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Energy islands in the EU – a challenge to a common EU energy policy

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1. Introduction

This policy brief examines the phenomenon of “energy islands” in the EU, namely – Estonia, Latvia and Lithuania in the Baltic Sea region and Spain and Portugal on the Iberian Peninsula, analysing the causes, outstanding issues and implications of the current situation for future development of EU energy policy and energy policy in the countries concerned. Development of strategic energy infrastructure, involvement of energy companies, as well as putting in place legislation that would provide a framework for effectively functioning market, increased energy cooperation and energy security in the EU are among the issues covered.

For a long time Europe has faced an intractable energy infrastructure interconnection problem. Interconnections are essential for energy security both logistically and politically, yet Europe remains dotted with energy islands: places with a complete lack of electricity and gas interconnections. There can be no effectively functioning common free European energy market if there are no wires and pipelines in place. A lack of interconnecting infrastructure cripples European energy security precluding the ability to supply energy and energy resources to regions that might potentially be affected by conscious politically motivated adverse supply policies by suppliers. Such a situation also precludes the ability to effectively feed renewable energy into the grid and distribute among consumers in various regions in Europe.

The EU energy island issue is closely related to energy security issues. Energy infrastructure is a prerequisite to integration of regional energy systems into a bigger European energy system. Furthermore, involvement of energy companies into developing strategic infrastructure is instrumental for increasing energy security and minimising the “energy island” effect. This research is based on analysis of the existing situation regarding energy infrastructure, the role of energy companies and energy policy decisions already made both on the EU and national level. It includes a focus on steps necessary to overcome energy island isolation.

2. Energy islands – a challenge to a common EU energy policy

Fulfilment of the criteria for calling a territory “an energy island” has multiple implications both for the given geographic and / or political entity and the EU as a whole. Those countries, which qualify as energy islands, may experience greater dependency on external energy supply. This is true for Latvia, which is especially vulnerable given a 100% dependency on Russian natural gas supplies and the partial ownership of gas infrastructure by Russia’s Gazprom (together with Germany’s E.ON). The *de iure* and *de facto* monopoly in the gas sector only adds to the uncomfortable position of being an “energy island” because of dependency on Russia for oil and gas.¹ Estonia has based its energy production mostly on its own fossil energy resource – oil shale, generating more than 90% of electricity from it. Until December 2009 Lithuania relied on the Ignalina nuclear power plant (NPP) to produce most of the needed electricity and managed to function as an important balancing source for electricity in the Baltic States. Ignalina NPP had to be closed down by January 2009 according to the accession agreement between the EU and Lithuania. All three Baltic States receive 100% of their natural gas supplies from the Russian Federation with only one route of supply, the only mitigating factor being the presence of an underground gas storage facility (UGSF) in Inčukalns in Latvia. Even so, it is important to note that the majority shareholder of the UGSF is the Russian natural gas monopolist Gazprom. Needless to say that the situation of gas monopoly leaves no place for market mechanisms and competition.

¹ BBC News, Guide to Russia's key energy clients, 11 July 2006. <http://news.bbc.co.uk/2/hi/europe/5167062.stm>.

The energy island situation in the countries of the Iberian Peninsula and especially in the Pyrenees is of a slightly different character – it mainly stems from the bottleneck effect of low electricity grid transmission capacity across the mountain range separating France and Spain. After prolonged efforts to construct a transmission line, a decision was made between French and Spanish authorities in June 2008 to proceed with an underground high-voltage direct current (HVDC) line. Until that time an over-head wire connection had been under consideration, causing significant opposition to the project from local inhabitants and regional authorities, who objected to the project's negative impact on tourism and recreation. This new electricity link is slated to begin operations at the end of 2011. This development will partially solve the Pyrenees electricity bottleneck problem. It will provide better energy security for the regions on both sides of the Pyrenees as well as allow effective use of electricity (via export to the French side) produced from renewable energy sources, specifically, the vast capacities of wind farms that Spain boasts.² In a similar way a new electricity interconnection linking Sweden and either Latvia or Lithuania would reduce power supply risks in the Baltic States.

These two energy islands have commonalities and differences. In terms of setting policy and identifying priorities, identifying commonalities is paramount. The functioning of any energy system, be it an energy island or part of a bigger system, takes place in two environments – the technical and the political. Lack of transmission lines or pipelines, insufficient grid or pipeline capacity contributes to the “islandness” of an energy system. The scale of any energy islands energy market may play a role as well, amplifying or decreasing the impact of the system being an energy island. A bigger (in terms of the volume of energy produced or consumed) energy island may be less vulnerable to external risks than a smaller isolated energy system.

As will later be demonstrated in the sections on specific energy security risks, the most typical risks are not equally valid for every situation – their influence on the energy system depends on the size, composition and liquidity of the market, availability of local energy resources and other factors. While Spain does not have extensive gas pipeline connections with France, this sole fact does not mean that the lack of pipelines poses significant risks to the country. However, lack of alternative suppliers and supply routes makes Latvia, which is part of the Baltic energy island, particularly vulnerable to economic and political pressures from the Russian Federation, which can easily employ energy supplies as a political tool.³ Unlike France in its relations vis-à-vis Spain and Portugal, the Russian Federation has played and can play out the power card in its relations with its neighbours – be it gas price policy, supply volume or other levers of influence that can be written off on technicalities of the power industry.

Consensus about the necessity to fix the energy island situation of the Baltic States is quite clear, leaders of the Baltic States are repeatedly emphasizing the importance of getting connected. All Baltic Sea Region countries have their concerns regarding energy, be it the need to diversify energy supply routes, diversify the energy mix or build additional production capacities. The Baltic States are concerned about being an “energy island” in the EU.⁴ The Baltic energy market interconnection plan (BEMIP⁵) was drawn up in 2008 with the assistance of the European Commission, which will also be providing its financial share in putting in place wires and cables in the Baltic region.

² Peak production of electricity in Spain using wind power reaches more than 50% (Spanish transmission system operator (RED) data).

³ Larsson, Robert, “Nord Stream, Sweden and the Baltic Sea Security”, Swedish Defence Research Agency, 2008, pp.79-81. <http://www2.foi.se/rapp/foir2251.pdf>

⁴ Rostoks, Toms, ““Energy problem” in the Baltic Sea Rim: is the region pulled together or pulled apart?” in „Energy: pulling the Baltic Sea region together or apart?” carried out by the Latvian Institute of International Affairs (LIIA), p.146.

in 2008-2009 with the participation of researchers from nine states of the Baltic Sea Region.

⁵ See details at http://ec.europa.eu/energy/infrastructure/bemip_en.htm

3. Causes and consequences of the energy island phenomenon

The energy island situation in a given EU region is not something that the region or the countries of the region have voluntarily chosen. The island situation stems from geographic position, economic and political ties with neighbours and relations with suppliers of power and energy resources.

Particular attention should be paid to those energy island countries facing high dependence on a single supplier. From this point of view the Baltic energy island situation is worse than the Iberian one: the Baltic States are not connected⁶ with western European or Scandinavian electricity networks and they are also heavily dependent⁷ on Russian natural gas.

From the point of view of European energy integration, the Iberian Peninsula is an energy island, because it is effectively isolated from mainland European gas and electricity networks – the transmission capacity is rather low and cannot handle large volumes of electricity or gas. This isolation aggravates the problem of external energy dependency⁸ (approx. 80%, well over the EU average of approx. 53%) and places Spain as well as Portugal at the level of some Southern European (Greece), island (Ireland, Cyprus, Malta) and small (Luxemburg, Belgium) countries with no domestic energy resources.⁹ To compare, Latvia's and Lithuania's energy dependency is approximately 62% despite 100% reliance on Russian natural gas that is used to produce a significant share of electricity and heat.¹⁰ Estonia has the lowest energy dependency index among the Baltic States – just around 30%, which positions Estonia among the least energy dependent EU countries along with Denmark, the UK, Czech Republic and Poland.¹¹

High dependency does not necessarily mean lack of power: Spain's 18700MW of installed wind turbine capacity have supplied more than half of its demand forcing the Spanish transmission system operator Red Eléctrica¹² to stop wind turbines to keep the system stable at times last winter.¹³ The cause of such obstructionism is the lack of transmission grid connections with a broader European market that could be accessed via interconnection with France over the Pyrenees Mountains.

3.1. Historical background to energy system development

Certain preconditions determine the development of each specific energy system, be it of local or regional character. Geographic position and climate conditions play an important role in how a

⁶ Except for the EstLink 380MW HVDC cable connecting Estonia and Finland.

⁷ This is particularly true for Latvia, which produces 30% of its electricity in CHPs from natural gas imported from the Russian Federation. Estonia is the least dependent on Russian gas for electricity production, but still uses natural gas for district heating like Latvia and Lithuania.

⁸ Change and continuity in Spain's role: from energy island to relevant actor. Esther Barbé (Ed.) *Spain in Europe 2004-2008*, Monograph of the Observatory of European Foreign Policy, num. 4, February 2008, Bellaterra (Barcelona): Institut Universitari d'Estudis Europeus. <http://www.iuee.eu/pdf-publicacio/129/t0PJWukerLlvIgPJdtke.PDF>

⁹ Data source: Eurostat

¹⁰ Around 33% of electricity and over 90% of district heating in Latvia is produced in large CHPs from natural gas. Latvian energy in Figures, Ministry of Economics, 2009. http://www.em.gov.lv/images/modules/items/les_2009_.pdf

¹¹ Data source: Eurostat

¹² Red Eléctrica is responsible for the technical management of the Spanish electricity system. As the owner of 99% of Spain's high voltage power transmission grid, it is the only company that specializes in the transmission of electricity in Spain.

¹³ Spain needs electric cars, links for wind boom, by Daniel Fineren, Reuters, 1 March 2010. <http://www.reuters.com/article/idUSTRE6204ND20100301>

specific energy system is built, in defining the main sectors of energy consumption, the methods and resource-use of heat and power production, etc. While Northern Europe consumes heat during the colder time of the year, Southern Europe needs cooling throughout most of the year. Thus the demand for energy differs in terms of the form of energy, the purpose of use, the amount needed, as well as seasonal specifics characteristic for the region.

The environment in which the energy island systems have been developing is also of importance. The following two subsections (3.2. and 3.3.) of this policy brief do not relate to the situation in the Pyrenees Peninsula, but are important to understand the roots of the Baltic “energy island” situation.

3.2. Integrated energy systems operating in EU member countries and third countries

This problem is specific to the Baltic region and is in no way characteristic to Spain and Portugal. Larger regional energy systems have been in place in the countries, which used to be part of the USSR. Thus, Estonia, Latvia and Lithuania were part of the so-called North-Western energy ring encompassing also the North-Western part of Russia and Northern part of Belarus. The Baltic energy transmission and balancing system still functions within this larger system, which has proved to be reliable and is able to satisfy system requirements even following the closure of Ignalina NPP,¹⁴ which was an essential element of the system. The North-Western energy ring was built in such a way that energy was produced from a variety of sources providing good system balancing¹⁵ possibilities. If we look at this energy ring then we can see that Leningrad (now St.Petersburg) region had an NPP, Moscow region and Belarus had a number of high-capacity combined heat and power stations,¹⁶ Lithuania had Ignalina NPP, Latvia had a cascade of hydroelectric power stations and Estonia – oil-shale power stations.

The two energy island cases have diverse historical backgrounds. In the case of the Baltic States the isolation from the rest of the EU stems from the integration into the former energy system of the North-Western part of the former USSR. The Baltic States are “energy islands “ in their new family - the EU, but are well connected with their “old” family, i.e. with Lithuania, Estonia, the Russian Federation and Belarus, which are all parties in the organisation called BRELL¹⁷ uniting TSOs of the respective countries. Each country TSO in rotation coordinates the functioning of BRELL.

Unlike the Baltic States, Spain and Portugal have never been incorporated into some other energy system outside the EU and their geographic positioning allows for solutions other than over-the-head (OH) lines, cables and pipelines.

3.3. Lack of incentive to reorient towards developing stronger links with the rest of EU

The fairly good heritage from the Soviet era in terms of energy transmission infrastructure has so far provided little incentive to reorient the Baltic energy system towards its EU partners while still keeping in place the existing interconnections with the partners in the former North-Western energy ring that has been replaced by BRELL after the break-up of the USSR. Nevertheless Baltic transmission system operators (TSOs) are planning to join the Union for the Co-ordination

¹⁴ Ignalina NPP that had 2720MW (2x1360MW) capacity had to be closed down by the end of 2009 according to the accession agreement between the EU and Lithuania based on operational security concerns of RBMK-1500 type reactors expressed by the EU while referring to the use of the same kind of reactors in Chernobyl NPP.

¹⁵ Balancing is necessary in almost every energy system during moments when one or more power producing entities stops for whatever reason. Other permanently available power production or electricity import capacities have to be in place to compensate loss of capacity in the system.

¹⁶ Combined heat and power or cogeneration power plants – produce both heat and electricity simultaneously.

¹⁷ See details (in Russian) at <http://www.so-ups.ru/index.php?id=brell>

of Transmission of Electricity (UCTE) system sometime in the future notwithstanding the lack of immediate technical necessity to switch over to the wider European system. System operators, however, would have to achieve higher electricity quality standards before joining the UCTE system. Besides that, the Baltic States would like to become active members of the Scandinavian NORDEL¹⁸ system and trade electricity on the Nordpool Spot market. NORDEL and UCTE joined ENTSO-E,¹⁹ the union of electricity system operators in 2009 to improve coordination of power transmission. Thus the main reason for joining the UCTE system would be integration of the Baltic energy systems into a wider European energy system and hence also energy market.

3.4. The role of energy companies as partners instrumental to achieve higher energy security

Energy production, transmission and distribution companies are key players in any energy system. Thus the development of energy systems to a large extent depends on the companies' willingness to take part in developing new interconnections, which includes having the ability to finance infrastructure projects, as well as the ability to cooperate with authorities that make political decisions.

The EU has a crucial role in these processes. The EU has developed a number of instruments that facilitate decision-making processes in the member states both in terms of policy-making and planning investment in energy infrastructure. Trans-European Networks for electricity and gas along with such initiatives as the Electricity Regional Initiative and Gas Regional Initiative provide good and realistic grounds for improvement in electricity grid and gas pipeline network development with emphasis on those regions that are least connected.

The Baltic and Iberian energy islands certainly qualify to benefit from these initiatives, albeit for slightly varying reasons. The main concern of the Baltic Transmission system operators (TSO) is to connect to the wider European electricity network because of poor connectivity with the Nordic and western European power markets and risks stemming from lack of power production capacity. TSOs in the South-Western part of Europe are going to play an important role in improving interconnectivity of the Iberian Peninsula in particular and the rest of Europe with potentially very lucrative green energy production possibilities on the African continent. One such example is the prospect of connecting France and Morocco via Spain to harness solar energy produced in North Africa.²⁰

4. Energy island phenomenon and its relation to energy security risks

The energy island situation is inherently related to energy security risks. In the Pyrenees the risks are related to insufficient capacity of electricity interconnections with France, thus making it more complicated for the Spanish TSO RED Electrica to carry out balancing system tasks – Spain easily produces at least 25% of its electricity in wind farms, but the peak production may rise to well over half of electricity produced in Spain. Therefore, the main problem is overproduction of power that needs to be balanced and exported.

In the Baltic States the risks are related to a number of issues, starting with an extreme dependency on Russian natural gas and ending with a lack of sufficient electricity transmission

¹⁸ NORDEL, Association of the TSOs in Northern Europe.

¹⁹ ENTSO-E, *European Network of Transmission System Operators for Electricity*.

²⁰ The Mediterranean Solar Plan: Implementation status and Links with EU policy, Direction Générale de l'Energie et du Climat (DGEC) Ministère de l'Ecologie, de l'Energie, du Développement Durable et de la Mer (MEEDDM), 2009, pp.18-26. http://www.estelasolar.eu/fileadmin/ESTELAdocs/documents/Workshop_08/2010-07-15_-_MSP_-_Pierre_Convert.pdf

capacity within the region and lack of interconnections with other countries of the EU. Thus the risks of energy shortages are present although no massive blackouts have been experienced. Lack of intra-region transmission capacity makes local energy regions vulnerable to power cuts stemming from environmental and meteorological causes.

4.1. Integration into the former system and isolation from the rest of the EU

As noted above the Baltic States have for a long time been integrated into the former energy system of the North-Western part of the former USSR and this situation makes them remain energy islands within the EU. The situation is different in Spain and Portugal.

Fostering free and fair competition has helped to develop the energy market. Initiatives of some of the energy market players in Europe did spark contradicting reactions in 2006 when E.ON got permission from the EU antitrust regulator to take over Spanish ENDESA, despite concerns that this merger might jeopardise the functioning of the free market, especially in Spain and Portugal. It is important to mention in the context of the “energy island” issue, that the EU’s competition commissioner Neelie Kroes noted at the time that the parties involved in the market investigation have pointed out the Spanish market being an “energy island” due to the low interconnection capacity with neighbouring countries (in particular, France), and also operational and regulatory barriers. Therefore, the possibility for E.ON to import electricity into Spain, which was one of the major points of concern for the Spanish side, was very limited.²¹ This demonstrates that both the companies and the Commission have been and still are aware of the nature of difficulties for a common energy market.

4.2. Repercussions in a national security context

The “energy island” situation has implications for the national security of the countries concerned. Implications differ in the two cases under review: Spain and Portugal do not experience the presence of third-country energy companies, while third-country energy companies are present in Estonia, Latvia and Lithuania.

The main problems the Iberian countries have to handle are mostly of technical and economic character although opposition of local authorities to OH lines in the Pyrenees can be considered to have a political tone. The Baltic States, however, not only have to deal with technical issues, like production capacity and intra-regional power transmission capacity, but also have to keep in mind the role of their partners in the East, namely Russia, whose presence in the Baltic energy system is strong and cemented with, for example, exclusive rights in the natural gas market²² at least until year 2014.

The above conditions add a strong political dimension to Baltic-Russian energy relations. The dominant position in the energy market makes this provider of energy resources powerful when negotiating energy prices. The area where Russia has clearly demonstrated that energy can effectively be used as a policy tool vis-à-vis the Baltic States is supply and transit of oil

²¹ Case No COMP/M.4110 - E.ON / ENDESA, Notification of 16.03.2006 pursuant to Article 4 of Council Regulation No 139/2004, 25 April 2006, http://ec.europa.eu/competition/mergers/cases/decisions/m4110_20060425_20310_en.pdf; E.ON Backs Away From Endesa, Forbes.com, 03 April 2007. http://www.forbes.com/2007/04/03/eon-endesa-enel-markets-equity-cx_cn_markets16.html

²² Latvia’s Parliament prolonged the right to legal monopoly of JSC Latvijas gāze (Gas of Latvia) till March 2014. In addition to this, the privatisation deal of JSC Latvijas gāze between the state and the shareholders provides exclusive rights of operation of the company in Latvia till 2017 and attempts to liberalise natural gas market may result in court proceedings and compensation payments to the company from the state budget.

products,²³ negotiating gas prices has always proved difficult. Russia has used gas prices as leverage in its relations and foreign policy vis-à-vis Belarus and Ukraine.

Russia's use of energy as a foreign policy tool has taken various forms: total or partial supply interruptions, threats of supply interruptions, pricing policy, use of existing energy debts, creating new energy debts, hostile take-over of energy companies or infrastructure. To illustrate the scale and potential of risks stemming from geographic positioning – it has been estimated that there have been more than 50 incidents²⁴ of one or another kind from 1991 (break-up of the USSR) till 2007 in energy relations between Russia and consumers of its energy resources. Only 20% of the incidents had no political underpinning.²⁵

Considering the above the following three subsections on energy security risks cover the Baltic energy island situation rather than the Iberian one.

4.2.1. Dependency on one supplier

This risk is characteristic to the Baltic region because of its historical links with the energy system of the countries of the former USSR, namely, Russia, which, as already indicated, is the sole supplier of natural gas and also the largest shareholder of the gas transmission, storage and distribution network. The situation is slightly different with respect to electricity – each of the Baltic States produces their electricity in their own particular way. Estonia produces over 90% of electricity from its own oil-shale. One third of electricity in Latvia comes from three hydroelectric power stations (HPS) on the River Daugava and another 30% is produced by burning natural gas in two combined heat and power stations.²⁶ Over 80% of electricity needed in Lithuania used to be produced by the Ignalina nuclear power plant, but after its closure most electricity comes from upgraded CHPs that played only a marginal role while Ignalina NPP was in operation. The significance of natural gas in the lives of ordinary citizens is felt every time the gas monopolist raises or talks about raising gas prices – households that organised their infrastructure around gas (cooking, heating, water heating) as the main source of energy when gas prices were low and gas technologies for households were subsidized by the monopolist, are the first to feel the effect of price changes.

4.2.2. Dependency on one major energy resource

Spain and Portugal do not experience particular dependency on one specific energy resource. A significant share of electricity produced from wind power could be called another form of dependency since wind power needs balancing and balancing requires the ability to put in operation permanently available energy production facilities. It is interesting to note that big energy companies see wind energy as the best niche for investment purely from the commercial point of view even if compared to natural gas,²⁷ which has highest efficiency among fossil fuels and which is also most environmentally friendly among fossil fuels.

Renewable energy might be an answer to the dependency of the Baltic States on Russian gas, but there are also difficulties to be overcome if wind power is to be considered as the best solution

²³ Russia stopped oil flow through the Druzhba pipeline to Mazeikiai Oil Refinery since July 2006 after Lithuania sold it to Polish PKN Orlen instead of Rosneft, which was one of the bidders.

²⁴ Larsson, Robert, "Nord Stream, Sweden and the Baltic Sea Security", Swedish Defence Research Agency, 2008, pp.79-80 and p.82. <http://www2.foi.se/rapp/foir2251.pdf>

²⁵ Ibid, pp. 81.

²⁶ Riga TEC-1 and TEC-2 CHPs.

²⁷ Ana Maria Fernandes, CEO EDP Renovaveis, EDP Investor day, 6 November 2008, p.75. <http://www.edp.pt/en/Investidores/publicacoes/apresentacoes/Presentations%202008/Investor%20Day%20-%20November%202008.pdf>

for electricity production from renewable energy sources (RES). One such difficulty is of purely technical character – the transmission grid²⁸ would currently not be able to absorb the power that could be fed into the grid from off-shore wind-farms in Latvia, which is also trying to solve legislative loopholes to open up the wind energy business off the coast. Electricity production from biomass is an option, the only problem being the amount of heat produced in cogeneration power plants while producing electricity – it is the amount of heat consumed in summer time that is the point of reference when planning capacity of a new biomass CHP. Lithuania has relatively low wind power potential, but is keen to develop power production from biogas.

Estonia is in a different position owing to its geography – Estonian islands offer an excellent place for wind power development. Estonia currently has 150MW of installed onshore wind energy generation capacity and a further 375MW due to become operational in 2013. To achieve its wind power target for 2018 a further 400MW are to be installed onshore and 500MW off the coast.²⁹ Theoretically Estonia could cover most of its electricity demand by wind. The only issue remaining is accumulation and balancing power plants that should be built in parallel to keep the system stable.

4.2.3. Dependency on one supply route

Besides dependency on one specific and important energy resource, the Baltic States and especially Latvia are also subject to another risk: all natural gas supplies come through only one supply route. Building an LNG (gasification) terminal in one of the Baltic States would be an option for diversification of supply routes. European Parliament has been keen in keeping security of energy supply high on the agenda through encouraging and supporting the construction of LNG terminals, notably in countries most vulnerable to disruptions of gas supply.³⁰ However, LNG import as a risk mitigation step is valid only if it breaks the current monopoly of control from Russian gas suppliers. Itera Latvija gas company, which is a daughter company of Russia's Itera and is also shareholder at JSC Latvijas gāze has on occasion voiced suggestions of building a LNG terminal in Latvia, thus discrediting the whole idea of LNG as a solution to the present energy security risks of dependency on one energy resource, one supplier and one supply route.

The risk of a single energy supply route also is also valid in situations where there are energy production capacities, but interconnections are insufficient for transmitting the power to the parts of energy system that need energy. The situation with interconnections between Spain and France is an example of this.

4.2.4. Increasing consumption of energy

The Baltic States are not among the countries with the highest energy consumption per capita in Europe. Latvia and Lithuania consume about half of the EU average per capita. Estonia has comfortably reached the EU average indicators.³¹ Total energy consumption is, therefore, not high. The potential for increased consumption of energy is one of the factors that need to be examined in a long-term perspective and through a sustainability and green growth prism. To cite a truism of the field: “The best energy is energy that has not been used”. Energy

²⁸ The so called Kurzeme electricity ring that is an unaccomplished task yet will receive financial support as part of the BEMIP initiative. Wind energy production cannot be carried out without upgrading the grid capacity.

²⁹ Gaizauskas, Vytautas, Kicking the gas habit: Offshore wind for the Baltic states, Wind Energy Update, 11 June 2010. <http://social.windenergyupdate.com/industry-insight/kicking-gas-habit-offshore-wind-baltic-states>

³⁰ European Parliament, Committee on Industry, Research and Energy, Draft report on Towards a New Energy Strategy for Europe 2011-2020, (2010/2108(INI)), para. 40. Available on-line at <http://bit.ly/bNDVeO>

³¹ Latvian energy in Figures, Ministry of Economics, 2009, p.6. http://www.em.gov.lv/images/modules/items/les_2009_.pdf

consumption per capita in Spain is slightly below the EU average, but is definitely higher than in Latvia and Lithuania. The general rule is that energy consumption follows GDP growth, and the wealthier a country is the more energy is consumed by single person.³² Increasing energy consumption leads to a need to produce more energy or to increase electricity import either from other EU countries or third-countries. In the Iberian case, the lack of power is not typical. In the Baltic States, however, Estonia is virtually self-sufficient, while Latvia has to import about one third of electricity needed.

There are two ways how the impact of energy consumption on energy security risks can be mitigated – via tax and price policy or the improvement of energy efficiency. When energy imports are increasing due to a lack of domestic production capacity,³³ a more efficient use of energy, whether produced or imported, is a potential solution. Higher energy efficiency standards in the construction industry and raising awareness among consumers and households is a significant part of the answer to the increasing demand problem. The recent economic crisis has paradoxically also contributed to energy savings efforts, making energy consumption drop back to pre-crisis levels (both on the EU and national level). Energy consumption growth forecasts have also been revised by those responsible for planning the future demand and supply balance.

4.2.5. Limited or no energy market

In contradiction to the experience of prying open the electricity market in the Baltic States, Spain has become the most liberalised energy market in continental Europe since the country's energy supply and consumer market was opened up to external players in 2000, offering opportunities to new entrants with innovative supply solutions.³⁴ Although Spain has a number of strong players that were able to unite against Germany's E.ON when it tried to take over ENDESA in 2006 and 2007, the domestic market is functioning and competition is present.

Unlike in the Pyrenees, the situation in the Baltic States is indeed typical of a limited energy market. Although the electricity market was finally opened in 2010 also by Estonia and Lithuania,³⁵ it can hardly be called a free and functioning electricity market. Energy producing incumbents³⁶ retain the dominant position in each of the three countries and the dynamics of change is slow. New players are entering the market slowly and face serious competition in the form of defensive tactics by the incumbents.

The situation is different when it comes to natural and liquefied gas. While gas supplies, storage and distribution in the Baltic States belong to a monopoly, market liberalisation in the Iberian Peninsula has facilitated growth³⁷ of the natural gas business. The domestic companies in the Iberian market have a number of competing external market players (REN Atlantico, Transgas, Naturgas, EDP Gas, HC Energia) with a clear set of rules.

The gas lobby is very strong and has achieved favourable conditions for penetrating markets in some member states. Good indication of interests of [Russian] gas industry was revealed on a number of occasions, negotiations on derogations from the Energy Tax Directive being just one

³² Latvian energy in Figures, Ministry of Economics, 2009, p.6.

http://www.em.gov.lv/images/modules/items/les_2009_.pdf, also Eurostat statistics on energy and GDP.

³³ As opposite to imports because of lower energy price in the market.

³⁴ Iberian energizer, *Frontiers*, British Petroleum, August 2004, pp.16-21.

³⁵ Latvia opened its electricity market on 1 July 2007.

³⁶ National energy production enterprises Latvenergo in Latvia, Lietuvos energijas in Lithuania and Eesti Energia in Estonia.

³⁷ EDP Financial Report 2008, pp.19-21.

<http://www.edp.pt/en/Investidores/publicacoes/relatoriocontas/2008/Annual%20Report%202008/Financial%20Report%202008.pdf>

example. During the negotiations some delegations requested derogations for member states that effectively are energy islands.³⁸

The idea of gas market liberalisation in those EU countries that have chosen to apply derogations provided for in the Energy Tax Directive³⁹ is also driven by EU's striving for improved competition policies and conditions in the member states. The main idea behind gas market liberalisation incentives is improvement of energy security of member states. A free EU gas market will decrease the risks that stem from dependency of a number of member states on Russian natural gas. "Gas wars" in recent years demonstrated possible effects of supply disruptions.

The problem with having a monopoly is that such a situation has a very high potential to make all the classic risks – dependence on one energy resource, supplier and supply route – come true in a worst-case scenario. A recent study by the European Centre for International Political Economy (ECIPE) emphasizes that particular attention should be paid to the countries that need antitrust action most, namely Bulgaria, the Baltic States, and Slovakia.⁴⁰ This is important because a lot of attention by the European competition bodies has been paid to fighting unfair market practices in Western European countries in recent years. The recent antitrust cases have focused on those markets that are least vulnerable to supply cuts from Russia's Gazprom, although Gazprom has clearly been behind most recent gas supply disruptions to European countries.

5. Avoiding and connecting energy islands in the EU

Generally it can be said that there are two types of challenges for any energy island – technical and political, where the political encompasses also economic aspects. A common and effectively functioning energy market in the EU can be both the ends and the means of solving the energy island situation that a number of EU member states are in. Iberian (IEI) and Baltic energy islands (BEI) demonstrate that energy islands have elements that are in common and that there are also elements that are unique to each specific situation. The Iberian energy island is more of a technical issue while the Baltic energy island has more political and economic elements overlaying the technical situation it is in.

Common to both situations is insufficient power transmitting capacity, lack of transmission lines and gas pipelines. No wires and pipelines means no market. However, having wires and pipelines does not yet mean a free market – a single market participant or few market players can be an indication of low market liquidity, which means that the market will not function effectively.

Differences come into play when we look at what implications technical and market aspects bring in. The Iberian energy island has fairly well functioning liberalised electricity and gas market with several important players that are able to compete with each other according to clearly set rules. The Baltic energy has few players on the electricity market and just one player on the gas market where a monopoly exists both de jure and de facto. While putting in place

³⁸ Proposal for a Regulation of the EP and of the Council concerning measures to safeguard security of gas supply and repealing Directive 2004/67/CE – Progress Report, para. 15.

<http://register.consilium.europa.eu/pdf/en/09/st16/st16000.en09.pdf>

³⁹ Council Directive 2003/96/EC of 27 October 2003 restructuring the Community framework for the taxation of energy products and electricity. [http://eur-](http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2003:283:0051:0070:EN:PDF)

[lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2003:283:0051:0070:EN:PDF](http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2003:283:0051:0070:EN:PDF)

⁴⁰ Iana Dreyer, Fredrik Erixon, and Robin Winkler, The Quest for Gas Market Competition Fighting Europe's Dependency on Russian Gas more Effectively, ECIPE Occasional Paper No. 1/2010.

<http://www.ecipe.org/publications/ecipe-occasional-papers/the-quest-for-gas-market-competition/PDF>

more power interconnections with the rest of the EU might make the day for the participants of electricity market, strategic gas pipelines are likely to maintain status quo. Considering that the existing pipelines come from one single source and supplier, LNG regasification seems to be the only feasible option for opening up gas market in the Baltic States provided that third-party access to pipelines is granted.

5.1. Technical challenges

As noted above, availability of local renewable energy sources may compensate for the lack of import / export capacity, but it does not necessarily mean a complete solution for the functioning of the market. One of the problems is balancing capacity either through permanently available energy production facilities or through electricity import. The Iberian Peninsula is an energy island given the lack of interconnections with France. The high variability in electricity production from renewable energy sources means that countries, which have significant wind power capacity – and Spain is such a country – have already surpassed, during high winds, 50% coverage of national demand in an instant or 40% of national demand over a whole day. On the other hand there are hours or even days when wind energy production does not reach 2% of national demand. The average production capacity of national electricity demand was 13% in 2009.⁴¹ Volatile production capacity means practical challenges to the TSOs that have to find ways to get the balancing power where and when needed.

The Spanish energy island has one important issue with a technical origin – the Spanish market cannot consume all the power produced from RES during peak production hours. Lack of interconnection capacity means that Spain cannot export the surplus either.⁴² Spain's installed wind power capacity exceeds 18700MW⁴³, which makes it one of the leaders in wind power energy production worldwide.

Over recent years, three special projects were undertaken, which are due to be commissioned in the period from 2011 till 2014. The first one to be implemented is a new interconnection with France, which is classified as of high-priority interest by the European Union. This interconnection will allow the present interconnection capacity between both countries to be doubled.⁴⁴ Two more links with Portugal are expected to come into service by 2012, increasing the ability of the Iberian power system to cope with variable wind power output.⁴⁵

There are also gas interconnections planned between Spain and France. The development of gas interconnections with Spain is the priority of work conducted by the ERGEG South Gas Regional Initiative. The project is set to improve the security of supply for France and the Iberian

⁴¹ José Luis Molina, The challenge of integrating renewable energy in Spain, May 28, 2010.

http://www.telvent.es/en/business_areas/global_services/blogs/2010/the-challenge-of-integrating-renewable-energy-in-spain.cfm.

⁴² Jose Manuel Tarifa Calvet, Meda Enviro Network, The Energy Market in Spain, Promotion of a Network of Euro-Mediterranean Enterprises in the Alternative Energy Source Sector, 4 November 2009.

http://www.medenergy.org/pres/Inv_ASEM_MedenergyPresent_MedaEnviro_Tarifa_v1E_1109.pdf.

⁴³ Global Wind Energy Council (GWEC). Global Wind 2007 Report.

<http://www.technologyreview.com/microsites/spain/wind/>

⁴⁴ “Grid congestion a breeze for Spanish wind energy generators”, Miguel de la Torre, senior engineer at Red Eléctrica de España, Spain's grid transmission operator, in Wind Energy Update, 25 March 2010.

<http://social.windenergyupdate.com/qa/grid-congestion-breeze-spanish-wind-energy-generators>.

⁴⁵ Spain needs electric cars, links for wind boom, by Daniel Fineren, Reuters, 1 March 2010.

<http://www.reuters.com/article/idUSTRE6204ND20100301>

Peninsula and to develop the French gas market in the southern part of the country.⁴⁶ The development plan is coordinated by the French and Spanish TSOs.

As for the Baltic region the main source of activity and co-funding is the BEMIP, which lists specific tasks to be carried out and envisages EU funding. Without doubt the main activities are putting in place at least two electricity interconnections from the Baltic States – one that would link the Baltic energy system with Sweden and another one linking Lithuania and Poland.

5.2. Political challenges

There are several challenges of political nature arising from the energy island situation. In both the Iberian energy island and the Baltic energy island situation support of the government and the parliament is essential to facilitate further development of a common European energy market for electricity and for gas. While even Spanish protectionism vis-à-vis its own market participants be it power or gas has not hampered the opening up of power and gas markets, political decisions in the Baltic States, especially in Latvia, have followed the interests of energy sector lobbyists favouring maintenance of the status quo with respect to market conditions or have even tried to capture the market before its full opening.⁴⁷

At the same time initiatives supporting market development have been put in place by the EU, namely electricity and gas regional initiatives (ERI and GRI respectively⁴⁸) created by the European Regulators Group for Electricity and Gas (ERGEG), aim to identify and implement practical solutions to overcome barriers to trade and facilitate regional market integration.⁴⁹ These regional initiatives are of both technical and political character, but would not be able to function without due political support of the involved parties and market participants.

In the case of the Iberian energy island there is yet another policy level that is involved and cannot be by-passed – local municipalities and inhabitants have a strong say in decision-making concerning new transmission lines across the Pyrenees. Public opposition to new electricity lines across the Pyrenees and a lack of French support for the proposals has led to a result that transmission capacity between France and Spain remains unchanged since 1982. The first new grid connection between France and Spain in nearly three decades is due to be built and will double the existing transmission capacity.⁵⁰ Such a development became possible after an agreement was reached with the local authorities that part of the electricity line will be crossing the Pyrenees as an underground cable, thus leaving the looks of the surrounding environment unchanged.

⁴⁶ Deliberation of the French Energy Regulatory Commission (CRE) dated 29 April 2010 providing guidelines/guidance on the development of gas interconnections with Spain as part of the Open Season 2015 procedure. <http://bit.ly/c5F0SW>

⁴⁷ This reference is made specifically in respect of the lobbying activities of the Russian and German-owned gas company JSC Latvijas gāze, which is the sole supplier of natural gas to the Baltic States. Latvian Parliament extended the period of exclusive rights in the market to the incumbent company till spring 2014 through a vote on 3 December 2009 when the term was closing in (the local gas market would otherwise have to be opened for competition starting from January 2010).

⁴⁸ South-West ERI covers the electricity markets of France, Spain and Portugal; Baltic ERI covers Estonia, Latvia and Lithuania. South GRI covers the gas markets of France, Spain and Portugal. GRI does not cover the Baltic States.

⁴⁹ ERGEG Regional Initiatives Factsheet, http://www.energy-regulators.eu/portal/page/portal/EER_HOME/EER_INITIATIVES/Progress_Reports/2007/RI_Annual_Reports/ERGEG_Regional_Initiatives_Factsheet_0.pdf

⁵⁰ Spain proposes doubling of renewable energy capacity, Rachel Fielding, [BusinessGreen](http://www.businessgreen.com/business-green/news/2258758/spain-proposes-doubling), 2 Mar 2010. <http://www.businessgreen.com/business-green/news/2258758/spain-proposes-doubling>

There is a fairly good consensus in the Baltic States about the necessity to build interconnections with other EU member states. There is weaker consensus, however, about what kind of power production capacities would be the best option to cover local electricity demand. Politicians express their support for new transmission lines and also new production capacity initiatives,⁵¹ especially those, which can be considered as regional Baltic projects, for example, Visaginas nuclear power plant⁵² replacing⁵³ Ignalina NPP. The growing threat to Lithuania's energy security following the closure of Ignalina NPP⁵⁴ at the end of 2009 has been taken very seriously.⁵⁵ The European Commission with close assistance from the EU's Swedish presidency drafted the EU Strategy for the Baltic Sea Region,⁵⁶ its Action Plan providing for activities in the field of energy. The Strategy stipulates that the Baltic Sea Region has the potential to be a model region in combating climate change. In addition to the scope for developing renewable energies (mentioned in a separate section), there is room for improvement in the energy efficiency of residential buildings, district heating (system for distributing heat generated in a centralised location for residential and commercial buildings) and combined heat and power facilities.

6. Conclusions

As long as EU regions do not have a better developed and interconnected electricity and gas infrastructure, some of the regions will remain either isolated from or ineffective in the common EU energy market. Member states stuck in an energy island situation will be looking for energy solutions parallel to seeking long-term development of interconnections with a wider EU energy system. This may include remaining well integrated in existing energy systems with third countries, which is the case for the Baltic States, or having energy production capacities that cannot be exported, which is the Iberian case. Import of natural gas with no supply alternatives may have an adverse effect on national policies of the Baltic energy islands. Import of energy for either market or renewable energy sources balancing needs is hampered in the Iberian energy island case.

EU member states still have polarised views on energy policy supported by different national interests. This can be observed especially well in the Baltic States, which have no alternatives for getting a vital energy resource, natural gas, into their cogeneration power plants. Baltic attitudes towards the Russian Federation in combination with energy isolation from Western European energy infrastructure endanger energy security of the Baltic region.⁵⁷ As was indicated earlier in the paper, Russia is not shy in pursuing its interests via the energy lever. Energy security remains high on the political agenda of the EU as an organisation and of individual member states.⁵⁸

⁵¹ EUP debate on the proposal for a regulation of the European Parliament and of the Council regarding public access to European Parliament, Council and Commission documents (recast) ([COM\(2008\)0229](#) C6-0184/2008 – [2008/0090\(COD\)](#)), available on-line <http://www.europarl.europa.eu/sides/getDoc.do?pubRef=-//EP//NONSGML+CRE+20090310+SIT+DOC+PDF+V0//EN&language=EN>, p.29, 10 March 2009.

⁵² The intended capacity of Visaginas NPP might be up to 3400MW. “New Visaginas Nuclear Power Plant Project in Lithuania moves forward”.

http://www.euronuclear.org/e-news/e-news-22/Visaginas_NPP%20.htm

⁵³ Environmental Impact Analysis has been carried out already and Lithuania is keen to proceed. For details, see <http://www.vae.lt/en/articles/view/108> and <http://www.vae.lt/en/pages/takeover-of-ignalina-npp-infrastructure>

⁵⁴ For details on the decommissioning of Ignalina NPP see the official site of INPP: http://www.iae.lt/default_en.asp?lang=1&subsub=10001

⁵⁵ President calls for further development of energy projects and higher energy security in the region. <http://archyvas.lrp.lt/en/news.full/9120>, 23 May 2008.

⁵⁶ EU Strategy for the Baltic Sea Region:

http://www.raplm.gov.lv/uploads/filedir/ES/teritoriala_sadarb/Minipanorama_strategy_en.pdf

⁵⁷ Gaidžiūnaite, Lina. Energetinis saugumas ir NATO vaidmuo Baltijos šalyse. Energy security and the role of NATO in the Baltic States. 2009.

⁵⁸ Lithuanian Minister of Foreign Affairs Audronis Azubalis, in The Lithuania Tribune, GlobalPost, August 24, 2010.

However, bilateral energy relations of member states with the suppliers of energy resources from third countries send confusing signals to those who believe the EU should have a common energy market and a common energy policy both within the EU as well as in foreign economic relations.

Regions excluded from the common European energy market are trying to solve their specific local energy issues and while following the general requirements of the EU energy law, they still find themselves under the influence of third-country energy supply (the Baltic States) or unable to diversify their energy mix (the Baltic States) or further develop their specific energy potential (both the Baltic and the Iberian example). It is important that the EU institutions influence effectively the way member states handle their relationships with energy companies, transmission system operators (TSOs) and how national regulators exercise their role as energy market watchdogs and facilitate less seclusion of regional energy systems from the rest of the EU.

The EU is aware of the necessity to tackle those situations in the EU, which are posing risks to energy security in individual member states, particular regions and in the EU as a whole. This awareness must be translated into more substantial and more timely actions, and include the disposal of sufficient funds for this purpose. External energy relations will remain a prerogative of individual member states for some time to come, however, it does not mean that exercising more pressure on national governments and energy companies should be an extraordinary practice. Establishing energy production and transmission infrastructure cannot happen without the direct involvement of energy companies and the support of parliaments, governments, local authorities and even citizens. Proper infrastructure planning and timely dialogue with businesses, municipalities and citizens must be an essential part of energy infrastructure development.

An enhanced role for national energy regulators and the European group of energy regulators (ERGEG) may be part of the solution for minimising the energy island effect. Regulators could also serve to resolve situations and practices that are slowing down or even working against the development of common energy market through exploiting all possible derogations from EU law. Such a situation can be positively influenced through tighter competition rules and practice.

Last, but not least – the EU's common foreign and security policy needs to get more energised thus overcoming the unfortunately commonplace split between traditional foreign and security relations and economic issues. This includes putting in place technical solutions to avoid energy islands. There is no obvious argument why EU members should continue to pursue bilateral external energy relations, hindering the possibility to develop a common European energy policy. A stronger Europe would emerge if in energy policy the EU were to use its ability to protect the common interests of its members with a single voice. It should be kept in mind that the ultimate goal of the European Union's energy law and practice is minimising energy security risks and fostering a common European energy market.

7. Recommendations

Energy island situations in the EU require solutions, which may seem simple on the surface, but may require a complicated set of actions on various levels. Putting in place a cable or a pipeline may seem easily implementable from technical perspective, but may require serious domestic, regional and inter-regional or international decision-making and political support. Given the character and technical and political aspects of the given energy islands, the following recommendations also summarised in the table below can be drawn for the particular two situations as well as any other similar situation:

- Regional plans for development of energy infrastructure can be drawn up repeating the Baltic energy market interconnection plan (BEMIP) pattern;
- Levels of action (intra- and interregional, and EU) and policy areas (energy, foreign and security) have to be as closely interacting as possible;
- National governments should be stimulated to invest in inter-regional interconnections or provide political support for the development of infrastructure that minimises energy security risks;
- Competition regulations should be further elaborated to grant national regulators power to effectively implement free market requirements;
- Third-party access to networks should be ensured to guarantee increasing market liquidity.

Recommended behaviour and action: Levels of action and overlapping policy areas

		Level of action		
		Intra-regional	Inter-regional	EU
Policy area	Energy policy	<ul style="list-style-type: none"> – Putting in place infrastructure to strengthen national energy system and its separate sections – Upgrading grid capacity to allow renewable power to be fed into grids – Ensuring third party access to gas transmission pipelines – Putting in place reverse flow option for gas pipelines – Diversification of supply infrastructure to minimise one-route supply risks 	<ul style="list-style-type: none"> – Planning and putting in place gas and power interconnections between regions – Upgrading of infrastructure capacity for power balancing (especially the power produced from RES) and security of supply – Diversifying regional power generation (energy mix) and supply of energy resources 	<ul style="list-style-type: none"> – Exercising a common approach to similar situations in external relations (vis-à-vis third countries) – Timely planning of strategic infrastructure that is crucial for energy security – Ensuring third-party access in all member states with special attention to energy islands – Implementing effective anti-trust policy including with the help of energy regulators

	Foreign policy	<ul style="list-style-type: none"> – Implementing bi- and multilateral relations with neighbours to develop regional markets – Implementing bi- and multilateral relations with neighbours supporting development of strategic energy infrastructure 	<ul style="list-style-type: none"> – Drawing up bilateral and multilateral cooperation agreements to support strategic regional energy interests in line with the EU strategic interests 	<ul style="list-style-type: none"> – Developing and strengthening common and coordinated external relations on strategic energy interests of the EU
	Security policy	<ul style="list-style-type: none"> – Putting in place back-up capacities for strategic infrastructure 	<ul style="list-style-type: none"> – Developing cooperation on regional security issues related to energy and economic security 	<ul style="list-style-type: none"> – Developing and strengthening common external relations on strategically important energy security issues