situation of national economy is electricity generation (inter alia because of the growing importance of electricity for the economy and society). This is illustrated in the following two figures. They are based on the BP's and Eurostat's data. The figures display electricity generation in the 8 countries of the Baltic Sea Region. The figures do not differ from each other significantly. The BP's data relate to a broader time perspective (20 years), and Eurostat's data for narrower (about 10 years). Additionally, the BP's figure does not include Estonia and Latvia, but because of their small share in the volume of energy generated in the Baltic Sea Region, it does not affect the whole statistics considerably. Due to these similarities, comments on the two figures are presented together.

Figure 1. Gross electricity generation in the Baltic Sea Region between 1991-2011[7]



Source: BP

Figure 2. Gross electricity generation in the Baltic Sea Region between 1999-2010[8]



Source: Eurostat

The above figures clearly show a dominant position of Germany in the field of electricity generation in the Baltic Sea Region. Its lowest value of the electricity generation falls on the year 1993 according to the BP's study (526 TWh), and on the year 1999 in the Eurostat

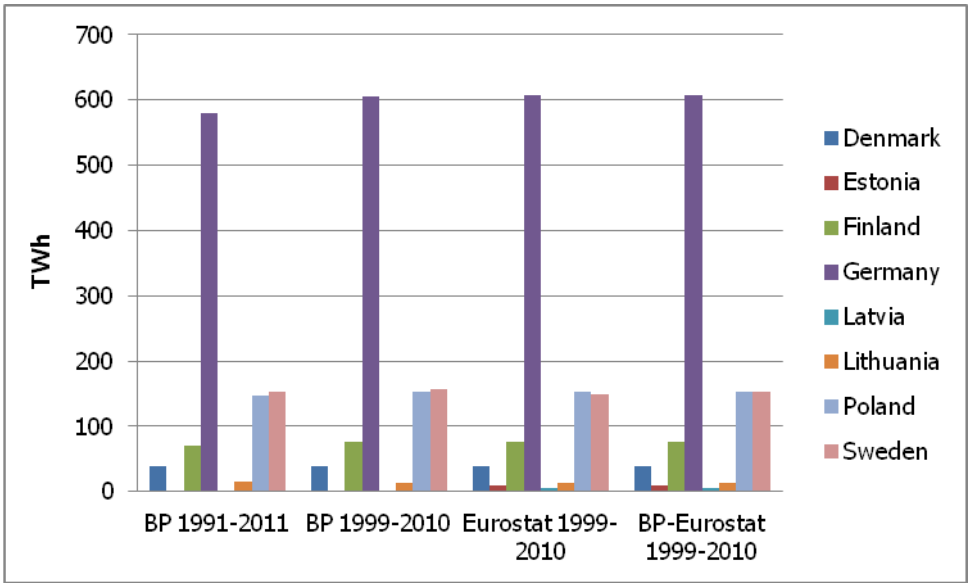
[7] Based on gross output.

[8] Total gross electricity generation. It covers gross electricity generation in all types of power plants. The gross electricity generation at the plant level is defined as the electricity measured at the outlet of the main transformers, i.e. the consumption of electricity in the plant auxiliaries and in transformers are included.

study (556 TWh). On the second place are Sweden (in 2001, BP: 169 TWh, and Eurostat: 163 TWh, also in 2001) or Poland (163 TWh in 2011, according to BP and 162 TWh in 2001, according to Eurostat). Apart from these small variations, figures show the scale of the difference between Germany and other countries of the Baltic Sea Region.

Let us take a look at the averaged data. They are presented in four versions. Firstly, the BP 1990-2010, secondly, BP 1999-2010, thirdly, the Eurostat 1999-2010. Finally, the average of BP and Eurostat surveys (data for Latvia and Estonia are only taken from the Eurostat), in the 1999-2010 perspective.

Figure 3. Average gross electricity generation in the Baltic Sea Region

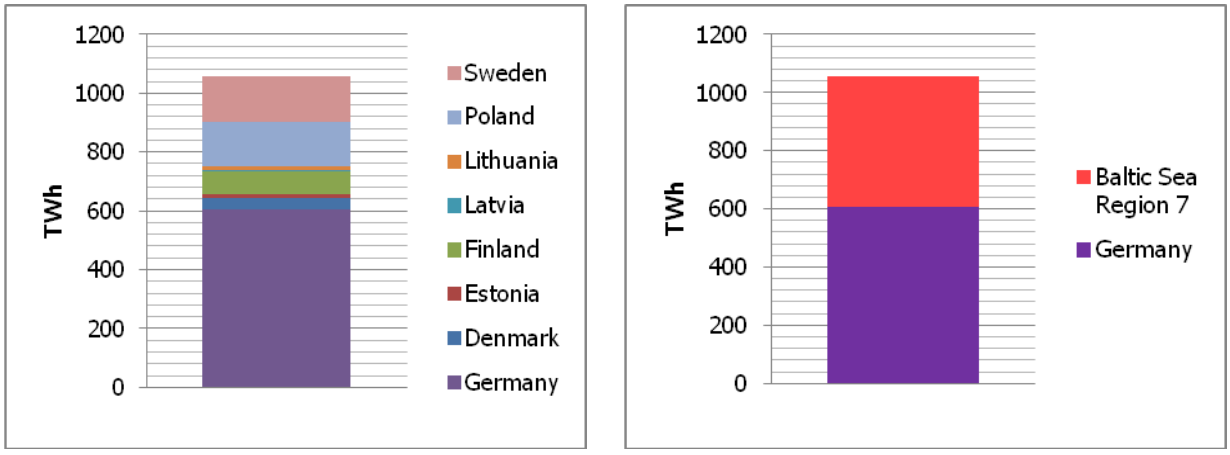


Source: BP, Eurostat

Evidently, these data confirm the abovementioned comments. In addition, they show that Baltic Sea Region states can be categorized in four groups. Due to the strength of the German economy, which clearly hinders the conduct of any categorization, these groups are deprived of names denoting the volume of production ('large', 'medium', 'small producers'). That is why this kind of categorization shall be rather perceived as grouping together countries similar to each other in terms of the volume of electricity generated. As a result, the following groups can be differentiated: (i) Germany, (ii) Sweden-Poland, (iii) Denmark-Finland, and (iv) Lithuania-Estonia-Latvia. This order reflects also the level of energy produced.

Lastly, with regard to the strength of the German energy sector against the background of the Baltic Sea Region, this can be further illustrated with the use of the figure below.

Figure 4. German and 7 Baltic Sea Region Member States' average gross electricity generation

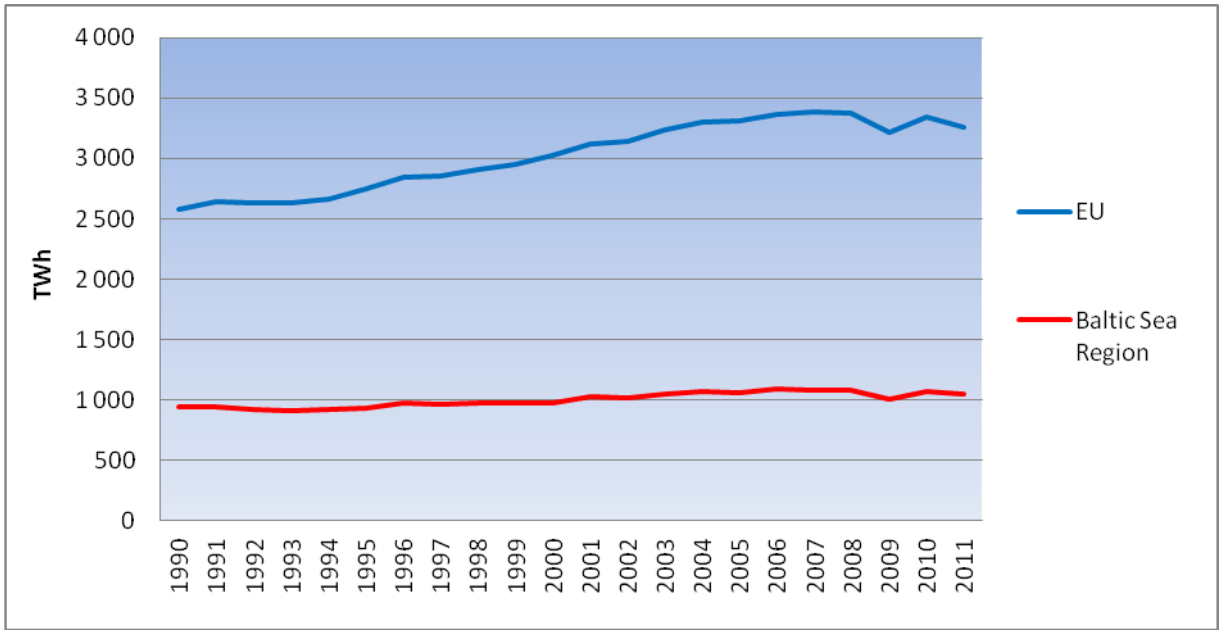


Source: BP-Eurostat 1999-2010

Relying on the average BP-Eurostat 1999-2010's data it can be observed that German energy generation represents more than half of the total volume of electricity produced in the countries of the Baltic Sea Region. Of course, these figures are only rough statistics, and cannot be treated as a statement where the total German economy is qualified as an integral part of the economy of the Baltic Sea Region. However, Germany, as the country, is formally classified as a part of this area (as it is stated in the European Union Strategy for the Baltic Sea Region), hence this simplification is justified here.

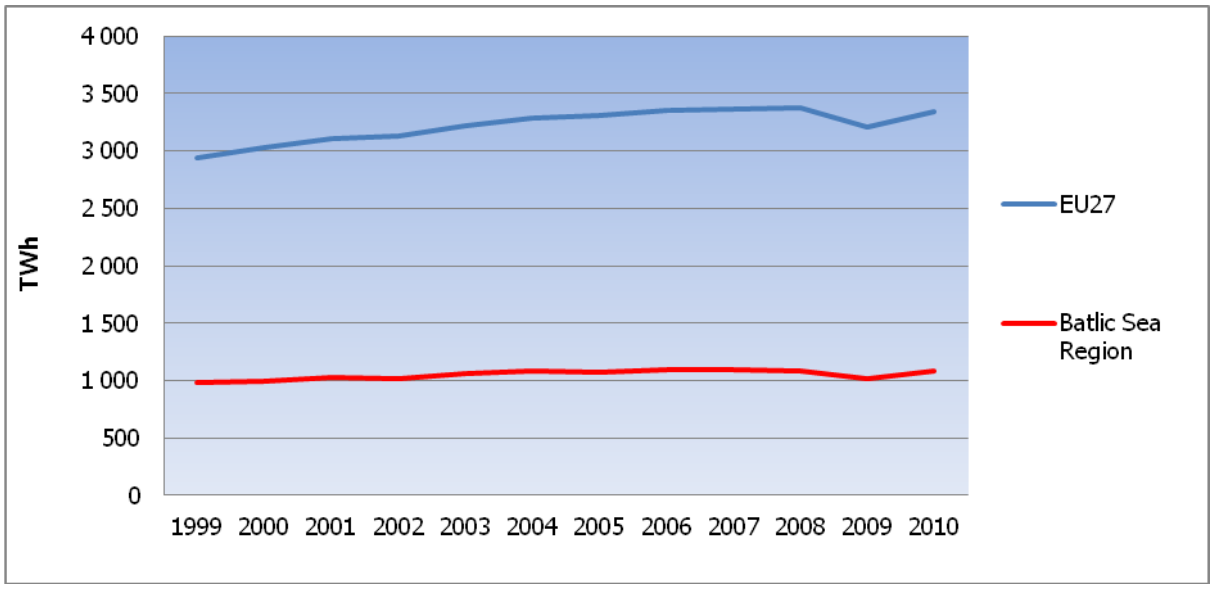
Now, let us examine the comparison of electricity generation in the EU and in the Baltic Sea Region. As with the previous figures presented here, the data are based on BP's and Eurostat's surveys, and they are discussed together. However, it should be noted, that due to their more specific character (see Annex) more attention is devoted to the Eurostat's data.

Figure 5. Gross electricity generation in the Baltic Sea Region and EU between 1991-2011[9]



Source: BP Statistical Review of World Energy June 2012

Figure 6. Gross electricity generation in Baltic Sea Region and EU between 1999-2010



Source: EUROSTAT

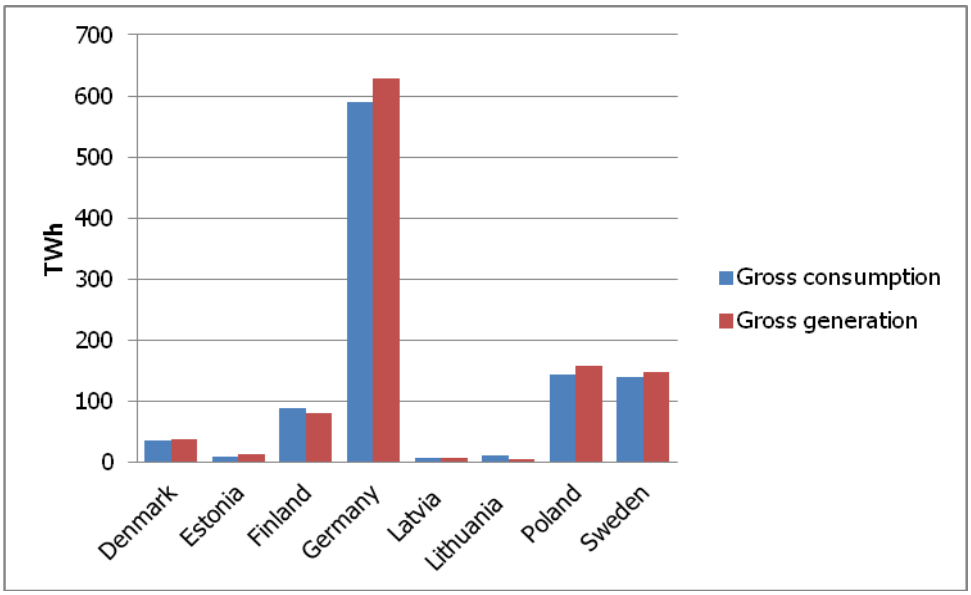
Comparing the energy generated in the European Union and in the Baltic Sea Region it can be seen that the energy generated by the Member State within the Baltic Sea Region is about 1/3 of the energy generated in the European Union. Of course, as it has already mentioned, German electricity constitutes a large part of the Baltic Sea Region generation

[9] Based on gross output.

sector. Parenthetically, the Eurostat's data for EU-27 are not related to the successive enlargements of the Union. Each annual indication applies always to the area of today's EU-27 (see annex). Therefore, the 1999-2008 growth of energy generation is not caused by the external (the enlargement), but rather internal factor – simply, the increase in the electricity generation in Member States (mainly Germany, France, Italy, and Spain).

A good illustration of a state's energy situation requires the addition of information on the consumption of electricity. Due to a more complex nature of this phenomenon, the Report includes the value of the 'gross electricity consumption', which equals: gross generation and imports minus exports and losses. For a comparison, 'net consumption' available in Eurostat publications is significantly different from the gross generation already presented. This could obscure the end result of generation-consumption's balance. This stands for a reason why the value of 'gross consumption' is used in the Report (based on IEA's data).

Figure 7. *Electricity generation and consumption in the Baltic Sea Region 2010*[10]



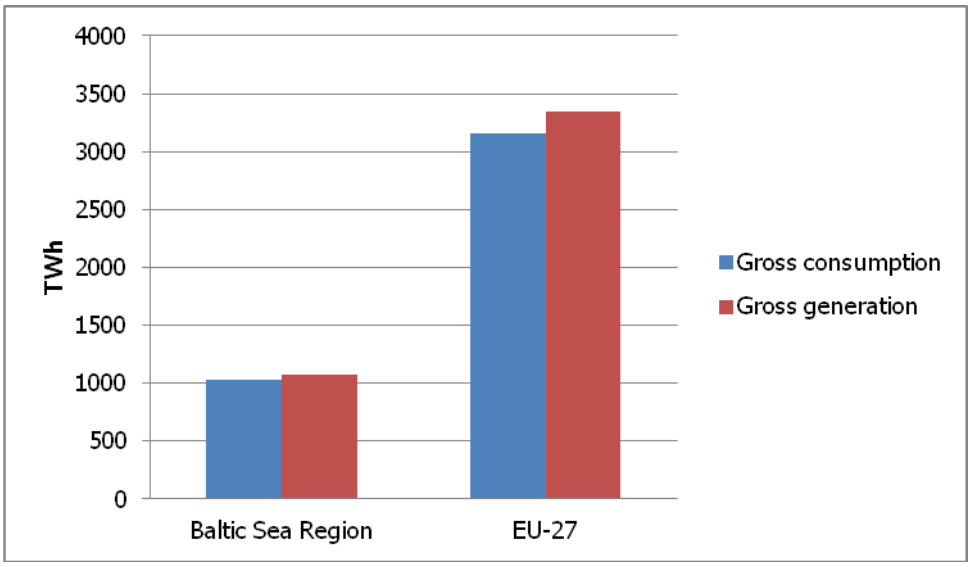
Source: EUROSTAT, OECD/IEA

In 2010, electricity consumption in the countries analysed was rather similar to the energy generated. As a rule, the state recorded a small generation surplus. The exceptions were only Finland and Lithuania, where the value of consumption exceeded electricity generation. In Finland it was 88,4 TWh consumed to 81 TWh generated (deficit of 7 TWh, what gives 9% in the whole gross electricity consumption), while Lithuania consumed 10,75 TWh to

[10] Generation: total gross electricity generation; consumption: gross generation + imports – exports – losses.

only 6 TWh generated. This results in 4,75 TWh deficit, which is as much as 45% of the whole gross electricity consumption.

Figure 8. *Electricity generation and consumption in Baltic Sea Region and the European Union in 2010*



Source: EUROSTAT, OECD/IEA

Taking into consideration the comparison of gross electricity consumption in the EU-27 and in the Baltic Sea Region in 2010, again, the surplus energy produced on the energy consumed can be noted. Respectively, it is 189 TWh (3346 TWh produced to 3157 TWh consumed) in EU-27, and 55 TWh (1079 TWh generated to 1024 TWh consumed) in the Baltic Sea Region countries.

Figure 9. Gross electricity consumption in the Baltic Sea Region and EU-19 in 2010 (TWh)[11]

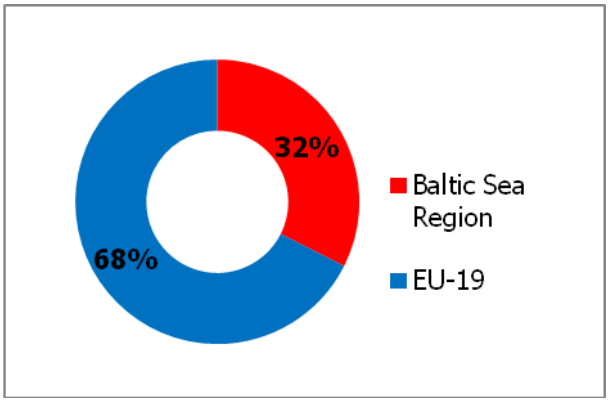
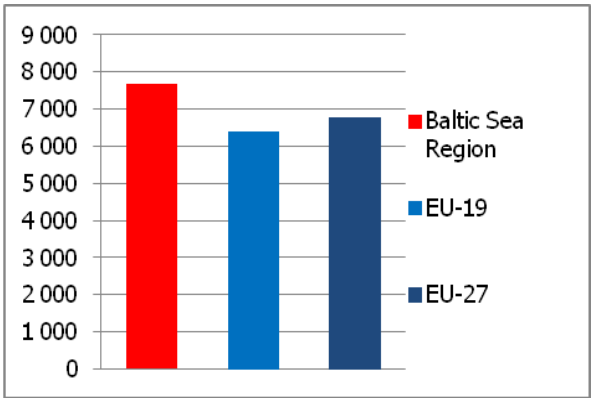


Figure 10. *Average gross electricity consumption / population in the Baltic Sea Region, EU-19 and EU-27 in 2010 (kWh/capita)*



Source: OECD/IEA

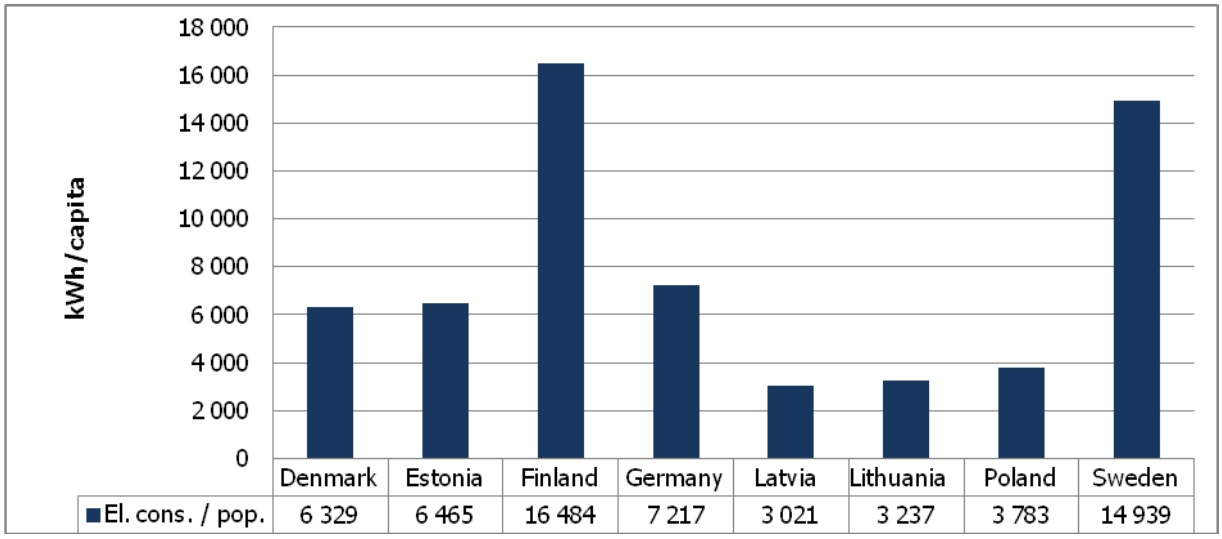
[11] Gross production + imports – exports – losses.

If we separate in the balance of the gross energy consumed in 2010 the EU-19 and the Baltic Sea Region (EU-8) from the EU-27,it can be noticed that the Baltic Sea Region countries consume about 1/3 (1024 TWh), while and EU-19 Member States consume 2/3 (2133 TWh) of the total energy consumed in 2010 within the European Union (3157 TWh).

Furthermore, let us take a look at the average value of gross electricity consumption per capita. An average for the Baltic Sea Region is almost 1000 kWh higher than the average for the European Union, and 1300 kW higher than the average for the EU-19. One of the reasons underlying such discrepancy lies in a high consumption per capita in Finland and Sweden (and thus their high energy development). It is accordingly 16484 kWh per capita in Finland, and 14939 kWh per capita in Sweden. Such a high indication in the whole EU-27 is only listed for Luxembourg: 16866 kWh per capita. Clearly, in case of this figure the size of the state and the number of its inhabitants must be taken into account.

For the countries of the Baltic Sea Region the electricity consumption per population statistics are as follows:

Figure 11. Electricity consumption per population in the Baltic Sea Region in 2010



Source: IEA 2012 Key World Energy Statistics

As in the case of energy generation, also here the Baltic Sea Region Member State can undergo a certain classification. Three groups can be distinguished: (i) Finland-Sweden, (ii) Germany-Denmark-Estonia, and (iii) Poland-Lithuania-Latvia. The order presented reflects the value of electricity consumed per capita in each Member State. These data should be supplemented by the following population's statistics.

Table 1. Electricity consumption and population in the Baltic Sea Region in 2010

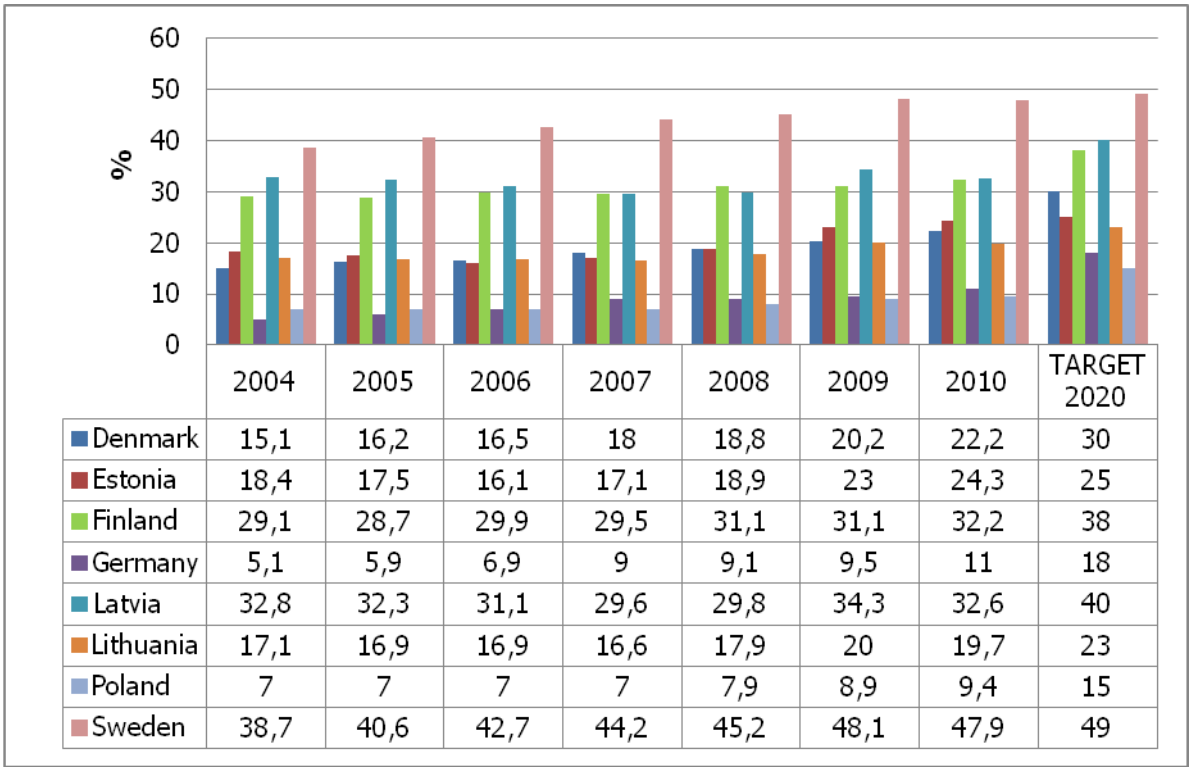
Country	Population (million)	Elec. cons. (TWh)	Elec. cons. / population (kWh/capita)
Denmark	5,55	35,1	6 329
Estonia	1,34	8,66	6 465
Finland	5,36	88,4	16 484
Germany	81,76	590,06	7 217
Latvia	2,24	6,78	3 021
Lithuania	3,32	10,75	3 237
Poland	38,19	144,45	3 783
Sweden	9,38	140,1	14 939

Source: OECD/IEA

It is noteworthy that the German population is estimated at over 80 million, or nearly 17 times bigger than the population of Finland. But the consumption of electricity per capita in Germany is 2 times lower than in Finland. Another notable indication is low consumption per capita in Poland. Electricity in Poland is consumed almost at the same level as in Lithuania even though the population of the latter is over 10 times smaller than that of Poland. Moreover, in comparable to Poland Sweden (in terms of energy production and consumption, which oscillates around 140-145 TWh) the value of gross electricity consumption per capita is 4 times higher.

Finally, let us present statistics complementary to a general overview of the energy situation in the Baltic Sea Region. It is a share of renewable energy in the gross final energy consumption and a market share of the largest generator in the electricity market.

Figure 12. Share of renewable energy in gross final energy consumption in the Baltic Sea Region[12]



	2004	2005	2006	2007	2008	2009	2010	TARGET 2020
Denmark	15,1	16,2	16,5	18	18,8	20,2	22,2	30
Estonia	18,4	17,5	16,1	17,1	18,9	23	24,3	25
Finland	29,1	28,7	29,9	29,5	31,1	31,1	32,2	38
Germany	5,1	5,9	6,9	9	9,1	9,5	11	18
Latvia	32,8	32,3	31,1	29,6	29,8	34,3	32,6	40
Lithuania	17,1	16,9	16,9	16,6	17,9	20	19,7	23
Poland	7	7	7	7	7,9	8,9	9,4	15
Sweden	38,7	40,6	42,7	44,2	45,2	48,1	47,9	49

Source: EUROSTAT

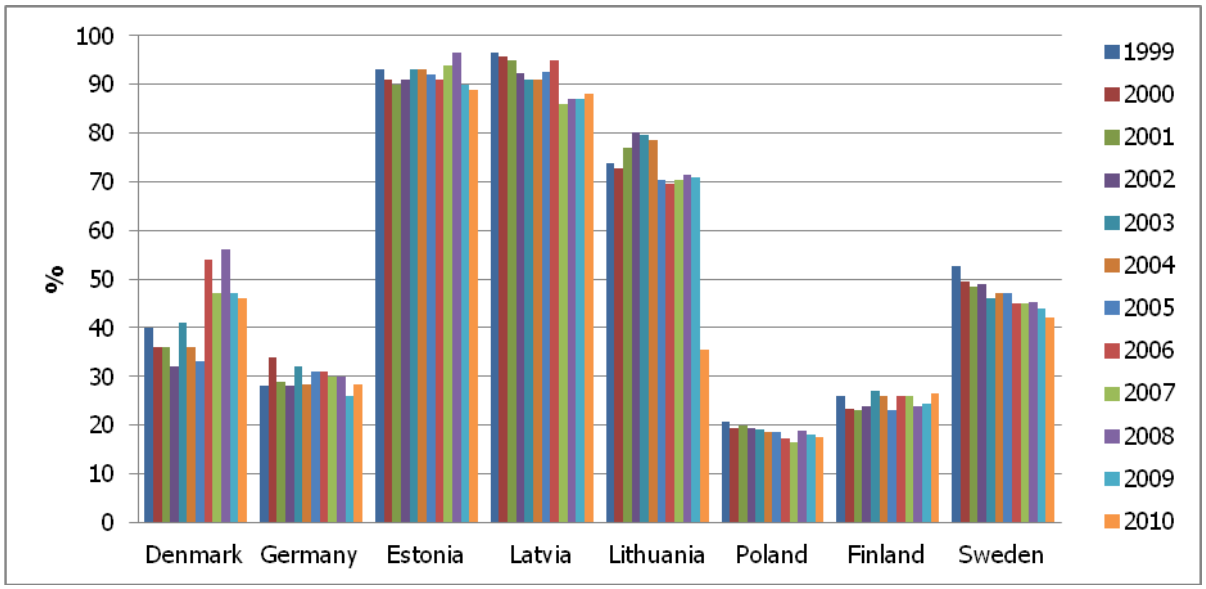
The presented renewable energy targets for all Member States were established in 2009 in the Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC[13]. Clearly, it can be seen here that the highest share of renewable energy occurs in Sweden, Latvia and Finland. On the other hand, the lowest percentage values refer to Poland and Germany. However, due to the scale of consumption of renewable energy in gross final energy consumption, the values expressed in TWh are higher in this case . In addition, observed increases in the percentage of the share of the renewable energy in gross electricity consumed in Estonia, Denmark and Sweden, are worth mentioning. During 7 years, these countries recorded 6%, 7% as well as 8% increases in the share of renewable energy in the gross final energy consumption.

[12] This indicator is calculated on the basis of energy statistics covered by the Energy Statistics Regulation. It may be considered an estimate of the indicator described in Directive 2009/28/EC, as the statistical system for some renewable energy technologies is not yet fully developed to meet the requirements of this Directive. However, the contribution of these technologies is rather marginal for the time being.

[13] OJ L 140, 5.6.2009, pp. 16-62.

Lastly, an important picture of the energy market can be drawn on the basis of market share of the largest generator in the electricity market data.

Figure 13. Market share of the largest generator in the electricity market in the Baltic Sea Region [14]



Source: EUROSTAT

These data illustrate the level of competition in the electricity market and the problem being faced by three Baltic States (Lithuania, Latvia, Estonia). This is a strongly monopoly structure of the generation. However, a general downward trend in the market structure of monopoly power in the Region should also be noted. Additionally, as with previous statistics, data of the Baltic Sea Region Member State presented on the above figure can be categorised into 3 groups: (i) Estonia-Latvia-Lithuania, (ii) Denmark-Sweden, (iii) Germany-Finland-Poland. This order is correlated with the value of the share of the largest generator in the electricity market, starting with the largest and ending with the smallest country's indication.

[14] % of the total generation. The indicator shows the market share of the largest electricity generator in each country. To calculate this indicator, the total net electricity production during each reference year is taken into account. It means that the electricity used by generators for their own consumption is not taken into account. Then, the net production of each generator during the same year is considered in order to calculate the corresponding market shares. Only the largest market share is reported under this indicator.

II. European Union's vision for energy in the Baltic Sea Region

A general idea of the European Union for the Baltic Sea Region is established in the European Union Strategy for the Baltic Sea Region. From a formal side, this Strategy is based on 3 documents: (i) a Communication from the European Commission to the Council and the European Parliament, (ii) an associated Action Plan which complements the Communication, presented to the Council and European Parliament at the same time, and (iii) a Working Document of the European Commission's Services which presents the background, approach and content of the strategy. In this section, an insight will be taken into the second document – the Action Plan accompanying the European Union Strategy for the Baltic Sea Region (Strategy's Action Plan).[15]

The Strategy's Action Plan includes 15 priority areas which are divided into four thematic pillars and one horizontal section. Priority areas are the main spheres in which the European Union Strategy can contribute to the improvement of the Baltic Sea Region functioning, by solving the major problems or through seizure of the main opportunities.

One of the pillars mentioned is an assumption 'to make the Baltic Sea Region an accessible and attractive place'. "The geography of the Baltic Sea Region, the very long distances by European standards (especially to the northern parts which are very remote), the extent of the sea that links but also divides the regions, the extensive external borders: all these pose special challenges to communication and physical accessibility in the region" – as stated in the Strategy's Action Plan. This pillar contains also remarks vital for the scope of this analysis: energy issues. As presented there "[i]n particular, the historical and geographical position of the Eastern Baltic Member States, with their internal networks largely oriented East-West, makes substantial investment in (…) energy infrastructures particularly important." Thus, energy and its infrastructure is in the interest of the European Union in the context of European cooperation in the Baltic Sea, becoming one of the 15 priority areas.

In the Strategy's Action Plan energy issues are presented in the priority 10 'To improve the access to, and the efficiency and security of the energy markets'. The energy markets in the Baltic Sea Region (including the electricity market) "lack appropriate infrastructures" and "are too nationally oriented instead of being linked and coordinated". In certain Member States levels of market opening and competition "are not sufficient to provide the right incentives

[15] The Action Plan presents a first set of priority areas identified in the preparation of the European Union Strategy for the Baltic Sea Region. The Plan may be revised regularly and can also be extended by the Member States and stakeholders.

for investments". As concluded in the Strategy's Action Plan, "[t]his creates higher risks in terms of energy security and higher prices."

Consequently, fragmented (isolated) electricity markets lead to the 3 main problems. According to the Strategy's Action Plan the following may be differentiated: "(a) access to the power generation capacities in the region is difficult (insufficient cable linking producers and consumers, different electricity standards, etc.); (b) higher prices in the absence of economies of scales and competitors; and (c) few incentives or opportunities for infrastructure investment especially in renewable energies."

"All European Union / European Economic Area countries in the region are part of the internal market for electricity. However, the electricity markets are still in widely different stages of liberalisation. It is this, linked to infrastructure gaps, that has impeded the physical integration of the three Baltic States[16]. Further physical integration of the grids in the region is needed to bring benefits in overall efficiency, and to improve security of energy supply through increased diversification, including renewable resources. Improved security of energy supply should also be promoted by other means, such as energy efficiency."

Source: the SBSR Action Plan

In this field, the Strategy's Action Plan entails the following actions: 'Establishing an integrated and well-functioning market for energy' which is classified as 'strategic action', and two 'cooperative actions' – 'Increasing the use of renewable energies' and 'Ensuring more cross-border cooperation'. The strategic action should be achieved by "implementing the Baltic Energy Market Interconnection Plan (BEMIP) which, in addition to infrastructure projects, includes specific steps to achieve the desired integrated and functioning internal market for energy. This should entail a better coordination of national energy strategies, and measures to promote diversity of supplies and better functioning of the energy market." Measures for reaching the cooperative actions are: extension of "the use of biomass, solar energy and wind power especially by research in demonstration and deployment of on- and offshore wind and other marine renewable energy technologies" for the first cooperative action, and sharing "experiences and coordinate better in fields such as electricity grid and maritime spatial planning, regulatory practices regarding interconnector investments, and environmental impact assessments of wind farms", for the second.

[16] "Estonia, Latvia and Lithuania are not properly integrated into the wider energy networks of the rest of the European Union (the only power connection is the Estlink between Finland and Estonia), and are hence practically isolated in the field of energy."

"In the frame of the TEN-E and / or the Baltic Energy Market Interconnection Plan (BEMIP) - and the relevant energy projects covered by the European Economic Recovery Plan - the following proposals are underlined (flagship projects):

10.1. 'Monitor the implementation of the Baltic Energy Market Interconnection Plan (BEMIP) correspondingly with the actions of the High Level Group of the BEMIP'. In particular, priority should be given to 'connect the Baltic States to the energy networks of the region'. (…) The function of monitoring relies on High Level Group of the BEMIP, therefore the aim of this project is better coordination between strategic goals of the European Union Strategy for the Baltic Sea Region and BEMIP. (…) BEMIP which identifies key missing infrastructures in electricity and gas, lists necessary actions (including financing), and provides coordination mechanisms to bring together Member States, market players and different financing sources. Innovative interconnector solutions involving 'plugging in' offshore renewable energy production installations are considered (…).

10.2. 'Demonstration of coordinated offshore wind farm connection solutions' (e.g. at Krieger's Flak (Denmark, Germany) and Södra Midsjöbanken (Sweden) (…).

10.3. 'Implement the Baltic Sea Region Bioenergy Promotion project'. The project aims at strengthening the development towards a sustainable, competitive and territorially integrated Baltic Sea Region in the field of sustainable use of bioenergy (…).

10.4. 'Extend the Nordic electricity market model (NORDEL[17])' to the three Baltic States by following a step-by-step approach with a concrete timetable for implementation (market integration roadmap) within the framework of the (…) BEMIP (…)."

Source: the SBSR Action Plan

Nevertheless, in field of energy, the Strategy's Action Plan refers to the Baltic Energy Market Interconnection Plan many times. In terms of a relation between the Strategy's Action Plan and the Baltic Sea Region Strategy, the Strategy's Action Plan has an executive character. It is a more detailed strategic planning tool, the European Union uses to build the energy market in the Baltic Sea Region. Due to this, let us examine its provisions in the following section.

[17] NORDEL is the collaboration organisation of the Transmission System Operators (TSOs) of Denmark, Finland, Iceland, Norway and Sweden. Their mission is to promote the establishment of a seamless Nordic electricity market.

Baltic Energy Market Interconnection Plan (BEMIP)

The idea for the BEMIP was initiated by José Manuel Barroso in October 2008.[18] In November 2008 the European Commission proposed in the Second Strategic Energy Review[19] 6 priority infrastructure actions. One of them was to connect "the remaining isolated energy markets in Europe". Therefore, together with all Member States concerned, and in close collaboration with national energy regulators, the Commission would develop a Baltic Energy Interconnection Plan. In the Commission's concept this would "identify the key missing infrastructures necessary for the effective interconnection of the Baltic region with the rest of the EU, establishing a secure and diverse energy supply for the region, and listing necessary actions, including financing, to ensure its realization." Soon after, a High-Level Group was established with members from the 8 Baltic Sea States: Denmark, Estonia, Finland, Germany, Lithuania, Latvia, Sweden and Poland, as well as Norway with the observer status.

The result of the High-Level Group's work is the 'Baltic Energy Market Interconnection Plan Final Report' (BEMIP Action Plan). The BEMIP Action Plan presents projects and actions within the scope of the BEMIP. It refers to the electricity market, interconnections and generation, gas market and infrastructure, including their main characteristics and their dependency from other projects. Considering the importance of the document mentioned, more attention in this report is devoted to its provisions concerning the electricity.

The BEMIP Action Plan's electricity section is divided into 3 subsections. Their titles express the key ideas of the European Union's approach to the electricity sector in the Baltic Sea Region. They are as follows: 'market integration', 'generation development', 'interconnections to support market development'.

[18] http://europa.eu/rapid/press-release_IP-09-945_en.htm.

[19] Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions - Second Strategic Energy Review: an EU energy security and solidarity action plan, Brussels, 13.11.2008, COM(2008) 781 final.

Market integration

The main issue of the BEMIP Action Plan is to link three Baltic countries (Latvia, Lithuania and Estonia – 'Baltic energy island') with the European Union grid. "It aims at developing sufficient interconnections to the grids of Finland, Sweden and Poland, as well as at integrating the Baltic area with the Nordic power market."[20]

The BEMIP Action Plan contains the roadmap towards an integrated electricity market between the Baltic Sea Region member states. Its main steps are presented below:

[20] BEMIP Action Plan, p. 3.

Figure 14. BEMIP main steps

Source: BEMIP Action Plan

Figure 15. STEP 1: Decision to start Baltic market integration

Source: BEMIP Action Plan

Table 2. Preliminary political and business decisions on market integration

Short description	Target timescales	Dependency with project	Responsible body
Political Baltic Prime Ministers decision to start the Baltic electricity market integration on the basis of the indications forwarded by the HLG Estonian and Lithuanian governments abolish the regulated tariffs for eligible customers at wholesale market (at least 35% of electricity consumption in each of the Baltic countries). *Business* Decision by Nord Pool Spot to start NPS Baltic preparation for opening of Estlink price area Decision by Estlink Shareholders to change Capacity Purchase Agreement and Shareholders Agreement for implicit auction by Day 1. In case the owners of Estlink1 cannot agree on opening, regulators will decide about changes in Estlink1 derogation.	Summer/ Autumn 2009		Prime Ministers, Three Baltic States' Governments Nord Pool Spot Estlink shareholders Finnish and Estonian regulators

Source: BEMIP Action Plan

Figure 16. STEP 2: What must be completed by Day 1

Source: BEMIP Action Plan

Table 3. Fulfilment of market opening requirements

Short description	Target timescales	Dependency with project	Responsible body
Regulated tariffs have been removed for eligible customers Subsidized renewable energy can enter the market without losing subsidies Separation of TSO activities/roles Basic transparency rules (Nord Pool Spot rules) Congestion management method between Estonia-Latvia-Lithuania and a common position towards Russian and Belarus TSO's Common ITC treatment of the perimeter countries for Estonia, Latvia, Lithuania and Finland Removal of cross-border restrictions, such as license and tariff in three Baltic States Introduction by Nord Pool Spot of price area Estlink.	Q1 2010	Preliminary political and business decisions	Three Baltic States' and Finnish Regulators and TSOs Nord Pool Spot Governments

Source: BEMIP Action Plan

Figure 17. STEP 3: How to continue the process

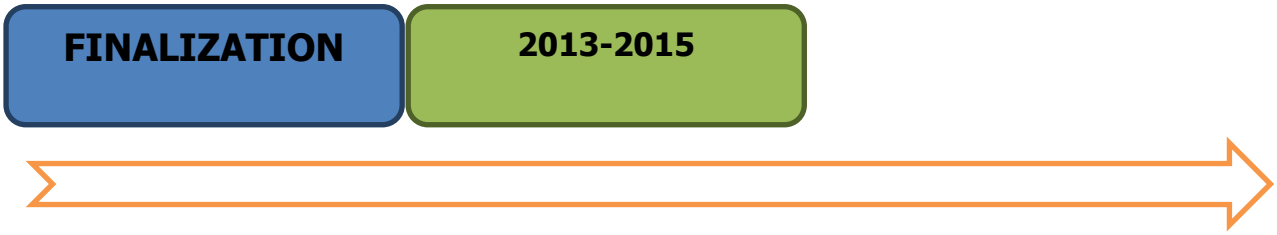
Source: BEMIP Action Plan

Table 4. Market functioning fine tuning

Short description	Target timescales	Dependency with project	Responsible body
Baltic common day ahead market (based on Nord Pool Spot trading platform) Stepwise introduction of Intra-day market Market based congestion management, implicit auction between Baltic countries managed by NPS Estonia, Latvia, Lithuania and Finland have a common position and trading principles towards non EEA third countries Transparency according to the ERGEG's North European Electricity Regional Initiative Common reserves and balancing power market Harmonized imbalance settlement and imbalance pricing Common market monitoring and surveillance rules Development of financial markets (OTC)	2011-2013	Fulfilment of market opening requirements	Governments, Regulators, TSOs, Nord Pool Spot

Source: BEMIP Action Plan

Figure 18. STEP 4: Actions to finalize the market



Source: BEMIP Action Plan

Table 5. Fully functioning market integrated

Short description	Target timescales	Dependency with project	Responsible body
Full opening of the retail market Common power exchange for physical trade in Nordic and Baltic area Market place for financial products Network tariff harmonization for generators	2013-2015	Market functioning fine-tuning	Governments, Regulators, TSOs

Source: BEMIP Action Plan

Generation development

According to the BEMIP's Action Plan "[t]he need for and viability of electricity interconnections is determined by the future distribution of power generation, levels of adequacy and expected power flows within the region." The development of power transmission is connected with the development of power generation. Generation and transmission (distribution) of electricity are two inter-related components of the power system. Failure of one of them is reflected in the condition of the other one (and vice versa).

When it comes to the structure of the generation, the BEMIP Action Plan highlights also the potential of renewable energy: "[t]he Baltic Sea Region is particularly well-positioned to further increase penetration of renewable energy sources". Members of the High Level Group qualify hydropower and biomass sources as those which "cover the largest part of the economic potential". In their opinion, bioenergy will be able to cover about 30% of the gross energy demand of the region as opposed to 16% for the EU27.

Additionally, the High Level Group sees great chances in the use of wind energy in cohabitation with the hydroelectricity. "Balancing wind power plants with hydro generation on a regional basis provides opportunities to become a leading macroregion in this area within the EU" (BEMIP Action Plan). Moreover, "the possibility to connect an increased amount of wind power and other new sustainable energy sources to the Baltic grid" is treated as one of the main advantages of a regional approach to energy security and energy network development. Despite the fact that members of the High Level Group indicate the crucial role of wind energy, the diversity of countries' approaches should be noted. However, "[p]lans differ from country to country but in general it can be said that wind is given a prominent role in the region as one of the most important renewable energy sources. Wind power already plays an important role in Denmark and Germany. Plans for installed capacity for 2020 for the Baltic Sea Region exceed an overall 10 GW."

However, in the BEMIP Action Plan wind energy investments are included in the framework of the "Long-term plans" (year 2020 perspective). Closer plans refer to conventional energy generation units, or units fired by bio-mass, wood, peat, or waste. All the power energy investments mentioned in the BEMIP Action Plan are listed below by countries.

Table 6. BEMIP Action Plan's generation projects

Country	Project	Description	Timescales	Cost	Dependency	Responsible
Denmark	-		-	-	-	-
Estonia	Narva PP, Estonia	deSOx and deNOx equipment for 4 units in Narva PP	2009-2012	€100m	-	Eesti Energia
	CHPs in Estonia	Several CHPs on wood, peat, and waste incineration CHP with overall planned capacity of 110-120 MW	2009-2013	-	-	Fortum, Eesti Energia, others
	Oil-shale CFB-s in Estonia	Up to 600MW new CFB units on oil-shale	2010-2015 Now: 2016	€1bn	Visaginas NPP	Eesti Energia, others
	Estonian wind development	Fastest growth is expected in wind power generation, electricity sector development plan foresees up to 900 MW of wind power by 2018	2020	n/a	Shadow generation (gas turbines, hydropump), 3rd LVEE interconnection	-
Finland	Nuclear Reactor in Finland	3rd nuclear reactor with 1600 MW capacity at Olkiluoto (FI)	2012	€3bn	-	Teollisu-ud en Voima Oyj (TVO)
	Finnish wind development	This corresponds to some 2000 MW of wind power, most of which will be located along the western coast of Finland	2020	n/a	Introduction of feed-in tariff system; grid reinforcements	-
Germany	Lubmin	New hard coal power plant (capacity 1600 MW)	2012	€1,5bn	-	DONG Energy

	Wind development plans in Germany	Onshore wind power generation is expected to reach up to 37000 MW in 2020. In addition, Germany aims to have a capacity of 20000 to 25000 MW offshore wind power installed by 2030 (combined North and Baltic Sea)	2020/2030	n/a	Grid reinforcement	
Latvia	Kurzeme TPP	Coal and bio-mass thermal power plant in Western Latvia. The first unit 400 MW	2016	€450m	Latvian grid reinforcement	Based on tender
	TPP in Latvia	CHP Riga2 the second unit 420MW, gas fired CCP unit	2016	€450m	none	Latvene-rgo
	Latvian wind development	By 2020, 550 MW of wind generation can be connected to the grid	2020	n/a	3rd LV-EE interconnection, generation for balancing	-
Lithuania	New CCGT in Lithuania	New Combined Cycle Gas Turbine block of 444 MW in Lithuania	2012	€328m	none	Lietuvos Elektrine
	Visaginas NPP	New nuclear power plant in Visaginas, Lithuania with stakeholders from Poland and the other Baltic States. Maximum power generation capacity 3400 MW	2018 Now: 2020/2022	€2,5 – 4bn	LitPolLink; Lithuanian grid reinforcement	UAB "Visagino atomine elektrine"
	Lithuanian wind development	The target for 2010 is to increase this capacity to 200 MW. A level of 500 MW could be achievable by 2020	2020	n/a	Development of reserve capacity; NordBalt	-

Poland	Bełchatów	858 MWe pulverised – supercritical unit lignite-fired (with CCS installation)	2010	n/a	-	-
	Łagisza	457 MW – hard coal-fired	2009	n/a	-	-
	Częstochowa	62 MWe/120 MWt –hard coal-fired	2010	n/a	-	-
	Polish wind development	Though currently the biggest part of energy generated in renewable energy sources comes from biomass, the biggest potential for development is seen in wind farms. Plans on wind generation development exist especially in the regions close to the coast, and also in midland and in areas close to mountains.	-	n/a	-	-
	2 new nuclear power plants in Poland	Government plans the commissioning of a first nuclear bloc about year 2020	about 2020	n/a	-	- Now: Ministry of Economy
Sweden	Swedish wind development plan	Yearly expansion of 500-700 MW to reach 8500 MW by 2020. Main limitations: national transmission capacity, lack of local planning, NIMBY effect	2020	-	Grid reinforcements	-

Source: BEMIP Action Plan

Interconnections to support market development

As it has already been mentioned, the other component of strengthening the power system is the grid's development. In this respect, to establish a common energy market it is necessary to build interconnectors. What finds its confirmation in the BEMIP Action Plan, physical infrastructure enables "market integration and efficient market functioning." Together with electricity generation it enhances energy security.

Seen in that light, "[t]o alleviate the present fragmentation among the power systems of the Member States surrounding the Baltic Sea and to allow effective power market integration (…)" the following new electricity interconnectors' projects have been proposed in the BEMIP Action Plan.

Table 7. BEMIP Action Plan's interconnection projects

Country	Project	Description	Timescales	Cost	Dependency	Responsible
Denmark	Great Belt	HVDC submarine link between West and East Denmark	2010	-	-	Energinet.dk
Estonia – Finland	Estlink2	2nd undersea cable of 650 MW capacity between Püssi (EE) and Porvoo (FI) Now: Püssi (EE) and Anttila SS (FI)	2014	€300m	Timetable for the opening of the wholesale market in Estonia including opening of Esink1 for Nord Pool Spot	Fingrid, Pohivork Now: Fingrid, Elering
Estonia – Latvia	Estonia - Latvia third interconnector	An interconnection between Estonia and Latvia	2020 earliest	€67m	Latvian grid reinforcement	Augstsprieguma tikls, Pohivork Now: Augstsprieguma tikls, Elering
Germany – Sweden – Denmark	Kriegers Flak combined solution	Regionally combined solution to connect 1600 MW offshore wind power in the Baltic Sea to Germany, Sweden and Denmark, as well as to provide additional transmission capacity between these countries	- Now: 2018/2020	-	-	Energinet.dk, Svenska Kraftnät, Vattenfall Europe Transmission Now: Energinet.dk (DK), 50HzT (DE)

Latvia	Latvian grid reinforcement (Kurzeme loop for NordBalt)	Construction of several new 330kV lines in the central and Western part of Latvia: GrobinaVentspils, Ventspils-Dundaga, Dundaga-Tume, Tume-Riga Now: Reinforcement of Kurzeme Ring connection point Riga in the central part of Latvia (construction of RigaCHP1-Imanta 330kV cable line) Construction of four new 330kV transmission lines in the Western part of Latvia: Grobina-Ventspils, Ventspils-Dundaga -Tume, TumeImanta	2009-2016 Now: 2012-2018	€200m	Wind PP in Western regions of Estonia and Latvia	Augstsprieguma tikls
Lithuania	Lithuanian grid reinforcement (for LitPolLink)	Construction of Alytus-Kruonis and Visaginas – Kruonis	2010-2020 Now: Alytus-Kruonis (2015) Now: Visaginas – Kruonis (2020)	€93 m	LitPolLink	Lietuvos Energija Now: Litgrid AB

	Lithuanian grid reinforcement (for NordBalt)	Construction of Klaipeda – Telsiai and Musa – Panevezys	2012-2013 Now: Klaipeda – Telsiai (2014) Now: Musa – Panevezys (2018)	€43 m	NordBalt	Lietuvos Energija Now: Litgrid AB
Poland	Polish grid reinforcement (Ełk -Alytus)	Internal PL transmission grid reinforcements (2010-2015) to make possible power import capacity of 600MW from Lithuania to Poland. Additional PL transmission grid reinforcements (2016-2020) to make possible power transfer capacity of 1000MW.	2010-2020 Now: 2015 Now: 2020	€799 m	LitPolLink Ełk (PL) – Alytus (LT)	PSE Operator

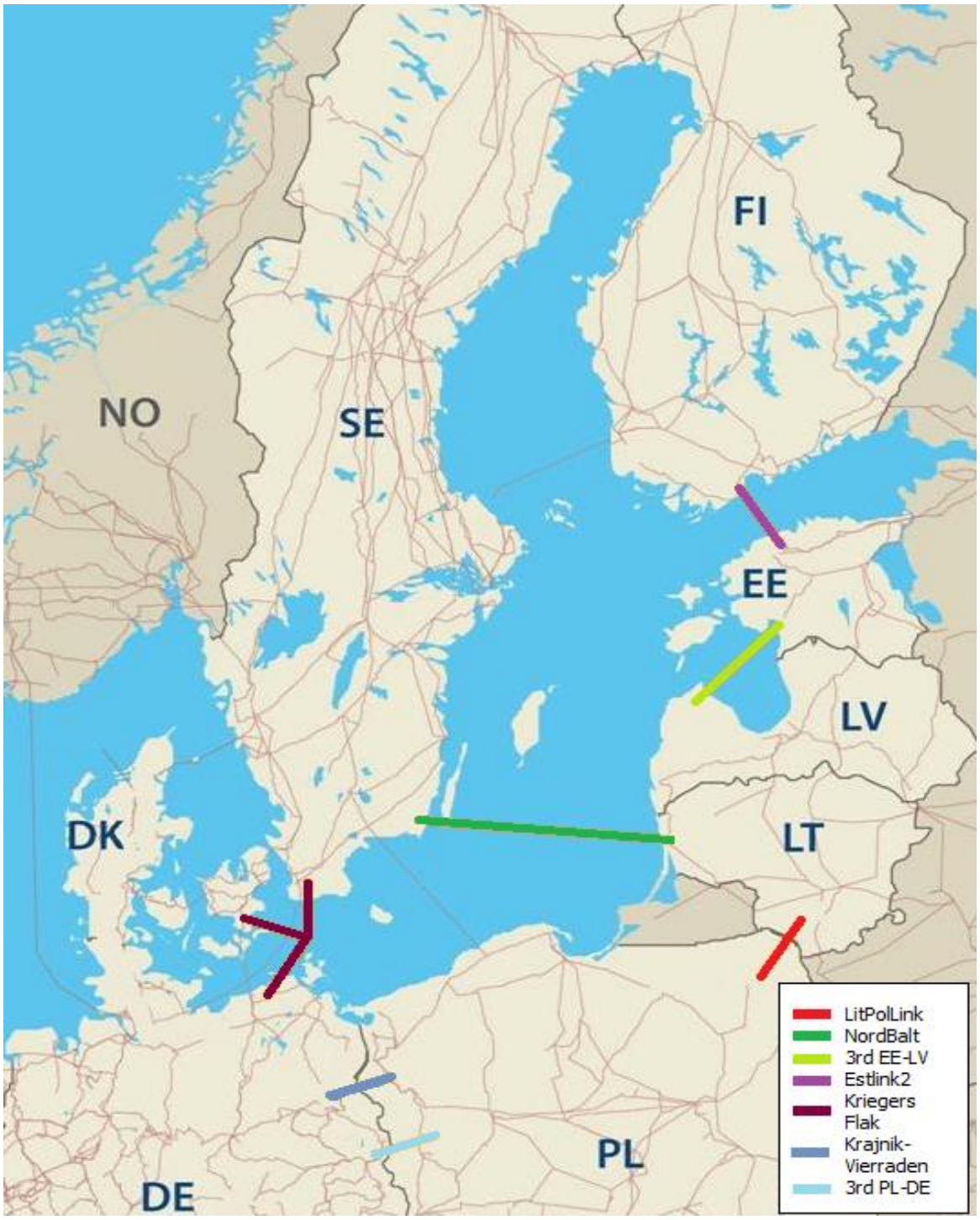
Poland – Germany	Krajnik (PL) - Vierraden (DE)	This project is the conversion of existing 220-kV double circuit line into a 400-kV line together with phase shifting transformers installation on 400 kV lines: Krajnik (PL) – Vierraden (DE) and Mikułowa (PL) – Hagenwerder (DE) (was agreed by TSOs: PSE Operator and VE Transmission)	Before 2013 Now: 2015	-	-	VE Transmission (DE) & PSE Operator (PL) Now: 50HzT (DE) & PSE Operator (PL)
	Baczyna / Plewiska (PL) - Eisenhüttenstadt (DE)	This is the 3rd 400 kV interconnection between Poland and Germany	After 2015	-	Polish grid reinforcement	VE-T (DE) and PSE Operator (PL Now: 50HzT (DE) & PSE Operator (PL)
Poland - Lithuania	LitPolLink: Ełk (PL) - Alytus (LT)	The interconnection line construction (2009-2015) Alytus – Lithuanian frontier (Double circuit 400kV interconnection line with construction of 2x500MW BtoB converter station with reconstruction of Alytus substation). The interconnection line	2009-2015 Now: 2015 (500MW)	€261 m	Lithuanian grid reinforcement; Polish grid reinforcement; Visaginas NPP	PSE Operator (PL) & Lietuvos Energija (LT) Added: LitPol Link

		construction (2014-2015) Ełk – Poland frontier (Alytus direction).				
Sweden – Lithuania	NordBalt	HVDC submarine cable of 700 - 1000 MW capacity between Hemsjö/Nybro (SE) and Klaipeda (LT).	2016-2017 Now: 2015	600 - 750m	Lithuanian grid reinforcement; Latvian grid reinforcement; Fully functioning market in three Baltic States	Svenska Kraftnat, Lietuvos Energija, Augstsprieguma tikls (final parties to be clarified) Now: Svenska Kraftnat (SE), Litgrid (LT)
Sweden – Finland	FennoSkan II	HVDC submarine/overhead link between Finnböle (SE) and Rauma (FI)	2011	€300m	-	Svenska Kraftnät, Fingrid

Source: BEMIP Action Plan, BEMIP Progress reports[21]

[21] Table includes only direct data on 8 Baltic Sea Region Member State's energy cooperation (e.g. data concerning Norway are omitted).

Map. 1. BEMIP Action Plan's interconnection projects



Source: BEMIP Action Plan

Memorandum of Understanding on the BEMIP

In June 2009 high-representatives of 8 Member States of the Baltic Sea Region and the European Commission signed the Memorandum of Understanding on the Baltic Energy Market Interconnection Plan (the Memorandum). The general background of this political action was strengthening realization of the BEMIP Action Plan and necessity "to further develop the electricity markets", "to implement the EU internal energy market rules", "to better coordinate priorities and energy infrastructure projects on the region's level", as well as to "recognise that the present document records political intent alone does not provide for legal commitments with regard to the Sides."

In spite of the fact that the Memorandum does not constitute a binding agreement under international law, it reflects crucial political intent. In the field of electricity its Sides "envisage implementing the actions described in the electricity market roadmap" of the BEMIP Action Plan. As stated in the Memorandum "[t]his approach is aiming at achieving the main common objectives for the future design of the electricity market." In the document analysed these main common objectives of the market design are presented in the context of the 3 Baltic States' electricity market. However, because of their general character, they can only be used to describe the postulated state of the electricity market in the whole Baltic Sea Region and the European Union. This finds its confirmation in the Memorandum - "[t]his market should be based on the principles and legal obligations set out in the Third Legislative Package and other legislation in force relating to the operation of the European Union's Internal Energy Market'. These main objectives included in the Memorandum are as follows:

- 'equal market conditions (no discrimination among market participants; no obstacles for new entrants)';
- 'free cross-border trade and market opening';
- 'free competition in each country with effective third party access regimes';
- 'reciprocal principles in trade with non-EEA third countries';
- 'reduced market concentration';
- 'sufficiently high market liquidity';
- 'fair price-formation (reliable and transparent market price for electricity)';
- 'transparent capacity allocation, based on implicit auction';
- 'transparent market information';
- 'efficient market monitoring'.

Moreover, the Memorandum's Parties put emphasis on "the need for infrastructure development (…) in the electricity (…), in order to achieve the ambitious objectives of the market opening and integration in the Baltic Sea Region." Additionally, as regards the organizational matters of the BEMIP Action Plan, signatories of the Memorandum provided for the maintenance of the High Level Group in its present shape. Furthermore, the European Commission intended to monitor the implementation of the Action Plan and to report on it, as well as to take measures to manage the risk.

Due to the role of the development of infrastructure in creating a complementary common electricity market in the Baltic Sea Region, it is necessary to present them in a more detailed way. Useful in this area would be 4 Baltic Energy Market Interconnection Plan Progress reports (BEMIP Progress reports) published between December 2009 and June 2012.

BEMIP Progress reports

The main objectives of progress reports "are to describe the expected and real status of actions and projects in terms of activities and timeline, to identify issues and difficulties encountered by the projects during implementation and to identify those that need to be further discussed with the High Level Group" (BEMIP First Progress Report). Additionally, Second, Third and Fourth report "touch upon changes in the external environment that are relevant for the BEMIP."

It should be mentioned that these reports differ in terms of details presented in them. Often the repetition of certain information and materials can be noticed. The same concerns the lack of a follow-up in some areas (e.g. information about coordinators). Despite this, the Progress reports are a valuable source of data about the development of the Baltic Sea Region's energy integration.

Within this context, the next section of this Paper will constitute a consolidation of the most important information collected in the above mentioned 4 Progress reports. Due to the scope of the Paper, this is limited to the remarks associated with the electricity. Some data are presented in tables, divided by a state to more accurately illustrate the actions undertaken and the development of energy projects in the Baltic Sea Region.

Table 8. Overall assessment for electricity

June 2009 – December 2009
"The first 6 months of the BEMIP implementation in the electricity sector are considered successful in that it generally delivers on the agreed actions and timeline. Some minor issues have been identified but are dealt with on the projects' level, as well as by the relevant authorities. There is continued political support towards effective implementation of the BEMIP from all participating countries as well as the Commission."
December 2009 – June 2010
"Overall progress of BEMIP implementation goes according to schedule. Continued monitoring is necessary to ensure issues are addressed as they arise. (…) Developments from the new taskforces ([inter alia] Nuclear generation) are expected by the end of the year and spring next year."
June 2010 – June 2011
"Overall progress of BEMIP implementation goes according to schedule for electricity (...)."
June 2011 – June 2012
"For electricity, implementation of BEMIP Action Plan seems to be on track and according to schedule."

Source: BEMIP Progress reports

BEMIP First Progress report

As emphasised in the BEMIP First Progress report, with regards to electricity, there have been "[s]ome synergies (…) between the BEMIP and other initiatives [BSR Strategy, ENTSO-E, projects financed with EEPR support]" identified. All projects listed for a potential financial support from the EEPR have applied. For electricity, these were the following projects: EstLink2, Nordbalt and strengthening the Latvian network as well as Kriegers Flak. Also applications for the TEN-E budget have been accepted for the following projects: LitPolLink: 2008 by Polish side, 2009 by Lithuanian side (BEMIP First Progress report).

In addition, the role of the internal electricity market roadmap is highlighted in the report. In European Commission's opinion it is "the critical path for most of the infrastructure investment projects. This roadmap is on schedule, continued cooperation between regulators and ministries in the future is necessary."

Report of the EU coordinators: "For the power link between Germany and Poland, both operators VE-T and PSE Operator have expressed their will to establish a project Development Company as a joint venture aiming at the preparation of the investments in the new interconnector. A letter of intent was signed on 23rd September 2009. For the Kriegers Flak project, which is earmarked for funding through the EEPR, the three TSOs will decide mid-December if they continue with a combined solution."

Source: BEMIP First Progress report

BEMIP Second Progress report

In the scope of the BEMIP Second Progress report "some delays in the internal electricity market roadmap" have been noted. On the other hand, "additional actions have been taken to speed up the process (…)", e.g. establishing a taskforce of the three Baltic States, or launching the creation of the "BEMIP price area" by the NordPoolSpot.

According to the BEMIP Second Progress report in terms of electricity interconnections the European Commission has considered "no major deviations from plan; only minor modifications have been reported on the projects' level, which haven't so far had an impact on overall planning." Moreover, "EEPR support is still highlighted as a driver for project implementation: Estlink2 investment decision has been made ahead of plan."

As for the financial aspect of energy infrastructure projects and participation of Member States in their construction it should be mentioned that Sweden withdrew from the Kriegers Flak project and Latvenergo withdrew from the NordBalt project (it "will focus on strengthening the LV grid to prepare for NordBalt"). In 2010 the applications for the TEN-E budget were received. In the field of electricity they concerned: the feasibility study on interconnection variants for the integration of the 3 Baltic States to EU internal Electricity Market by the 3 TSOs: Litgrid (LT), Augstsprieguma tikls (LV), Elering (EE), and third interconnection between Germany and Poland: feasibility studies and documentations for board decision, environmental decisions, technical analysis as well as action management (BEMPI Second Progress report).

Report of the EU coordinators: "For the power link between Germany and Poland, both operators 50Hertz Transmission and PSE Operator have expressed their will to establish a project Development Company as a joint venture aiming at the preparation of the investments in the new interconnector. A letter of intent was signed on 23rd September 2009. For the Kriegers Flak project, that is earmarked for funding through the EEPR, after the decision in January 2010 of Svenska Kraftnät to withdraw from the project, 50Hertz transmission and Energinet.dk the two TSOs decided to continue with a combined solution. Svenska Kraftnät may still re-join the project later on.
The Pentalateral Political declaration of nine countries was signed in December 2009 on the North Seas Countries' Offshore Grid Initiative. The Initiative was joined by Norway in February 2010."

Source: BEMIP Second Progress report

Furthermore, an event which occurred in the political sphere deserves a careful attention. Namely, on May 2010 the Ministers of Lithuania, Latvia, Estonia and Poland, in the presence of the European Commissioner for Energy signed a Joint Communiqué to give support to the integration of the Baltic electricity market into the European Union energy market and the new nuclear power plant project in Lithuania. This action resulted in the establishment of a High Level Task Force on "Nuclear Power Generation". In the European Commission's opinion the Joint Communiqué "aims at strengthening cooperation between the regional partners and allows a forum for issues to be resolved" (BEMIP Second Progress report).

BEMIP Third Progress report

"The BEMIP priority interconnections are progressing according to the plan and are financially supported by the (…) EEPR" – to quote the BEMIP Third Progress report. "In December 2010, several contracts have been awarded (…). The total amount of these contracts is about €710 million, €231 million of which is financed by the EEPR." This stems from the fact that "all projects in the Baltic region that applied for EEPR funding have received positive Commission decisions. For electricity, the projects are: EstLink2 (EC contribution up to €100M), Nordbalt and strengthening the Latvian network (EC contribution up to €175M) and Kriegers Flak (EC contribution up to €150M)" (BEMIP Third Progress report).

In terms of TEN-E programme for the 2011 call, the European Commission received applications from the Baltic Sea Region. The evaluation process was completed and the proposal to award funds was announced in 2011.

Report of the EU coordinators: "The signing of the Memorandum of Understanding in December 2010 by the North Seas Countries' Offshore Grid Initiative represented a major progress towards addressing the issues surrounding the need for a European transmission network linking the future offshore parks in the North and Baltic Seas.

Work of the European coordinator appointed for the LitPollink progresses according to schedule. LitPol Link prepared a localisation study for the Polish side with a few possible variants of the route for the line, with territorial and environmental descriptions of the proposed options. On the Lithuanian side, the Environmental Impact Assessment is completed the preparation of territorial planning (Special plan) procedures and documents for the 400 kV overhead power transmission line between Alytus substation – border of the Republic of Poland are at the final stage. The preparation of feasibility study, technical documentation and territorial planning for reconstruction and extension of the Alytus substation with a back-to-back converter station is completed. On the Polish side, the preparation of the report on the Environmental Impact Assessment together with the bio-diversity investigation for the construction of the 400 kV connection Ełk – Republic of Poland's border and the reconstruction of the Ełk substation is in progress. The Trans-boundary Environmental Impact Assessment for the project was conducted and successfully completed. The financial and operational model for the project is at the final stage of preparation. The procurement of a company, which will be responsible for the construction permit for the 400kV line as well as the Terms of Reference for Ełk station are at their final stage.

For the power link between Germany and Poland, both operators (50Hz and PSE Operator) signed in March 2011 a General Agreement to establish the project structure for the construction of a third interconnection connecting their networks, known as GerPol PowerBridge."

Source: BEMIP Third Progress report

In terms of the political declarations, in December 2010 the energy Ministers of the 3 Baltic States and Poland met Commissioner Oettinger. According to the BEMIP Third Progress report "[t]he participants confirmed their commitment to timely implementation of the BEMIP and the commitment to the longterm objective of synchronous interconnection of the Baltic States."

BEMIP Fourth Progress report

As stated in the BEMIP Fourth Progress report "[b]ased on reports received from the project promoters, implementation of the [BEMIP] Action Plan is mainly on track, in some cases with delays linked to market issues or caused by technical problems."

In regard to the financial issues of the Baltic Sea Region's energy integration, the Commission provided through the EEPR funding for the construction of two electricity

interconnections between the Region and the Scandinavian Peninsula (Estlink2: Finland – Estonia, NordBalt: Lithuania – Sweden). As for the last TEN-E call, the Commission also received applications devoted to the electricity from the region.

Within the area of regional nuclear energy use, despite the Fukushima accident in March 2011, the 3 Baltic States confirmed their potential interest and engagement of their national utilities (energy and electricity companies) in the Visaginas NPP project. In October 2011 the Investment Project for Visaginas NPP was officially notified by VAE as the main investor to the Commission. In June 2012 – "after analysing all aspects of the investment related to the objectives of the Euratom Treaty", the European Commission put forward its opinion. Additionally, it was stated that the Project Company should be established and all project agreements be finalised by the end of 2012 (BEMIP Fourth Progress report).

Table 9. Overall progress report of generation projects

Country	Project	Progress report 1	Progress report 2	Progress report 3	Progress report 4	Progress remarks
Denmark	-	-	-	-	-	-
Estonia	Narva PP, Estonia	-	-	-	-	-
	CHPs in Estonia	-	-	-	-	-
	Oil-shale CFB-s in Estonia	-	-	*Progress during 2010:* EIA finalised Support scheme was introduced in legislation, subject to the state aid approval from the Commission Financing scheme of Eesti Energia was in principle decided by the Government	Design and foundation works are in progress by main contractor (Alstom). Net available capacity of the unit is planned 270 MW	Timescale changed: 2016
	Estonian wind development	TSO received applications for: Sindi windpark: 150	150 MW in operation TSO received additional	150 MW in operation TSO received additional applications for:	- installed capacity of wind power is 194 MW - increase of 100 MW	

		MW Via Baltica Windpark 600 MW Hiiumaa offshore windpark 990 MW All developers intend to connect to the network before 2020	applications for: Sindi windpark: 150 MW Via Baltica Windpark 600 MW Hiiumaa offshore windpark 990 MW All developers intend to connect to the network before 2020	Sindi windpark: 150 MW Via Baltica Windpark 600 MW Hiiumaa offshore windpark 990 MW All developers intend to connect to the network before 2020	expected in 2012 - largest units: Paldiski 53 MW and Narva 39 MW.	
Finland	Nuclear Reactor in Finland	-	-	-	-	-
	Finnish wind development	*Progress are expected next year:* New legislative proposal (feed-in tariff) in 2010 Wind atlas published on 24th Nov '09	*Progress are expected next year*: New legislative proposal (feed-in tariff) in 2010 Wind atlas published on 24th Nov '09	A new feed-in tariff system has entered in force in 2011, which provides a guaranteed price for electricity produced by wind power.	A new feed-in tariff system in force since 2011, which provides a guaranteed target price for electricity produced by wind power	
Germany	Lubmin	-	-	-	-	-
	Wind	Installation of	25 000 MW installed	25 000 MW installed	-	

	development plans in Germany	turbines in deep water (alpha ventus) 2000 MW expected installation onshore	onshore capacity surpassed in 2009 Successful installation of turbines in deep water (alpha ventus)	Successful installation of turbines in deep water (alpha ventus)		
Latvia	Kurzeme TPP	-	-	-	-	-
	TPP in Latvia	-	-	-	-	-
	Latvian wind development	TSO has received around 2000MW Wind PP applications mainly onshore and off-shore in Western region of Latvia. Coordination with 3rd EE-LV interconnection	TSO has received around 2000MW Wind PP applications mainly onshore and off-shore in Western region of Latvia. Coordination with 3rd EE-LV interconnection	TSO has received around 2000MW Wind PP applications mainly onshore and off-shore in Western region of Latvia. Coordination with 3rd EE-LV interconnection	-	
Lithuania	New CCGT in Lithuania	-	-	-	-	-
	Visaginas NPP	*Preparatory phase*: EIA completed Territorial planning in Progress On schedule Main risk: lack of strategic investors by	*Preparatory phase:* EIA completed Territorial planning in progress *On schedule*: Final investment	*Preparatory phase:* EIA completed Territorial planning completed Full scale site evaluation against	*Preparatory phase:* - investor selection completed, exclusivity arrangements with strategic investor - nuclear energy and regulatory reform carried our: package of 12	-

		2010/2011	decision no later than 2013. Main risk: lack of strategic investors by 2010/2011	International Atomic Energy Agency (IAEA) requirements completed Final investment decision no later than 2013. Proposals were received from the potential Strategic Investors - Hitachi-GE Nuclear Energy Limited and Westinghouse Electric Company . Presently Visaginas NPP project is in a process of direct negotiations. Following selection of the Strategic Investor, the Project agreement is expected to be finalized	nuclear field related laws and their amendments adopted and majority of further implementing legal acts approved - package of Visaginas NPP project related laws allowing to further development of the Project and providing required investment environment adopted by Parliament (including: Law on the Nuclear Power Plant and Law on Granting the concession and assuming the essential property obligations of the Republic of Lithuania in Visaginas NPP) - concession and other Visaginas NPP project related agreements are expected to be signed by the end of 2012
	Lithuanian	68 MW in operation	90 MW in operation	160 MW in operation	161.83 MW in operation

	wind development	+ 21 MW by end 2009 + 140 MW by end 2010 + 250 MW by end 2012	152 MW in operation by end 2010 300 MW in operation by end 2013	42 additional MW in 2011. 260 MW in operation by end 2012	- 61.8 MW (e) of wind farms could start operation by the end 2012/first quarter of 2013 - for 714 MW (e) TSO have issued design requirements	
Poland	Bełchatów	-	-	-	-	-
	Łagisza	-	-	-	-	-
	Częstochowa	-	-	-	-	-
	Polish wind development	Current capacity about 600MW;	Current capacity 724 MW; Future development: 2010: +200 MW 2011: + 300 MW 2012: 350 MW 2013: 400 MW 2014/2020: 500 MW Offshore: 2019: 250 MW 2020: 450 MW	Current installed capacity: 1724 MW Future development: 2012/2020: 500 MW Offshore: 2020: 500 MW	Current installed capacity: 1968 MW Future development: 2012/2020: 500 MW Offshore: 2020: 500-1000 MW	
	2 new nuclear power plants	First block before 2020;	First block in 2020; Data on capacity,	Atomic law and law on preparation and	-	Clarification of responsible

	in Poland	Data on capacity, technology, location not yet available	technology, location not yet available	realisation on investments in nuclear power to be adopted mid 2011. 2016-2020: Construction of the first block		body: Ministry of Economy
Sweden	Swedish wind development plan	-	-	-	-	-

Source: BEMIP Progress reports[22]

[22] Table includes only direct data on 8 Baltic Sea Region Member State's energy cooperation (e.g. data concerning Norway are omitted).

Table 10. Overall progress report of interconnection projects

Country	Project	Progress report 1	Progress report 2	Progress report 3	Progress report 4	Progress remarks
Denmark	Great Belt	*Construction phase:* on track	*Construction phase:* on track	*Completed:* started commercial operations in August 2010	*Completed:* started commercial operations in August 2010	
Estonia – Finland	Estlink2	*Preparatory phase*: Seabed survey completed EIA completed in EE, Feb 2010 in FI On schedule, minor delays with no impact on overall planning	*Preparatory phase*: Seabed survey completed Environmental studies completed in EE and FI Permitting process on going Tendering procedures for the cable and converters on going Investment decision achieved	*In progress:* Seabed survey and route selection on land completed. Environmental studies completed Permitting process completed. Contracts for cable and converters signed	*In progress*: Surveys, route selection, environmental studies, permitting process completed - contracts for cable and converters signed - implementation is progressing according to the schedule	Clarification of place: Anttila SS (FI), change of Estonian responsible body: Elering
Estonia – Latvia	Estonia - Latvia third interconnector	*Study phase* *Preparatory phase:* Preparation of IEA	*Preparatory phase:* Right-of-way and IEA studies	*Preparatory phase:* Right-of-way and IEA studies	*Preparatory phase:* - Study, prepared by working group of AST	Change of Latvian responsible body: Elering

		Coordination with wind development in LV and EE Potential delays due to selection of right-ofway studies	Coordination with wind development in LV and EE	Coordination with wind development in LV and EE	and Elering members completed in 2011 - MoU between AST, Elering and LET signed – Feb 2012	
Germany – Sweden – Denmark	Kriegers Flak combined solution	Preliminary phase Pre-feasibility study completed in May 2009 Feasibility study to be completed in December 2009 Recommendation of Steering Group about continuation of project Dec 2009	Preliminary phase Pre-feasibility study completed in May 2009 Svenska Krafnät withdrew from the project Next phase: detailed feasibility study and survey on environmental data	Preliminary phase Pre-feasibility study completed in May 2009 Svenska Krafnät withdrew from the project Platform extension ordered for OSS Baltic 2 (former KF I) No decision on KFIII on Danish side	Under consideration - pre-feasibility study completed in May 2009 - Svenska Krafnät withdrew from the project - March 2012 - the Danish parliament decided Kriegers Flak DK (former KF III) - to be commissioned in 2017-2020 - Energinet.dk to present a suggested grid solution - Dec 2012	Svenska Krafnät withdrew from the project, new timescale: 2018/2020

Latvia	Latvian grid reinforcement (Kurzeme loop for NordBalt)	*Preliminary phase:* Preparation of the technical project	*Preliminary phase:* Preparation of the technical project	*Preliminary phase:* Preparation of the technical project	*Preliminary phase*: Preparation of the technical project - delays occurred related to financing	Clarification of project's description, new timescales (2012-2018), delayed related to financing
Lithuania	Lithuanian grid reinforcement (for LitPolLink)	Alytus – Kruonis *Preliminary phase*: EIA in 2011 Visaginas – Kruonis *Under consideration*: Dependant on 2nd	Alytus – Kruonis *Preliminary phase*: EIA in 2011 Visaginas – Kruonis *Under consideration*: Dependant on 2nd unit at Visaginas	Alytus – Kruonis Contractor for preparation of territory planning documents & IEA to be selected in Aug. 2011 Visaginas – Kruonis *Under consideration* Dependant on Visaginas NPP decision	Alytus – Kruonis *Preliminary phase*: - contractor for preparation of territory planning documents & IEA selected in Nov. 2011 - preparation of territory planning documents, environmental impact assessment expected in June 2013 - procurement of technical design and construction ("turn key") expected for December 2013	Clarification of timescales and change of responsible body: Alytus – Kruonis (2015), Visaginas – Kruonis (2020), Litgrid AB

		unit at Visaginas NPP	NPP (decision by strategic investor)	by strategic investor	Visaginas – Kruonis *Under consideration* pending on Visaginas NPP decision by strategic investor	
	Lithuanian grid reinforcement (for NordBalt)	Klaipeda – Telsiai *Preparatory phase:* Preparation of IEA and territorial planning Musa – Panevezys *Preliminary phase* EIA in 2014 Change of commissioning date has no impact on NordBalt	Klaipeda – Telsiai *Preparatory phase:* Preparation of IEA and territorial planning. Musa – Panevezys *Preliminary phase* EIA in 2014 Project implementation is aligned with NordBalt	Klaipeda – Telsiai IEA and territorial planning document are approved. Delayed to 2014 due to litigation processes with landowners. Musa – Panevezys *Not yet started* Commissioning delayed to 2018	Klaipeda – Telsiai *Preparatory phase:* - completed land acquisition or issuing of servitudes – December 2011* - completed tenders for supply of equipment and contracted works - December 2011* Delayed to 2014 due to litigation processes with landowners (* litigation with 2 land owners ongoing). Musa – Panevezys *Not yet started* - selection of contractor for preparation of territory	Clarification of timescales (+delays) and change of responsible body: Klaipeda – Telsiai (2014, Musa – Panevezys (2018), Litgrid AB

					planning documents, environmental impact assessment and technical design expected for January 2013	
Poland	Polish grid reinforcement (Ełk – Alytus)	*Preliminary phase*: Preparation of the tendering procedure for the design and the construction	*Preparatory phase:* Agreements with contractors for the design and the construction signed	*Preparatory phase:* Design work and territory planning activity started	*Preparatory phase:* - agreements with contractors for design and construction signed - design work and territory planning activity started	Clarification of timescales (2015 and 2020)

Poland – Germany	Krajnik (PL) - Vierraden (DE)	*Preparatory phase*: Preparation of documents for permitting procedures and tendering.	*Preparatory phase*: Preparation of documents for permitting procedures and tendering.	*Preparatory phase*: - Permitting procedure started in PL, documentation completed in DE and handed over to Authorities - Preparation tendering documentation.	*Preparatory phase:* - public permit for first construction stage of German part received - pre-investment activities for Polish part (permitting procedures for Polish part have been started)	Change of time and German responsible body: year 2015 and 50HzT (DE)
	Baczyna / Plewiska (PL) - Eisenhüttenstadt (DE)	*Preparatory phase:* Preparation of the Project Development Company. Technical calculation commenced	Technical calculation commenced *Preparatory phase:* Preparation of the Project Development Company. Ger-Pol Power Bridge.	*Preparatory phase:* General Agreement on project development signed in March 2011. DE side: application for the start of the spatial planning procedure sent to Authorities. PL side: Preparation tender documentation for	*Preparatory phase:* - project development company abandoned, general agreement on project development signed in March 2011 - 50HzT is preparing documents for the spatial planning procedure for the DE	Change of German responsible body: 50HzT (DE)

				feasibility study and getting environmental decisions	part	
Poland - Lithuania	LitPolLink: Ełk (PL) – Alytus (LT)	*Preparatory phase:* Preparation of IEA and territorial planning	*Preparatory phase:* Preparation of IEA and territorial planning.	*Preparatory phase:* LT side: EIA report approved in Dec. 2010. Territorial planning documents: for Alytus station – approved, for 400 kV overhead line - under preparation (in process of review and approval by the competent authorities); PL side: EIA in progress. Track study completed. Procurement for acquiring construction permit being finalized	*Preparatory phase:* LT side: EIA report approved in Dec. 2010. Territorial planning documents: for Alytus station – approved, technical designs - expected for 02/03 2013; PL side: EIA expected for June 2013. Track study completed. Procurement for acquiring construction permit being finalized	New target timescales: 2015 (500MW)

Sweden – Lithuania	NordBalt	*Preparatory phase:* Seabed survey completed Preparation of IEA, of territory planning documents. On schedule	*Preparatory phase:* Seabed survey completed Latvenergo withdrew from the project Preparation of IEA, of territory planning documents. Tendering procedure for the cable and converters ongoing On schedule	*In progress:* Seabed survey completed. Contracts for the cable and converters signed LT: Territory planning document in a final stage. Landowners' agreement for cable route ongoing	*In progress:* - territory planning documents approved – April 2012 - permit for construction of the converter (LT) – expected August 2012 - permit for installation of the cable (LT) – expected August 2012	Latvenergo withdrew from the project, new timescale (2015)
Sweden – Finland	FennoSkan II	*Construction phase:* on track	*Construction phase:* on track	*Construction phase:* on track: transmission tests foreseen in August – Sept 2011. Commercial operation in Dec. 2011	*Completed* - start of commercial operation Dec 2011	

Source: BEMIP Progress reports[23]

[23] Table includes only direct data on 8 Baltic Sea Region Member State's energy cooperation (eg. data concerning Norway are omitted).

Overall assessment of projects' progress

In 2010, at the Energy Security Conference in Tallinn, Estonian Foreign Minister Urmas Paet expressed his appreciation for moving forward with energy interconnection projects.[24] In his opinion "the Baltic Energy Market Interconnection Plan (BEMIP), launched by the European Commission two years ago, has been a valuable tool in this respect." He explained that due to the Estlink 3 Baltic States were no longer the 'energy island'. "However, in order to create a fully integrated Baltic energy market, three links must be established: the second Estlink cable, the NordBalt cable to connect Sweden and Lithuania, and especially the link between Lithuania and Poland" enumerated the Estonian Minister. In his speech, he also referred to the Visaginas nuclear power plant, saying that "the implementation of this project is essential in order to strengthen the security of the electricity supply in the region. We need the discussions on Visaginas to produce real progress as decisions in this field cannot be delayed."

However, after being compiled, the data show a number of shortcomings in the implementation of key projects listed in the BEMIP. This concerns both interconnections and generation, as well as strategic investments in the 3 Baltic States and projects in other countries of the Baltic Sea Region. For instance, within the area of generation investment the following delays may be identified: Oil-shale CFB-s in Estonia has a new timescale (2016, instead of 2010-2015); Visaginas NPP planned for operation in 2018 is now assumed to be ready in 2020/2022; Polish Bełchatów 858 MWe has been in operation from 2011 (initially planned for 2010, without CCS installation); Polish nuclear power program has been delayed for 2025; Nuclear Reactor in Finland will not be ready by the latest deadline of 2014, and German coal power plant investment in Lubmin was suspended. Wind projects, e.g. Estonian, Latvian, and Swedish wind development plans, have a long term of realization – 2020, that is why they are more of a vision rather than a specific plan. Furthermore, in BEMIP Progress reports there is no official information about numerous projects which are delayed (Polish nuclear power plants, Finnish nuclear power plant), already realised (e.g. Bełchatów, Częstochowa) or cancelled (Lubmin). These gaps should be made up in the next edition of the reports.

Delays in the interconnections investments include the following: Kriegers Flak combined solution will be in operation in 2018/2020; Latvian grid reinforcement (Kurzeme loop for

[24] *Opening remarks by Foreign Minister Urmas Paet at the Energy Security Conference in Tallinn*, http://www.vm.ee/?q=en/node/10070.

NordBalt), instead of the timescale 2009-2016, will be realized in 2012-2018; Lithuanian grid reinforcement (for NordBalt): construction of Klaipeda – Telsiai and Musa – Panevezys, with the previous timescale 2012-2013, is planned to be in operation in 2014 (Klaipeda – Telsiai) and 2018 (Musa – Panevezys); whereas Polish-German investment's (Krajnik-Vierraden) new timescale is 2015 instead of the term 'before 2013'. Moreover, Svenska Krafnät withdrew from the Kriegers Flak' project - similarly to Latvenergo in the case of NordBalt. Despite these shortcomings, there are also some positive exceptions. Namely, the NordBalt's new timescale has been established for 2015 (initially 2016-2017) and the Great Belt has been running commercial operations since August 2010.

III. Supporting European infrastructure development

Infrastructure investments in the energy sector, both in the generation and transmission sectors, are the key to creating an internal energy market in the European Union. They allow for the generation of electricity and its transmission to the areas going beyond the boundaries of each state. What is also of crucial importance, they increase energy security and introduce the mechanism of competition in the traditionally non-competitive structures, such as national energy systems.

Their significance has already been recognized by the European Union in the 90s. In 1996, the Decision No. 96/391/EC of the Council[25], and the Decision No. 1254/96/EC of the European Parliament and the Council[26] were put into force., both relating to the development of European energy infrastructure (trans-European energy networks) and underlying the critical role of investments in this sector – "the establishment and development of trans-European energy networks contribute towards attaining major objectives of the Community, such as completion of the internal market and the strengthening of economic and social cohesion." (Decision No. 1254/96/EC).

Interestingly, these legal acts put emphasis on the necessity for international cooperation and establishment of a common European approach to the development of energy infrastructure. According to the provisions of the preamble to the Decision No. 96/391/EC, within measures for the development of trans-European energy networks the Community attached the greatest importance to, the "cooperation between Member States through mutual consultations with a view to facilitating implementation of the authorization procedures for projects on trans-European energy networks in order to reduce delays" can be found. Moreover, as outlined in the preamble to the Decision No. 1254/96/EC, "in order to complete the internal market in energy, measures must be incorporated in an overall energy strategy (…)."

More than ten years after the adoption of the above Decisions, the European Union still aims to achieve an internal energy market. Nevertheless, in 2010 Günther Oettinger, the EU

[25] Council Decision of 28 March 1996 laying down a series of measures aimed at creating a more favourable context for the development of trans-European networks in the energy sector (96/391/EC), OJ L 161, 29.6.1996, pp. 154-155.
[26] Decision No. 1254/96/EC of the European Parliament and of the Council of 5 June 1996 laying down a series of guidelines for trans-European energy networks, OF L 161 , 29.06.1996, pp. 147-153.

Commissioner for Energy, in the speech on the "Europeanisation of energy policy"[27], stressed that the titled "Europeanisation" had already been started. He supported this thesis with four examples. Firstly, EU has "clear energy policy goals in terms of competitiveness, security of supply and sustainability as laid down in Article 194 of the Lisbon Treaty." Secondly, the European Union has "the legislation to create an open and competitive European energy market." Seen in that light, "[t]he adoption of the third internal energy market package last year was a major step forward." Thirdly, "[EU] 2020 initiative, together with last year's Renewables and Emissions Trading Directives, has created a push to renewable and low–carbon energy in all Member States." Finally, the European Union invests money "in energy policy: research and development (including ITER), infrastructure (including the Trans-European Networks for Energy), energy funding in the Structural Funds, and more."

However, Commissioner Oettinger indicated also that much more needs to be done. With regard to the infrastructure development and completing the internal market, he noticed that, EU "need[s] to establish a new method for European infrastructure development to identify the concrete projects necessary to achieve our goals" among which are: "[a]n inter-connected market to deliver on competition and quality" as well as "[a] grid which is 'intelligent' and can accommodate new demand such as e-cars and provide energy efficient solutions." The Commissioner added also that: "[i]t is about time energy is given comparable pan-European infrastructure, as other sectors of public interest such as telecommunication and transport have enjoyed for a long time." In addition, he emphasised the need to establish a new infrastructure instrument, "[b]eyond the full use of the current regulatory framework (…)". In his opinion "[t]his should allow us to define "networks of European interest", building on the strength of regional projects. Some of these networks have already been endorsed, such as the Baltic Energy Market (…)."

However, in 2011, Commissioner Günther Oettinger described European Union's electricity infrastructure as "ageing and not prepared for future challenges." He added that "without changing this situation we will not meet [EU's] energy and climate targets and will hamper [European] competitiveness." Furthermore, he warned that "if we want to succeed in developing renewable energy, we must ensure its full access to the European electricity grid." The Commissioner also stressed that "it is [European] responsibility to work with the

[27] *Günther Oettinger EU Commissioner for Energy "Europeanisation of energy policy", Speech of Commissioner Oettinger at the Dinner Debate with the European Energy Forum Strasbourg, 19 October 2010*, http://europa.eu/rapid/press-release_SPEECH-10-573_en.htm.

public to commit [EU's] generation to create the conditions for more secure, more intelligent and more sustainable networks."[28]

Recognizing the importance of infrastructure for the internal energy market in the European Union and its role for the development of energy in the Baltic Sea Region, the last several key initiatives of the EU aiming to accelerate the European energy interconnections, will be presented below.

Blueprint for an integrated European energy network

In November 2010 the European Commission presented the Communication on Energy infrastructure priorities for 2020 and beyond – A blueprint for an integrated European energy network[29] ('Blueprint'). The Communication proposes a strategy for the new infrastructure policy with measures necessary to achieve timely implementation of projects being in the European interest.

"This Communication outlines a Blueprint which aims to provide the EU with a vision of what is needed for making our networks efficient. It puts forward a new method of strategic planning to map out necessary infrastructures, qualify which ones are of European interest on the basis of a clear and transparent methodology, and provide a toolbox to ensure their timely implementation, including ways to speed up authorisations, improve cost allocation and target finance to leverage private investment."

Source: Blueprint

A background for the Blueprint is the assumption that "Europe's energy infrastructure is the central nervous system of [Europe's] economy. EU energy policy goals, as well as the Europe 2020 economic aims, will not be achievable without a major shift in the way European infrastructure is developed." Due to these circumstances, the Blueprint is a response to the infrastructural challenges Member States and the European Union are facing. "This is not a task which a single Member State can achieve on its own. A European strategy, and funding, will be necessary."

[28] *EU commissioner brands Europe's energy infrastructure as 'ageing'*, http://www.theparliament.com/latest-news/article/newsarticle/eu-commissioner-brands-europes-energy-infrastructure-as-ageing/#.URfmRB0sAuA.

[29] Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: Energy infrastructure priorities for 2020 and beyond – A Blueprint for an integrated European energy network, Brussels, 17.11.2010, COM(2010) 677 final.

Integrated and reliable energy networks are essential for the proper functioning of the European Union. They contribute to the achievement of the objectives of the European energy policy. Furthermore, energy infrastructure has a major impact on the implementation of the European Union's economic strategy. Within this context, "the energy infrastructures planned today must be compatible with the longer term policy choices". Additionally, "[d]eveloping [EU's] energy infrastructure will not only enable the EU to deliver a properly functioning internal energy market, it will also enhance security of supply, enable the integration of renewable energy sources, increase energy efficiency and enable consumers to benefit from new technologies and intelligent energy use." According to the Blueprint, as far as consumers are concerned, "[a] fully interconnected European market will also help stabilise (…) prices by ensuring that electricity (…) goes to where it is needed."

In terms of energy infrastructure the above mentioned 'new method of strategic planning' leaves "the current practice of the TEN-E with long predefined and inflexible projects lists" (Blueprint). Following the European Commission's assumptions this new method consists of the 4 below steps:

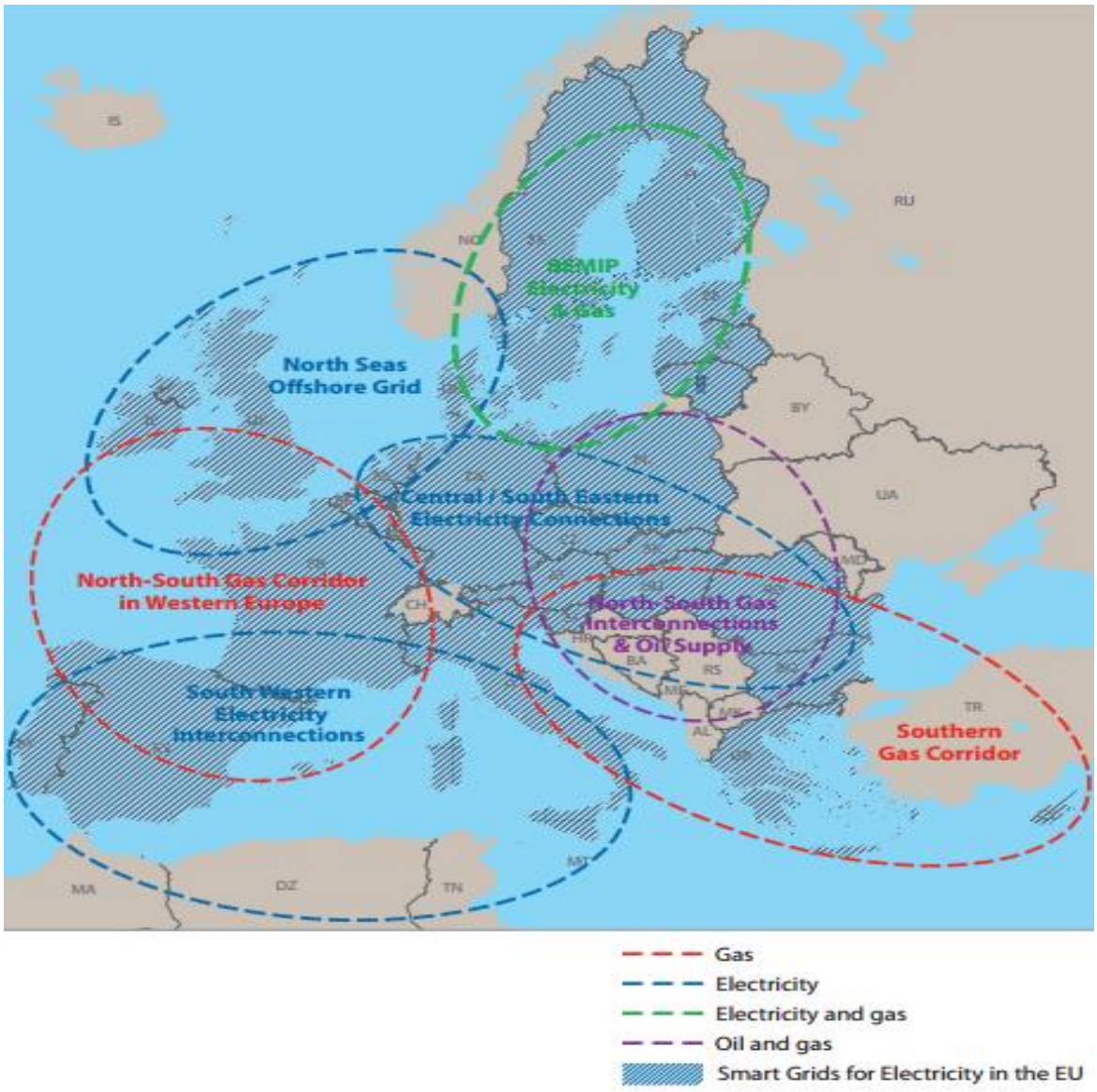
(i) 'identification of the energy infrastructure map leading towards a European smart supergrid interconnecting networks at continental level';
(ii) 'focusing on a limited number of European 2020 priorities';
(iii) 'identification of concrete projects necessary to implement these priorities – declared as >projects of European interest<';
(iv) 'supporting the implementation of projects of European interest through new tools, such as improved regional cooperation, permitting procedures, better methods and information for decision makers and citizens and innovative financial instruments' (Blueprint).

In this context, the European Commission – among 'short term and longer term priorities to make European energy infrastructure suitable for the 21st century' – proposed establishment of 'priority corridors for electricity, gas and oil' (Blueprint). The Transport, Telecommunication and Energy (TTE) Council in its conclusions from 28 February 2011[30] endorsed the energy corridors and the smart grids as priorities for Europe. These corridors are as follows: for electricity (offshore grid in the Northern Seas and its connections to onshore grids and storage, interconnections in South Western Europe, connections in Central

[30] Council conclusions on Energy 2020: A Strategy for competitive, sustainable and secure energy, 3072th Transport, Telecommunications and Energy Council meeting Brussels, 28 February 2011.

Eastern and South- Eastern Europe, BEMIP); for gas (BEMIP, Southern Corridor, North-South Corridors in Central Eastern and in Western Europe); and for oil (Central Eastern European pipelines). All these corridors are presented on the map below.

Map 2. European Union's priority corridors for electricity, gas and oil



Source: Blueprint

In addition, the Blueprint raises the issue of regional planning ('regional clusters') with the BEMIP being presented as a good example of such formula of cooperation: "[r]egional cooperation as developed for the (…) BEMIP has been instrumental in reaching agreement on regional priorities and their implementation." In the European Commission's opinion "such dedicated regional platforms would be useful to facilitate the planning, implementation and monitoring of the identified priorities and the drawing up of investment plans and concrete

projects. (…) The role of the existing Regional Initiatives, established in the context of the internal energy market, should be reinforced (…). In this regard, the EU strategies for so called macroregions [e.g. Baltic Sea Region] can be used as cooperation platforms to agree on transnational projects across sectors" (Blueprint).

Furthermore, the Blueprint's Annex ('Proposed energy infrastructure priorities for 2020 and beyond') encloses technical information on the European infrastructures priorities. The Annex refers also to the BEMIP, containing some crucial comments which concern the electricity: "[s]everal factors have led to this initiative being seen by stakeholders around the Baltic Sea as a success: (1) the political support towards the initiative, its projects and actions; (2) the highlevel involvement of the Commission as a facilitator and even driving force; (3) the involvement of all relevant stakeholders in the region from inception to implementation (ministries, regulators and TSOs) to implement the defined infrastructure priorities." Nevertheless, "[d]espite the progress achieved so far, further efforts are still necessary to fully implement the BEMIP: continuous monitoring of the Plan's implementation by the Commission and the High Level Group will be necessary in order to keep the agreed actions and timeline."

Finally, it should be mentioned that in the preceding Annex the issue of 'the European electricity highways' is presented in the context of 'preparing the longer term networks'.

> "An electricity highway should be understood as a an electricity transmission line with significantly more capacity to transport power than existing high-voltage transmission grids, both in terms of the amount of electricity transmitted and the distance covered by this transmission. To reach these higher capacities, new technologies will have to be developed, allowing notably direct current (DC) transmission and voltage levels significantly higher than 400 kV"

Source: Blueprint

The electricity highways may serve as a long-term solution that would be needed to tackle the main power grid challenges to appear beyond 2020 and up to 2050. These future problems are 'accommodating ever-increasing windsurplus generation' and 'connecting new generation hubs' [with major storage capacities and with the existing and future consumption centres]. "This action will need to integrate ongoing research and development work, notably under the SET plan European Electricity Grid Initiative (EEGI) and European Industrial Wind Initiative, to adapt existing and to develop new transmission, storage and smart grid technologies." In the European electricity highways' recommendation part a set of 3 key actions is highlighted. One of them is associated with strategic planning based on the

establishment of 'a modular development plan' to be elaborated by ENTSO-E by mid-2013, and aimed at the commissioning of first electricity highways by 2020.

EU's infrastructure package

In June 2011, the European Commission adopted a proposal for the next Multi-Annual financial framework for the period 2014-2020 - "A Budget for Europe 2020'", which entails the objective of establishing a new instrument of investing in European infrastructure priorities in the sector of transport, energy and telecommunication. Namely, the 'Connecting Europe Facility' (CEF), which legal form is a Proposal for a Regulation of the European Parliament and of the Council (Proposal for CEF Regulation).[31]

It needs to be stressed here that CEF is the part of a broader legislative initiative. In October 2011, the European Commission proposed a complex package to enhance trans-European infrastructure development in 3 areas: transport, energy and telecommunication. This 'infrastructure package' includes 5 legislative proposals: the three sectorial guidelines, establishing the sectorial infrastructure policies and the CEF, providing financial aid to the three sectors, as well as the project of a bond proposal being an introduction to the future action on a new set of financial instruments.

The Proposal for CEF Regulation was to determine the conditions, methods and procedures for providing Union financial aid to trans-European networks in order to support projects in the field of transport, energy and telecommunications infrastructures. The BEMIP[32] is one of the projects, qualified as 'infrastructure priority corridors' in the Proposal for CEF Regulation, as well as a Proposal for a Regulation of the European Parliament and of the Council on guidelines for trans-European energy infrastructure and repealing Decision No. 1364/2006/EC. Due to its character, the latter would constitute the binding legal basis for 'priority corridors'. Additionally, what is stated in the preamble to the Proposal for CEF Regulation's paragraph 44: "[o]n the basis of the sector specific guidelines laid down in separate Regulations, a list of priority areas for which this Regulation should apply has been drawn up and should be included in the Annex". As it indicated above, the Proposal for a Regulation of the European Parliament and of the Council on guidelines for trans-European

[31] Proposal for a Regulation of the European Parliament and of the Council establishing the Connecting Europe Facility, Brussels 19.10.2011, COM(2011) 665 final.
[32] Namely 'BEMIP electricity'. It is because in the Proposal for CEF Regulation the BEMIP is divided into two projects: one in the field of electricity and another in gas sector.

energy infrastructure and repealing Decision No. 1364/2006/EC is one of those 'separate Regulations'.

Thus, due to the integrating similarities and importance of the two legislative proposals for the future shape of the European energy sector (and the Baltic Sea Region within it),it is essential to outline their frameworks.

Connecting Europe Facility (CEF)

As written in the Explanatory Memorandum to the preceding Proposal for CEF Regulation "[s]mart, sustainable and fully interconnected transport, energy and digital networks are a necessary condition for the completion of the European single market. Moreover, investments in key infrastructures with strong EU added value can boost Europe's competitiveness in a difficult economic context, marked by slow growth and tight public budgets. Finally, such investments in infrastructure are also instrumental in allowing the EU to meet its sustainable growth objectives outlined in the Europe 2020 Strategy and the EU's "20-20-20" objectives in the area of energy and climate policy."

According to the Explanatory Memorandum to the Proposal for CEF Regulation the added value of the CEF as a common funding framework would consist of 4 elements:

(i) 'simplification': "[a] common framework would lead to the simplification of the EU legal framework concerning TEN infrastructures funding [and ensuring a coherent approach to project financing]";
(ii) 'coherency and transparency': "[a] single EU infrastructure fund and financial framework would provide a coherent and transparent approach to EU funding (…)";
(iii) 'economy of scale': "(…) the progressively increasing interdependency between economic infrastructure projects, networks and sectors would enable the realisation of economies of scale [what could] allow exploiting cross-sector synergies at project development and implementation level (…)";
(iv) 'best practice': "(…) a common framework draws on lessons learned and best practice sharing across sectors (…)."

CEF		**€40 billion**
	Energy	€9.1 billion
	Transport	€21.7 billion
	Telecommunications/Digital	€9.2 billion
Amounts ring fenced in the Cohesion Fund for transport infrastructures		**€10 billion**
Total		**€50 billion**

Source: Proposal for CEF Regulation

In re-designing its funding strategy for infrastructure, the Commission pursued inter alia the objectives of ensuring "cost-effective and timely implementation of key priority network infrastructure in the energy, transport and ICT sectors" as well as providing "optimal project selection, follow up and monitoring so that EU funding is well targeted, delivers the highest impact and is spent in the most effective way." The Proposal for CEF Regulation introduces also a simplification to the issues such as: 'flexibility on budget allocations', 'centralised management for the three sectors, possibly through implementation via an executive agency', 'common funding instruments' or 'common award criteria'.

Furthermore, CEF would complement European Union direct support with financial instruments in order to optimise the impact of the funding. As may be read in the Explanatory Memorandum: "[t]hrough the high multiplier effects of financial instruments (e.g. which could be as high as up to 1:15 to 1:20), access to capital for the substantial investment needs will be facilitated."

The Proposal for CEF Regulation is correlated with another European Commission's legislative initiative in the field of energy: a Proposal for a Regulation of the European Parliament and of the Council on guidelines for trans-European energy infrastructure and repealing Decision No. 1364/2006/EC (Proposal for Guidelines Regulation).[33] Enough to mention herein the Proposal of CEF Regulation's article 2 (Definitions: "project of common interest" means projects identified in the Proposal for Guidelines Regulation, with the "priority" meaning any of the energy infrastructure priorities 1 to 8 and 10 to 12 as designated in Annex I to the Proposal for Guidelines Regulation), article 7 (Eligibility and conditions for financial assistance: "1. Only actions contributing to projects of common

[33] Brussels 19.10.2011, COM(2011) 658 final.

interest according [inter alia] to the Proposal for Guidelines Regulation shall be eligible for support through EU financial aid in the form of grants, financial instruments and procurement"), or article 10 Funding rates ("3. (b) in the field of energy co-financing rates may be increased to a maximum of 80% for actions which based on the evidence referred to in Article 15(2) (a) of the Proposal for Guidelines Regulation, provide a high degree of regional or Union-wide security of supply, or strengthen solidarity of the Union or comprise highly innovative solutions").

Because of this correlation, in the next section of the report the main scope of the Proposal for Guidelines Regulation is to be elaborated upon. However, before this matter is presented, a broader background for the case should be provided. Therefore, the issue of the Trans-European Energy Networks is to be the first to undergo an analysis.

Trans-European Energy Networks (TEN-E)

The European Commission's Communication on energy infrastructure priorities for 2020 and beyond (Blueprint) adopted in November 2010 called for a new European Union's policy in the area of energy infrastructure. This was to coordinate and improve the network development on a continental scale. The basis underpinning this proposal are to be sought in the necessity to review existing Trans-European Energy Networks (TEN-E) policy and financing framework, what was also confirmed in the Blueprint.

The TEN-E framework has been established in the 1990's, with the application of a series of TEN-E guidelines and correlated financing Regulation. The recent guidelines have been adopted by Decision No. 1364/2006/EC of the European Parliament and of the Council of 6 September 2006 laying down guidelines for trans-European energy networks and repealing Decision No. 96/391/EC and Decision No. 1229/2003/EC (Decision 1364/2006/EC).[34] As written in the preamble to Decision No. 1364/2006/EC "[t]he priorities for trans-European energy networks stem from the creation of a more open and competitive internal energy market", while the Decision itself "serves to move closer towards the target for the level of electricity interconnection between Member States". Additionally, these priorities "also stem from their growing importance for securing and diversifying the Community's energy supplies, incorporating the energy networks of the new Member States, accession and candidate countries, and ensuring the coordinated operation of the energy networks in the Community and in neighbouring countries after consulting the Member States concerned."

[34] OJ L 262, 22.9.2006, pp. 1-23.

According to Article 4 (2) (a) and (b) of the Decision No. 1364/2006/EC, the above mentioned priorities for electricity networks are as follows: adapting and developing networks to facilitate the integration and connection of renewable energy production, as well as ensuring interoperability of electricity networks within the Community and other countries in Europe and in the Mediterranean and Black Sea basins.

The Decision No. 1364/2006/EC divides European energy projects into three categories: 'projects of common interest' (Article 6; they must display potential economic viability; Projects of common interest are listed in Annexes II and III to the Decision), 'priority projects' (Article 7; selected from among the projects of common interest; they must have a significant impact on the proper functioning of the internal market, on the security of supply and/or the use of renewable energy sources; priority projects, listed in Annex I to the Decision have the priority to grant Community financial assistance) and, finally, 'projects of European interest' (Article 8; certain priority projects of a cross-border nature or [those] which have a significant impact on cross-border transmission capacity; ; projects of European interest, listed in Annex I, have the priority to grant Community funding under the TEN-E budget with a particular attention given to their funding under other Community budgets). To sum up, in the Decision No.1364/2006/EC about 550 projects qualifying for European support have been listed.

Finally, Decision No. 1364/2006/EC provides regulations concerning the 'axes for priority projects', among which the EL7 electricity network may be found. A comprehensive analysis of the network allows for the identification of some similarities between the EL7 in question and the BEMIP's infrastructure.

EL.7. Denmark – Germany – Baltic Ring (including Norway – Sweden – Finland – Denmark – Germany – Poland – Baltic States – Russia): increasing electricity interconnection capacities and possible integration of offshore wind energy.

Including the following projects of European interest:

- Kassø (DK) – Hamburg/Dollern (DE) line
- Hamburg/Krümmel (DE) – Schwerin (DE) line
- Kassø (DK) – Revsing (DK) – Tjele (DK) line
- Vester Hassing (DK) – Trige (DK) line
- Submarine cable Skagerrak 4: between Denmark and Norway
- Poland – Lithuania link, including necessary reinforcement of the Polish electricity network and the Poland Germany profile in order to enable participation in the internal energy market
- Submarine cable Finland – Estonia (Estlink)
- Fennoscan submarine cable between Finland and Sweden
- Halle/Saale (DE) – Schweinfurt (DE).

Source: Decision No. 1364/2006/EC

In April 2010, the European Commission's "Report on the implementation of the TEN-E framework in the period 2007-2009" (TEN-E Report)[35] was published. The TEN-E Report summarises the progress TEN-E achieved at that time. Firstly, it points to the 5 electricity projects of European interest completed out of 32 with 9 being under construction since 2007. Subsequently, in reference to the priority projects, it is reported that 9 electricity projects were finalised in 2007-2009 and 33 remained under construction. Thirdly, in the field of projects of common interest (164 in electricity), TEN-E Report indicates that they "meet the objectives and priorities laid down in the Guidelines and display potential economic viability as determined by a cost-benefit analysis in terms of the environment, security of supply and geographical cohesion."

Nevertheless, the TEN-E Report also draws the attention to some areas of the TEN-E's shape that require a particular improvement. The emphasis is put on e.g. "a need to narrow the focus of TEN-E on a limited number of strategic projects demonstrating European priorities", and on the urgency to make the definition of projects more flexible "to better respond to market development". When it comes to the area of financing TEN-E a crucial importance is attributed to the "increased coordination between TEN-E and IPA/ENPI instruments in order to generate more possibilities for network and market integration".

[35] Report from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on the implementation of the Trans-European Energy Networks in the period 2007-2009, Brussels 4.5.2010, COM(2010)203 final.

Furthermore, the necessity to "streamline planning and authorisation procedures in the case of projects which cross several jurisdictions" is noticed. Finally, the Report demonstrates that "[t]he impact of TEN-E has been less relevant in dealing with the more recent challenges concerning the EU's strategic energy policy goals and targets." In addition, "the programme has responded too slowly to the major challenges which have emerged in recent years, and is poorly equipped to deal with the growing challenges which will arise from the 2020 and 2050 ambitions" (TEN-E Report).

Trans-European energy infrastructure

In response to the matters analysed and listed in the TEN-E Report, in October 2011 the above mentioned package of infrastructural legislation (EU's infrastructure package) was presented. The Proposal for Guidelines Regulation, that has already been introduced, is one of its 3 sectorial infrastructure policies.

The Proposal for Guidelines Regulation establishes rules for "the timely development and interoperability of trans-European energy networks". As emphasised in Proposal's Explanatory Memorandum, it is "to achieve the energy policy objectives of the Treaty on the Functioning of the European Union to ensure the functioning of the internal energy market, to ensure security of supply in the Union, to promote energy efficiency and the development of new and renewable forms of energy, and to promote the interconnection of energy networks."

To go into a greater detail, "this Regulation aims at the full integration of the internal energy market, including by ensuring that no Member State is isolated from the European network, contributes to sustainable development and protection of the environment by enabling the Union to achieve its targets of a 20% reduction of greenhouse gas emissions, 20% increase in energy efficiency and 20% of renewable energy in final energy consumption by 2020, while ensuring security of supply and solidarity among Member States."

What is also important, the Proposal for Regulation of Guidelines identifies, for the period up to 2020 and beyond, a limited number of trans-European priority corridors which the European Union's action is 'most warranted' for. It provides a legal basis for priority corridors, indicated earlier in vital European documents, but only on the level of the European Commission and the Council, or as the BEMIP – supported by separate strategy and international agreement. Despite this fact, the BEMIP is clearly qualified as one of the European Union priority corridors, what is confirmed in the Proposal's Annex I.

Priority Electricity Corridors	Description	Member States concerned
(4) Baltic Energy Market Interconnection Plan in electricity (**'BEMIP Electricity'**)	Interconnections between Member States in the Baltic region and reinforcing internal grid infrastructures accordingly, to end isolation of the Baltic States and to foster market integration in the region	Denmark, Estonia, Finland, Germany, Latvia, Lithuania, Poland, Sweden

Source: Proposal for Regulation of Guidelines

The issue of priority corridors is connected to the idea of 'projects of common interest' (PCI). It is defined in the Article 2 (4) of the Proposal for Regulation of Guidelines. According to its provisions, PCI stands for a project that is "necessary to implement the energy infrastructure priority corridors and areas set out in Annex I". As it has been mentioned previously, one of these priority corridors is the BEMIP.

A European Union-wide list of PCIs will be elaborated by the European Commission. According to the Article 3 (1), the first list shall be adopted by the end of July 2013. Additionally, the list shall be reviewed and updated as necessary every two years. To identify PCIs a Regional Group will be established, based on each priority corridor and area and their respective geographical coverage as set out in Annex I (Article 3 (2)). According to the Article 3 (3), each Group shall draw up its proposed list of projects, with the approval of the Member State(s) to the territory which the project relates to.

The general criteria for selecting PCIs are provided in the Article 4 of the Proposal for Regulation of Guidelines. As stated in the Article 4 (1) (a)-(c), PCIs shall be "necessary for the implementation of the energy infrastructure priority corridors and areas set out in Annex I", and display "economic, social and environmental viability", as well as involve "at least two Member States, either by directly crossing the border of one or more Member States or by being located on the territory of one Member State and having a significant cross-border impact (…)". The specific criteria apply to selected infrastructure (one of five categories). Among them, in Article 4 (2) (a) criteria concerning electricity (transmission and storage projects falling under the categories 1(a) to (d) of Annex II[36]) are regulated. They are as

[36] (a) high-voltage overhead transmission lines, if they have been designed for a voltage of 220 kV or more, and underground and submarine transmission cables, if they have been designed for a voltage of 150 kV or more; (b) concerning in particular electricity highways; any physical equipment designed to allow transport of electricity on the high and extra-high voltage level, in view of connecting large amounts of electricity generation or storage located in one or several Member States or third countries with large-scale electricity consumption in one or several other Member States; (c) electricity storage facilities used for storing electricity on a permanent or temporary basis in above-ground or

follows: "market integration, competition and system flexibility", "sustainability, inter alia through transmission of renewable generation to major consumption centres and storage sites", and "interoperability and secure system operation". The project in this field shall contribute to at least one of them.

Monitoring of the progress achieved in the implementation of the PCIs is entrusted to the Groups mentioned and the Agency for the Cooperation of Energy Regulators. Pursuant to the Article 6 (2), the Groups may "request additional information", "verify the provided information on site", and "convene meetings with the relevant parties". Moreover, the Groups may also request the Agency to "take measures to facilitate the implementation of projects of common interest". As far as reporting is concerned, each year, the project promoters shall submit an annual report to the Agency or to the respective Group, depending on the categories which the project is falling under (Article 6 (3)). The Agency shall submit to the Groups a consolidated report for the projects of common interest (Article 6 (4)). The concerned competent authorities[37] report to the respective Group on the status and, where relevant, delays in the implementation of projects of common interest located on their respective territory (Article 6 (5)).

The Proposal for Regulation of Guidelines also provides for the possibility of action in case of delays. As stated in Article 6 (6), in the situation of a delay of a PCI (by more than two years compared to the implementation plan without sufficient justification) the project promoter of that project shall accept investments by one or several other operators or investors to implement the project (a), or the European Commission may launch a call for proposals open to any project promoter to build the project according to an agreed timeline (b).

Finally, according to Article 6 (7), a PCI may be removed from the Union-wide list of PCIs in 4 situations: "[t]he energy system-wide cost-benefit analysis carried out by the ENTSOs (…) does not yield a positive result for the project" (a); "[t]he project is no longer included in the ten-year network development plan" (b); "the inclusion in the list referred (…) was based on incorrect information which was a determining factor for the decision" (c); "[t]he project does not comply with existing Union legislation".

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underground infrastructure or geological sites, provided they are directly connected to high-voltage transmission lines designed for a voltage of 110 kV or more; (d) any equipment or installation essential for the systems defined in (a) to (c) to operate safely, securely and efficiently, including protection, monitoring and control systems at all voltage levels.

[37] According to Article 9 (1) "[w]ithin six months of the entry into force of this Regulation, each Member State shall designate one national competent authority which shall be responsible for facilitating and coordinating the permit granting process for projects of common interest and for the implementation of the relevant tasks of the permit granting process (…)."

IV. Countries review

It is crucial that the general data on the electricity sector in the 8 Baltic Sea Region are sequentially compared with the individual energy situation of 8 Member States. Therefore, the objective of this Report is to present an overview of the current situation in the electricity sector in Denmark, Estonia, Finland, Germany, Latvia, Lithuania, Poland and Sweden.

The review contains inter alia information about electricity generation with a comparison to the previous year and month (October 2012 as a reference point); data on the electricity generated from combustible fuels and form renewable energy sources, as well as trade volume and electricity imports by origin.

Data are provided by the International Energy Agency ("Monthly electricity statistics. October 2012") as well as the Eurostat. Unfortunately the IEA's monthly overview does not apply to Lithuania and Latvia. As far as possible these data are supplemented from other sources. Furthermore, this section includes the World Energy Council's data from report "World Energy Trilemma. 2012 Energy Sustainability Index" ('2012 Energy Sustainability Index').[38]

[38] *World Energy Trilemma. 2012 Energy Sustainability Index*, World Energy Council, London 2012.

Denmark

In March 2012, the Danish government established a politically broad energy agreement within the Danish Parliament. As written in the "Energy Policy Report 2012" ('EPR 2012')[39], "the agreement will establish a stable framework, which is crucial with respect to making important investments in renewable energy, energy efficiency, the energy system and research, development and demonstration of new green-energy technology. The energy agreement will therefore be a cornerstone in the green transition of Danish energy for many years to come." What is very significant, the agreement is aimed at "the long-term goal of full conversion to renewable energy in 2050."

To elicit the impact of Danish activities on the situation of the Region, some of the actions undertaken in the area of renewable energy sources should be described. In the EPR 2012, as well as in the agreement mentioned, significant offshore wind expansion is highlighted, such as e.g. the Baltic initiative of 600MW offshore wind turbines at Kriegers Flak. Seen in that light, "[t]he greater scope of wind power means that electricity will be the dominant energy carrier in the energy system of the future."

In terms of electricity interconnectors within the Baltic Sea Region, "Energinet.dk will be analysing whether it would be financially sound to expand the capacity for transmission to (…) Germany and Sweden." In this context, the Danish government plans to conduct "an analysis of the possibilities for and the effects of electricity exchange connections, in particular with regard to connecting to expanded networks in neighbouring countries." It is assumed that the analysis will be elaborated by the end of 2014. Additionally, a number of projects in the Danish internal electricity transmission grid have been launched. Their aim is to integrate more wind energy into the power system. One of the vital energy grid connections in the Danish power system is a 400 MW high-voltage line between Kassø near the German border and Tjele. This line is planned to be put into operation at the end of 2014.

With regard to the regulatory framework, Denmark has notified full transposition of the Third Energy Package Directives. Since 2000, the Danish regulator has been the Danish Energy Regulatory Authority, DERA. It employs about 50 staff and has an annual budget of around

[39] "Energy Policy Report 2012. Report from the Ministry of Climate, Energy and Building to the Danish Parliament on Danish energy policy", 9 May 2012.

EUR 5 million.[40] Denmark has a state-owned TSO, Energinet.dk. It owns and operates the transmission networks for both electricity and gas. As written in the Commission Staff Working Document "Energy Markets in the European Union" [f]or electricity, there are another 10 regional network operators, which are fully or partly vertically integrated with other companies engaged in competitive activities, such as trading, production and generation. With effect from 1 January 2012, the 10 regional transmission companies were bought by the Danish TSO, Energinet.dk."

In 2010, generation was dominated by two companies: Dong Energy and Vattenfall. They together accounted for almost two thirds of the total capacity. According to "Energy Markets in the European Union" "[m]arket integration with neighbouring markets is adequate. In the Nordic countries, roughly 75 % of energy is traded on the power exchange, Nord Pool Spot (NPS). The country is divided into two market areas, east and west."

Danish consumers of electricity have free market access without price regulation. In terms of suppliers of electricity to households there are 55 companies in Denmark. As stated in "Energy Markets in the European Union" "[p]ower prices are characterised by high taxes, representing approximately 51 % of the final price. Network costs accounted for 49 % of the power price for Danish households (without taxes) in 2011, with energy and supply costs making up the other 50 %."

Electricity production was 2 587 GWh in October 2012.

This was lower by 5 GWh, or 0.2%, compared to October 2011.

This was an increase of 533 GWh, or 25.9%, compared to the previous month.

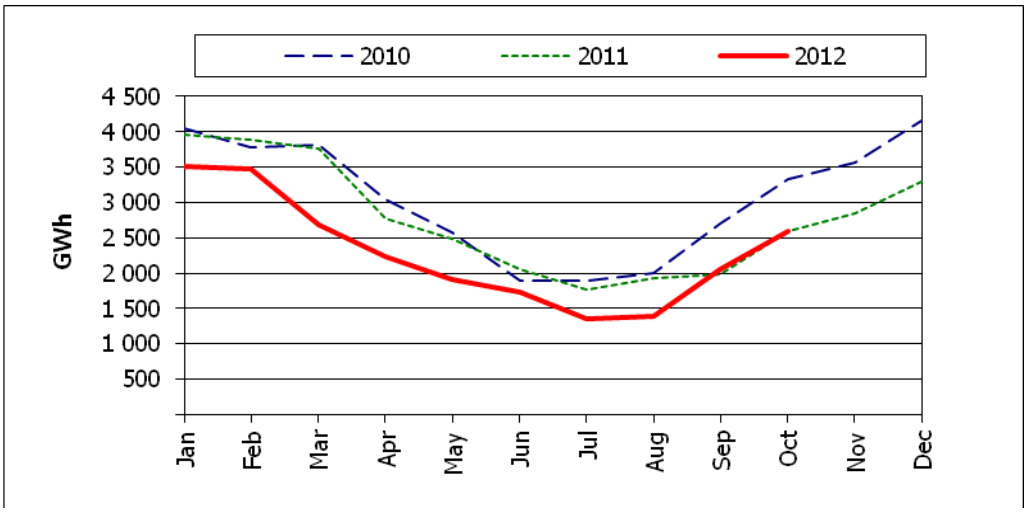
Total production for the year to date was 22 923 GWh. Comparing this to the same period last year shows that:

- total production was lower by 4 288 GWh, or 15.8%.
- combustible fuels production showed the largest percentage change by energy source, being 25% lower.
- trade volume increased by 3 634 GWh, or 19.7%.

Source: IAE

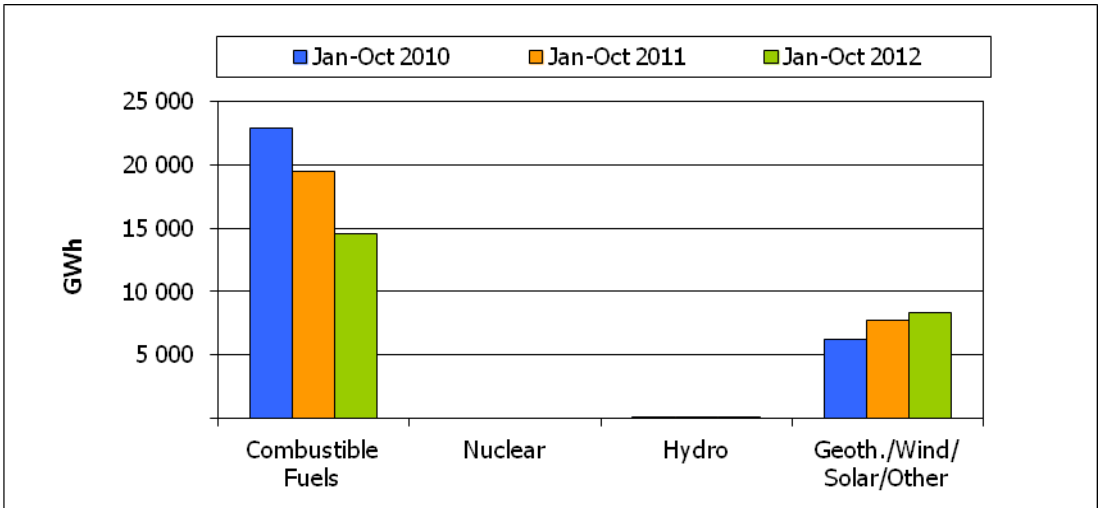
Figure 19. Electricity production compared to previous year: Denmark

[40] Commission Staff Working Document Energy Markets in the European Union in Accompanying the document Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions Making the internal energy market work, 2011 SWD(2012) 368 final ('Energy Markets in the EU').



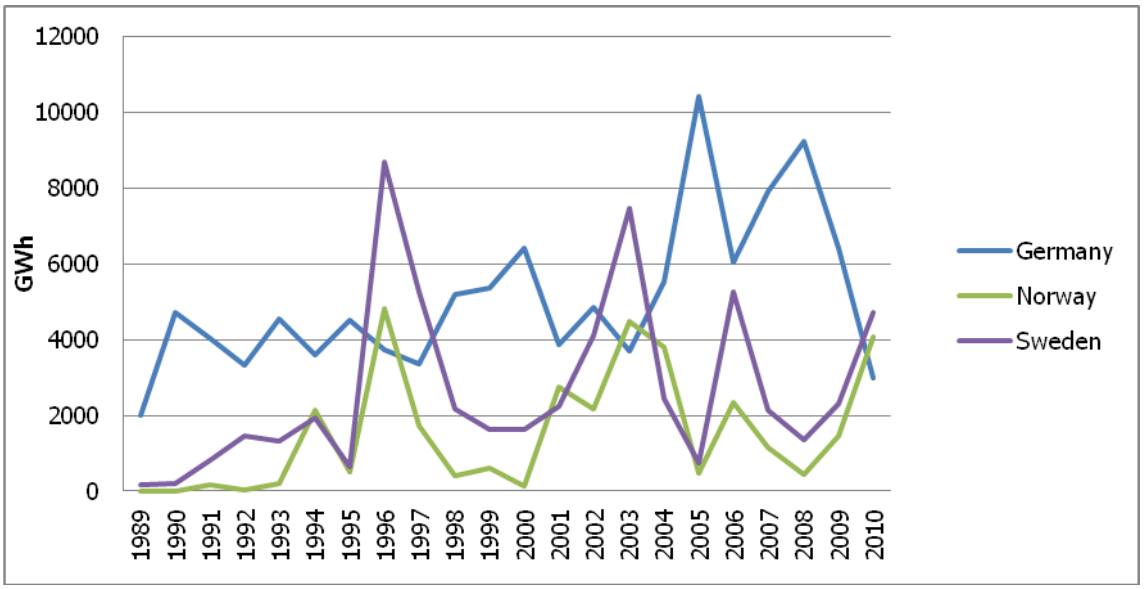
Source: IEA

Figure 20. 'Year to Date' comparison of production by fuel type: Denmark



Source: IEA

Figure 21. Electricity imports by origin: Denmark



SOURCE: OECD/IEA

Energy produced in Denmark over 1989-2010 was exported to three countries: Germany, Norway and Sweden. Denmark reached the highest level of exports in 2005, when it exported to Germany more than 10 000 GWh of electricity. However, in 2010 Danish exports to Germany noted more than a 3 times lower level, reaching a value of less than 3 000 GWh of electricity exported to Germany. In 1996, 2003, 2006 and 2010 a number of jumps in the electricity export from Denmark to Sweden may be observed, even though each of these jumps is characterized by an increasingly lower volume of exports (from about 8 600 GWh in 1996 to 4 700 GWh in 2010). At the same time, such jumps were recorded also for Danish electricity exports to Norway. However, these increases were smaller in scale when compared to the peaks of the Danish import of electricity to Sweden. Finally, in terms of a tendency that may be observed in the export of Danish electricity, it can be seen that in recent years (up to 2010) the rate of electricity export considerably dropped in the case of Germany, but gradually increased for Sweden and Norway.

In a survey conducted by World Energy Council: 2012 Energy Sustainability Index, Denmark increases one rank in the Index to rank seven. "Environmental impact mitigation slightly improves (…) due to lower CO2 emissions from electricity and heat generation." In an overall assessment, "Denmark continues to exhibit strong contextual performance; however economic strength suffers slightly due to high cost of living and a drop in macroeconomic stability."

In the area of Danish energy "Trends and Outlook", the World Energy Council indicates to the new Energy Agreement already mentioned. In the WEC's opinion it "contains a wide

range of ambitious initiatives, bringing Denmark closer to reaching the target of 100% renewable energy in the energy and transport sectors by 2050 by committing to large investments up to 2020 in energy efficiency, renewable energy and the overall energy system." Additionally, "[t]o overcome the challenges and reach its ambitious targets of becoming independent of fossil fuels and reducing CO2 emissions, Danish policymakers are [inter alia] focusing on (…) the introduction of huge amounts of fluctuating renewable energy in the electricity grid."

Estonia

In April 2012 Estonian government approved the National Reform Programme "ESTONIA 2020" ('NRP 2020'). NPR 2020 sets Estonia's goals for 2015 and 2020, as well as presents Estonian priorities and measures of "raising Estonia's competitiveness". As stated in the Programme, "[a] factor that is increasingly starting to impact the state's competitiveness is the existence of an environmentally sustainable and efficient energy sector." Within this field, the importance of ensuring the functioning of energy market as well as adapting "the national development plan for the energy sector to the changes in energy market" is emphasised.

A great challenge for Estonia, in the context of European climate and energy policy and its obligations, is the electricity sector. It is because of its structure, where over 90% of energy is produced from oil sources. That is why "[a] major keyword in the decade ahead is diversification of energy sources as by 2020, a situation must be achieved where the share of no single energy source exceeds 50% of the country's energy balance sheet." This includes the entire energy mix of Estonia: generation of electricity from oil sources, co-generation, as well as the development of wind sources. "It is also necessary to decide whether Estonia's future energy generation portfolio will include nuclear energy" – we can read in the NRP Estonia 2020. Additionally, the plans assumed by the Estonian government require the establishment of "sufficient energy connectors in the region".

According to "Energy Markets in the European Union" Estonia has declared that the Third Energy Package Directives have been now fully transposed. The electricity TSO, Elering AS, is state-owned and plans to apply for certification under the ownership unbundling model. As it written "Energy Markets in the European Union" "[e]ffective competition is limited by the dominant position of Eesti Energia, which accounted for 89 % of total electricity production in 2010."

With regard to the level of market openness, it should be explained that in 2010 Estonian electricity market was opened only to the extent of 30%. To improve this situation and to fulfil European Union requirements in June 2012 the law on electricity market was changed. On January 1, 2013 the Estonian electricity market was fully opened for the competition. Households can now choose their supplier among seven companies – Eesti Energia, Elektrum, 220 Energia, Imatra, VKG, Elektrimüügi AS and Eesti Gaas. Eesti Energia, the historical power company, has already concluded more than 460,000 contracts, while the other companies don't exceed 15,000 contracts each. About 65% of Estonian households have concluded a free-market contract.[41] Nevertheless, according to NRP Estonia 2020 "opening the market will result in an increase in the number of electricity companies and changes in the price of electricity. On one hand, the competition will increase with the market opening up, which should ensure better service for end consumers. At the same time, the state should ensure that the procedural side operates as impeccably as possible and that the market functions successfully."

Electricity production was 988 GWh in October 2012.

This was higher by 101 GWh, or 11.4%, compared to October 2011.

This was an increase of 89 GWh, or 9.9%, compared to the previous month.

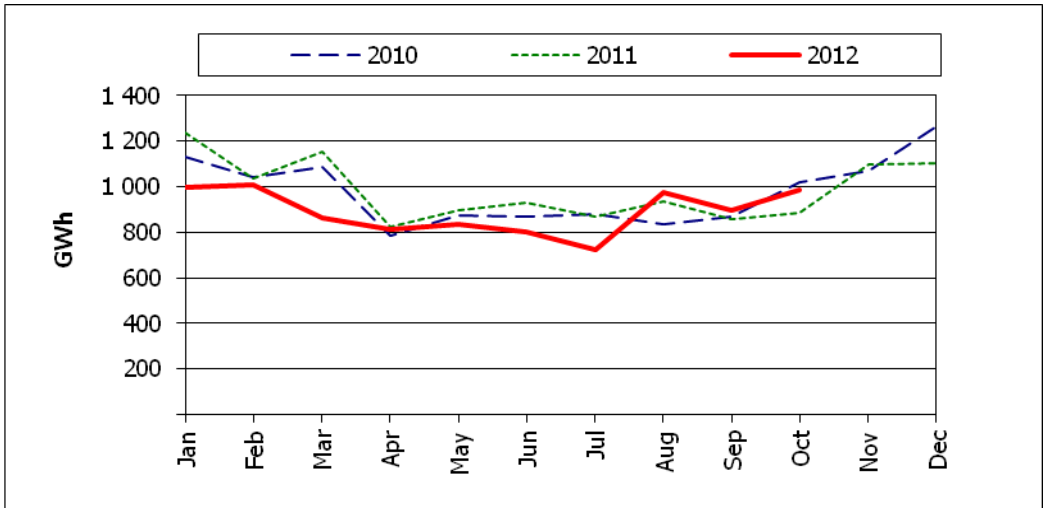
Total production for the year to date was 8 894 GWh. Comparing this to the same period last year shows that:

- total production was lower by 736 GWh, or 7.6%;
- hydro production showed the largest percentage change by energy source, being 36.4% higher;
- trade volume increased by 525 GWh, or 9.2%.

Source: IAE

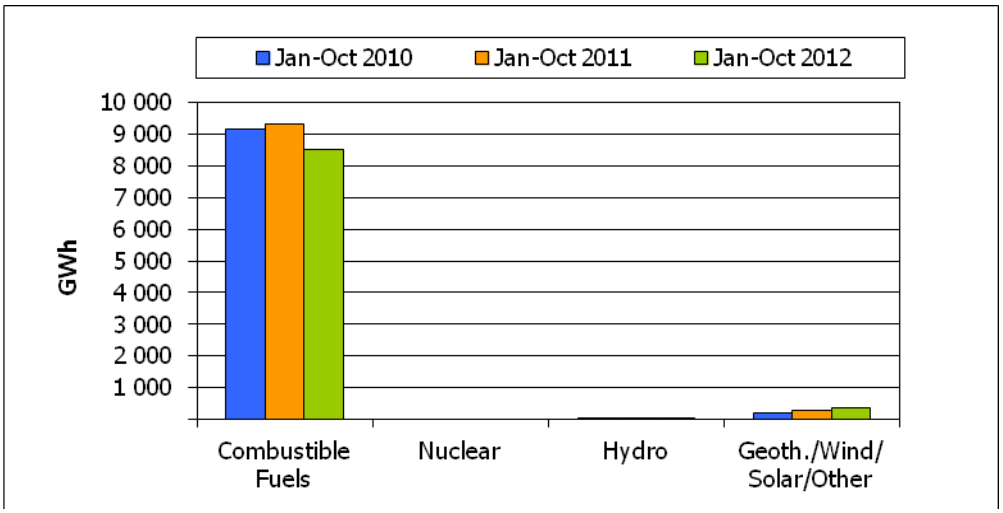
[41] *Estonian electricity market is fully opened to competition*, http://www.enerdata.net/enerdatauk/press-and-publication/energy-news-001/estonian-electricity-market-fully-opened-competition_15486.html.

Figure 22. Electricity production compared to previous year: Estonia



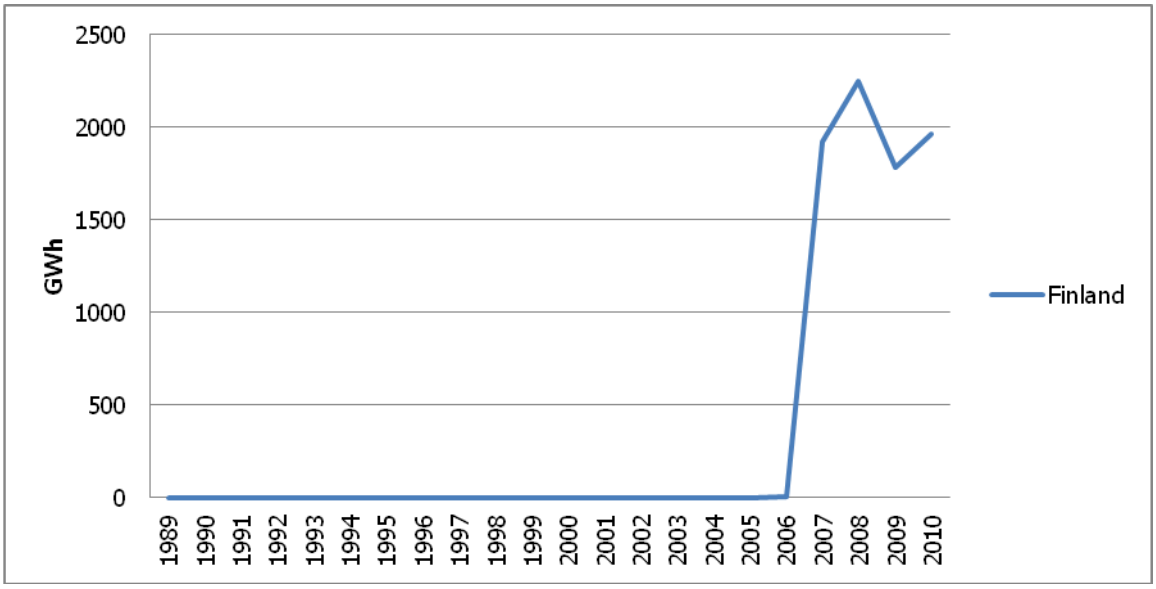
Source: IEA

Figure 23. 'Year to Date' comparison of production by fuel type: Estonia



Source: IEA

Figure 24. Electricity imports by origin: Estonia



SOURCE: OECD/IEA

The figure above shows the scale of the energy isolation of Estonia. Up to 2006, Estonia did not export any volume of electricity. This became possible only after the Estonia and Finland launched operation of Estlink 1– a set of HVDC submarine power cables, the first interconnection between the Baltic and Nordic electricity markets. Thanks to it, in 2007 Estonian export was close to 2 000 GWh of electricity. In the following years (by 2010) the level of Estonian exports also oscillated around 2 000 GWh of electricity transmitted to Finland.

In the Energy Sustainability Index Estonia goes up by three places to rank 35. "This was mainly triggered by significant improvements in energy security driven by a decrease in energy consumption, as well as a more diversified electricity production and an increased wholesale margin on gasoline." In terms of "Trends and Outlook", the World Energy Council emphasises the effort made by Estonia in terms of "its security of energy supply by diversifying its energy imports, increasing the domestic electricity production capacity to exceed domestic demand (…)." However, "Estonia still struggles with environmental impact mitigation, mainly due to CO2 emissions from electricity production."

According to WEC, in the context of establishing an internal energy market in the European Union (as well as in the Baltic Sea Region within it), one of the main factors of improving Estonia's position in the Index ranking is "building of new interconnections with neighbouring countries." However, "Estonian policymakers need to also focus on the other two aspects of

the energy trilemma, environmental impact mitigation and social equity, while keeping energy security levels high."

Finland

Finnish national regulator is the Energy Market Authority (EMA) – in operation since 1995. According to "Energy Markets in the European Union" it employs 45 staff and has an annual budget of almost EUR 5 million (2010). The electricity TSO is Fingrid, (state has a majority stake – about 53%). In Finland there are 87 electricity distribution companies (of which 52 are legally unbundled) and 12 regional network operators. Price regulation does not exist in Finland (retail markets). As written in "Energy Markets in the European Union" "[a]t the generation level, the market is dominated by two big players, Fortum (which is mostly state owned) and Pohjolan Voima (PVO). The three biggest companies control approximately 58 % of the total installed capacity."

In November 2008, the Finnish government approved the "Climate and Energy Strategy" for Finland. The strategy sets policy measures in the field of Finland's energy sector in the perspective of the year 2020 up to 2050. As written in the Finnish government's Report to Parliament from 2008[42], "[t]he long-term climate and energy strategy describes changes in the international operating environment over the last few years, and presents the measures required in Finland, e.g. concerning the objectives for the reduction of greenhouse gases, energy sourcing, renewable energy and energy efficiency (…)." What is interesting, the Climate and Energy Strategy is based on European Union's strategic documents dating from the period before an official adoption of the EU's Climate and Energy Package: "guidelines approved by the European Council in the spring of 2007, and the climate and energy package based on them, presented by the European Commission in January 2008." However, they reflect only the basic direction of the development of the European energy industry in the future.

Let us recall several key provisions of the Climate and Energy Strategy. They include, inter alia, "halting and reversing the growth in final energy consumption so that, in 2020, final energy consumption is approximately 310 TWh, i.e. over 10% less than the baseline. (…) In order to attain these objectives, the efficiency of energy consumption must be enhanced, particularly in housing, construction and transport." Additionally, in the Climate and Energy Strategy an increase of the share of renewable energy in the line with EU's obligations is

[42] *Long-term Climate and Energy Strategy*, *Government Report to Parliament 6 November 2008*, http://www.tem.fi/files/20587/Climate_Change_and_Energy_Strategy_2008_summary.pdf.

established. Furthermore, as may be found in the Finnish 2008 Climate and Energy Strategy, "[i]n constructing our own capacity, priority will be given to plants that do not emit greenhouse gases, or ones with low emissions, such as combined power and heat plants using renewable fuels, and financially profitable and environmentally acceptable hydro and wind power plants. Furthermore, we will prepare for constructing additional nuclear power."

Nevertheless, in the Climate and Energy Strategy of 2008 certain obsolete provisions are readily perceptible, e.g. "the high price of emission allowance in the EU's emission trading, has significantly changed the price relationship of fossil energy forms and renewable energy, in favour of the latter. In the current situation, renewable energy has become more competitive than before." For a comparison, in January 2013, the price of a permit to emit a tonne of carbon fell to a record low level of €2.81.[43] Consequently, the competitiveness of energy sources using fossil fuels significantly increased.

It should be added that Finland's government has taken action to update the existing Climate and Energy Strategy. "The ministerial working group on energy and climate policy has begun to update the strategy devised in 2008. The primary objective of the updating process is to ensure that Finland will be able to meet the energy and climate policy targets set for 2020. As specified in the Government programme, the new strategy will entail a programme to reduce oil dependence."[44] According to information provided by the Finnish government, "[t]he strategy devised in 2008 will be updated in accordance with the Government programme, and the updated strategy will be finalised by the end of January 2013."[45] Up to now, the new version of the strategy has not been available yet.

[43] *EU carbon price crashes to record low*, http://www.guardian.co.uk/environment/2013/jan/24/eu-carbon-price-crash-record-low.
[44] *Strategy 2013*, http://www.tem.fi/index.phtml?l=en&s=5039.
[45] *National Climate and Energy Strategy*, http://www.tem.fi/index.phtml?l=en&s=2542.

Electricity production was 5 918 GWh in October 2012.

This was higher by 339 GWh, or 6.1%, compared to October 2011.

This was an increase of 1 232 GWh, or 26.3%, compared to the previous month.

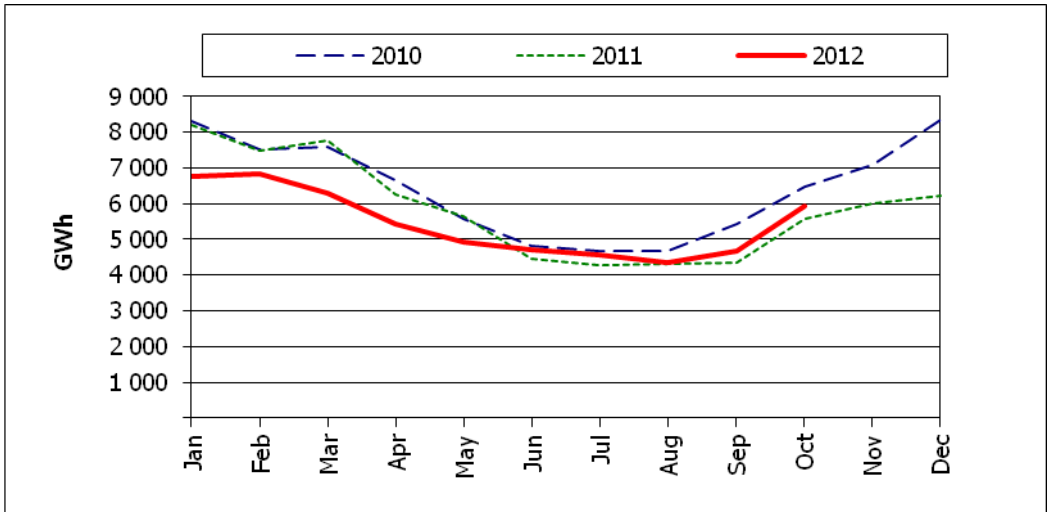
Hydro production showed the most significant percentage change compared to the previous month with an increase of 32.2%, or 394 GWh.

Total production for the year-to-date was 54 488 GWh. Comparing this to the same period last year shows that:

- total production was lower by 3 848 GWh, or 6.6%;
- hydro production showed the largest percentage change by energy source, being 41% higher;
- trade volume decreased by 1 078 GWh, or 5.8%.

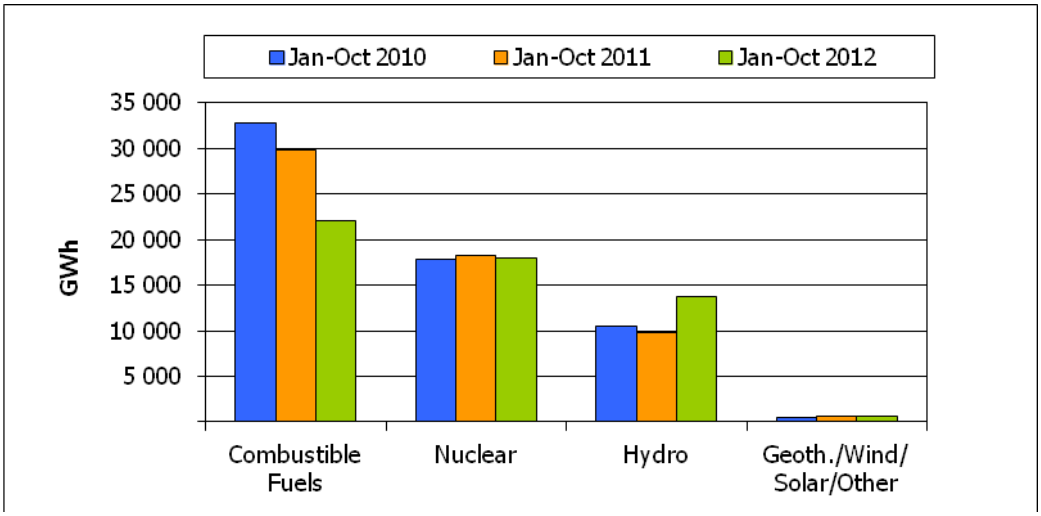
Source: IAE

Figure 25. Electricity production compared to previous year: Finland



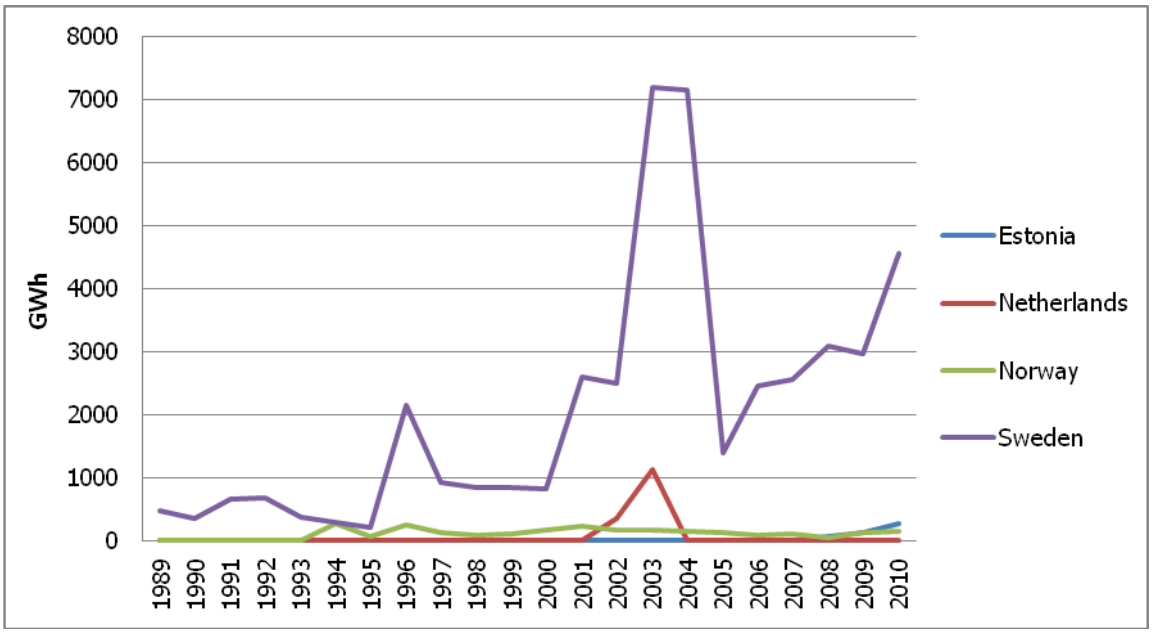
Source: IEA

Figure 26. 'Year to Date' comparison of production by fuel type: Finland



Source: IEA

Figure 27. Electricity imports by origin: Finland



SOURCE: OECD/IEA

In the timescale presented above, it may be observed that the principal export of electricity from Finland is transferred to Sweden. It reached the highest level in 2003, approaching the 7 200 GWh. In subsequent years, a decline was recorded, but since 2005 this tendency has switched to a gradual increase (more than 4 500 GWh of Finnish electricity exported to Sweden in 2010). Exports to Norway and, since 2008, to Estonia are rather small (less than 300 GWh). Parenthetically, it should be noted that in 2003 Finland exported more than 1100

GWh to the Netherlands (although the Netherlands is not a country of the Baltic Sea Region).

Finally, in the 2012 Energy Sustainability Index Finland drops from rank 2 to 5. "Finland's energy security score suffers from a slower decrease in the energy consumption growth compared to other countries and a deterioration in the ratio of production to total energy supply (…)." In terms of "Trends and Outlook" the World Energy Council refers also to Finnish recent energy policy which includes "1) a proposal to introduce a windfall tax which will make hydro and nuclear energy less competitive; 2) streamlining the approval of wind farms; and 3) tax hikes on fossil fuels in heat generation (….) which will increase costs but also 'clean' the fuel mix." Furthermore, in Finland "[a] number of policies are under discussion, including: 1) an ambition to completely phase out coal by 2025; 2) limiting the use of peat, a domestic biofuel which is not categorised as a renewable; and 3) limitation of oil consumption and support for electric mobility."

Germany

In September 2010 German government established the "Energy Concept for an Environmentally Sound, Reliable and Affordable Energy Supply" ('Energy Concept'). It is a long-term overall strategy for the period up to the year 2050. The Energy Concept sets out Germany's energy policy until 2050 with ambitious targets. Firstly, greenhouse gas emissions are to be decreased by 2050 by at least 80% comparing to the 1990 levels. As stated in the Energy Concept, "[t]o achieve reduction in greenhouse gas emissions by 2050, the development path will have to mean: a 55% reduction by 2030, a 70% reduction by 2040 and an 80-95% reduction by 2050." Earlier, in 2020, the emissions are to be cut by 40%.

Secondly, renewable energy sources are to generate the vast majority of electricity in Germany. By 2020, 35% of gross electricity consumption in Germany will be generated from renewable energy sources. In the following years, gross electricity consumption contributed by electricity from renewable energy sources is planned to reach 50% by 2030, 65% by 2040 and 80% by 2050.

Thirdly, energy consumption is to be reduced and energy efficiency is to be increased. According to the Energy Concept, "[b]y 2020 primary energy consumption is to be 20% lower than in 2008, and 50% lower by 2050. This calls for an annual average gain in energy productivity of 2.1%, based on final energy consumption." In the field of electricity, German government plans to cut electricity consumption by around 10% by 2020 and 25% by 2050.

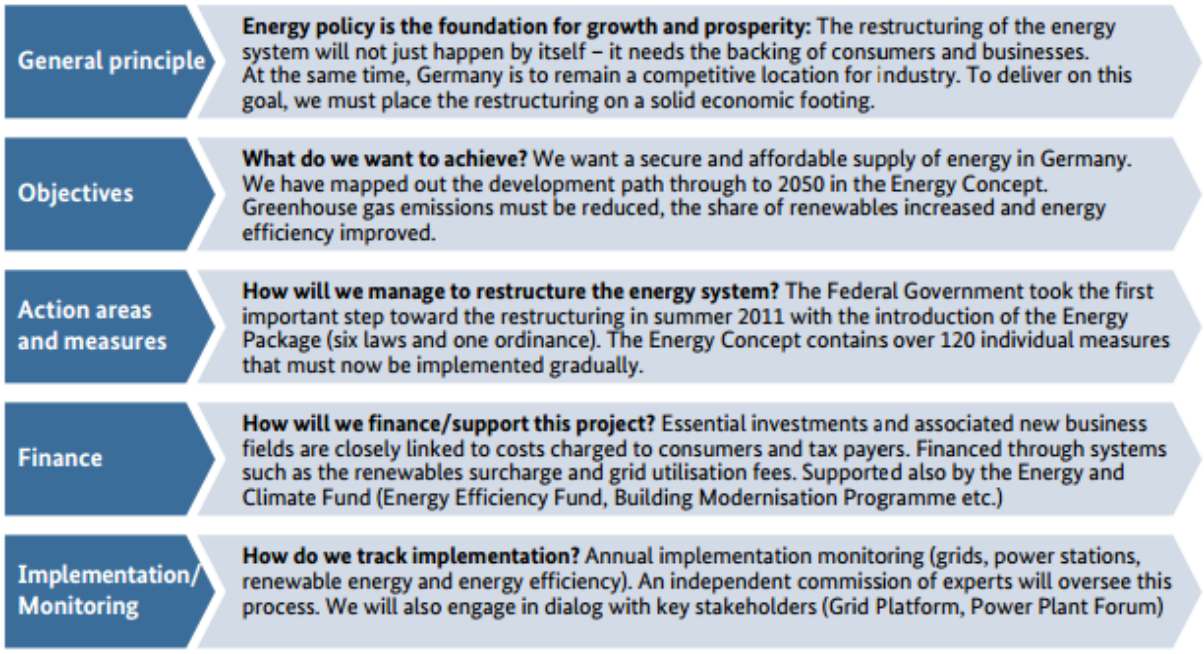
In 2010 German government predicted "[a] limited extension of the operating lives of existing nuclear power plants". Nevertheless, after the Fukushima Daiichi nuclear disaster in 2011, the role assigned to nuclear sources in German energy system was reassessed. As written in the Energy Concept's supplement, "[t]he seven oldest nuclear power plants and the one at Krümmel were shut down permanently. Furthermore, a decision was taken to phase out operation of the remaining nine nuclear power plants by 2022."

Additionally, in mid-2011, German Parliament passed an Energy Package, consisting of 7 legal acts, regulating inter alia renewable energy sources, electricity grid, climate measures.[46] Furthermore, in 2012 German government presented a report titled "Germany's new energy policy. Heading towards 2050 with secure, affordable and environmentally sound energy" ('Report NEP'). The Report highlights the German approach to the energy sector and its main directions. Its general provisions are presented on the following figure.

In reference to the regulatory framework Germany had notified full transposition of the Third Package Directives by the end of September 2011. In the field of Germany's power transmission system it comprises four TSOs: Tennet, Amprion, 50Hertz and TransnetBW. There are 54 regional utilities responsible for distribution and over 800 municipal distributors. As underlined in "Energy Markets in the European Union" generation "is still dominated by four large private companies, E.ON, RWE, EnBW and Vattenfall."

[46] Act to Restructure the Legal Framework for the Promotion of Electricity Generation from Renewable Energy Sources (Gesetz zur Neuregelung des Rechtsrahmens für die Förderung der Stromerzeugung aus erneuerbaren Energien, EEG), including the 2011 firsthand report on the Renewable Energy Sources Act, Act on Measures to Accelerate the Expansion of the Electricity Grid (Gesetz über Maßnahmen zur Beschleunigung des Ausbaus der Elektrizitätsnetze, NABEG), Act to Restructure Provisions of the Energy Industry Act (Gesetz zur Neuregelung energiewirtschaftsrechtlicher Vorschriften, EnWGÄndG), Act Amending the Act to Establish a Special Energy and Climate Fund (Gesetz zur Änderung des Gesetzes zur Errichtung eines Sondervermögens "Energie- und Klimafonds", EKFG-ÄndG), Fourth Ordinance amending the Ordinance on the Award of Public-sector Contracts, 13th Act to Amend the Atomic Energy Act (13. Gesetz zur Änderung des Atomgesetzes, AtomG), Act Strengthening Climate-Friendly Measures in Towns and Municipalities (Gesetz zur Stärkung der klimagerechten Entwicklung in den Städten und Gemeinden). English names of the act are as they are written in Report NEP.

Figure 28. Restructuring the energy system – overall approach



Source: Federal Ministry of Economics and Technology

Electricity production was 51 652 GWh in October 2012.

This was higher by 2 385 GWh, or 4.8%, compared to October 2011.

This was an increase of 5 122 GWh, or 11%, compared to the previous month.

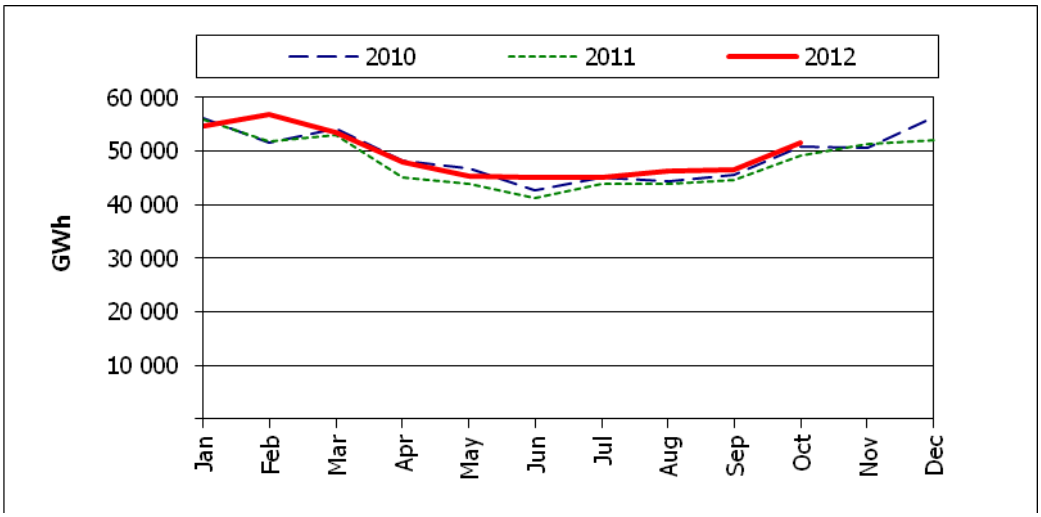
Combustible Fuels production showed the most significant percentage change compared to the previous month with an increase of 16.1%, or 4 878 GWh.

Total production for the year-to-date was 492 998 GWh. Comparing this to the same period last year shows that:

- total production was higher by 20 187 GWh, or 4.3%;
- Geoth./Wind/Solar/Other production showed the largest percentage change by energy source, being 22.6% higher;
- trade volume increased by 8 076 GWh, or 9.5%.

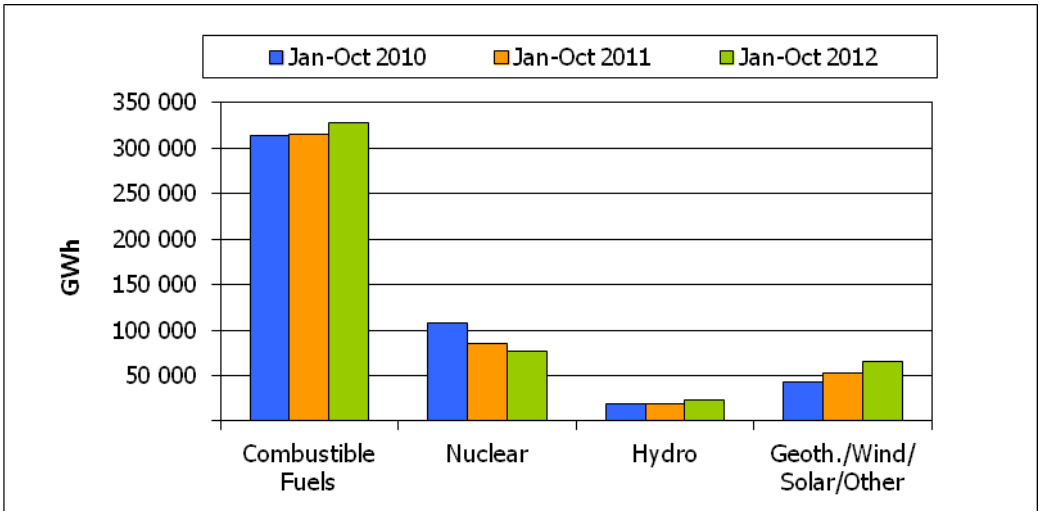
Source: IAE

Figure 29. Electricity production compared to previous year: Germany



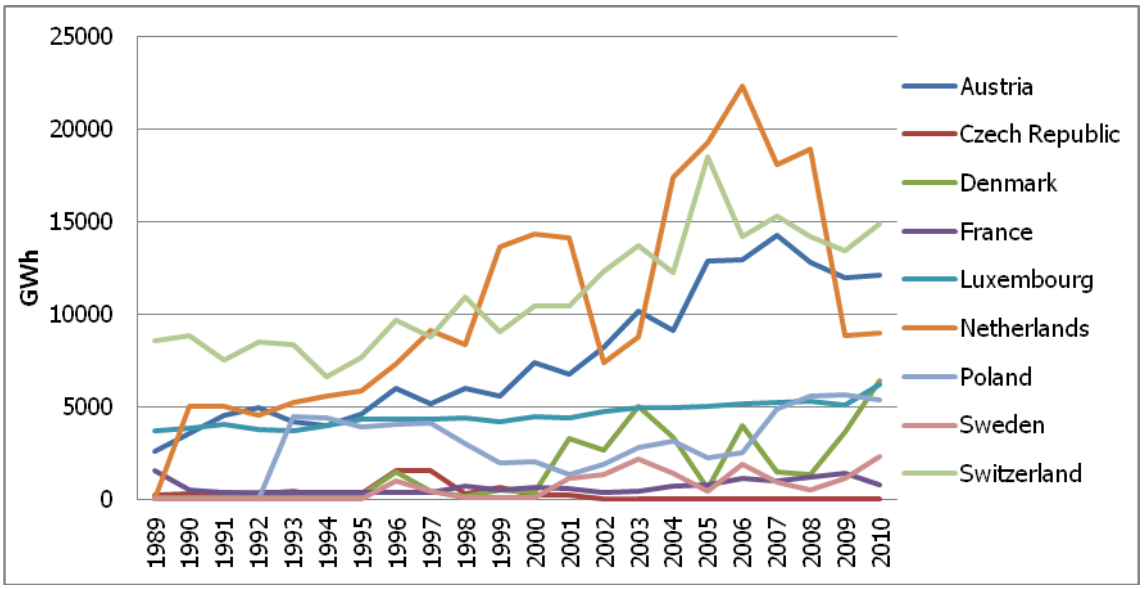
Source: IEA

Figure 30. 'Year to Date' comparison of production by fuel type: Germany



Source: IEA

Figure 31. Electricity imports by origin: Germany



SOURCE: OECD/IEA

The scale of electricity generation in Germany reflects the structure of the German electricity export. In the period presented above, Germany exported electricity to all neighbouring countries except Belgium. The data show that German export to the Baltic Sea Region has a much lower scale (in 2010, 6 400 GWh exported to Denmark, about 5 300 GWh to Polish, and about 2 300 GWh to Sweden) than export to the countries outside the Region (between 15 000 – 10 000 GWh in export). In terms of exports to the Baltic Sea Region, a strong growth in exports to Denmark (in 2008, by about 5 000 GWh), as well as to Poland (in 2006, by over 2500 GWh) may be noticed.

In the terms of the 2012 Energy Sustainability Index, "Germany showed a very stable and overall strong performance across all dimensions and drops by one place in the Index." However, its environmental performance is only ranked 41, "with relatively high energy and emissions intensity per GDP per capita and high CO2 emissions from electricity and heat generation."

As regards German "Trends and Outlook" in the energy sector, the World Energy Council notes that the decision about moving away from nuclear energy sources in energy system is a major challenge for the Germany and its energy mix. What is interesting – as pointed in the 2012 Energy Sustainability Index – "[s]ubsidies for renewable energy and investments in grid infrastructure to integrate the increasing amounts of volatile renewable energy into the system have led and will continue to lead to higher electricity prices. Policymakers must set the right framework towards a free and efficient European electricity market to limit the burden."

Latvia

Latvia had notified full transposition of the Third Package Directives by the end of September 2011. The Latvian national regulator is Sabiedrisko pakalpojumu regulēšanas komisija, the Public Utilities Commission — PUC (in operation since 2001, it employs 110 staff with a budget of around EUR 3 million, 2010). Latvian the TSO is JSC Augstsprieguma tikls ("legally unbundled since 2005, it became a separate company in 2012 and operates as ISO", as stated in "Energy Markets in the European Union"). The main DSO is JSC Sadales tikli ("there are 10 smaller local electricity-distribution companies"). The dominant generator is Latvenergo, according to "Energy Markets in the European Union" it "produced around 90% of all power in 2010 and this was the only company whose market share exceeded 5%." What is interesting Latvia has the highest renewable energy share (34,6%) in the whole EU-27 in the energy-consumption mix

The main targets of Latvian energy policy are stated in Latvia's long term policy strategic document titled "Sustainable Development Strategy of Latvia until 2030." Nevertheless, in Latvian government's opinion "this document does not outline energy policy targets precisely enough to create stable and predictable energy policy framework necessary to attract the needed investments for energy sector development as well as to ensure security of supply by flexibly adopting to different possible energy market development scenarios (…)"[47] Other Latvian planning documents are based on out-of-date and inflexible energy consumption projections (e.g. "Guidelines for Energy Sector Development for 2007-2016").

Consequently, in 2011 Latvian Ministry of Economics started to develop a national energy strategy for the year 2030. The initial draft version was finalised at the end of the year and in December 2011 presented for public consideration. After analysis of the comments and views received, Ministry continued the work on the revised document. A draft of the policy guideline document – "Latvian energy long term strategy 2030 – competitive energy for society" ('Strategy 2030') was announced at State Secretaries' meeting in September 2012.[48] Bearing in mind that Strategy 2030 is just a draft version let us present its provisions relating to the energy market in Latvia and electricity cooperation in the Baltic Sea Region.

In the assumptions of the Latvian government the Strategy 2030 will lead to "the efficient integration of the Latvian energy market in the Baltic energy markets and, correspondingly,

[47] *Latvian energy long term strategy 2030 – Competitive energy for society*, http://www.em.gov.lv/images/modules/items/Latvian_energy_long_term_strategy.pdf.
[48] *Energy Policy*, http://www.em.gov.lv/em/2nd/?lng=en&cat=30169.

the successful integration of the entire region in the energy markets of the Nordic States and the EU." The main objective of the Strategy 2030 is "to promote competitive economy." Energy security (with actions concerning diversifying supply routes, developing energy infrastructure, or engaging in improvement of international regulation) is qualified as Strategy 2030's sub-target.

Furthermore, Strategy 2030 establishes "basic conditions for the development of the energy sector." In this scope, "the wider integration of Latvia into the European and global energy markets (…)" is considered. For this reason the Strategy 2030 "sets several prerequisites and commitments for the directions of actions and measures to ensure access to efficient markets of energy resources, stable and substantiated energy prices, as well as secure national and regional energy infrastructure in the long run". Among other, the following actions are planned:

- ensuring "the liberalisation of the energy market by facilitating the entry of new participants to the market, by promoting the diversification of energy supply sources and ways on the regional scale (…)";
- continuing "close cooperation with regional partners within the framework of the Baltic Energy Market Interconnection Plan (BEMIP) and Connecting Europe Facility (…)";
- continuing "integration of the Scandinavian and the Baltic States electricity market within the framework of NordPool Spot, by forming a unified price region area and developing regional interconnections, so that the joint Baltic region interconnection capacity with the Scandinavian countries and Poland would reach the average load level of the region, reducing rapid electricity price fluctuations, increasing market liquidity, and giving signals to the development of new capacities, including RES."

In the 2012 Energy Sustainability Index Latvia drops in the Index by 14 places to rank 37. According to the World Energy Council report this is a result of "a substantial decrease in energy security", caused by inter alia "slowing down of the reductions in energy consumption." Furthermore, "Latvia's strong environmental performance also experiences a drop driven by higher energy and emissions intensity per capita (…); this is only partly offset by a reduction of CO2 emissions from electricity and heat generation." The overall assessment of Latvia in the World Energy Council's study is also affected by a "very weak economic situation (…)." It "further deteriorates due to a decline in macroeconomic stability and credit availability."

Lithuania

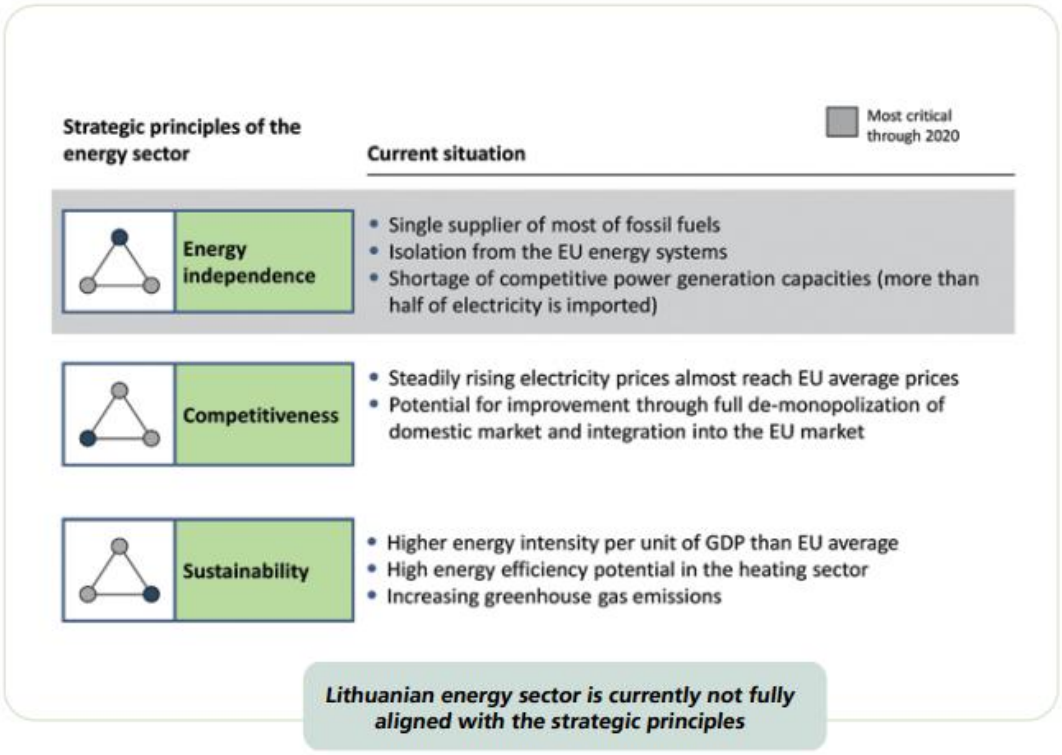
"Following the opening of infringement proceedings in September 2011 for non-transposition, Lithuania has notified full transposition of the Electricity Directive" we read in "Energy Markets in the European Union". In the field of regulatory framework, the Lithuanian regulator is the National Control Commission for Prices and Energy (NCC). It has been in operation since 1997 (employs 46 staff with an annual budget of almost EUR 0.92 million, 2011). As emphasised in "Energy Markets in the European Union" "[t]hese are low figures compared to those of other Member States, even in relative terms."

In terms of unbundling Lithuania chose the ownership model, state-owned TSO (Litgrid AB). There is one major DSO (AB LESTO) and five smaller DSOs in electricity. Regarding generation "[t]he closure of Ignalina NPP in 2009 removed a monopoly power supplier and created room for new suppliers on the market." It not really changed the situation, because "the Lithuanian electricity market is still concentrated." As stated in "Energy Markets in the European Union" "INTER RAO Lietuva UAB and Lietuvos Energija AB each had a 40 % share of the wholesale electricity market and 18 other market players had a combined market share of 20 %" (2010).

Lithuania's strategic actions in the field of energy sector are determined by the "National Energy Independence Strategy"[49] ('NEIS Strategy') adopted in June 2012. The main goal of the NEIS Strategy is to "ensure Lithuania's energy independence before the year 2020 by strengthening Lithuanian's energy security and competitiveness". Additionally, "to become a fully-fledged Member State of the European Union, the Lithuanian energy sector should be entirely integrated into the European energy system."

[49] National Energy Independence Strategy of the Republic of Lithuania was approved by Resolution No XI-2133 of the Seimas of the Republic of Lithuania of 26 June 2012.

Figure 32. Strategic principles of the energy sector: current situation



Source: NEIS Strategy

What is highlighted in the NEIS Strategy, "after the shutdown of Ignalina NPP, Lithuania's energy system became highly dependent on import of electricity and fossil fuels." From the electricity exporter Lithuania turned to the electricity importer. More than half of the Lithuania's electricity is imported from neighbouring countries, mainly from Russia. Moreover, Lithuania has a relatively old power transmission system, which is not connected with the networks of Continental Europe and the Nordic countries. As estimated in the NEIS Strategy, "[d]ue to the growing economies of Lithuania and other Baltic States, the region will experience a significant shortage of electricity by 2020; additional 1.3 GW power generation capacities will be necessary to eliminate it." This situation is additionally complicated by energy isolation of Lithuania. "[T]here are no electricity (…) interconnections with the Continental Western Europe and, therefore, the country is dependent on the sole external energy supplier." As a result, "Lithuanian energy consumers are more vulnerable to electricity or gas supply interruptions or large fluctuations of fossil fuel price compared with countries with diversified and self-sufficient energy systems."

These constitute one of the reasons why Lithuania focuses "on the implementation of those strategic projects and solutions which have crucial impact on ensuring the country's energy independence", which may be differentiated as follows:

(i) 'full integration into the European Energy Systems';
(ii) 'ensuring sufficient competitive local electricity generation capacities';
(iii) 'implementation of the 3rd EU Energy Package'.

In terms of the 'full integration into the European Energy Systems' the actions presented below are provided:

- start-up of the Lithuanian–Polish power link LitPol Link 1 in 2015 and extension of the link in 2020, as well as completion of the extra Lithuania-Poland cross-border power connection (LitPol Link 2) which are all required for the future synchronous interconnection with the European Continental Network of the European Network of Transmission System operators for Electricity;
- completion of the Lithuanian–Swedish power link NordBalt in 2015;
- development of the Regional Baltic States' electricity market and integration into the Nordic and Continental European Electricity Markets;
- synchronous interconnection of the Lithuanian, Latvian and Estonian electricity transmission systems with the European Continental Network of ENTSO-E.

The realisation of the above mentioned projects, "required for the achievement of energy independence will ensure that in 2020 more than 80% of energy-mix, which is currently being imported from the single supplier, is replaced with a well-balanced structure of energy resources." As a result, in this year, "at least half of the required energy will be generated locally (with the focus on nuclear power and renewable energy sources), while the rest of energy will be imported from different sources."

"Lithuania is gradually liberalising its electricity market. Market operator Baltpool was set up at the end of 2009. from the beginning of 2010 Baltpool started to run the electricity market according to the principles of Nord Pool Spot exchange. This is an important step in the formation of the Lithuanian electricity market as part of the Baltic Sea Region and the single electricity market of continental Europe."

NEIS Strategy

Nevertheless, the main aim of Lithuania's energy policy is abolishing country's energy isolation – a step crucial for the creation of an EU's internal energy market. Within this area, Lithuania considers implementation of the BEMIP which "foresees the realization of crucial energy generation and interconnection projects as well as the integration of energy markets in the Baltic Sea Region" as a measure to reach this aim.

According to the World Energy Council's 2012 Energy Sustainability Index Lithuania moves down nine places to rank 31. "There is a significant drop in energy security by 17 places" which is also caused by "[a] less diversified electricity production (…)." In addition, "Lithuania experiences a small drop in environmental performance; however it continues to perform very well despite a high level of energy intensity per capita as it outperforms other countries with similar levels of energy intensity." Nevertheless, "Lithuania's weak economic position further deteriorates to rank 55 due to less credit availability."

Poland

National Regulatory Authority, Urząd Regulacji Energetyki (URE) is the Polish electricity regulator (in operation since 1998, employs 300 staff, with an annual budget of about EUR 8.7 millio, in 2010). What is important Poland has not yet fully transposed the Third Energy Package Directives.

Polish TSO in electricity is PSE Operator SA. In 2010, in distribution, 7 out of 22 DSOs electricity were legally unbundled (the other 15 were exempted from unbundling, "Energy Markets in the European Union"). In terms of ,a as written in "Energy Markets in the European Union" "the three biggest producers together controlled more than 60 % of the Polish market. Polska Grupa Energetyczna SA (PGE) had a 36.5 % market share, TAURON Polska Energia SA (TAURON) 15.1 % and Electricité de France (EDF) 10.2 %. Consequently, market concentration remained high."

In November 2009, the Polish Council of Ministers adopted "Energy Policy of Poland until 2030" ('Energy Policy 2030')[50]. This strategic document sets out the framework of the Polish energy sector's development. It "presents the strategy of the state which aims to address the most important challenges that the Polish power industry must face, both in the short and in the long run, until 2030."

[50] *Energy Policy of Poland until 2030*, adopted by the Council of Ministers on 10 November 2009 http://www.mg.gov.pl/files/upload/8134/Polityka%20energetyczna%20ost_en.pdf.

In reference to electricity market, the primary directions of the Polish energy policy are inter alia diversification of "the electricity generation structure by introducing nuclear energy", development of "the use of renewable energy sources" and "competitive fuel and energy markets."

Electricity in Poland is generated in the domestic system "with reduced possibilities of international exchange – currently less than 10%." This led to the necessity of developing "electricity generation capacity, power grid transmission and distribution capacity." Consequently, the main directions of the "Energy Policy 2030" include "increasing the possibilities to exchange electricity with neighbouring countries" and, in the field of generation and transmission of electricity, ensuring ongoing meeting of demand for energy, taking into account the maximum possible use of domestic resources and environmentally friendly technologies."

What is more, "Energy Policy 2030" elaborates upon the actions which are important in the context of energy cooperation in the Baltic Sea Region. These entails e.g. "[d]eveloping cross-border connections coordinated with extending the domestic transmission system as well as the systems in neighbouring countries, which will allow to exchange at least 15% of electricity used in Poland by 2015, 20% by 2020, and 25% by 2030." To achieve this specific objective "[r]econstruction and reinforcement of the existing power lines and building new ones, particularly those enabling cross-border electricity exchange with neighbouring countries" is planned. Additionally, Poland will seek to play a leading role in the process of regional integration of electricity markets. It "will assume the role of an emissary of practical implementation of the European standards into the functioning of the markets." As stated in the "Energy Policy 2030", Poland will also work towards achieving standards of cooperation in energy systems with neighbouring Member States (Lithuania) as well as third countries (Ukraine, Belarus) by "building connections and developing trade in electricity."

Finally, as it has already been mentioned, Poland plans to diversify the electricity generation structure with a use of nuclear energy sources. "Climate protection and the climate and energy package adopted by the EU result in the need of switching generation to low CO2 emission technologies. In the current situation, particular significance is attached to using all available technologies simultaneously enhancing energy security and lowering emission of pollutants, retaining economic efficiency." In the Polish government's assessment a response to these challenges is a nuclear power, since "[a]part from the lack of CO2 emission, it also ensures independence of typical directions from which energy resources are obtained."

Electricity production was 12 526 GWh in October 2012.

This was lower by 260 GWh, or 2%, compared to October 2011.

This was an increase of 1 151 GWh, or 10.1%, compared to the previous month.

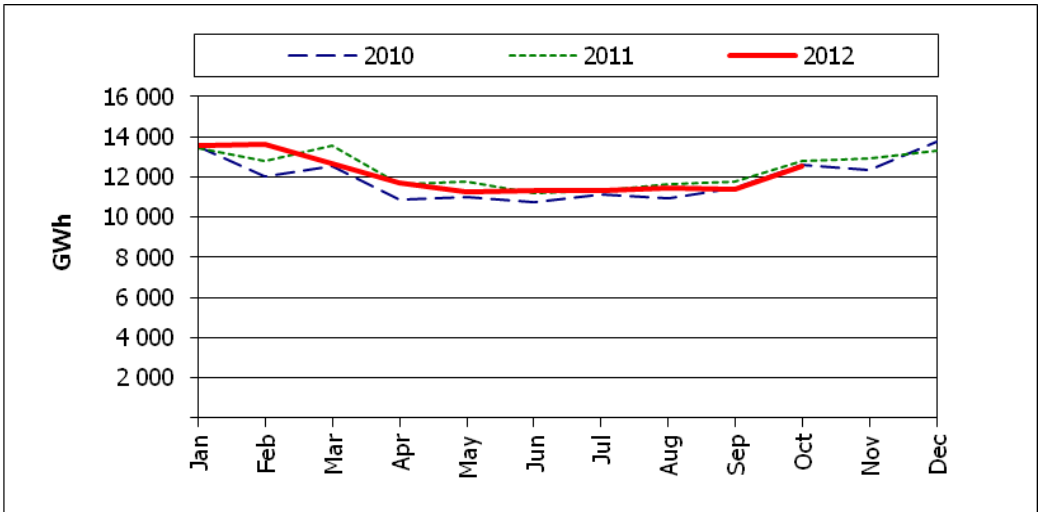
Hydro production showed the most significant percentage change compared to the previous month with an increase of 25.4%, or 30 GWh.

Total production for the year to date was 120 745 GWh. Comparing this to the same period last year shows that:

- total production was lower by 1 273 GWh, or 1%.
- Geoth./Wind/Solar/Other production showed the largest percentage change by energy source, being 65% higher.
- trade volume increased by 5 014 GWh, or 36.3%.

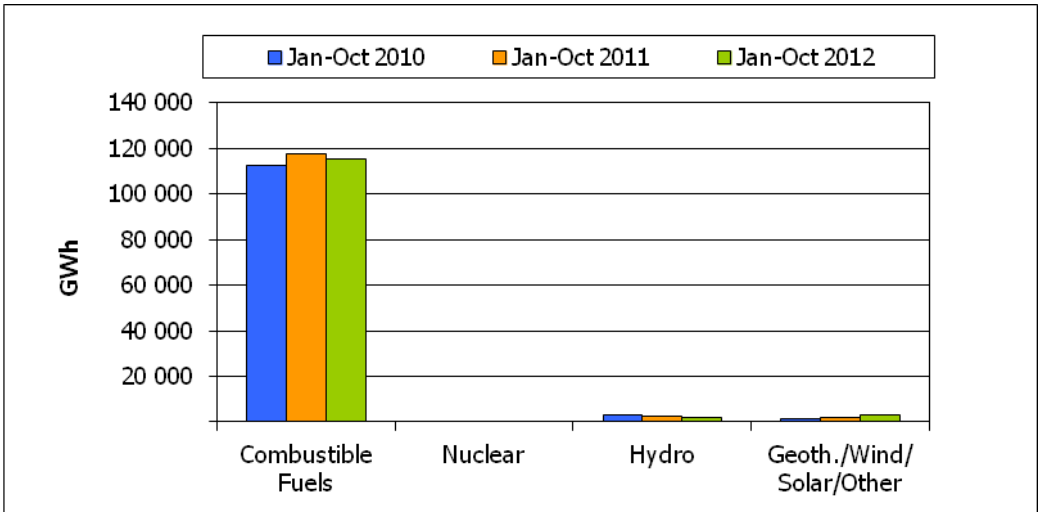
Source: IAE

Figure 33. Electricity production compared to previous year: Poland



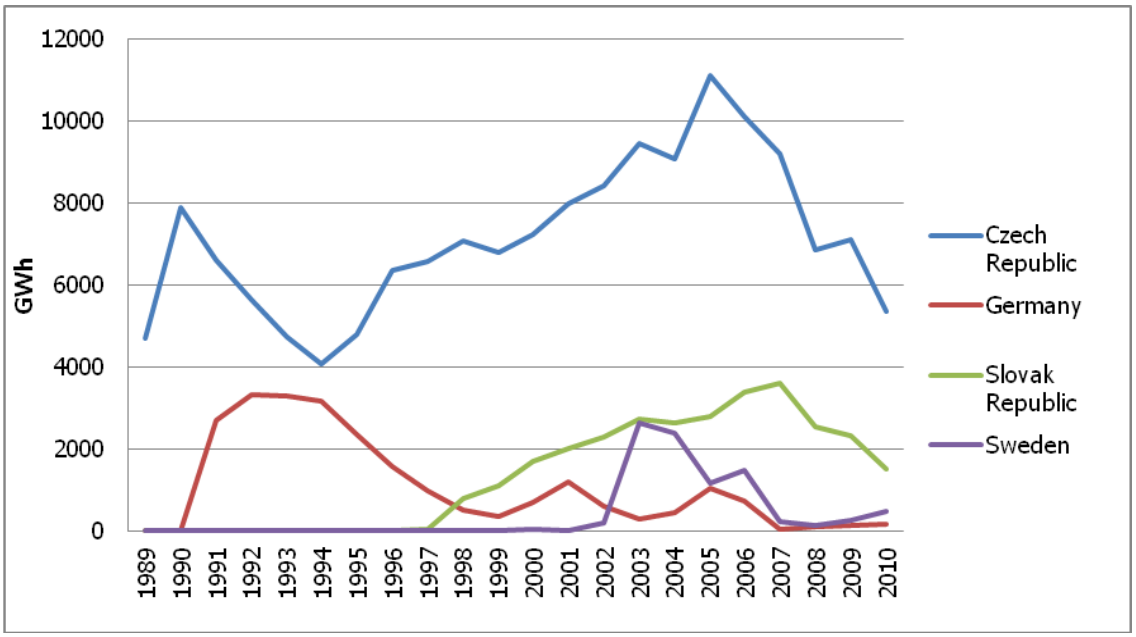
Source: IEA

Figure 34. 'Year to Date' comparison of production by fuel type: Poland



Source: IEA

Figure 35. Electricity imports by origin: Poland



SOURCE: OECD/IEA

In 2010, Polish exports of electricity to the two states of the Baltic Sea Region - Germany and Sweden reached a very low volume (approximately 500 GWh exported to Sweden and less than 200 GWh exported to Germany). These values differ significantly from the Polish historical peaks: in 2003 for Sweden (more than 2600 GWh in exports), and 1993 for Germany (3 300 GWh). For a comparison, Polish exports to the Czech Republic in 2010 were higher than 5 300 GWh (with the peak of 11 000 GWh exported in 2005).

In the 2012 Energy Sustainability Index Poland goes up by 6 places to rank 47. This is "mainly driven by improvements in the energy dimensions", e.g. a "more diversified electricity production lead[s] to an increase in energy security despite an increased energy consumption growth rate (…). As regards to the Poland's "Trends and Outlook", "[t]he diversification of the structure of electricity production by building new, more efficient thermal power and nuclear plants", "introduction of incentives that foster the development of renewable energy" or "limiting the energy sector impact on environment by development of clean coal technologies" are expected to "positively affect energy efficiency, increase energy security and improve the mitigation of the environmental impact" In addition, to name the few, "[e]xpected future trends effecting Poland's sustainability balance and issues for policymakers to focus on" involve: "1) reduction of primary energy imports possibly by exploiting shale gas resources"; "2) modernisation of the energy sector" (with huge investments necessary in electricity); as well as "3) improvement of energy intensity and reduction of CO2 emission by deploying low emission technologies to achieve 'zero' emission growth."

Sweden

In September 2012, Sweden declared that the Third Energy Package Directives have been fully transposed. The Swedish regulator is Energy Market Inspectorate – EI (in operation since 2008, employs 95 staff, an annual budget of around EUR 11 million). "Despite being an agency administratively attached to the Ministry of Enterprise, Energy and Communication, it is an independent NRA with satisfactory powers" we read in "Energy Markets in the European Union". Svenska Kraftnät is the TSO for electricity. It has been certified under the ownership unbundling model. In electricity, 170 DSOs are functionally unbundled.

In the field of wholesale power market, Sweden is part of the integrated Nordic power market. Electricity production (2010) was dominated by three companies, Vattenfall, Fortum and E.ON. According to "Energy Markets in the European Union" they together controlled 80 % of generation. Nevertheless, as it is underlined in this mentioned Commission Staff Working Document, "thanks to the connection with Nord Pool, the actual number of players active on the wholesale market is higher."

In 2009, Swedish Parliament established in the form of binding legal acts the new "Integrated climate and energy policy".[51] The new Climate and Energy Policy enforces

[51] Bills 2008/09:162 and 2008/09:163.

energy targets and strategies for Sweden that are in a line with EU's 20/20/20 targets. What is more, the policy coincides with the earlier proposal of the government and is, therefore, presented on the basis of it.[52] In this context, Swedish government's climate and energy policy targets to be realized by 2020 include reaching 40% reduction in greenhouse gas emissions, and achieving at least 50% share in renewable energy (with at least 10% renewable energy in the transport sector). Measures to be taken in order to reach the emission target involve "using economic instruments in the area of taxation (…) including the carbon dioxide tax", while achieving the target in the field of renewable energy requires "establishing a national planning framework for a wind power production" and "improving the conditions for connecting renewable electricity production to the electricity grid." It should be also mentioned that Sweden established the emission 'vision for 2050'. By this year, "Sweden should have no net emissions of greenhouse gases into the atmosphere."[53]

What is interesting from the point of energy cooperation in the Baltic Sea Region, according to Swedish government's proposal, well-functioning energy markets are measures to "create better conditions for energy supply, the environment and growth." Furthermore, Swedish "aim is to achieve an efficient electricity market with healthy competition that provides secure access to electricity at internationally competitive prices." In this context, Sweden's government emphasises the role of the Nordic electricity market which "is necessary for the efficient exploitation of common production resources in the Nordic region", as well as underlines the necessity to eliminate "[b]ottlenecks in the Nordic electricity grid and between the Nordic region and the European continent (…).

In 2009, Swedish government assessed nuclear energy sources as "an important part of Swedish electricity production for the foreseeable future." The reason for this stems from "an increased focus on climate change" connected with the fact that "nuclear power fulfils one of the most important requirements placed on today's energy sources, i.e. that leads to low greenhouse gas emissions."

[52] *An integrated climate and energy policy*, http://www.government.se/content/1/c6/12/34/66/1a1aa683.pdf
[53] "Energy in Sweden 2011", Swedish Energy Agency 2012.

Electricity production was 14 341 GWh in October 2012.

This was higher by 1 892 GWh, or 15.2%, compared to October 2011.

This was an increase of 2 470 GWh, or 20.8%, compared to the previous month.

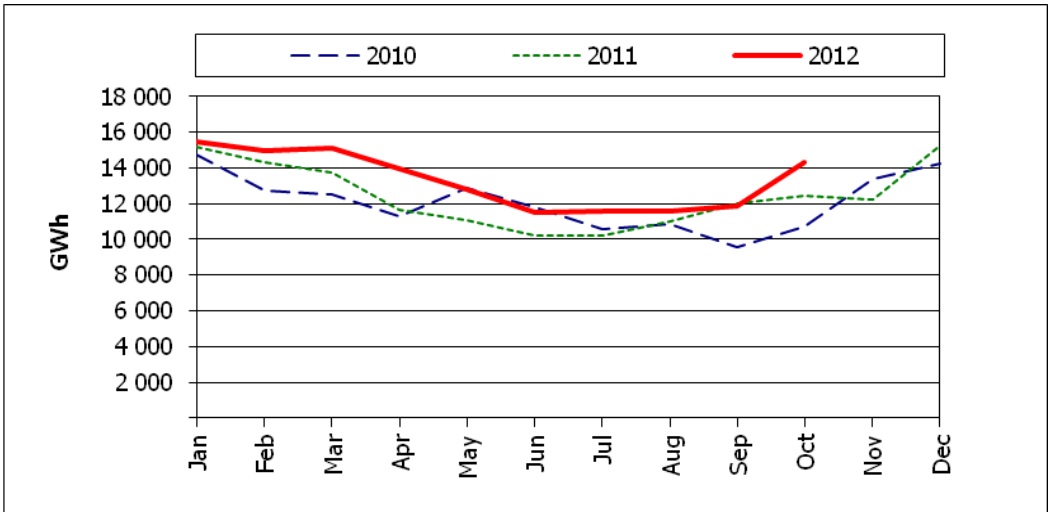
Combustible Fuels production showed the most significant percentage change compared to the previous month with an increase of 30.6%, or 314 GWh.

Total production for the year to date was 133 191 GWh. Comparing this to the same period last year shows that:

- total production was higher by 11 372 GWh, or 9.3%.
- Geoth./Wind/Solar/Other production showed the largest percentage change by energy source, being 21.7% higher.
- trade volume increased by 9 957 GWh, or 37%.

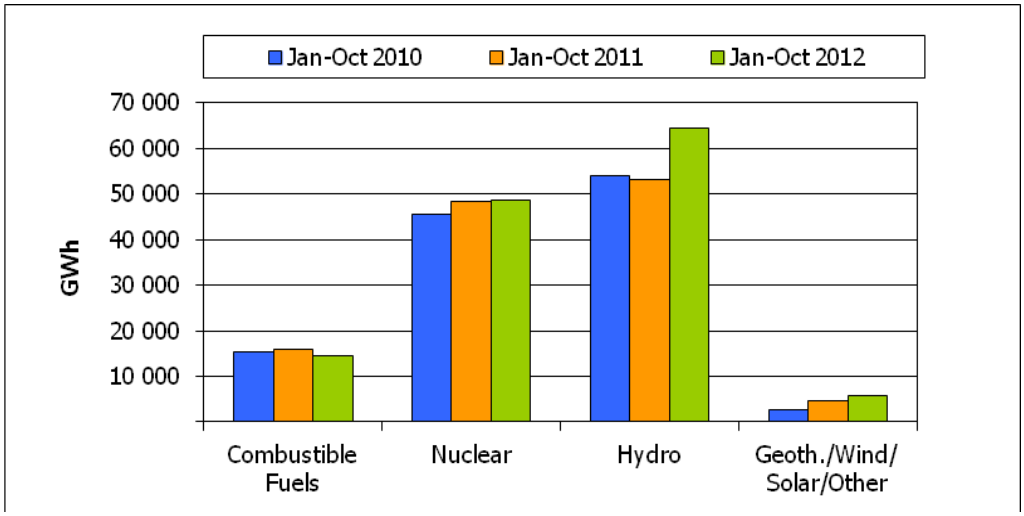
Source: IAE

Figure 36. Electricity production compared to previous year: Sweden



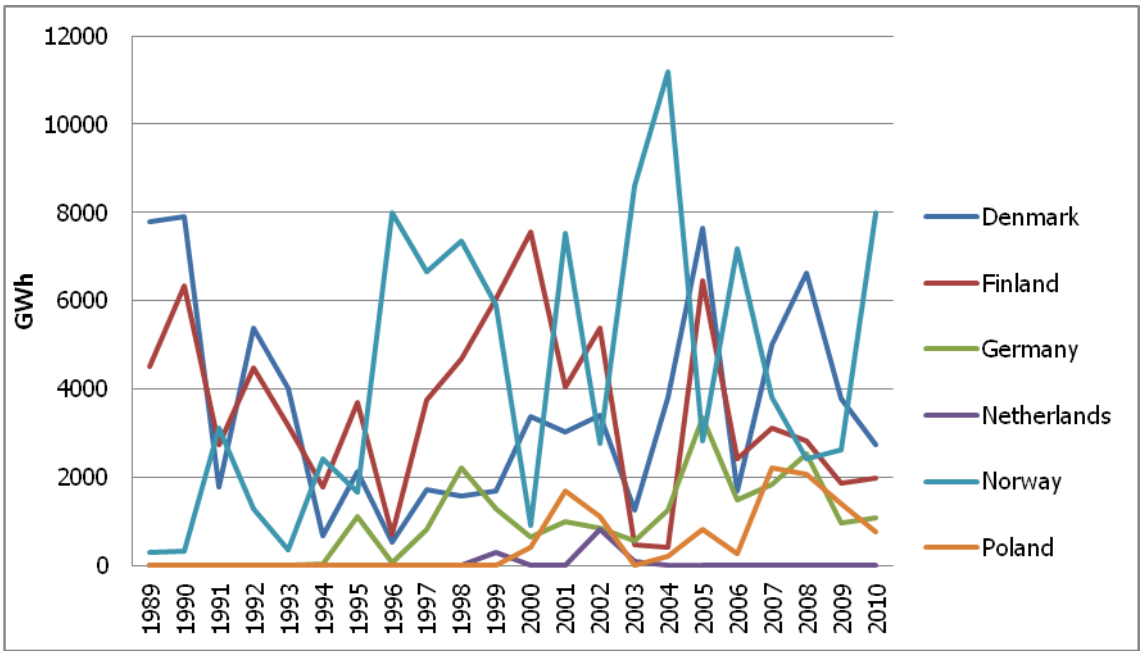
Source: IEA

Figure 37. 'Year to Date' comparison of production by fuel type: Sweden



Source: IEA

Figure 38. Electricity imports by origin: Sweden



SOURCE: OECD/IEA

In the field of Swedish export of electricity a high rate of energy transmission to Norway may be observed. It is characterized by high and frequent jumps, notable for a large volume of electricity exported (a peak of more than 11 000 GWh of electricity exported in 2004). Similar jumps in the energy exchange occur in the case of Finland and Denmark. However, in 2010 a downward trend can be noticed with only 2 700 GWh reported for exports to

Denmark and 2000 GWh to Finland - 2-3 times lower values when confronted with the previous years. At the same time the exports to Norway grow. For a comparison, in 2010 the Swedish export to Germany and Poland did not exceed the level of 1 000 GWh (Germany's peak is around 3 300 GWh in 2006, and the Poland's peak is approximately 2 200 GWh in 2007).

According to the 2012 Energy Sustainability Index, Sweden climbs to the top of the Index from number 4 in 2011. "The jump is due to a substantial increase in energy security (…)." Sweden recorded also "a relative increase in quality and affordability of electricity supply." Additionally, "Sweden continues to perform very strongly in environmental impact mitigation, which is driven by (…) low emissions intensity on a per capita level and in electricity and heat generation, however energy intensity is still relatively high."

In the area of Swedish energy sector "Trends and Outlook", the World Energy Council indicates that "Sweden has a successful market-based green certificate system for promoting renewable energy sources (RES) in place since 2003 and since 2012 this is a joint system with Norway" which is assessed by the Council as "a major step forward." Furthermore, Swedish policymakers have to solve the issue of replacing ten nuclear reactors "which are expected to close around 2025 to meet the future electricity demand." Thus, "[p]ermit application for building new reactors to replace existing ones have been filed, in line with the governmental decision to allow the replacement of existing reactors at existing sites." Finally, apart from actions to be taken in the field of EU CO2 reduction and RES targets, in the 2012 Energy Sustainability Index the need to treat energy efficiency as a Swedish "top priority" is also strongly underlined.

Summary

The Baltic Sea Region, comprised by 8 European Union countries – Denmark, Estonia, Finland, Germany, Latvia, Lithuania, Poland and Sweden has a significant economic and social potential. This finds its confirmation in the BSR being the 'practical internal sea' of the European Union – almost *mare nostrum* ('practical' due to the location of the Kaliningrad Oblast within the Baltic Sea). The geopolitical situation of the Baltic Sea Region makes this area a 'crossroad of the Western and Eastern Europe.'

The European Union considers the BSR a possible "model of regional co-operation where new ideas and approaches can be tested and developed over time as best practice examples" – as may be read in the Strategy for the Baltic Sea Region. Its strengths and possibilities are composed of different approaches, different economies and different energy.

A good example of this diversity is the key issue of this Report – the energy sector. In reference to the Baltic Sea Region's potential, when we compare the energy generated in the European Union and in the Baltic Sea Region it can be seen that the energy generated by the Member State within the Baltic Sea Region is about 1/3 of the energy generated in the European Union. A similar situation emerges in the case of the balance of the gross energy consumed. The Baltic Sea Region Member States consume about 1/3, whereas EU-19 Member States 2/3 of the total energy consumption in the European Union. In the area of gross electricity consumption per capita, an average for the Baltic Sea Region is almost 1000 kWh higher than the average for the European Union. Additionally, it is 1300 kW higher than the average for the EU-19.

However, the German energy generation represents more than half of the total volume of the electricity produced within the Baltic Sea Region. The electricity consumption per capita is higher in the Baltic Sea Region due to a high per capita consumption in Finland and Sweden. The German population is over 80 million, or nearly 17 times more than the population of Finland, but the consumption of electricity per capita in Germany is 2 times lower than in Finland. On the other hand, in Poland, having more than 10 times more people than Lithuania, electricity is consumed almost at the same level as in that country. Finally, in Sweden, with population similar to that of Poland, the value of gross electricity consumption per capita is 4 times higher than in Poland.

A complex nature of this region, shaped in many ways, may become its advantage. Naturally, this requires an appropriate policy and ensuring coordination. This kind of

approach is being implemented by the European Union in the field of energy sector. It is one of the main pillars of regional cooperation and due to its importance for modern economy the European Union treats it as the priority. That is why the European Union takes steps – by adopting new energy policies and enacting relevant legislation – to improve the European energy situation.

And there is a lot to improve. In the Baltic Sea energy sector, it is easy to recognize challenges that need to be tackled. According to the Strategy for the Baltic Sea Region, within the category of such challenges, the 'lack [of] appropriate infrastructures' and 'too nationally oriented energy markets' should be stressed. These affect mainly the 3 Baltic states: Estonia, Latvia, and Lithuania (what results in their 'energy isolation'), but new energy interconnectors should also be developed in other parts of the Baltic Sea Region. Furthermore, as we may be find in the Strategy's Action Plan, "the historical and geographical position of the Eastern Baltic Member States, with their internal networks largely oriented East-West, makes substantial investment in (…) energy infrastructures particularly important." Moreover, in certain Member States levels of market opening and competition "are not sufficient to provide the right incentives for investments."

Fragmented (isolated) electricity markets lead to the emergence of 3 main problems: "(a) access to the power generation capacities in the region is difficult (insufficient cable linking producers and consumers, different electricity standards, etc.); (b) higher prices in the absence of economies of scales and competitors; and (c) few incentives or opportunities for infrastructure investment especially in renewable energies." – as summarised in the Strategy's Action Plan.

This situation caused the need to take crucial steps at the European level. That is why energy and its infrastructure has been qualified as one of the Baltic Sea's 15 priorities ('To improve the access to, and the efficiency and security of the energy markets'). In this area, the main actions were divided into 'strategic' and 'cooperative'.

The strategic action aims to 'establish an integrated and well functioning market for energy'. According to the Strategy's Action Plan, the strategic action should be achieved by the implementation of the BEMIP "(…) which in addition to infrastructure projects, includes specific steps to achieve the desired integrated and functioning internal market for energy. This should include better coordination of national energy strategies, and measures to promote diversity of supplies and better functioning of the energy market." The BEMIP

occupies a more specific level of the European Union policy in the field of strategic planning and coordination.

The goals to 'increase use of renewable energies' as well as to 'ensure more cross-border cooperation' are classified as 'cooperative actions'. The measures to be developed in order to implement the first include the extension of "the use of biomass, solar energy and wind power especially by research in demonstration and deployment of on- and offshore wind and other marine renewable energy technologies". When it comes to ensuring 'more cross-border cooperation' it is vital to share "experiences and coordinate better in fields such as electricity grid and maritime spatial planning, regulatory practices regarding interconnector investments, and environmental impact assessments of wind farms" (Strategy's Action Plan).

To steer activities in the field of the implementation of the BEMIP, the European Union appointed the High-Level Group. This body has elaborated another strategic document, which aims to develop energy sector in the Baltic Sea Region: the BEMIP Action Plan. It includes projects and actions within the scope of the BEMIP. Due to its sectorial character it covers also the issue of electricity.

The main issue of the BEMIP Action Plan is to link three Baltic countries (Latvia, Lithuania and Estonia – 'Baltic energy island') with the European Union grid. "It aims at developing sufficient interconnections to the grids of Finland, Sweden and Poland, as well as at integrating the Baltic area with the Nordic power market", since "the need for and viability of electricity interconnections is determined by the future distribution of power generation, levels of adequacy and expected power flows within the region." The development of power transmission is connected with the development of power generation. Generation and transmission (distribution) of electricity are the two inter-related components of the power system. Failure of one is reflected in the condition of the other (and vice versa).

The potential of renewable energy, in terms of generation, is highlighted in the BEMIP Action Plan ("The Baltic Sea Region is particularly well-positioned to further increase penetration of renewable energy sources"). The High Level Group sees great chances in the use of wind energy in cohabitation with the hydroelectricity. As emphasised in the BEMIP Action Plan, "[b]alancing wind power plants with hydro generation on a regional basis provides opportunities to become a leading macroregion in this area within the EU". "[T]he possibility to connect an increased amount of wind power and other new sustainable energy sources to the Baltic grid" is treated as one of the main advantages of a regional approach to energy security and energy network development. Despite the fact that members of the High Level

Group indicate the crucial role of wind energy, the diversity of countries' approaches should also be noted - "[p]lans differ from country to country but in general it can be said that wind is given a prominent role in the region as one of the most important renewable energy sources. Wind power already plays an important role in Denmark and Germany. Plans for installed capacity for 2020 for the Baltic Sea Region exceed an overall 10 GW."

The other component of strengthening the power system is the grid's development. Investments in this area, particularly in interconnectors, are highly important for the establishment of an internal energy market within the European Union. Physical infrastructure enables "market integration and efficient market functioning" (BEMIP Action Plan) and together with electricity generation enhances energy security. These circumstances make it a real condition for an internal energy market. That is why new projects of electricity interconnectors have been proposed in the BEMIP Action Plan.

The realisation of investments in the field of these two main components of achieving the internal energy market - generation and transmission- has been under control of the High Level Group, which up to this day has elaborated 4 reports on the BEMIP's progress. The reports constitute an important source of information about the development of the Baltic Sea Region's energy integration. Apart from including generally positive assessments, the reports show also some shortcomings and delays taking place during the realization of the Baltic energy projects. What is also worth to mention, the reports themselves are characterized by certain gaps in terms of reporting, such as e.g. incomplete data from particular countries or lack of appropriate updates on specific investments.

Policy remarks

Energy market scenarios of the Baltic Sea Region's development may be different but they revolve around two main directions: positive and negative, standing for extreme points of the future shape of the EU energy market. Of course, there are numerous intermediate (moderate) forms between them, but let us focus below only on the positive and negative scenarios.

The first scenario (positive) entails achieving the aims expressed in the strategic documents of the European Union. It concerns primarily the integration of 3 Baltic States with the rest of the European Union. However, it is legitimate to percept the Baltic Sea Region as a wider area, consisting of 8 countries, as a minimum, with a possible extension to Norway, or Norway and Kaliningrad Oblast. This area, in the field of political, economic, and energy

relations, has a high potential that can be better used for the pan-European needs, e.g. plans for the development of wind generation, which – with the cooperation of all the countries in the Region – can become a counterpart of energy co-operation in the North Sea. This approach being limited to the 3 Baltic States is inadequate. However, most of the European Union's strategic documents on the energy sector limit this area to those 3 Baltic States and their problems (key BEMIP's goal: 'energy isolation of the 3 Baltic States'). However, the efforts to extend this perspective (e.g. the investment part of the BEMIP) should be also taken into consideration.

In this context, if we look at the area of the Baltic Sea as one holistic part of the EU internal energy market, we will see that it is characterized by a kind of optimal energy market with a vast array of sources. In terms of energy security, understood through the prism of the possibility of using indigenous energy resources, it is a general advantage of the Region. However, many of these sources are technologies considered by the European Union as market's 'coming down' sources. These are mostly conventional, primarily coal sources. Another issue is the use of nuclear sources. Some of the states of the Region have decided to terminate the nuclear program (Germany), some continue to pursue it (Poland, Lithuania), while others expand the range of the programme (Finland). Again, coming back to the argument about the optimization of the energy mix, – the use of a variety of sources in this area can positively serve the whole Region (e.g. in terms of energy security, but also of the pricing policy).

Nevertheless, this approach requires the development of the energy interconnectors. They are a *sine qua non* condition of the establishment of an internal European energy and are crucial for further strengthening of bilateral and regional cooperation within the Baltic Sea Region. Building energy interconnectors is the key to the internal energy market.

Therefore, the European Union activity in this field should be assessed positively. This refers to both strategies proposed by the Union and specific legislative solutions designed to accelerate the development of EU priority energy connections ('infrastructure package'). It is reasonable to establish more decentralized, regional approach in the construction of the energy market in the European Union, which may be based on a regional cooperation platform. This enables the combination of two strategic management's paradigms: decentralization and centralization.

It should be noted that in March 2013 the European Council adopted the Regulation on Guidelines for trans-European energy infrastructure, with the European Parliament approval.

According to Günther Oettinger, "[t]his is really a breakthrough and will give a big push to much needed infrastructure: Rather than waiting up to 12 years or longer for a permit, developers of crucial cross-border infrastructure - such as pipelines or power grids - will have a decision in about 4 years. This will save them time and money – and will help us creating a true European market where energy systems are physically connected with each other. Consumers and companies will profit because competition keeps costs down."[54]

The second of the scenarios (negative) is related to the noncompletion of the European Union's objectives. This issue is presented in an interesting way in the Lithuanian "National Energy Independence Strategy" ('NEIS Strategy'). Naturally, it refers to the Lithuanian energy sector, however, some aspects of it may be applied to a more general level of the Baltic Sea Region's remarks (what is consistent with the broad approach to the Baltic Sea Region).

According to the NEIS Strategy, "a lack of implementation of projects and initiatives established in the analysed document would lead to the following negative consequences for Lithuania's and other Baltic States":

(i) '[p]ersistent dependence on the single external energy supplier and foreign energy monopolies';
(ii) '[p]ersist external threat that monopolistic energy supply may be used not only for economic purposes, but also for the attainment of (geo)political goals';
(iii) '[f]ailure to develop the common Baltic States energy market', leading to low competitiveness of Lithuania and all Baltic States as well as inadequate security of energy supply because of the unused market potential';
(iv) '[d]ue to the absence of own nuclear power plant the needed electricity would be imported from the third (non-EU) countries (not excluding the nuclear power plants with questionable security level of the third countries)';
(v) 'Lithuania, as a constituent part of the IPS/UPS electric energy system controlled by the Russian federation, would remain within the authority area of the Eastern geopolitical space';
(vi) '[n]on-implementation of the 3rd EU energy package: non-liberalised energy market, inadequate access to supply networks by alternative energy suppliers, absence of competitiveness and unfavourable energy prices for consumers';

[54] *Commissioner Oettinger welcomes Council adoption of the Energy Infrastructure Regulation*, http://europa.eu/rapid/press-release_IP-13-266_en.htm?locale=FR.

(vii) '[p]ersistent dependence on fossil fuel (oil and natural gas) – decrease in the reserves of fossil fuel and simultaneous increase in their demand would cause disproportionate growth of their prices undermining the competitiveness of the country's economy';

(viii) '[u]nused potential of the local and renewable energy sources and inefficient use of energy sources resulting in a larger-scale import of electricity from the outside and greater energy dependence.'

The 'failure to develop the common Baltic States energy market', when broadened to the whole Baltic Sea Region, can have similar consequences in the field of inadequate security of energy supply, as a result of the unused market potential within the whole Region. The same takes place with 'non-implementation of the 3rd EU energy package' i.e. non-liberalised energy market, inadequate access to supply networks by alternative energy suppliers, absence of competitiveness and unfavourable energy prices for consumers. Naturally, these will also touch other countries, however with a different scale of impact as a result of a different level of advance in the market activity. Furthermore, 'dependence on fossil fuel (oil and natural gas)' concerns not only the 3 Baltic States but also Poland, and to some extent Germany (increased production of energy from coal in Germany due to the withdrawal of nuclear sources of energy system at a low price of CO2 emission rights[55]). The same occurs with 'unused potential of the local and renewable energy sources' and inefficient use of energy sources, which can find application in all countries within the Baltic Sea Region if the actions aimed at implementing the European Union strategies dedicated to energy sector as well as to Baltic Sea Region are slowed down or withdrawn (e.g. developing wind generation on the Baltic Sea needs action in the field of energy interconnections and strengthening each countries' grid).

Naturally, narrowing the development scenarios for the energy market to bipolar variations (positive and negative) is subject to an error of generalization. In fact, this may lead to the omission of certain important details and determinants. Economic relations, including those in the energy sector, are characterized by high complexity. Already mentioned investments delays are good examples of such a complex relation (among which delays in the field of Polish nuclear power program, Finnish nuclear power plant, Visaginas power plant or development of national grids for the needs of supporting interconnectors may be found).

[55] *Merkel's Green Shift Forces Germany to Burn More Coal*, http://www.bloomberg.com/news/2012-08-19/merkel-s-green-shift-forces-germany-to-burn-more-coal-energy.html.

Apart from the challenges already mentioned, other problems to be faced by the Baltic Sea Region in 2013 may be exemplified, e.g. low capacity of Latvian-Estonian cross-border energy transmission. "Besides, Latvia is taking its first steps in establishing electricity exchange. In view of this electricity price in Lithuania is much higher than in Estonia and only a small part of Estonian energy reaches Lithuania."[56] Other problems concern the electricity generation within the 3 Baltic States. They are counting on the construction of the Visaginas nuclear power plant. However, as we may be read in Geopolitika, Latvia "considers a possibility to participate in another nuclear power development project in the region. There are also plans to resume the construction of a coal-fuelled plant (this project was suspended after Visaginas has been chosen as an alternative). Besides, there is also a possibility to reconstruct Daugava's hydro-electric power stations or construct new plants, including a biomass and municipal solid waste incineration plant in Daugava. Construction of coastal or off-shore wind farms is also possible." Additionally, "[t]he final integration of the European Union's three Baltic states to the Nordic power exchange may be delayed past June as Estonia and Latvia disagree over whether Russia should be given import preference."[57] The lack of Latvia in the Nord Pool makes Lithuania an "isolated area for power trading as it only has cross-border connections to the Russian enclave of Kaliningrad and Belarus, and none to the Nordic or EU power markets" (Bloomberg.com). Other issues for broader energy debate in the field of Baltic Sea Region concern transition of German, Swedish and Danish economy into renewable energy economy, optimising Polish energy mix, as well as nuclear energy program in Finland.

Finally, the energy challenges of the Baltic Sea Region require an appropriate regulatory plan in a strategic dimension. BEMIP is an opportunity to create a regional energy market, although the pan-Baltic (not only 3-Baltic) dimension could be more accentuated at the strategic level. Additional, important instruments are elaborated by the European Union legislative packages, including the already presented "infrastructure package". With the new financial perspective, they provide an opportunity to accelerate investment efforts aimed at building internal energy market.

However, it should be called for greater coordination and verification of assumptions. Noteworthy is the general idea of functioning of the High Level Group. Nevertheless, attention should be drawn to the need to improve the reporting of the progress of

[56] *Electricity policy in the Baltic States: On the Eve of Decisive Decisions*, http://www.geopolitika.lt/?artc=5838.
[57] *Baltic Dispute Over Russian Power May Delay Joint Market*, http://www.bloomberg.com/news/2013-01-31/baltic-dispute-over-russian-power-may-delay-joint-market.html.

investments and actions conduced in the individual states. It is necessary to accelerate investment and make up for the delays. Perhaps the political activity should also be intensified and the establishment of another, revised strategic document of all 8 Member States introduced. The latter could take into account the developed (or adopted) European legislation, as well as the new perspective on the European budget. Moreover, it could have a sectorial character, i.e. be devoted to the development of wind generation in the Baltic Sea Region.

The Baltic Sea Region has a great potential. Naturally, combining different approaches requires time and financial resources. However, the effect, in the form of an internal energy market, providing greater energy security and improving competition within the Region, is well worth making the effort. Taking into account this idea, aiming at the connection of the Region with the use of the energy infrastructure, the activity undertaken by individual Member States as well as the general direction proposed by the European Union should be assessed positively, although some measures are still to be implemented.

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APPENDIX

Table 1. Overall electricity generation in the Baltic Sea Region and the European Union between 1991-2011[58]

[TWh]	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Denmark	26	36	31	34	41	37	54	44	41	39	36	38	39	46	40	36	46	39	36	36	39	35
Estonia n.d.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Finland	54	57	57	61	65	63	69	69	70	69	70	74	75	84	86	70	82	81	77	72	81	74
Germany	550	539	537	526	528	535	550	550	553	555	564	586	587	608	616	620	637	638	637	593	628	615
Latvia n.d.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lithuania	28	29	19	14	10	14	17	15	18	14	11	15	18	19	19	15	12	14	14	15	6	5
Poland	136	135	133	134	135	139	143	143	143	142	145	146	144	152	154	157	162	159	155	152	158	163
Sweden	147	147	146	146	143	148	140	149	154	162	153	169	154	142	160	167	151	156	157	144	156	157
EU[59]	2583	2640	2627	2629	2665	2744	2841	2853	2912	2952	3028	3120	3139	3232	3298	3312	3364	3380	3377	3214	3338	3255
Baltic Sea Region	941	945	923	914	922	935	973	969	979	981	979	1028	1016	1051	1075	1065	1090	1087	1077	1012	1067	1048

Source: BP Statistical Review of World Energy June 2012

[58] Based on gross output.
[59] EU Excludes Slovenia prior to 1991.

Table 2. Electricity generation in the Baltic Sea Region and the European Union between 1999-2010[60]

Terawatt-hours	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
EU27	2942	3025	3107	3132	3220	3288	3311	3355	3367	3371	3209	3346
Euro area (changing composition)	1924	1992	2089	2121	2188	2245	2255	2297	2324	2348	2259	2364
Euro area (17 countries)	2029	2105	2149	2183	2250	2308	2319	2361	2371	2388	2267	2377
Euro area (16 countries)	2020	2096	2141	2174	2240	2297	2309	2351	2359	2377	2259	2364
Denmark	39	36	38	39	46	40	36	46	39	37	36	39
Estonia	8	9	8	9	10	10	10	10	12	11	9	13
Finland	69	70	74	75	84	86	71	82	81	77	72	81
Germany	556	577	586	587	607	615	621	637	637	637	592	628
Latvia	4	4	4	4	4	5	5	5	5	5	6	7
Lithuania	14	11	15	18	19	19	15	12	14	14	15	6
Poland	142	145	146	144	152	154	157	162	159	155	152	158
Sweden	155	145	162	147	135	152	158	143	149	150	137	149
Batlic Sea Region	988	997	1033	1022	1058	1082	1073	1097	1097	1086	1019	1079

Source: EUROSTAT

[60] Total gross electricity generation. Total gross electricity generation covers gross electricity generation in all types of power plants. The gross electricity generation at the plant level is defined as the electricity measured at the outlet of the main transformers, i.e. the consumption of electricity in the plant auxiliaries and in transformers are included.

Table 3. Final energy consumption of electricity in the EU27 between 1999-2010[61]

Terawatt-hours	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
EU (27 countries)	2941947	3025238	3106669	3131668	3219921	3288069	3310643	3354764	3367476	3371287	3209053	3345618
Austria	60944	61257	62449	62499	60174	64151	66409	64499	64757	66877	69088	71127
Belgium	84514	84012	79821	82069	84630	85643	87025	85617	88820	84930	91225	95120
Bulgaria	38248	40924	43968	42679	42600	41621	44365	45843	43297	45037	42964	46653
Cyprus	3139	3370	3551	3785	4052	4201	4377	4652	4871	5078	5227	5345
Czech Republic	64694	73466	74647	76348	83227	84333	82578	84361	88198	83518	82250	85910
Denmark	38921	36053	37730	39287	46185	40436	36246	45611	39316	36620	36384	38785
Estonia	8281	8509	8493	8606	10220	10304	10205	9732	12190	10581	8779	12964
Finland	69457	69968	74483	74945	84312	85831	70572	82301	81247	77435	72062	80667
France	525809	540734	549836	559194	566941	574269	576203	574609	569771	574055	539337	569002
Germany	556300	576543	586406	586694	606719	615287	620574	636761	637100	637232	592464	627918
Greece	49632	53843	53704	54608	58471	59346	60020	60789	63496	63749	61365	57392
Hungary	37832	35191	36415	36157	34145	33708	35756	35859	39960	40025	35908	37371
Ireland	22009	23977	24956	25195	25219	25569	25970	27480	28196	30238	28310	28611
Italy	265667	276642	279009	285276	293885	303347	303699	314121	313888	319130	292641	302062
Latvia	4110	4136	4280	3975	3975	4689	4906	4891	4771	5274	5569	6627
Lithuania	13536	11425	14737	17721	19488	19274	14784	12482	14007	13913	15358	5749
Luxembourg	1022	1169	1621	3696	3621	4132	4131	4334	4002	3558	3878	4592
Malta	1854	1917	1943	2052	2236	2216	2240	2261	2296	2312	2168	2113
Netherlands	86721	89631	93667	95942	96829	102440	100219	98393	105162	107645	113502	118140
Poland	142128	145184	145616	144126	151631	154159	156936	161742	159348	155305	151720	157657
Portugal	43287	43764	46509	46107	46852	45105	46575	49041	47253	45969	50207	54090
Romania	50710	51934	53866	54735	55140	56499	59413	62697	61673	64956	58014	60619
Slovakia	28407	31158	32046	32427	31178	30567	31455	31418	28056	28962	26155	27841
Slovenia	13262	13624	14466	14599	13820	15271	15117	15115	15043	16399	16401	16433
Spain	208451	224472	236043	244963	260727	280007	294077	299454	305052	313758	294620	303092
Sweden	154860	145266	161617	146735	135437	151728	158436	143419	148926	150036	136717	148609
United Kingdom	368152	377069	384790	387248	398207	393936	398355	397282	396780	388695	376740	381129

Source: Eurostat

[61] Final energy consumption of electricity covers the electricity delivered to the final consumer's door (in the industry, transport, households and other sectors) for all energy uses. It excludes deliveries for transformation and/or own use of the energy producing industries, as well as network losses.

Table 4. Final energy consumption of electricity in the Baltic Sea Region and the European Union between 1999-2010[62]

[1000 toe]	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
EU27	210491	216590	222125	224460	229788	234951	238178	243267	244913	246039	233202	243907
Euro area (changing composition)	141172	145896	153858	156288	160641	164671	166664	170790	173204	174513	167523	175862
Euro area (17 countries)	148293	153225	157663	160146	164608	168800	170753	175031	176437	177245	168095	176454
Euro area (16 countries)	147879	152796	157218	159683	164122	168292	170233	174473	175853	176642	167523	175862
Denmark	2767	2791	2800	2796	2783	2835	2877	2906	2878	2848	2699	2757
Estonia	413	429	445	463	486	508	519	558	584	602	572	593
Finland	6385	6507	6653	6850	6952	7145	6942	7396	7401	7097	6628	7178
Germany	40712	41569	42585	43724	44100	44686	44794	45211	45344	45189	42612	45482
Latvia	384	385	394	420	447	465	493	528	568	570	525	534
Lithuania	563	533	554	578	617	658	686	725	762	778	720	716
Poland	8262	8482	8492	8387	8701	9000	9064	9551	9848	10115	9692	10188
Sweden	10884	11068	11375	11258	11130	11209	11238	11247	11271	11062	10608	11283
Batlic Sea Region	70370	71764	73298	74476	75216	76506	76613	78122	78656	78261	74056	78731

Source: EUROSTAT

[62] Final energy consumption of electricity covers the electricity delivered to the final consumer's door (in the industry, transport, households and other sectors) for all energy uses. It excludes deliveries for transformation and/or own use of the energy producing industries, as well as network losses.