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**Renewable Energy
Is there a Latvian Master Plan?***

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ABSTRACT

Global energy demand continues to grow. Crude oil production is stagnating, coal's production cost is rising fast on the back of carbon pricing, electricity generating capacity is getting old and nuclear power has its own environmental and political issues. In addition there is the concern about climate change where the man-made CO₂ emissions are the primary source of global warming. The need for more electricity and the environmental concerns drive the focus towards the renewable energy sector. Furthermore, countries are concerned about energy security, and countries urge to diversify supplies, both in terms of generation type and of geographical source. This is especially true also for Latvia that, due to its limited domestic energy resources, is one of the most dependent countries on imported energy resources with the European Union. Domestic production of primary energy in Latvia accounts for 35 per cent of total production, with the remaining 65 per cent being imported. Furthermore, oil and gas-fuelled power stations count for more than 60 per cent of the total domestic production and hence representing the largest source of primary energy in Latvia and the gas and oil supplies are fully imported.

In addition to the energy security and energy independence aspects, Latvia has, based on the European Parliament and Council Directive 2001/77/EC, also committed itself to increase its share of renewable energy in electricity consumption to 49.3 per cent. To do this, the Government of Latvia plan to gradually increase wind power share to 1.48 per cent in 2007 and 5.37 per cent in 2010. However, the capacity of wind power plants in Latvia has remained at 26.9 MW since 2003.

Taking into account the potential of wind energy and Latvia's vulnerable position in terms of energy security and energy independence, this report analyzes the legal, economic and political aspects of further development of the wind power sector in Latvia. The findings of the show that, from a legal perspective, Latvia has properly implemented the EU law governing wind-energy production into Latvian legislation and that the current legislation contains more or less all the formal pre-requisites to encourage investments into the wind-generated energy industry. There are, however, still some question marks when it comes to the administrative practices.

The economic analysis indicates that the tariff set by the Energy Department of the Latvian Ministry of Economics in the current tender to purchase electricity from wind farms is high enough to attract investment in wind power production provided that the bureaucratic burdens of the procurement process are not perceived as too heavy. Calculations show that investment in wind-power will yield an internal rate of return of between 7.2% and 9.8% depending on what is assumed about future price developments. Of the two tariff alternatives, the fixed tariff scheme seems to be the more attractive from the investor's perspective – hence creating the strongest incentives to invest in wind energy. The analysis also underlines the crucial role played by the state-owned energy company Latvenergo. Because of the irregular and difficult-to-predict volumes of wind-power generated electricity, the Latvenergo-owned hydro-electrical power plants and their ability to store energy have to be employed in order to balance the variation in wind-power energy generated.

Although the necessary legislation is in place, this does not necessarily imply that wind-generated power plants will be built in Latvia – there is a need for a political will and vision as well. While having a strong support among the general public, the support for and interest

in renewable energy including wind energy is, with the exception of the Greens and Farmers Union, fairly weak in the current coalition government.

1. INTRODUCTION

Global energy demand continues to grow. Crude oil production is stagnating, coal's production cost is rising fast on the back of carbon pricing, electricity generating capacity is getting old and nuclear power has its own environmental and political issues. In addition there is the concern about climate change where the man-made CO₂ emissions are the primary source of global warming. The need for more electricity and the environmental concerns drive the focus towards the renewable energy sector. Furthermore, countries are concerned about energy security, and countries urge to diversify supplies, both in terms of generation type and of geographical source. This is especially true also for Latvia.

In a world where many believe the fossil fuel era is close to its end, wind energy is gaining its standing as one of the most prospective sources of power. Global wind power production capacity has increased more than nine times over the last ten years, and has reached 94 122 MW in 2007, when its share in the energy mix grew to a total of 7 per cent in the European Union. The growth in wind power generation has been largely driven by EU Member States; however, the rest of the world, and USA, China, India, and Canada in particular, are catching up. Wind power in Denmark meets more than 20 per cent of its electricity demand – the highest proportion in the whole world. Not only that – this growth was never anticipated. Since 1996 the European Commission has changed its predictions for wind power production in 2010 and 2020 five times, and the predicted volume has grown more than ten-fold for both years.¹

Based on the European Parliament and Council Directive 2001/77/EC, Latvia has also committed itself to increase its share of renewable energy in electricity consumption to 49.3 per cent. To do this, the government of Latvia planned to gradually increase wind power share to 1.48 per cent in 2007 and 5.37 per cent in 2010.² However, the capacity of wind power plants in Latvia has remained at 26.9 MW since 2003.³

Furthermore, from an energy security perspective, the development of the wind energy sector in Latvia could play an important role given the fact that Latvia, due to its limited domestic energy resources, is one of the most dependent countries on imported energy resources within the European Union. Domestic production of primary energy in Latvia accounts for 35 per cent of total production, with the remaining 65 per cent being imported. Oil and gas-fired power stations, at more than 60 per cent of total domestic production, represent the largest source of primary energy in Latvia and the oil and gas supplies are fully imported.

Taking into account the reported potential of wind energy and Latvia's vulnerable position in terms of energy security, the aim of this paper is to analyze the legal, economic and political aspects of further development of wind power production in Latvia. The rest of the report is organized as follows. The remaining part of this chapter is devoted to a brief overview of the historical context. Then follows three chapters – each devoted to one of the the three aspects of analysis considered: the legal, economic and political. The latter being an important but often neglected aspect when analyzing the prospects of the wind energy sector in Latvia as well as elsewhere. The final section of the report provides a conclusion and summary of the findings.

¹ Kjaer and Zevos (2008).

² The Cabinet of Ministers (2007).

³ Niparte (2008).

1.1 Historical Context

From the 1960s there was a closely integrated energy system across the three Baltic States when they were part of the Soviet Union. Lithuania generated nuclear power at Ignalina, Estonia produced energy from oil shale at Narva, and Latvia had its hydro-electric system on the Daugava River.

The Baltic States have comparatively well-developed electricity grid systems, natural gas supply and storage networks and district heating systems. The electricity and natural gas systems are well interconnected with Estonia and Lithuania. However, good interconnections in the electricity system outside the Baltic States are limited and, due to the historical context of the Soviet Union, oriented towards Russia and Belarus. Besides, the Ignalina nuclear power station in Lithuania is scheduled to close in 2009 and it is likely that energy from oil shale at Narva in Estonia will be closed by 2016.

Now as the Baltic States are three independent countries again, the energy situation across the Baltic States is changing. Each country is expected to maintain a complete energy system at the national level, comprising base load and variable energy, with traditional production from fossil fuels, increasing production from renewables, and complemented by imports as required. With its hydro-electric system, Latvia currently is one of the leading producers in the EU of energy from renewables. For example, since joining the EU in 2004, Latvia has produced on average 45 per cent of its domestic energy annually from renewable resources (mostly hydro), compared with 8 per cent in the EU as a whole (and 15.5 per cent in OECD). However, hydro-electricity is seasonal, has water stock limits and does not provide fully secure base energy. Therefore, Latvia's first priority is to solve the need for base energy capacity and ensure energy security with respect to minimizing reliance on foreign imports (particularly from Russia). While Latvia needs to develop other forms of electricity production, the EU requires more renewables (excluding wood, peat, coke and similar) and this does not fit well with Latvia's own energy priorities.

2. THE LEGAL FRAMEWORK⁴

This chapter discusses the legal framework that has a bearing on the energy market in general and on the the development of the wind energy sector in particular. It starts with an overview of the institutional framework, which is followed by a discussion of the energy sector and market regulation during the period 1996-2003. The following two sections discuss the recent legislation and procedures including the recent amendments to the Energy Law. This last part of this chapter is devoted to the Implementation of the EU law on wind energy and its implications.

2.1 Institutional Framework

2.1.1 Energy policy

Energy policy in Latvia is planned by the Ministry of Economics. The government's energy policy guides development of Latvia's energy sector, including electricity production and supply from renewables. Since 1997 energy policy has been defined by the National Energy Programme and local production from renewables has become a key element of that Programme. The Programme runs currently to 2020 and its implementation is evaluated every five years.

2.1.2 Guidelines for the Development of the Energy Sector for 2007-2016

The Guidelines for the Development of the Energy Sector for 2007-2016 were approved by the Cabinet of Ministers on June 27, 2006. These guidelines set the development targets and priorities in the energy sector for the medium to longer term. For a further discussion of the Guidelines and their implications, see section 4.1.

2.1.3 Energy market

Latvia, as an EU member state, has to ensure compliance with the unified requirements set in EU legal rules. In the electricity supply sector, this means that the electricity market in Latvia was to become liberalised and operate in accordance with provisions of Directive 2003/54/EC of June 26, 2003 concerning common rules for establishing and managing an internal market in electricity. The 1998 Energy Law was amended by removing those parts relating to energy market regulations and delegating the market matters to the new 2005 Energy Market Law which aims to liberalize the energy market and allow any qualifying supplier to operate on the market.

2.1.4 Latvenergo

Latvenergo is the key player in the market and is a wholly state-owned energy utility whose core business is the generation, distribution and sale of electricity and thermal energy.

⁴ This chapter is written by Ieva Indriksone and Esmeralda Balode-Buraka of the Riga Graduate School of Law (RGSL).

Latvenergo also provides telecommunications and information technology services based on its optical fibre network in Latvia. Latvenergo has wholly-owned subsidiaries comprising Augstsprieguma tīkls AS (high-voltage network) and Sadales tīkls AS (distribution network).

Currently (November 2008) in the local energy market, in addition to Latvenergo there are two other companies in Latvia which are supplying significant volumes of electricity, namely a Latvian subsidiary of Eesti Energia in Estonia (energy trader's licence issued in January 2007) and Enerģijas Avots (licence issued in February 2007), also a Latvian subsidiary of an Estonian energy company.⁵

2.1.5 Wind generated electricity

Wind generated electricity was first produced industrially in Latvia in 1995 when Latvenergo, as a trial, erected two wind turbines with total capacity of 1.2MW in Ainaži on the coast of Riga Bay. Commercial wind energy generation became operational in 2002 when a 33-turbine wind park with total capacity of nearly 20MW was built in Grobiņa on the west coast, and three other smaller commercial producers launched production in the same region.

The procurement framework that prevailed at that time, including a favourable double tariff regime for wind energy, was discontinued in 2003, by which time a total of 41 wind turbines had been installed with aggregate capacity of 27MW. No new wind farms have been developed since 2003 because the government was not ready to purchase more electricity from wind energy, and therefore Latvenergo was not required to purchase the relatively expensive wind-generated electricity.

2.1.6 The Latvian Wind Energy Association

The Latvian Wind Energy Association was established in 1998 and its members are private individuals and some small local companies. The Association's purpose is to promote and raise awareness of the benefits of wind energy production and it is a member of the European and International wind energy associations. The Association participates in policy dialogue with the Energy Department of the Ministry of Economics, however it could be more active in the area.

2.1.7 Regulation

Since 2007 a new quota system has managed and regulated electricity production and procurement from renewables, including wind. For example, in March 2008 the Ministry of Economics issued a public tender for the purchase of 404,081 MWh per year of wind-generated electricity through to 2020.⁶ The tender is still open and will close at the end of December 2008. Fulfilling this volume is likely to require the installation of approximately 50MW of new capacity.

⁵ See Licence information: <http://www.sprk.gov.lv/index.php?sadala=127>

⁶ Reference: the current tender is based on Regulation Nr 503 of the Cabinet of Ministers "Regulations for electricity production from renewable resources", based on Energy Law Article 29, parts 2, 4 and 5.

2.1.8 EU law and its implementation

Latvia is in compliance with EU law relating to energy production. According to Directive 2001/77/EC, national targets for energy production are included that are indicative but not mandatory, and consequently the new Member States, including Latvia, have undertaken to aspire towards particular proportions of electricity production from renewable energy sources. However achieving those targets is not compulsory. Therefore no infringement proceedings on non-compliance with EU law against the State can be contemplated at the moment if the targets are not reached. Secondly, since the current electricity tender is still open and not yet completed, it is not yet possible to evaluate the actual performance of the tender or the institutions involved.

Any questions relating to the execution of a public tender can be addressed to the Procurement Monitoring Bureau (Iepirkumu uzraudzības birojs), a state administrative institution under Ministry of Finance which monitors the conformity of all public tenders against state and local government procurement procedures. Fulfilling the duties provided by law, the Procurement Monitoring Bureau publishes tender notices and contract award notices, examines complaints, and provides methodological assistance and consultations.

2.2 Development of the energy sector and market regulation (1996-2003)

2.2.1 The Energy Law (1998)

The Energy Law (1998) brought general practices in Latvia into line with those in Western Europe. The law provides a structural framework of rules for regulation of the energy industry. The law was intended to promote competition in the sector, introduce transparent pricing and address issues of tariffs, third-party access, emergency planning, conservation and environmental protection, and to promote the development of new energy sources, including from renewables.

In 2000, the Latvian energy market opened to competition. In 2005 the Energy Market Law incorporated EU Directive 2001/77/EC which requires that by 2011, 49.3% of gross electricity consumption in Latvia should come from renewable sources.

2.2.2 Market structure and regulation

Latvenergo, the state-owned electricity utility, deals with production, distribution and sale of electricity and heating energy. Latvenergo owns the HVEN (High Voltage Electricity Network) which receives electricity from hydroelectric and thermoelectric power stations in Latvia, as well as from Lithuania, Estonia, Russia and Belorussia. The HVEN sends the high-voltage power into regional distribution networks. Private energy producers must interact with Latvenergo as their primary customer and distributor. Latvenergo is governed by a Supervisory Council of five members, all of whom are government nominees.

Chapter XII of the Energy Law regulates the management of the energy sector. Article 76 states that the Cabinet of Ministers is the decision-making body responsible for regulations and the Ministry of Economics is the executive institution responsible for energy policy and

preparation of the regulations. These regulations support the efficiency of use of Latvia's energy resources, and encourage investments into the modernization of the energy industry. The Public Utilities Commission (PUC) is responsible for monitoring and regulating the electricity market.

Chapter II of the Energy Law prescribes Licensing of energy producers and operators. Article 5 states how the activities of energy producers and suppliers are regulated by licensing. A license determines the safety of energy users, the provision of reliable and stable energy supply according to demand, and governs compliance with environmental standards. Energy suppliers are regulated by the PUC, which is itself governed by the Law on Public Utilities Regulators. The Regulator grants a licence to qualifying producers and operators (Energy Law, Chapter II, Article 7). A license for energy production, transmission, distribution or storage is granted for a period of 20 years, while a licence for energy trading is valid for 5 years. Energy Law Article 82 states that small operators or producers (up to 4MW), which do not require a license, are regulated by the State Construction Inspectorate. More detail on the licence procedure is presented below in the section on Licensing.

Article 84 in Chapter XIII of the Energy Law states that in addition, the Regulator is responsible for encouraging efficiency of energy producers and operators, use of renewable resources for energy production, efficient use of supplied energy and that the activities of the Regulator comply with the State National Energy Strategy. Article 97 on tariffs and prices are dealt with in more detail by the Law on Public Utilities Regulators⁷.

2.3 Recent legislation and procedures since 2005

2.3.1 Purpose of the new laws

Changes in recent years to legislation relating to the energy sector have been made in the framework of EU legislation and with the objective of consolidating numerous previous issues into the new law, liberalising the market, promoting renewables in the form of wind energy, solar and biomass, and promoting further use of co-generation.

Co-generation of electricity and city heating (combined heat and power; CHP) has been used in Latvia since 1972, however, until recently there were only two such CHP plants in Latvia, and both in Riga. Since 2005, new regulations opened opportunities for co-generation expansion in other smaller towns in Latvia.

The Energy Law sets economic incentives to encourage co-generation. Under this law, Latvenergo must purchase excess electricity generated by small CHP plants of up to 4MW. The size limit is raised to 7MW if the fuel used is municipal solid waste or biogas. The law establishes higher purchasing prices for electricity generated from different types of technology based on renewables. Amendments in 2001 to the Energy Law provided further rules for the installation of generation equipment and for the sale and purchase of electricity produced from renewable sources. The law stipulates that owners of buildings and other facilities have the right to choose the most cost-efficient type of energy supply.

⁷ Source: <http://www.likumi.lv/doc.php?id=108834>; and <http://www.ttc.lv/index.php?skip=105&itid=likumi&id=10&tid=50&l=EN> (however, this is not a good translation in English)

2.3.2 Deregulation

Deregulation or liberalisation of the electricity market was approved by parliament in 2005 with the adoption of the Energy Market Law (see below). Deregulation has separated Latvenergo's main operations of energy production, transmission and distribution into separate units with transparent accounting for income, costs, and transfer pricing. This enables energy producers and competitors to work with or alongside Latvenergo. However as the primary market player, the amendments to the Energy Law included that Latvenergo will not be privatized and that all the company's shares will remain the property of the state. The amendment also states that Latvenergo's assets including the three main hydro power plants on the Daugava River, Riga 1st and 2nd co-generation plants, the national grid, and telecommunications networks and facilities, will not be used as collateral or security against loans or other liabilities, and that these assets will not be privatised or sold. Consequently Latvenergo will remain the dominant market player for the foreseeable future.

In 2006 the European Commission launched the infringement proceedings against the State of Latvia on non-compliance with the Directive 2003/54/EC concerning common rules for establishing and managing an internal market in electricity (proceeding No.2006/2058). This was in relation to the possibly non-transparent practices on setting the electricity prices for the end consumers. However, the proceedings were terminated after the Commission accepted the Latvian authorities' explanations that the price for consumers is set independently by the PUC on the basis of objective calculations.

In July 2007 Latvenergo's Sadales Tīkls (distribution network) subsidiary was separated legally from AS "Latvenergo" and received a licence issued by the PUC to operate in the energy market in Latvia. Thus the energy market in Latvia became fully liberalised and open for any qualifying third party energy trader.

Active participation from other energy suppliers started in the first half of 2007 and around 20 licences have been issued by the PUC to a variety of energy suppliers, the largest of which is E. Energy, a daughter company of Eesti Energia in Estonia. Currently Eesti Energia via its licenced daughter company is supplying market-priced energy to approximately 10 corporate customers in Latvia. In August 2008 E.Energia stated its aim to gain 35% of the Latvian energy market.⁸

On 26 June 2007, the Cabinet of Ministers issued Regulation Nr. 452 on Electricity Trading and Consumption, which governs energy trading including rights and obligations of suppliers and customers, cost calculation, settlement of service payments, setting the market price and required service levels. Regulation 452 determines the procedure for how a customer can change their energy supplier and the security measures for customers in a situation when needed energy supply is at risk. Regulation 452 determines also those customers who are entitled to receive a back-up energy service (universālais pakalpojums)⁹.

On 15 May 2008 amendments to the Energy Market Law were approved which determined that all electricity consumers with 50 or more employees and annual turnover of more than LVL 7 million (EUR 10 million) become members of the free energy market. In practice this means that the price they will pay for electricity will no longer be set by the Regulator,

⁸Source: <http://www.sprk.gov.lv/index.php?id=28&sadala=41>

⁹Source: <http://www.sprk.gov.lv/index.php?id=28&sadala=41>

rather the price will comprise a fixed part that covers the supplier's transmission and distribution costs, and a floating part that will be determined by the Nordpool market (www.nordpool.com). This change in pricing methodology means that large customers need to negotiate a new agreement with their electricity supplier.

2.3.3 The Public Utilities Commission (PUC)

The Public Utilities Commission (PUC) started its operation in October 2001 taking over the responsibilities of the Energy Regulation Council. The PUC is politically, financially, and institutionally independent, however, it is supervised by the Ministry of Economics. The PUC is responsible for the regulation of energy, telecommunications, postal service, and railway sectors in accordance with the Law On Public Utilities Regulators (2000) and the corresponding acts in the respective regulated sectors¹⁰. The PUC has its own statutes, strategies and code of ethics, as approved by the Commission's board. The energy laws of Latvia are drawn up in accordance with EU Directives on sustainable energy. The PUC's functions include regulation of regulated sectors and companies whilst balancing the interests of users and public service providers. It determines methodologies for calculating tariffs, approves tariffs, issues licenses (see below), registers authorisations, promotes competition in regulated sectors, and performs out-of-court dispute settlements. The PUC monitors how service providers comply with their license conditions and quality requirements.

2.3.4 The Energy Market Law (2005)

The Energy Market Law (2005) has become the main law to regulate the energy sector. The law also is the main law regulating the use of renewables for energy production and supply and sets Latvia's aim to increase production from renewables. The law sets the legal framework for the functioning of the electricity market, safe electricity supply to users, ensuring quality standards at a reasonable price, determining user rights to choose electricity suppliers and to promote electricity generation from renewable energy sources. Article 12 of Chapter III is dedicated to the independence of the operator of the network transmission system, such independence being under the supervision of the Regulator.

2.3.5 Licensing

To receive a licence from the PUC to operate a wind generator and to produce and sell electricity to the market, the following documents and procedures apply¹¹:

1. Certificate from the Commercial Register confirming corporate legal existence.
2. Information submitted that describes the technical equipment and process to be used for the production of electricity.
3. Documents certifying the qualifications of the participants as required by energy sector regulations.
4. Permission from the Ministry of the Environment confirming that the project complies with the required environmental standards.

¹⁰ Source: <http://www.sprk.gov.lv/index.php?id=28&sadala=41>

¹¹ Source: http://www.sprk.gov.lv/doc_upl/iesniegums_licences_sanemsanai.doc

5. A statement from the State Revenue Service confirming that the legal entity has been registered in Latvia as a tax payer and does not have any tax debts.
6. Annual company report (if applicable) and business plan for the project.
7. Description of the organisational structure of the producer or operator.
8. Document certifying ownership or contractual usage rights of the applicable real estate.
9. Permission from the relevant municipality governing the proposed area of activity, including a geographic territory map and description.
10. Other documents, as required by energy sector regulations.

2.3.6 Grid network

Chapter I of the Energy Market Law (2005) defines load balancing on the grid, which from 2007 in the Cabinet of Ministers' Regulations Nr 503 forms part of the services that wind energy producers need to include as part of their responsibilities and so need to include in their operating costs budget.

Chapter II of the law describes the electricity system as comprising production, transmission and distribution systems. The law refers to the Grid Code, which from January 2008 sets the usage rules for grid participants and deals with a variety of technical matters. Chapter II determines that participants in the electricity market act according to written agreements between the parties.

According to Article 8 of the Energy Market Law, rights to access the grid are regulated by the PUC. The most recent version of the Regulations on Grid Connection for Electricity Producers (No.280) was adopted by the PUC on 3 September 2008¹².

Chapter III describes the base principles of the operational system. Article 9 in the chapter addresses issues relating to connecting into the grid. The operator is responsible for the grid in their operational territory, which is stated in their license, its maintenance, safety, development, connection with other grid nodes, and the ability of the grid to transmit electricity according to longer term planned demand.

2.3.7 Connection procedure

If the participant fulfils the technical and other requirements for being connected to the grid, it remains the operator's responsibility to provide the physical connection to the grid according to Operators' regulations. Connection cost is based on the real cost of creating the new grid connection. In the case of there being more than one beneficiary, sharing of the grid connection cost is decided by the Regulator. The grid connection cost does not include the system's development costs. According to the Regulations on Grid Connection for Electricity Producers (No.280) the total costs for a particular new connection are calculated only after the formal application on connection is submitted.

End users can apply for a grid connection. An operator can decline access if the capacity of the line is not sufficient to handle the additional load. A response must be given within 30 days from the application date. Within seven days of declining access to the grid, the system

¹²Source: <http://www.sprk.gov.lv/index.php?id=4458&sadala=252>

operator must report to the Regulator about such application being declined and must describe what measures are required to improve the system and capacity.

Article 13 deals with operators' duties including load balancing services and stability of the transmission system. Applied measures have to be fair, transparent and on an equal basis, as regulated by the Grid Code. In the case of an overload on the grid, the operator has the authority to close temporarily some supply to the grid. Trading activities are registered, decreased and declined according to Grid Code rules. (The most recent amendments to this Article 13 were made in May 2008)¹³.

Article 14 deals with services in the transmission network. The operator either provides independent services, including load balancing, or buys them. The operator buys support services in a transparent, undiscriminating manner, based on market principles.

2.3.8 Energy trading

Energy Market Law (2005) Chapter VI, Introduction of new capacities, Article 22 deals with the increase of production capacities by building new facilities and which require permission issued by the Ministry of Economics. The permission issuing procedure and terms are regulated by Cabinet of Ministers Regulations 503. A development permit (licence) is given or refused within 30 days of submitting the application. Refusal can be based only on the application being incomplete. A refused application can be re-submitted. Building of new energy production facilities is done according to construction regulations. Article 23 of Chapter VI deals with tendering which governs the quantity and price of electricity supplied to the market by both existing and new energy production facilities. When existing supply is insufficient, the operator informs the Ministry of Economics of the need to either develop new production capacity or to renovate existing facilities to increase their capacity. The decision to issue a supply tender, which is a multi-year energy purchase programme, is made by the Cabinet of Ministers. The subject of the tender competition is the procurement of a defined amount of electricity over several years at a competitive price. Assuming satisfactory technical characteristics, the lowest price wins. Article 23 provides more details of the tender process and procedures.

Chapter VII, Production of energy and setting the purchase price, (including the production of energy from renewables and its purchase by the operator). In this section 29, the Cabinet of Ministers has set the goal to achieve 49.3% of energy from renewables by 2010.

In Latvia, the main source of renewable energy is from hydro power and hydro power in general, currently providing more than 42% of Latvia's total energy needs¹⁴, will continue for at least the medium term as a key strategic priority for energy production. The volume of energy produced from hydro power fluctuates slightly each year because rainfall affects water levels in the catchment dams and consequently this affects annual energy production capacity. However, as a proportion of energy being produced from all renewable sources, hydro power at around 93%¹⁵ is clearly the largest. In the coming years other renewable sources such as bio-fuel and wind will increase gradually but only as a very small proportion relative to

¹³ Source: http://www.ast.latvenergo.lv/portal/page?_pageid=73,299246&_dad=portal&_schema=PORTAL

¹⁴ Source: http://www.latvenergo.lv/portal/page?_pageid=73,56603&_dad=portal&_schema=PORTAL

¹⁵ Source: <http://www.em.gov.lv/em/2nd/?cat=14281>

hydro. In 2007 Latvia produced approximately 45% of its energy from renewable resources (38% in 2006; 48% in 2005; and 47% in 2004).

2.3.9 Electricity trading system

Electricity generated from wind energy can be sold to Latvenergo, or to any other consumer. As described above, the State buys energy within a mandatory procurement programme, based on a quota approved by the Cabinet of Ministers. The Public Distributor of Energy calculates the volume of energy from renewables on an annual basis and publishes in its portal (www.sprk.gov.lv) and the government's "Latvijas Vēstnesis" newspaper and portal.

Article 32 in Chapter VIII Trading of Energy lists various details, such as that a license is required to sell or to buy energy, purchase agreements are set for a minimum of 5 years and maximum of 10 years, and that the Regulator decides various details of what information is given to customers and the core pricing principles.

Articles 36 and 37 are about load balancing responsibilities and transparency principles for price calculation based on activity reports provided by participants. The system operator is responsible for the load balancing on the grid and provides a load balancing service to the users, producers and distribution operators who are connected directly to the grid. All participants have agreements with the system operator about load balancing. To a producer of electricity from wind energy, load balancing is part of their operating cost because wind fluctuations create the need for load balancing. Pricing for under-supply and over-supply relative to a submitted delivery plan are priced differently, as described in Regulations 503. Balancing energy purchase and sale price is published daily by the operator (http://www.ast.latvenergo.lv/portal/page?_pageid=73,299181&_dad=portal&_schema=PORTAL).

2.4 Amendments to the Energy Law

With the aim of conforming legislation to EU standards prior to accession, since 2001 legislation in Latvia related to energy production from renewables has undergone a number of changes, for example in 2001 the Law of Energy was amended particularly with regard to the use of renewables in Latvia. On the basis of this law, a number of Cabinet of Ministers regulations (CMR) were adopted in 2001, including the following:

- Requirements for co-generation plants and the procedure of setting the price for the purchase of excess electricity. This Regulation sets a higher purchase price if domestic energy sources, rather than imports, are utilized;
- Regulations on total installed capacity in 2002, with specific capacities for each type of electricity generation if renewables are utilized (CMR Nr.28);
- Regulations for the installation and location of electricity production capacities if renewables are used for production of electricity (CMR Nr. 29).

In 2005, in order to create the new Energy Trading Law the clauses in the 1998 Energy Law relating to energy trading were removed and Article 201 in the Energy Law was presented in new wording according to the revised market requirements. In 2006 the Cabinet of Ministers accepted the Regulations on the Special Connection to Electricity Transmission System that

define the procedures for the establishment of a special connection to the electricity transmission system for large end users or for increasing the capacity of an existing connection.

2.4.1 Regulations on Electricity Generation from Renewables, CMR No. 503

Regulations on Electricity Generation from Renewables, CMR No. 503 were adopted on July 24, 2007 by the Cabinet of Ministers. These Regulations ensure the mandatory procurement of power generated from renewables (wind, small hydro, biomass, biogas) with an agreed long-term purchase price based on a feed-in tariff system with the quantity and price determined through public tender. See below for further details on the procurement process.

2.4.2 The 2008 tender

The Energy Department of the Ministry of Economics currently is running a tender to purchase electricity from wind farms in the annual amounts indicated in the table below¹⁶. The tender process is governed according to the Cabinet of Ministers Regulations 503. The maximum price available under the tender is LVL 0.07 per kWh (EUR 0.10 per kWh), and the winner or winners are likely to bid at a lower price than the maximum. The total volume for 10 years to be procured under the tender is 130MW. The tender will close on 30 December 2008. The public procurement rules allow the disclosure to third parties of the number of currently submitted applications, but not the names of the applicants. The Energy Department confirmed that as of 3 November 2008 no submissions had been received.

If the winner with the lowest offered price commits to providing only a part of the total needed volume of 130 MW, the next lowest price participant will be invited to provide the remaining amount of needed volume of MW, and so on until the full 130MW are committed.

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Vol. of electricity (MWh)	404 081	404 081	404 081	404 081	404 081	404 081	404 081	404 081	404 081	404 081

To qualify for the current tender, a bidder needs to be a legal entity with at least 1MW of wind energy production capacity, or be in the process of building such capacity, and needs to submit audited accounts with the following balance sheet elements:

1. At least 25% of the working capital is covered by equity; and
2. Total assets are not less than LVL 100 000;
3. Or to prove that the bidder's parent company fulfills the above criteria and will provide a guarantee for the financial obligations in the project.

The bidder's application for the tender needs to include the following documents:

¹⁶ The Energy Department's tender instructions can be found at <http://www.em.gov.lv/em/2nd/?cat=14267>

- Proof of the ownership or usage rights of the land where the wind turbines are installed or are going to be built. Depending on location, this may require written permission from the relevant municipality;
- Proof of ownership or operator's contractual rights of the wind turbines;
- A written statement from the State Revenue Service (VID) that all taxes are paid;
- A bank guarantee for the project's financing, including construction, installation and operations works;
- Guarantee from an European Economic Area - registered wind turbine producer, committing that they will supply the required equipment within 18 months from the date the bidder wins the tender;
- Description of the wind turbines and wind farm;
- Audited accounts for the previous two years of the bidder company or its parent company;
- Environmental impact assessment, approved by the Ministry of Environment¹⁷;
- Forecast plan over 10 years of annual electricity supply volumes and price, providing the number and validity date of the permit issued by the Ministry of Economics for the supply of electricity. The average price and any annual price of the supplied electricity cannot exceed the price stated in the tender.

According to the Environmental Impact Law (1998)¹⁸ an initial environmental impact assessment is mandatory if the height of the envisaged wind-power generator structure exceeds 20 metres or if it will be based offshore in the sea. The Ministry of Environment's decision must be provided to the applicant within 60 days of an initial impact assessment being submitted (Article 3¹). Depending on the particular circumstances, for example if the relevant area is close to the NATURE 2000 territory or to listed historical places, a full impact assessment is likely to be required and this may take up to one year to collect the relevant data and prepare and submit the report.

2.5 Implementation of EU law on wind energy

Latvia as well as other EU Member States must apply the provisions of Directive 2001/77/EC on the promotion of electricity from renewable energy sources in the internal electricity market. However, it must be noted that according to the European Commission itself the harmonization on the subject is still at an experimental stage¹⁹.

2.5.1 Directive 2001/77/EC

Directive 2001/77/EC determines on the EU level harmonization rules in the field of wind energy. Whilst the national indicative targets for the "old" Member States were introduced into the initial text of the Directive, the Accession Treaties set indicative targets for the "new"

¹⁷ According to the Latvian Wind Association, the environmental impact assessment is likely to include a bird habitat and flight route study, which takes several months, and also confirmation that the land does not contain any protected or at-risk plant species.

¹⁸ Source: http://www.em.gov.lv/em/images/modules/items/item_file_14312_10.doc

¹⁹ Communication from the Commission - The support of electricity from renewable energy sources {SEC(2005) 1571}, Chapter 8, http://eur-lex.europa.eu/smartapi/cgi/sga_doc?smartapi!celexplus!prod!DocNumber&lg=en&type_doc=COMfinal&an_doc=2005&nu_doc=627, accessed on 30.10.2008.

Members. It is important to underline that these targets in their essence are indeed indicative and not mandatory. In other words the Member States have undertaken to aspire towards particular proportions of electricity production from renewable energy sources however the achievement of the particular targets is not compulsory. Nevertheless the Directive entrusts the European Commission to decide on mandatory targets in the future, if in its opinion the current national activities are not in line with the indicative targets.

Besides the obligation to direct national energy policy towards the implementation of the particular indicative target, the Directive imposes the following additional tasks on the Member States:

- 1) To adopt and publish every five years a report setting national indicative targets for the next ten years (Art. 3, Para. 2 of the Directive). The relevant report for Latvia is integrated within the general energy policy planning document²⁰ and was adopted in 2006;
- 2) To ensure that a guarantee of origin of electricity produced from renewable sources can be issued upon request (Art. 5). That mechanism corresponds to the one introduced into the Energy Market law Art. 29, Para.5 and Arts 75 – 79 of CMR No. 503 of 24 July 2007;
- 3) To publish every two years a report which includes an analysis of outcomes (Art. 3, Para 3). On the basis of these reports the European Commission may be requested to provide its conclusions on the general progress towards achieving the national indicative targets and to propose appropriate measures for further common actions.

The deadline for publishing the last Member States' reports expired on 27 October 2007. Since the Commission is dependent on the existence of national reports to fulfill its task, infringement actions against the States that did not provide the reports followed thereafter. In the case of Latvia a complaint or letter of formal notice from the Commission (meaning the launch of possible litigation against the State) was issued on 5 July 2008 (proceeding No.2008/2133). The reaction of the Government was prompt and the draft report was submitted to the Commission at the end of July and the final version submitted to the Government by the end of August 2008²¹.

- 4) To take all necessary administrative steps to encourage the electricity production from renewable sources, including the reduction of regulatory and non-regulatory barriers, streamlining and expediting administrative procedures etc. (Art. 6, Para 1). Particular attention should be paid to the authorization procedures to which the on-going tender in Latvia belongs.

²⁰ Energētikas attīstības pamatnostādnes 2007.-2016.gadam (not available in English), <http://www.em.gov.lv/em/2nd/?cat=14281>, accessed on 31.10.2008.

²¹ Latvijas Republikas regulārais ziņojums par Indikatīvā mērķa sasniegšanas gaitu atbilstoši Eiropas Parlamenta un Padomes 2001. gada 27. septembra Direktīvas Nr.2001/77/EK par tādas elektroenerģijas pielietojuma veicināšanu iekšējā elektrības tirgū, kas ražota, izmantojot neizsīkstošos enerģijas avotus, 3. pantam (not available in English), <http://www.mk.gov.lv/lv/mk/tap/?dateFrom=2007-11-01&dateTo=2008-10-31&text=indikat%C4%ABv%C4%81+m%C4%93r%C4%B7a&org=0&area=0&type=0>, accessed on 31.10.2008.

- 5) To guarantee the transmission and distribution of electricity produced from renewable sources, to request the transmission and distribution system operators to publish their standard rules relating to the bearing of possible costs of new grid connections and grid reinforcements as well as to provide any new producer with a comprehensive and detailed estimate of the costs associated with the connection (Art. 7).

The transmission and distribution of wind-generated electricity in Latvia is guaranteed by the obligations entrusted with the transmission and distribution operators. The Directive (Art.7, Para 1) also allows for Member States to guarantee priority access to the grid system of electricity produced from renewable energy sources, however the Latvian legislature has not opted to introduce this privilege. In relation to possible costs for a new producer, the legislation of Latvia leaves still room for further clarification. In particular, there is no explicit legal basis for a potential new producer to claim from the grid operator a prompt detailed estimate of the costs associated with the connection before the decision on investments and the connection are required. However, this is an important element for deciding on participation in tenders where a deadline for preparing all the documentation (including the possible purchase of the land, environment impact assessment etc.) is tight. Thus the outcome of co-operation with the transmission operator on the subject may vary from case to case.

In 2006 a number of reproaches on insufficient promotion of wind-generated energy were received by Latvia from the European Commission (infringement proceeding No.2005/2424). The reply submitted to the Commission²² recognised that the Commission was not satisfied with the comparatively low level of activities in wind-generated energy production, on access to the grid and on the connection costs. While Latvia continues to have challenges relating to reliable base energy production, the number and content of subsequently adopted and amended laws (see previous sections) appears to be directed towards addressing the EC's concerns.

2.5.2 Non-discrimination and proportionality

National legislation in force does not provide any rule which would contain a basis for discriminatory approach towards foreign wind-energy producing companies. Moreover, there is no ground to presume that such a different treatment would exist in practice since no complaints on the administrative practice have been raised. However, the wind-energy market is comparatively new in Latvia and thus the statements on the consistent administrative practice in this field cannot be drawn yet.

As concerns the application of the principle of proportionality, two remarks should be made. On the one hand, from the performance perspective the proportionality requirement states that the procedures applied for the tender for the guaranteed acquisition of the new volumes should be proportionate. This task has been eased by the standards set within the Directive 96/92/EC concerning common rules for the internal market in electricity, for example, the obligation to make available the tender specifications to any interested party so that it has sufficient time in which to submit a tender, the task to consider the electricity supply offers with long-term guarantees from existing generating units etc. Since the current tender is not completed yet, there is little ground to evaluate the actual performance of the responsible

²² <http://www.mk.gov.lv/lv/mk/tap/?dateFrom=2005-11-17&dateTo=2008-11-17&text=2005%2F2424&org=7&area=0&type=0>, accessed on 17.11.2008.

institutions from this perspective. However, no indications have been identified so far in relation with possible infringements.

On the other hand, the promotion of wind-generated energy should be proportionate to the general national energy policy. It is worth recalling that in the specific case of Latvia the production of energy from renewable sources is primarily an issue of energy security and only secondly a matter of environmental policy (cf. the basis of Directive 2001/77/EC, which is the protection of environment). Subsequently it should be taken into account that the national policy and related legislation on the subject will always be screened initially through the energy policy prism.

2.5.3 Competition law

In terms of competition, the most grey area is the possible State aid granted for the installation of operating wind turbines. However, no infringements have been established so far with this regard. Moreover, according to the Article 4 of the Directive 2001/77/EC the national support schemes appropriate to promote the production of “green energy”, for example, such as feed-in-system by the guaranteed purchase price are welcomed.

2.6 Conclusion

According to the above analysis it can be summed up that the EU law governing wind-energy production has been properly implemented into Latvian national legislation. This legislation contains all the essential formal pre-requisites to encourage investments into the wind-generated energy industry. However, in principle as noticed before, neither the EU legislation nor the related national laws obliges Latvia to promote primarily the production of wind-generated energy. Exclusively the guaranteed purchase of the volume tendered binds the state. The picture is not so clear with regard to the administrative practices because of the relatively small number of activities. Thus the first assessments could be made once the current tender has been completed at the end of December 2008.

3. ECONOMIC VIABILITY OF WIND POWER PRODUCTION IN LATVIA²³

Taking into account the potential of wind energy, the aim of this chapter is to reveal the economic arguments both in favour of and against the further development of wind power production in Latvia. The introductory section outlines the framework and current situation of wind power production in Latvia. The main arguments in favour of further wind power production development in Latvia are presented in section 2, while the arguments against – in section 3. Section 4 offers an economic model of the development of wind power production. Section 5 concludes the analysis and offers suggestions for the necessary changes in markets or government support to make wind power production attractive. Section 6 offers an insight into possible future developments that might change the discussion about wind power production.

3.1 Background

3.1.1 Wind power production in Latvia

66.1% of the electricity consumed in Latvia in 2006 was produced domestically, as is illustrated in Figure 1. Only the large hydroelectric power plants (HPPs) produced more electricity than was imported. Domestic generators powered by natural gas were the third largest source of electricity consumed in Latvia. The other sources of electricity constituted a mere 1.8%, including 0.6% produced by wind energy.

The situation in wind power production in Latvia has changed very little since 2003, when Latvia had 41 wind turbines installed with the total capacity of 26.9 MW.²⁴ However, in recent years activity and interest in wind power production has grown significantly. During the first half of the year the Ministry of Economics has received applications for the construction of wind turbines with the total capacity of 160 MW.²⁵

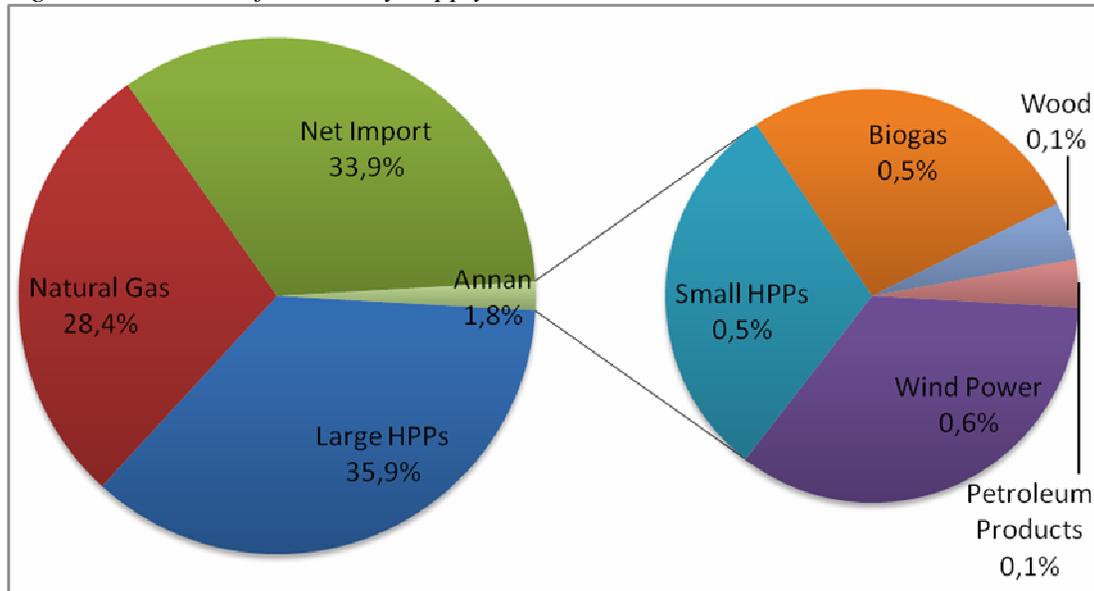
However, production capacity is just part of the equation. An important issue in wind power production is how much of the capacity can be utilised given the wind conditions in a particular year. Although the Ministry of Economics in the procurement for compulsory electricity purchase from wind power production assumes 2500 as the maximum productive hours of wind, the evidence shows that the actual number of productive hours (electricity produced in a year [MWh]/capacity [MW]) is significantly lower. In 2006 wind energy in Latvia produced 48 000 MWh, thus the number of productive hours was 1784; in 2007 – 52 000 MWh and 1933 productive hours.

²³ This section is written by Mārtiņš Kālis, Baltic International Centre for Economics Policy Studies (BICEPS).

²⁴ Niparte (2008).

²⁵ Ministry of Economics (2008).

Figure 1. Structure of Electricity Supply in Latvia in 2006



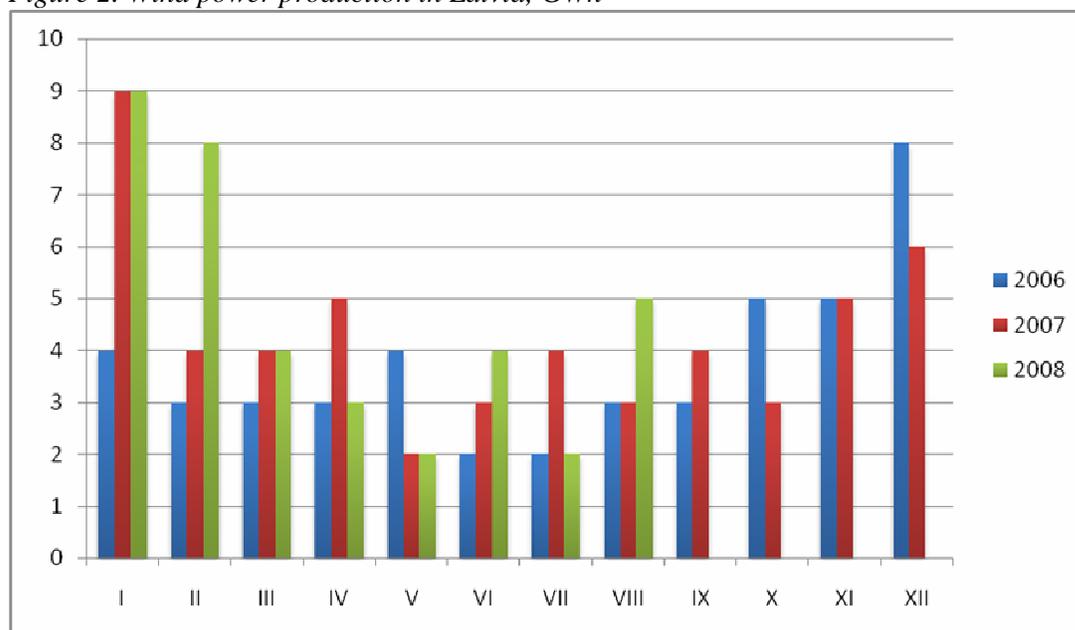
Source: “Draft regular report by the Latvian authorities on success in meeting the indicative target pursuant to Article 3(2) and (3) of Directive 2001/77/EC”, August 2008.

Figure 2 shows the seasonal variation in wind power production in Latvia. The most productive months are in winter, while summers are relatively less productive. Important to note is that the volume of electricity consumption follows the same pattern – it increases during winter months and decreases during summer. However, as can be seen in the same figure, production within the same month is less predictable.

Latvia is considered suitable for wind power production, with Kurzeme and Ainaži regions having the highest potential for on-shore wind power production. It is estimated that Latvia has the potential for generating 1 000 GWh per year from wind energy.²⁶

²⁶ Ostapenko and Gamaļejevs (2004).

Figure 2. Wind power production in Latvia, GWh



Source: Central Statistical Bureau, 2008.

3.1.2 The framework for wind power production in Latvia

As with all electricity production, the Energy Market Law of 2005 (discussed in more detail in section 2.3) governs wind power production. It also includes Latvia's national indicative target that 49.3% of Latvia's electricity consumption must be met from renewable energy sources by 2010. It also covers the introduction of new electricity production capacity and the expansion of current capacity. On the basis of this law, the Cabinet of Ministers has issued Cabinet Regulation No 695 of 29 August 2006 "Rules on permits to increase production capacity or install new production facilities" and Cabinet Regulation No 503 of 24 July 2006 "Rules on electricity production from renewable energy sources". The latter also provides for procurement for compulsory electricity purchase from wind power production.²⁷ This target is now accompanied by another set out in the EU Climate Action and Renewable Energy Package (2008), where Latvia has committed to increase its share of renewable energy sources in its energy provision from 34.9% in 2005 to 42% in 2020.

Based on the Regulation No 503, the Ministry of Economics has started a procurement procedure. Within this procedure the government offers a compulsory purchase of electricity in the amount of 404 GWh per year for 10 years, starting in 2010. For comparison, Latvia currently produces approximately 50 GWh of electricity from wind energy. However, the ministry argues, if all licences issued this year for new wind power plant are utilised, according to their calculations (2500 productive hours a year for wind power production), this would constitute approximately the required supply – 400 GWh. The procurement provisions define a fixed price for the energy purchase – 70.2804 LVL/MWh (100 EUR/MWh) for a ten year period.²⁸

²⁷ European Commission (2008).

²⁸ Ministry of Economics (2008).

However, not everyone is satisfied with the procurement procedure. The President of Latvian Wind Energy Association, Paulis Barons, has stated that the application procedure is burdensome and bureaucratic – to participate an applicant has to submit 12 different documents and statements. It is especially hard for small producers to participate, as the application window is slightly more than six months, while acquiring a new wind turbine may take up to 18 months, and usually a third of the costs have to be paid upfront, and the producer still has an uncertainty about winning the procurement.²⁹ Even the research of Ministry of Economics' suggests that the price might be too low – it is estimated that the price should be around 110 EUR/MWh for wind power production to be profitable.³⁰

3.2 Arguments in favour of wind power production in Latvia

3.2.1 Impact on the environment

The most obvious reasons for supporting wind power production is its benign impact on the environment. Capturing the wind energy does not in any way decrease it; therefore it is 100% renewable energy source. To give an illustration of the effects of wind power production in the EU, according to the European Wind Energy Association, the 56 GW installed wind power production capacity already meets 3.7% of the total EU electricity demand, which is equivalent to powering 30 million average EU households (15% of all EU households). As a consequence, the emission of 91 Mt of CO₂ per year is avoided, which is equivalent to taking 21% of the EU car fleet off the road and fulfilling 26% of the EU-15's Kyoto obligation. By 2030 it is predicted that wind energy will produce power equivalent to the needs of 84% of EU households and avoid 575 Mt of CO₂ – equivalent to taking 132% of EU 2004 car fleet off the road.

If Latvia does manage to introduce the wind power production necessary to produce the planned 404 GWh per year, it will avoid emitting 0.335 Mt of CO₂ (assuming that the wind power produced displaces energy generated by coal, which emits 0.83t CO₂ per MWh energy produced, according to the Ministry of Economics). At the current price of a tonne of CO₂ at 18 EUR (Carbon Positive), such wind power production would save EUR 6.03m in carbon emissions.

3.2.2 Energy independence

Another reason some people support the introduction of more wind power production is the possibility to increase Latvia's energy independence. Based on the indicative targets set out in the Cabinet Regulations Nr. 503, electricity produced by wind energy should reach 5.96% of the total electricity consumption in Latvia, which would be a significant contribution towards energy independency (the current share of imported electricity is 33.9%). For Latvia it is almost impossible to just have one source that ensures energy independence, therefore even seemingly small contributions like this are regarded as very valuable.

²⁹ Niparte (2008).

³⁰ Ozola (2008).

3.2.3 EC requirements

Another clear motive for increasing wind power production in Latvia is Latvia's commitment to increase the share of renewables in electricity generation. According to the European Parliament and Council Directive 2001/77/EC, Latvia has to ensure that 49.3% of the electricity consumed in Latvia is generated by renewable resources. As the Ministry of Economics predicts that electricity produced by our largest renewable source – hydroelectric power plants – will decrease, wind power production represents an alternative means of reaching the set target.

Another EU commitment has set more strain on Latvian renewable energy targets. The EU Climate Action and Renewable Energy Package (2008) require that by 2020 Latvia has to cover 42% of its final energy demand by renewable energy sources.

3.2.4 Support for wind power production in the society

In some countries consumers can choose to receive electricity generated from a specific source, such as wind, and many do. This implies that at least some consumers perceive the source of power as creating added value; therefore we cannot ignore society's opinion on different energy sources. Moreover, the situation in Latvia is very favourable for wind power production, as was found in a survey by the Marketing and Public Opinion Research Centre SKDS. The survey revealed that 82% of the Latvian public support the construction of new wind power plants, which is the highest level of support among all energy sources. People also perceive it to be the least damaging to the environment (84% of respondents perceived wind power production to cause little or very little damage to environment).

The survey also revealed that price, impact on human health, and impact on the environment are the aspects of power production people consider most. Interestingly, the high level of support for wind energy is potentially unstable, as it is based on the misconception that wind power production is among the cheapest ways of producing electricity. 51.8% of respondents considered wind power production to be cheap, as compared with just 12.8% who said the same about electricity produced from natural gas. Only 3.9% of respondents were against wind power production, showing strong support for further development of wind power production in Latvia. For a further discussion of public opinion on wind energy, see section 4.4.

3.2.5 Development of the wind-power industry

The development of wind power production would also create new workplaces. Currently wind power production generates 102 100 direct jobs and a total of 180 000 jobs in the EU-27 (European Wind Energy Association). At the end of 2007 the EU-27 had more than 56 GW of wind power capacity installed, resulting in approximately 3.2 workplaces per MW installed. This means that if Latvia achieved its full potential of wind power production at 1 000 MW, it would likely create around 3 000 new workplaces. Here it is important to note 59% of the workplaces generated by wind power production would be in general manufacturing and component manufacturing. However, the current situation, when demand for wind turbines exceeds supply and wind power production is still an early development phase, might be the right time for Latvian engineers to join this market.

3.2.6 Local power production

One of the possible benefits of wind power production is local production, decreasing the strain on the grid line and decreasing the distance electricity has to travel, thus decreasing losses. In most cases communities powered by wind energy cannot be self-sufficient, as wind power is not constant and it is difficult to accumulate it; however, it can significantly decrease dependency on a central electricity provider for local communities. An additional benefit, especially in cases where the local community owns the wind turbines, is that people become more aware of their energy use. Through the monetary investment they become more involved and committed to the promotion of renewable energy, which was clearly shown in Samsø Island in Denmark, which has turned from a producer of 45 000 CO₂ annually to carbon-neutral island that additionally helps to displace energy production based on fossil fuels that used to produce another 15 000 CO₂ annually in the Danish mainland. Samsø Island could be a model for other communities.³¹

3.3 Arguments against wind power production in Latvia

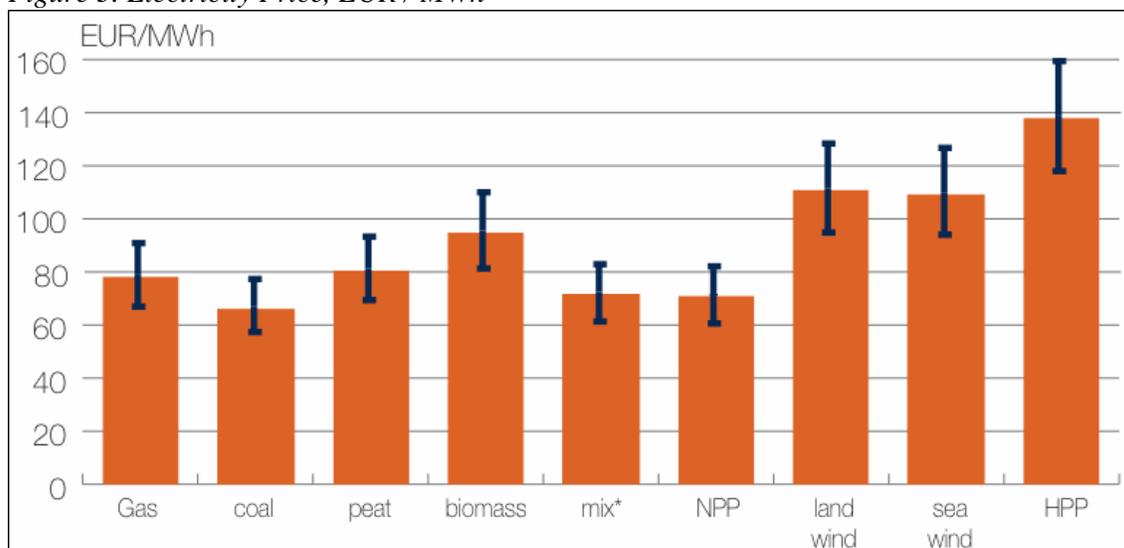
Opponents of wind power production in Latvia in most cases base their position on the fact that wind power production is more expensive than conventional means of energy production. However, there are also some other factors playing against a widespread introduction of wind power production, such as, unstable and difficult to predict power production, power storage problems and some incompatibility with the current electric grid system.

3.3.1 High costs

One of the most common and most influential arguments against wind power production is the cost factor. Although wind power production does not require any fuel, and most Latvians do consider it to be among the cheapest electricity sources, the initial investment in wind turbines makes it considerably more expensive than the more traditional means of energy production. Figure 3 shows the current price producing electricity from various sources. Only electricity from hydroelectric power plants (if they need to be newly constructed) cost more than capturing either land or sea wind. Unfortunately, the most CO₂ emitting source costs the least, thus making it a very attractive investment in financial terms.

³¹ McKie (2008).

Figure 3. Electricity Price, EUR / MWh



Source: Ozola, Laura. "Nuclear power plant – the most realistic solution for covering base load deficit." *Energo Forums*, 8, 2008: 3-4.

The Latvian government also does not have to be very concerned about meeting their obligation towards the Kyoto protocol – in 2010 Latvia is expected to have 40% less CO₂ emissions than in 1990 – far beyond the target of 8% reduction. The only international regulations encouraging Latvia to use more renewable resources are the European Commission's directives, where lack of compliance does not translate into direct (or measurable at the moment) costs.

3.3.2 Unstable production volume

Another significant problem of wind power production is its unstable and hard-to-predict production volume, both over a year and in any given month. As there are very few effective ways to conserve the power produced by wind, there needs to be some other type of power production facility that can step in when wind power is low. The unpredictability of wind power production also makes it difficult to plan the loads for these other power plants. At the moment, although a large part of all wind power plants are under one investor (*Rets Investīcijas, SIA*), they have been formed as different legal entities (*Vēja parks 10, Vēja parks 11*, etc.), therefore none of these have the duty to comply with the central management process of the Transfer System Operator. The instability of wind power production might also cause imbalances in the system, as the minimum and maximum load on the grid system from wind power production in a day may vary up to 100%.³²

Additionally to this, our current electricity power grids were not designed with a large quantity of wind power production in mind. For the short-term development of up to 200 MW of new capacity in Kurzeme, the central electricity grid is ready; however, if there are plans to increase this capacity, the construction of appropriate grids might take longer than the construction of the wind turbines – up to 3 or 4 years.³³

³² Junghāns (2004).

³³ Latvenargo (2008).

3.3.3 Horizon pollution and environmental impact

An often-used argument against wind power production is the fact that the wind turbines are visible. One could imagine that horizon filled with large wind turbines might decrease the natural beauty of it. However, the apparent support within society for wind power production and the creation of new wind power plants, suggests that this may not be a very significant problem. There are also professional ways to plan the development of wind power production sites and areas to decrease the negative visual effects, which also include the flicker of lights where a wind turbine is between the sun and a house or an office.

Another argument that has been used against wind power production is its adverse effect on nature. After all, the rotor turning constantly makes sound, which might inhibit the local wildlife. There is also a concern that the blades of wind turbines might harm migrating birds. However, there is very little evidence of any such serious harmful effects of wind power production. Additionally, each new wind power plant needs to plan including an analysis of its effects on migrating birds, as well as on nearby towns or houses.³⁴

3.4 An economic model

The economic model is based on the thesis “Prospects, costs and benefits of wind energy development in Latvia” by Wicher J. Slagter (2008). The model can be used to analyse the economic aspects of the procurement of electricity generated by wind energy in 2010-2019 by the Ministry of Economics. The Ministry of Economics has proposed a compulsory purchase of wind power for up to 404 081 MWh, assuming the maximum number of productive hours to be 2500 per year, i.e. the minimum installed capacity to reach the target would be 162 MW. If a company applying for the procurement assumes that the set price is appropriate (which would be the reason they are applying), they would use the maximum allowed productive hours for their predictions to be sure that they are able to sell all their produced electricity. Further on we will look at the other assumptions used for this model.

3.4.1 Assumptions

We will look at the option of on-shore wind power production plant only at this research, as previous analyses have shown that at the moment off-shore wind power plant in Latvia are not yet commercially viable.³⁵

3.4.1.1 Investment costs

According to European Wind Energy Association, the global market for wind power capacity in the period 2001 – 2004 grew less than expected and created a surplus in wind turbine production, dramatically decreasing the costs. However, in the period 2005 – 2007 the demand for wind turbines has surged leading to a significant increase in prices in the short term. Therefore European Wind Energy Association estimates a cost of 1 300 EUR for a kW of capacity. This would mean an upfront investment of 210.6m EUR for the proposed capacity of 162 MW.

³⁴ Ostapenko un Gamālejevs (2004).

³⁵ Slagter (2008).

3.4.1.2 Auxiliary Costs

According to Paulis Barons, President of Latvian Wind Energy Association, auxiliary costs grid connections, roads, foundation, and others can be estimated at about 20% of the initial investment in the wind turbine.³⁶ This is close to what one of the Latvian wind power producers “Vēja parks 20, SIA” reports – their Annual Report for year 2007 shows that the initial auxiliary costs were 16% (Vēja parks 20). We also have to take into account a possibility that in case Latvenergo feels a competition from wind power, it might raise its prices for grid connections for external suppliers. For this model we will assume auxiliary cost of 20% of the initial investment in the wind turbines.

3.4.1.3 Operation and Maintenance

According to the European Wind Energy Association, experience in Germany, Spain, the UK, and Denmark shows operation & maintenance (O&M) costs to be around 1.2 to 1.5 eurocents per kWh. In the model we will use the same costs with O&M costs at 1.2 eurocents per kWh increasing to 1.5 eurocents per kWh during the lifetime of the turbine. In 2007 *Vēja Parks 20* had costs of service (LVL 22 906), security (LVL 1 085), insurance (LVL 3 001), rent of land (LVL 750), administrative expenses (LVL 17 071), a total O&M costs of LVL 44 813. Assuming an average number of productive hours – 1800, and considering its capacity of 1.8 MWh, it produced approximately 3 240 MWh of electricity. Thus the O&M costs constituted approximately 0.0138 LVL/kWh (0.0197 EUR/kWh). In 2006 the proportion was 0.0102 LVL / kWh (0.0145 EUR/kWh). The large increase in costs in 2007 is due to the increase in administrative costs from LVL 5 916 to LVL 17 071. Assuming that the new wind turbines would be better designed with O&M in mind, the assumption of O&M costs to be between 1.2 and 1.5 eurocents per kWh appear to be appropriate.

3.4.1.4 Wind power plant turbine

The economic life of an on-shore wind turbine is generally assumed to be 20 years, although in some cases business assume a different period, e.g. the previously mentioned Vēja parks 20 has assumed an economic life for its wind turbines to be 25 years. We will use 20 years for the model.

3.4.1.5 Projected electricity production

Although the Ministry of Economics allows a maximum of 2500 productive hours for wind power production predictions, the evidence shows that the actual number historically has been lower. The installed capacity of wind power production has not changed since 2003 in Latvia. In the period 2003-2006 the average wind power production was 47.5 GWh (Central Statistical Bureau), while the capacity remained 26.9 MW, giving an average of 1766 productive hours per year, which we will use in our model. The projected electricity produced therefore is 286 GWh per year.

³⁶ Slagter (2008).

3.4.1.6 Projected revenues

Based on the procurement terms of the Ministry of Economics, if the procurement attracts any applicants, the price of wind power produced electricity will be set for the period 2010 – 2019 at 100 EUR/MWh, unless somebody offers a lower price. With growing demand for electricity and decreasing supply (closing Ignalina Nuclear Power Plant, Latvian experts predict electricity prices to triple by 2030). As electricity in Latvia is still comparatively cheap, this is in line with European Commission's prediction of doubling of prices in the EU over the same period.³⁷ At the moment, according to the Public Utilities Commission, the average price for surplus energy purchase from independent electricity producers is 0.03435 LVL/kWh (0.04888 EUR/kWh). For the purpose of the model, we will assume this to be the market price for wholesale electricity. According to the predictions of Latvian experts, the electricity price will triple by 2030, thus reaching 0.14664 EUR/kWh. After the 10 years of fixed tariff, we will assume that the electricity generated by wind energy will be bought at the market price, and the price from 2020 will grow linear to reach a price of 0.14664 EUR/kWh. We consider this the rapid price increase scenario. A conservative scenario would use the prediction by European Commission experts of doubling of the price. In this scenario wholesale electricity price would reach 0.09776 EUR/kWh in 2030, and would be rising at around 3.5% each year, reaching 0.06895 EUR/kWh in 2020.

3.4.1.7 Discount rate

According to local experts, the commercial discount rate in Latvia is usually considered to be 7% (Slagter). This means that EUR 107 in a year is considered to be worth EUR 100 today, as there are many possibilities one could invest the EUR 100 and get a return on the capital. The discount rate will be used to calculate the net present value of the investment in wind power production.

3.4.2 Results

Table 1 shows that a model based on the assumptions outlined before produces a positive net present value (NPV) for the possible investment. In the rapid price increase scenario the wholesale price of electricity will have grown to the fixed tariff offered in the procurement by 2020, thus ensuring a further increase in price and eliminating the need for any extra subsidies for these wind power plants after the ten-year period. If Latvian experts are right about the rapid price increase in electricity, this investment can be considered as quite lucrative.

³⁷ Slagter (2008).

Table 1. Projected revenues of the rapid price increase scenario, 2010-2029

Year	Electricity production, MWh	Price, EUR / MWh	Revenue, '000 EUR	O&M, '000 EUR	Operating profit, '000 EUR	Discount factor	Discounted operating profit, '000 EUR
2010	286,092.00	100.00	28,609.20	3,433.10	25,176.10	1.00	25,176.10
2011	286,092.00	100.00	28,609.20	3,474.30	25,134.90	0.93	23,490.56
2012	286,092.00	100.00	28,609.20	3,515.99	25,093.21	0.87	21,917.38
2013	286,092.00	100.00	28,609.20	3,558.18	25,051.02	0.82	20,449.09
2014	286,092.00	100.00	28,609.20	3,600.88	25,008.32	0.76	19,078.73
2015	286,092.00	100.00	28,609.20	3,644.09	24,965.11	0.71	17,799.78
2016	286,092.00	100.00	28,609.20	3,687.82	24,921.38	0.67	16,606.17
2017	286,092.00	100.00	28,609.20	3,732.08	24,877.12	0.62	15,492.22
2018	286,092.00	100.00	28,609.20	3,776.86	24,832.34	0.58	14,452.65
2019	286,092.00	100.00	28,609.20	3,822.18	24,787.02	0.54	13,482.49
2020	286,092.00	104.66	29,943.53	3,868.05	26,075.48	0.51	13,255.45
2021	286,092.00	109.33	31,277.87	3,914.47	27,363.40	0.48	13,000.15
2022	286,092.00	113.99	32,612.20	3,961.44	28,650.76	0.44	12,721.28
2023	286,092.00	118.66	33,946.53	4,008.98	29,937.55	0.41	12,423.02
2024	286,092.00	123.32	35,280.87	4,057.09	31,223.78	0.39	12,109.12
2025	286,092.00	127.98	36,615.20	4,105.77	32,509.43	0.36	11,782.91
2026	286,092.00	132.65	37,949.53	4,155.04	33,794.49	0.34	11,447.36
2027	286,092.00	137.31	39,283.86	4,204.90	35,078.96	0.32	11,105.10
2028	286,092.00	141.98	40,618.20	4,255.36	36,362.84	0.30	10,758.45
2029	286,092.00	146.64	41,952.53	4,306.42	37,646.11	0.28	10,409.46
Net Present Value:							306,957.48
Initial investment:							210,600.00
Initial auxiliary investment (+20%)							42,120.00
NPV - total initial investment							54,237.48
Internal rate of return (IRR)							9.8%

Source: Self-compiled.

If, on the other hand, EU experts are right and electricity prices only double over the next 20 years, the investment's net present value is significantly lower, but still positive. In any case, the fixed tariff at 100 EUR/MWh ensures an almost break-even point by the end of it in 2019. In that sense the tariff gives the probable investors some stability, ensuring that they will at least get to break-even point.

Table 2. Projected revenues of the conservative scenario, 2010-2029

Year	Electricity production, MWh	Price, EUR / MWh	Revenue, '000 EUR	O&M, '000 EUR	Operating profit, '000 EUR	Discount factor	Discounted operating profit, '000 EUR
2010	286,092.00	100.00	28,609.20	3,433.10	25,176.10	1.00	25,176.10
2011	286,092.00	100.00	28,609.20	3,474.30	25,134.90	0.93	23,490.56
2012	286,092.00	100.00	28,609.20	3,515.99	25,093.21	0.87	21,917.38
2013	286,092.00	100.00	28,609.20	3,558.18	25,051.02	0.82	20,449.09

2014	286,092.00	100.00	28,609.20	3,600.88	25,008.32	0.76	19,078.73
2015	286,092.00	100.00	28,609.20	3,644.09	24,965.11	0.71	17,799.78
2016	286,092.00	100.00	28,609.20	3,687.82	24,921.38	0.67	16,606.17
2017	286,092.00	100.00	28,609.20	3,732.08	24,877.12	0.62	15,492.22
2018	286,092.00	100.00	28,609.20	3,776.86	24,832.34	0.58	14,452.65
2019	286,092.00	100.00	28,609.20	3,822.18	24,787.02	0.54	13,482.49
2020	286,092.00	68.95	19,726.04	3,868.05	15,857.99	0.51	8,061.40
2021	286,092.00	71.36	20,416.45	3,914.47	16,501.99	0.48	7,839.98
2022	286,092.00	73.86	21,131.03	3,961.44	17,169.59	0.44	7,623.50
2023	286,092.00	76.45	21,870.62	4,008.98	17,861.64	0.41	7,411.95
2024	286,092.00	79.12	22,636.09	4,057.09	18,579.00	0.39	7,205.26
2025	286,092.00	81.89	23,428.35	4,105.77	19,322.58	0.36	7,003.39
2026	286,092.00	84.76	24,248.34	4,155.04	20,093.30	0.34	6,806.30
2027	286,092.00	87.72	25,097.04	4,204.90	20,892.14	0.32	6,613.92
2028	286,092.00	90.79	25,975.43	4,255.36	21,720.07	0.30	6,426.19
2029	286,092.00	93.97	26,884.57	4,306.42	22,578.15	0.28	6,243.05
Net Present Value:							259,180.08
Initial investment:							210,600.00
Initial auxiliary investment (+20%):							42,120.00
NPV - total initial investment							6,460.08
Internal rate of return (IRR)							7.2%

Source: Self-compiled.

3.5 Conclusion

Based on the model and assumptions offered, it seems that the current tariff set in the procurement procedure should be high enough to make wind power production commercially attractive for investors, assuming the legal or bureaucratic burdens of the procurement are not too extreme. The level of attractiveness of this opportunity for private investors mostly depends on assumptions about the future energy price developments.

The fixed tariff seems to be a practical way for the government to support the development of wind power production. It offers investors assurance that they will be able to reach a break-even point in a reasonable time frame, and it does not require large upfront costs from the government, which would be very difficult in the current economic situation. This strategy could be supplemented by decreasing bureaucratic burden on the new producers.

Both the European Commission and the European Wind Energy Association predict that the price of both on- and offshore wind turbines will decline in the future³⁸, and depending on the developments of the price of electricity, it is possible that in less than 10 years wind power production might become economically viable even without price support by the government. However, as mentioned before, there are several aspects that should encourage the government to support wind power production until it can economically sustain itself. First of all, wind power production industry is still in its initial phase of development ie arguably an 'infant industry'. Supporting its development would mean that more jobs related to the industry could be kept in the country. If the whole development of wind power production takes place abroad and comes to Latvia only after it is economically viable without the

³⁸ Kjaer and Zervos (2008).

support of the government, Latvian workers will lack skills and experience in many areas, and many of the jobs that could be created in Latvia will remain abroad.

Wind power production creates some challenges, such as unstable and difficult-to-predict volumes of power generated; therefore it is important to find ways to address these issues, as wind power production has considerable potential as a future energy source in Latvia. For example, while other countries need to spend considerable resources building devices to accumulate energy created by wind, Latvia already has the technology – our hydroelectric power plants. They are not only very good at generating energy; they are also excellent at accumulating it. Using wind and water in unison, it is possible to save wind energy in its peak times in the hydroelectric power plants and to use it when wind power production is low. For this to happen, we need to find a way to make Latvenergo interested in supporting wind power production.

Although wind power production will never be the main source of Latvian electricity, it has very good potential to develop and contribute significantly to our renewable energy targets and energy independence.

3.6 Future prospects

With wind power production quickly developing, many try to address the remaining negative aspects. For example, Lewis Smith from the Times reports that the Netherlands is planning to build a large energy island in the North Sea by 2020. It would be a large container at sea, where water would be pumped out during surplus times of wind power production, and let in, generating electricity, when wind power production is low. The capacity of the energy island is planned to be around 1 500 MW, and it will cost EUR 3-3.5 billion. Although we already have similar technology in the form of hydroelectric power plants, we can still learn to start using it in unison with wind energy.

Another significant development that could change the debate about wind power production globally is the development of new technologies that might decrease the costs of wind power production. For example, a Chinese power company Zhongke Hengyuan Energy Technology has proposed a new technology for wind power production plants that might allow building one wind turbine with a capacity equal to a thousand traditional wind turbines at a fraction of costs (USD 53m). The new turbine would be using full-permanent magnets to almost eliminate friction by "floating" the blades above the base.

This and other developments are still in their early stages and we will have to wait and see how they perform in practice. But it is important to note that wind energy industry is still in its development stage and new technologies may emerge that completely change the discussion in the future.

4. THE POLITICAL DIMENSION³⁹

4.1 Background

This section presents the political aspects of the Latvian energy discussion through an analysis of the current political and public discussion of energy issues, including renewable energy. It aims at providing an insight into the main topics discussed as well as to identify the key stakeholders. The discussion is heavily influenced by the following factors: Latvian energy security and energy independence; the closure of the Lithuanian nuclear power plant in Ignalina; the dependence on imported energy.

One of the most important, if not the most important, question on the Latvian Government's political agenda is energy security, which has a strong bearing on Latvia's independence as well as its financial stability. There are two reasons behind this: the expected closing down of the Ignalina power plant; and Latvia's dependence on imported fuel/energy.

The Ignalina nuclear power plant is Latvia's main supplier of imported electricity. After the closure of the power plant, tentatively scheduled for the end of 2009, Latvia faces major challenges related to the shortfall of energy – a shortfall that has to be replaced in one way or another.

As discussed in the previous sections, Latvia depends heavily on imported energy sources (approximately two thirds of primary energy and one third electricity supply) with Russia being the main exporter. Needless to say this is related to Latvia's energy security and in this context the main issue is how to reduce the dependence on Russian energy and how diversify among energy sources and suppliers.

The Latvian discussion on electricity and heating energy supply was intensified when Latvia joined the European Union in 2004. One of the first policy documents – “Energy Strategy of the Baltic States” was prepared in 2006 when Latvia, Estonia and Lithuania agreed to connect their energy grids to the North and Central European grids. In the same document they agreed on increasing the use of energy from renewable sources. At the same time the European Commission developed the so-called “Green Book” which stipulates that the European Union has to ensure stable energy supply; decrease the dependency on energy monopolies, increase the energy production based on renewable resources; and to reduce the CO2 emissions.

The agreement between the Baltic countries and the tasks outlined by the European Commission were incorporated into another policy planning document “Guidelines for Energy Development for 2007-2016”, developed in 2006. The main priorities for Latvia's energy policy according to this document are to:

- Ensure security of supply;
- Increase self-sufficiency;
- Facilitate diversification of supplies
- Reduce the dependency of external suppliers of primary energy sources.

³⁹ The input to this Chapter was provided by Baltic Sea Communication.

Although the document should serve as the basic strategy document for Latvia's energy policy, it has been criticized by the Saeima for not setting out a clear direction of the Latvian energy sector's development and for failing to reflect on the overall energy strategy of Latvia.

Currently the Government is of the view that there are only two possible scenarios when it comes to meet the country's demand for energy in the future – building a power plant either fuelled by coal or gas. The principal decision on these two scenarios was taken in 2007. This year (i.e. 2008) has seen a keen and vivid discussion among the Government members on which route to take; coal or gas. At the time of writing this report (mid November 2008), the Government seems to be close to reach a conclusion.

In parallel with the discussion on whether to rely to a large extent on coal or gas, there has been a (less keen and less vivid) discussion on other ways of (at least partly) meeting Latvia's growing energy demand. This discussion has ranged from the development of renewable energy sources including wind energy as a viable domestic alternative source through the construction of a Latvian nuclear power plan to connecting Latvia with the Swedish grid through a cable under the Baltic Sea.

In this context it should also be mentioned that the Latvian energy policy is integrated with other important national policies, for instance environment, transport and agriculture policies. This integration process is done through legislation, regulation by the Cabinet of Ministers as well as through different national programmes. The Latvian energy policy is also discussed in the "National Development Plan" and the "Latvian Sustainable Development Strategy".

The rest of this chapter is organized as follows. The next section discusses the current Latvian coalition parties' views on the energy policy. This discussion is followed by an overview of the different scenarios, i.e. coal and gas, as well as a discussion of the potential of renewable energy. The section following is devoted to the public opinion on energy issues. The final section provides a summary of the findings.

4.2 The 'Energy Profile' of the Latvian Parties

This section provides an overview of the main Latvian political parties' 'profile' when it comes to energy policy. Given the characteristics of Latvian politics it is not only devoted to the policy issues as such it also addresses the role of the individual persons involved in the leadership of the respective political party. Currently⁴⁰ there are seven political parties represented in the Latvian parliament, the Saeima. Out of these seven parties, four form the current government which has been in power since December 2007. The coalition government led by Prime Minister Ivars Godmanis (Latvia's First Party/Latvia's Way) comprises the following parties: People's Party; Greens and Farmers' Union; Latvia's First Party/Latvia's Way; and Fatherland and Freedom/LNNK. The number of ministerial portfolios of each of the coalition parties reflects their operational capacity as well as the influence the individual party can exert on the political agenda including Latvia's energy policy.

4.2.1 People's Party⁴¹

⁴⁰ The forthcoming discussion reflects the political situation at the time of writing, i.e. in mid-November 2008.

⁴¹ In Latvian: Tautas partija.

People's Party is a right-wing, conservative party. It was founded in 1998 by Andris Šķēle – a businessman and former Latvian Prime Minister. Šķēle served as the party chairman until 2002. Because of Šķēle's strong personality, many voters identified People's Party with its leader during his period of chairmanship.⁴²

At the October 2002 elections, the Party became the third largest in the Saeima winning 16.7 per cent of the popular vote, which gave the party 20 seats (out of 100) in the Saeima. In 2004, Aigars Kalvītis of People's Party was appointed Prime Minister – a position that he held until 2007, i.e. through 2006 election. The 2006 election saw People's Party becoming the largest party in the Saeima with 19.5 per cent of the popular vote and 23 seats in the Saeima. Being the leading party of the ruling coalition although it lost the position of Prime Minister when Ivars Godmanis of Latvia's First Party/Latvia's Way took over after Aigars Kalvītis in 2007.

Following its founding in 2002, the Party was perceived as one of the leading forces on the Latvian political scene. It was praised for its pragmatic approach, organizational and managerial skills and for its economic orientation. However, following a number of unpopular decisions by the government under Prime Minister Kalvītis, the Party has been experiencing a significant loss of popularity and hence of its supporters. In an opinion poll undertaken in September 2008, the party was only supported by 2.9 per cent of the persons interviewed – an all-time-low for People's Party.⁴³ In addition to Messrs. Kalvītis and Šķēle, the strong names of the party are: Māris Riekstiņš, Minister of Foreign Affairs and Edgars Zālāns, Minister of Regional Development and Local Governments.

Despite the low support in the opinion polls, the Party continues to exercise strong and to a large extent dominant influence on the Government's decisions in general and energy issues in particular – more precisely projects related to gas. In supporting a long term energy solution that rests on energy generated by gas, the Party openly admits that this implies the presence of the Russian gas industry in Latvia and through this it has earned the label of "Gas Party" among the Latvian common man.⁴⁴

While being a strong supporter of a gas-based solution, the Party is a strong opponent of an energy policy based on coal with former Prime Minister and Party founder Andris Šķēle as one of the strongest opponents.⁴⁵ Furthermore, according to Aigars Kalvītis, the decision about building a gas power plant at Latvenergo TEC-2 has already been made (March 2008). According to Kalvītis, a gas plant [in comparison to a power plant using coal] is financially more profitable since it creates less CO₂ emissions.⁴⁶

In March 2008, the strength of the People's Party was shown, when the Government accepted the proposal by the Minister of Finance, Atis Slakteris, to take the development of a Latvian-Swedish electrical transmission network off the Government's agenda and to waive the urgency of building a coal-based power plant in Latvia.⁴⁷

⁴² Website: www.balsogudri.lv/parties.

⁴³ LETA, 03.11.2008, article: "Record-low popularity indicator of 'People's Party'".

⁴⁴ Newspaper "Diena", 27.03.2008.

⁴⁵ Newspaper "Diena", 27.03.2008.

⁴⁶ LETA, 31.03.2008.

⁴⁷ Newspaper "Latvijas Avīze", 09.04.2008, article "Gerhard's Plan for Energy and Communication".

4.2.2 Fatherland and Freedom/LNNK⁴⁸

The second party of the current coalition government, Fatherland and Freedom/LNNK (henceforth FF/LNNK), is one of the oldest parties in Latvia. Its roots go back to the last years of the Soviet occupation and the Latvian National Conservative Party established in 1988. Today the party positions itself as a right-wing, national, conservative party whose main goals are to preserve the identity of the country, to strengthen the Latvian language as the state language and to consolidate the middle class.⁴⁹

Currently FF/LNNK experiences a popularity decline and according to the September survey by “Latvijas Fakti” a mere 3.1 per cent of the persons surveyed would have voted for FF/LNNK had there been an election in September 2008. Furthermore, the party has experienced attempts to weaken its position in the local government of Riga where it holds the position of Chairman of the Riga City Council. In the current coalition government FF/LNNK holds three positions with Kaspars Gerhards in a leading position. Being Minister of Economics Kaspars Gerhards plays an important role when it comes to energy policies since these are in his portfolio. FF/LNNK also holds the positions of Minister of Justice and Special Assignments Minister for Administration of European Union Funds. Another active member of the party is Roberts Zīle, Chairman of FF/LNNK, who is also Member of the European Parliament and member of the EU Committee on Industry, Research and Energy.

In terms of energy policy and energy security, FF/LNNK has listed energy security and independence as task no. 4 in the party’s programme for the period 2008-2010, which states: “...to promote Latvia’s involvement in the network of the EU electro energy by ensuring the development of required electrical transmission network between EU member states; the increase of power considering the long term goals of diversification of resources and suppliers; support to renewable energy resources and energy efficiency”⁵⁰.

The priority of the Minister of Economics, Kaspars Gerhards, has been construction of a coal-fuelled power plant that would, according to Gerhards, improve Latvia’s energy security and energy independence and point to a development along the lines supported by various EU incentives. The MEP, Roberts Zīle, supports the EU perspective as well and points out that: “Coal is an important element in the diversification of energy resources and is a long-term energy solution”⁵¹.

Initially (spring 2008), Minister Gerhards suggested the construction of gas power plant could be undertaken in parallel with the construction of the coal power plant and that both projects could be finished by 2015. However, recently (autumn 2008) he has argued that: “given the fluctuations and instability of gas prices the project of a gas power station might be too risky to undertake. This is the main reason why it was decided not to support this project anymore”⁵². Furthermore, in this context it should be mentioned that Gerhards has

⁴⁸ In Latvian: Tēvzemei un Brīvībai/LNNK.

⁴⁹ Web-site: www.tb.lv.

⁵⁰ *ibid.*

⁵¹ LETA, 09.04.2008.

⁵² Newspaper “Diena”, 18.09.2008, article “Gerhards: ‘The construction of a gas power plant might be too risky’”.

demonstrated less certainty on the development of wind energy and argues that: “The winds are not continuous, frequency varies and therefore it is called ‘dirty energy’ that should be balanced with other sources of energy. Besides it is expensive”⁵³. He also believes that the stability can only be achieved through constant and stable energy supply such as coal from reliable suppliers.⁵⁴

4.2.3 Greens and Farmers Union⁵⁵

The Greens and Farmers Union (GFU) is an alliance established prior to the 2002 elections to the Saeima. It comprises the Latvian Farmers’ Union and the Latvian Green Party and deputies from “For Latvia and Ventspils”. Referring to the date of the founding of the Latvian Farmers’ Union in 1917, GFU positions itself as the oldest in Latvia and postulates constructive principles as an integral part of its activities. Its popularity has been stable and in a recent opinion poll (October 2008) it is supported by 6 per cent of the electorate – making it the party in the current coalition with the strongest support.⁵⁶

The alliance has been linked to the Ventspils mayor and businessman Aivars Lembergs to the degree that its critics have suggested that Lembergs is in fact running the Union. Lembergs was the GFU candidate for the position as Prime Minister in 2006, before being charged of various crimes. AS of March 2007, Lembergs was detained by the Latvian authorities in relation to a criminal investigation.

In terms of energy policy, the Programme of GFU states: “The foundations Latvia’s independence in terms of energy should be laid. There the utilization of alternative energy sources, usage of sun batteries, wind energy and nuclear energy should be undertaken. GFU support the production of biogas in Latvia. GFU will support the building of a new effective nuclear power plants”.⁵⁷

Since 2002 GFU has hold the position as Minister of Environment through Raimonds Vējonis. As the Minister, Vējonis has been responsible for a number of document related to energy issues including “Guidelines for Renewable Energy Resources 2006-2013”, which sets the goal to increase the proportion of renewable energy resources in Latvia’s ‘energy balance sheet’. The Minister is an active and frequent participant in various environmental seminars and conferences. In a Latvian-Danish seminar on renewable energy resources in November 2007, he stated that: “The Latvian energy policy should to the greater extent be based on energy efficiency and on the renewable energy resources in order to lessen the climate changes. Investments in renewable energy resources would give an additional number of benefits in the areas of employment, new technologies and entrepreneurship development”⁵⁸.

Despite the fact that his Minister of Environment, the impact of Vējonis’ commitment to renewable energy and energy efficiency has, when evaluated, been perceived as relatively

⁵³ Newspaper “Latvijas Avize”, 09.04.2008, article “Gerhards’ Plan for Energy and Communications”.

⁵⁴ *ibid.*

⁵⁵ In Latvian: Zaļo uz Zemnieku savienība.

⁵⁶ LETA, 03.11.2008, article “Record-low popularity indicator of ‘People’s Party’”.

⁵⁷ Web-site: www.lzs.lv.

⁵⁸ Website:

www.ambriega.um.dk/lv/servicemenu/News/DnijasLatvijasSeminrsParEnergoefektivittiUnAtjaunojamiemEnergoresursiem.htm.

small.⁵⁹ Furthermore, even though GFU's programme clearly states the Union's goals within the field of energy, the determination and perseverance in order to fulfil these goals have been comparatively less present in its activities.

4.2.4 Latvia's First Party/Latvia's Way⁶⁰

Latvia's First Party (LFP), established in 2002, is one of the new parties represented in the current coalition. LFP positions itself as a centric political organization supporting Christian conservative values.⁶¹ The most visible members of Latvia's First Party are Ainārs Šlesers, Minister of Transportation and Ainārs Baštiks, Minister of Children and Family Affairs. In 2005, it was decided to consolidate the liberal party Latvia's Way with the Christian democratic Latvia's First Party. The consolidation brought in such strong personalities as the current Prime Minister Ivars Godmanis and the former Prime Minister Andris Bērziņš as well as other leading Latvian politicians.

As regards energy policy, this has so far not been a priority of Latvia's First Party/Latvia's Way. Energy issues are for example not a separate topic in the Party's programme. Nevertheless, given its participation in the current government coalition with a number of ministers and given the fact the current Prime Minister, Ivars Godmanis, represents the Party, it could, directly or indirectly, influence the decisions taken by the Government on energy as well as other issues.

4.3 Three energy supply scenarios

The first part of 2008 saw a, by Latvian political standards, very active discussion on two different scenarios for meeting Latvia's growing energy demand. The two scenarios discussed were building a power plant either fuelled by coal or by gas. These constitute two out of the three scenarios discussed in this section. The third scenario discussed in this section (although discussed to a lesser extent in the political debate) include the development of renewable energy sources, including wind energy as a viable domestic alternative source of energy production; building of a nuclear power plant in Latvia; connecting Latvia to the Swedish electrical transmission grid; and work towards more effective energy usage throughout Latvia.

From the previous section follows that the coal scenario is in line with the ideas of People's Party, the gas scenario in line with the ideas of Fatherland and Freedom/LNNK whereas the last scenario outlined is in line with the ideas of the Greens and Farmers Union.

The remaining part of this section aims at presenting each of these three scenarios. Furthermore, building on media accounts it aims at identifying the networks of supporters and opponents, respectively, as well as exploring the likelihood of each of the three scenarios considered.

⁵⁹ Newspaper "Rīgas Balss", 25.09.2008, article "Minister of Environment more fruitful in words than in deeds".

⁶⁰ Latvijas Pirmā partija/ Latvijas ceļš.

⁶¹ Website: www.lppc.lv.

4.3.1 The Gas Power Plant

The April 2008 amendments to the Energy Law pushed through by the Minister of Finance, Atis Slakteris (People's Party) provided the legal basis for making the construction of a gas power plant a reality.

The gas power plant scenario is supported by the People's Party, in particular by former Prime Minister Aigars Kalvītis and Andris Šķēle. It has also gained support from Adrians Dāvis, CEO Latvijas Gaze, Kiril Seleznov, Deputy Head of the Gazprom Council, Kārlis Miķelsons, CEO Latvenergo, and Juris Savickis, CEO Itera Latvija.⁶² Among the arguments in favour of the gas power plant are:

- The construction of a gas power plant will secure Latvia's energy supply and enhance Latvia's energy independence.
- The infrastructure needed for a gas power plant at Latvenergo TEC-2 is already in place, whereas this is not the case for coal-fuelled power plant.
- Power generated by gas is economically more beneficial since it creates less CO2 emissions than a coal-fuelled power plant – gas is ecologically 'cleaner'.
- Due to the upcoming closing down of the Ignalina nuclear power plant there is not very much time to develop an alternative source of energy supply – in this context the gas power plant scenario is the only realistic solution, in particular since the infrastructure to a large extent is already in place.⁶³

The latter argument is supported by Latvenergo (the state energy company), which stresses that the required infrastructure is in place, that the new power station at Latvenergo TEC-2 is being built and that a confirmation from Gazprom about the supply of the necessary amount of gas has been received. Adrians Dāvis, CEO of Latvijas Gaze, clearly stated in April 2008 that the gas power plant will be finished by 2013.

When asked about the impact of the price of gas on the project, the Latvijas Gaze CEO acknowledges that a higher price will significantly alter the economics of the project for the worse.⁶⁴ Furthermore, although the demand for gas will increase (from 1.7 billion to 2.8 billion cubic metres a year) as a result of the gas power station, the CEO of Itera Latvija, Juris Savickis, claims that this will not increase the dependency on gas imported from Russia.⁶⁵ As indicated above, Gazprom – the state-controlled Russian giant gas-monopoly – has expressed its interest in the project as well.

Among the opponents of the gas plant are Latvian, mainly academic, energy experts; Juris Ozoliņš, advisor to the EU Commissioner on Energy; and journalists from the right wing and liberal media. Their opposition is built around the following arguments:

- A new gas power station will make Latvia heavily dependent on Russian energy supply – this "suicidal scenario" means that Latvia will import up to 69 per cent of its energy from Russia.

⁶² Itera Latvija is a private company involved in the natural gas trade.

⁶³ Newspaper "Diena", article "Money for Kremlin? The energy security in Latvia might be paid by Gazprom".

⁶⁴ Newspaper "Dienas Bizness" 01.08.2008, article "The gas prices can lead to bankruptcy".

⁶⁵ LETA, 10.11.2008, article "Savickis criticizes plan to build a coal power station".

- The reliance on one source of energy and the volatility of the gas price raises questions regarding the financial viability of the project as such, and expected price increase in gas will result in higher prices which in turn will affect the consumers.
- The proposed policy relying on gas power energy contradicts the stance of the European Commission that stresses the necessity to diversify energy resources.
- The tender for choosing participants and investors is merely a political performance and a levy to bureaucracy since Latvenergo's key role in the project is already agreed on.^{66 67}

When asked about the Latvian developments, the EU Energy Commissioner (from Latvia), Andris Piebalgs, suggested not to dramatize the situation and solve it in a pragmatic way taking the market needs and costs into account.⁶⁸ The Commissioner also stressed the necessity of energy diversification, which should be one of the main principles guiding the decision making when choosing the source(s) of energy supply. Andris Piebalgs also suggested using renewable energy technologies. A similar opinion was expressed by the former U.S. Ambassador to Latvia, Charles Larson, who encouraged Latvia to diversify among the suppliers of energy in order to reduce the dependency on energy provided by a single state.

4.3.1 The coal power plant

Among the advocates of a coal-fuelled power plant is Roberts Zīle, MEP and member of Fatherland and Freedom/LNNK. Positive responses have also been heard from the European Commission and Latvian energy experts. Among the arguments put forward in favour a coal power plant are:

- Only a coal power plant can ensure the energy independence of Latvia.
- A coal-fuelled power plant can solve Latvia's energy related problems for the next ten years.
- If constructed, a coal power plant will provide market stability and give Latvia further opportunities to diversify among the coal supplying countries.

In the Latvian political debate, People's Party and in particular Andris Šķēle has been among the most critical. Among the other critics are Juris Savickis of Itera Latvija. Arguments used against a coal-based solution include:

- A coal power plant requires a CO2 quota higher than the one need for a gas power plant with similar capacity.
- A coal power plant requires a very complicated procedure of environmental assessment.
- The cost of the coal power plant is considerably higher than for a gas power plant – the estimated costs are 421 million LVL and 270 million LVL, respectively.⁶⁹
- The construction of a coal power plant is not an optimal solution and the Ministry of Economics have failed to prove the benefits of building one.⁷⁰

⁶⁶ Newspaper "Dienas Bizness", 29.04.2008.

⁶⁷ LETA, 29.04.2008, article "Tender for building a new power station – just performance for people".

⁶⁸ LETA, 06.06.2008, article "Piebalgs: The situation should not be dramatized".

⁶⁹ LETA, 29.04.2008, article "Gerhards: Gas plant might cost Ls 270 million".

Roberts Zīle, Latvian MEP, acknowledges the strong opposition and points out that the supporters of a gas power plant will do everything to prevent the construction of a coal-fuelled power plant.⁷¹

Kaspars Gerhards, Minister of Economics, has, in particular during the autumn of 2008, presented a clear vision of the project. The construction of a coal power plant can start already in 2010 and will for 4-6 years. Liepāja is the likely location of the power plant. The plant will cost up to 400 million LVL. The project will be developed on a purely commercial basis and the state's role would be to buy power and to undertake an environmental impact assessment prior to the start of the construction work. The Minister's vision has been underpinned by a number of activities including, for example, media activities; a visit by the Minister to Denmark where he made a tour of the Avedore power plant; support from Latvian scientists in the field of energy.

In a report by the Ministry of Economics⁷² released in October 2008, it is stated that the priority when it comes to Latvia's energy supply should be given to coal through a coal-fuelled power plant. Furthermore, in the project presented by Minister Gerhards it is stipulated that the power should be generated by coal and it is foreseen that the plant will be up and running by June 30, 2015.⁷³ According to the Minister there are already a number of potential investors such as E.ON. Ruhrgas as well as companies from Scandinavia and the United States. When asked, Minister Gerhards said that Latvenergo too might be interested in taking part in the project.⁷⁴

4.3.3 Renewable energy

Latvia has committed herself to increase the share of renewable energy sources (RES). However, the political interest and will has been decreasing since 2002. The plans to close the Ignalina nuclear power plant have, however, spurred the interest in RES and opened for a discussion on the role of RES in Latvia's energy portfolio. Among the more active participants in this discussion are Latvian energy experts and NGOs such as Latvian Green Movement – Latvian Environmental Protection Club, and Green Alternative. Their main arguments are (see also the discussion in section 3.2):

- RES provides an environmentally safe way of producing energy.
- The potential of RES in Latvia has been far from being fully exploited.
- There is a substantial gap between the closure of the Ignalina plant (planned for 2009) and the completion of the coal or gas power plant – this gap can be filled by energy generated by RES utilizing biomass, wind energy, solar energy and other renewable energy resources.

In November 2008, a group of energy experts presented a number of suggestions to the Energy Committee of the Saeima on how to increase the share of RES in Latvia's energy

⁷⁰ Newspaper "Bizness Baltija", 10.11.2008 article "Savickis criticizes the plan to build the coal power plant".

⁷¹ Newspaper "Diena", article "Money for Kremlin? The energy security in Latvia might be paid by Gazprom?".

⁷² "About the situation in Latvian Energy Supply", presented in October 2008.

⁷³ LETA, 06.10.2008, article "New power generation in Latvia to be installed in 2015".

⁷⁴ LETA, 20.10.2008, article "E.ON.Ruhrgas International shows an interest in the new coal power plant project".

balance sheet.⁷⁵ The energy experts stressed that there are enough renewable energy resources in Latvia in order to fulfil the stipulations set by the European Union and the Cabinet of Ministers while at the same time increasing Latvia's energy independence. They also point out that the Government should proceed in developing the legal basis necessary for offshore wind power generation.

In the energy section of the Baltic Sea Region Business Forum in June 2008, the issue of potential investors in Latvian RES was discussed. During the discussion potential investors indicated that they find the renew energy market in Latvia as well in the region appealing and that in a Latvian context they are waiting for clear signals from the Government.

Even though the potential of renewable energy resources has been strongly advocated by various stakeholders, the Latvian Government seems to be less enthusiastic. For instance, the Minister of Economics, Kaspars Gerhards, indicates that he is not negative about the diversification of energy resources such as building wind generators⁷⁶ – however, this is where the discussion mostly stops. Nevertheless, the Ministry of Economics indicated in November 2008 that the regulations on renewable energy sources will be amended and simplified in order to alleviate the wider usage of RES and increase their share in the country's energy balance sheet.⁷⁷

Several other members of the Government have expressed their concerns about the potential of renewable energy sources in general and wind energy in particular. Among the arguments raised are (cf. the discussion of section 3.3):

- Wind energy cannot serve as a permanent source of energy supply, since there are not adequate winds in Latvia. In this context the winds over land are discussed – the winds offshore are not considered.
- In comparison to other energy sources such as coal, gas and nuclear power, RES seem to be both unreliable and expensive.

Furthermore, Latvia's energy monopoly, Latvenergo, already in 2005 expressed a negative attitude towards wind energy. According to the CEO of Latvenergo it is difficult to manage and coordinate the energy grid using such an unreliable energy source as wind. In addition he mentioned that Latvia cannot be considered a windy country and that from a commercial point of view the production of wind-based energy causes losses.⁷⁸ The supporters of wind energy argue that Latvenergo's argumentation is not based on facts but on the wish to prevent new entrants from entering the Latvian energy market.

4.4 The public opinion

The public opinion on energy issues has been surveyed by the Ministry of Economics in the spring of 2008 and the results of this survey are briefly discussed in the following.⁷⁹ Out of

⁷⁵ LETA, 04.11.2008, article "Energy Experts: There are enough renewable energy resources in Latvia in order to fulfil the stipulations set by EU and the Cabinet of Ministers".

⁷⁶ Newspaper "Latvijas Avize", 01.09.2008.

⁷⁷ Newspaper "Dienas Bizness", 03.11.2008, article "will change the regulations on renewable energy resources".

⁷⁸ LETA, 19.01.2005.

⁷⁹ The survey is available at: http://www.em.gov.lv/em/images/modules/items/item_file_21170_1.pdf.

the persons surveyed a mere 10 per cent indicate that they carefully follow the energy developments, whereas 33 per cent follow developments sometimes, whereas 35 per cent do it rarely and 18 per cent never think about the energy issues.

Among the findings of the survey are:

- The Latvian population is in general poorly informed about energy issues – 77 per cent indicated that they are insufficiently informed on current energy issues.
- People are better informed about energy prices and production of electricity, whereas they in general feel that they are less informed about Latvia's overall energy policy.
- The older generations (those older than 55) are the ones most active when it comes to follow the developments on energy issues, whereas the younger (18-34) with elementary education are the one being the least active never thinking about energy issues.
- The two most important factors when deciding on which technology to use for production of energy were: costs and impact on human health, third in importance was the impact on the environment.
- Among those that claim that they carefully follow the energy debate answers on important factors when deciding which technology to employ include: effectiveness of production; impact on global warming; energy independence from other countries.
- Two thirds of the respondents prefer the energy to be produced locally.

When asked to indicate which source of energy the respondents prefer, renewable energy sources were the preferred ones. 86 per cent of the respondents indicated wind energy, 84 per cent solar energy, and 80 per cent hydro generated energy. When it comes to energy generated by coal and gas, 45 and 48 per cent, respectively are positive, whereas 35 and 39 per cent are negative. As regards nuclear energy 53 per cent of the respondents were negative.

As regards the development of the Latvian energy sector a vast majority of the respondents (82 per cent) indicate that they would support the construction of wind power plants, whereas the construction of gas and/or coal power plants is supported by less than one third of the respondents. 60 per cent of the respondents were against the construction of a nuclear power plant.

When asked about the cost of energy generated by different sources a slight majority of the respondents were under the impression that energy generated by coal and gas is very expensive, whereas just a quarter of the respondents thought wind generated energy is expensive. These findings suggest that the general public overestimates the costs associated with coal and gas, whereas underestimated the costs of wind generated energy. The latter might be one explanation for why a vast majority (82 per cent) of the respondents prefer wind energy to other energy sources. Given the fact that wind generated energy is (still) more expensive to produce than energy from conventional sources, there is reason to believe that respondents would have been less favourable towards wind energy had they known the actual costs.

4.5 Conclusion

This section has shown that energy policy is one of the battle fields of Latvian politics as well as of the current government, which is divided into three 'camps'. The two main alternatives,

gas vs. coal, are strongly supported by People's Party and Fatherland and Freedom/LNNK, respectively. Both parties are represented in the current coalition government.

Surprisingly, the issue of renewable energy sources as a third alternative or at least a complement to the conventional energy sources has not received very much attention despite the fact that one of its strongest advocates, the Greens and Farmers Union, is present in the current coalition government and holds the position as Minister of the Environment. In general the government seems to be less willing to discuss the role, if any, of renewable energy sources in Latvia's energy balance sheet. Furthermore, this is even more surprising given the Latvian general public's strong preference for renewable energy sources, in particular wind energy.

The analysis above has revealed that there are strong business interests linked to the conventional energy sources, in particular coal. Renewable energy, on the other hand, is mainly supported by independent energy experts and NGOs.

5. SUMMARY AND CONCLUSIONS

This paper has analyzed the prospects of wind energy in Latvia along three dimensions – the legal, the economic, and the political. Overall, the analysis revealed, that unlike many other countries, wind energy, as well as production from of energy from any other renewable source, is primarily an issues of energy security and energy independence and only secondly a matter of environmental policy.

The legal analysis showed that the EU law governing wind-energy production has been properly implemented into the Latvian legislation. The legislation contains all the essential formal pre-requisites to encourage investments into the wind-generated energy industry. As regards the Latvian administrative practices the picture is not yet very clear due to the relatively small number of activities so far. The first assessment of the administrative practices could be made once the current tender run by the Energy Department of the Ministry of Economics in order to purchase electricity from wind farms has been completed at the end of December 2008.

The economic analysis of the potential of wind-generated energy in Latvia revealed that the tariff set in the current tender seems to be high enough to attract investment in wind power production – given the caveat that the bureaucratic burdens of the public procurement process will not be too heavy. Furthermore, the analysis showed that a fixed tariff scheme seems to be the best way for the Government to support the development of wind power production.

Taking into account the challenges with wind power production – in particular the irregular and difficult-to-predict volume of wind power generated, Latvia is well positioned through it hydro-electrical power plants. The hydro-electric power plants can be used to store energy that could be used to balance the irregular supply generated by the wind energy production. However, this requires that the state-owned Latvenergo will be interested (or get the incentives) to support wind power production – this is not yet the case.

As pointed out in the legal analysis neither EU legislation nor the related national law obliges Latvia to promote primarily the production of wind-generated energy. In other words, the political will to introduce wind energy at a larger scale in Latvia is of vital importance. While having strong support among the general public, the support for and interest in renewable energy and wind energy in particular is with the exception of the Greens and Farmers Union fairly weak in the current coalition government. Until now, most of the energy within the coalition has been spent on discussing whether Latvia should invest in a gas-fuelled or coal-fuelled power plant to replace the energy generated by the Lithuanian Ignalina nuclear power plant when it is closed down (supposedly in 2009). Finally, the analysis showed that, in the Latvian context, there are strong business interests linked to investments in conventional energy sources – in particular coal. Wind energy and other sources of renewable energy are, on the other hand, mainly supported by independent energy experts and NGOs.

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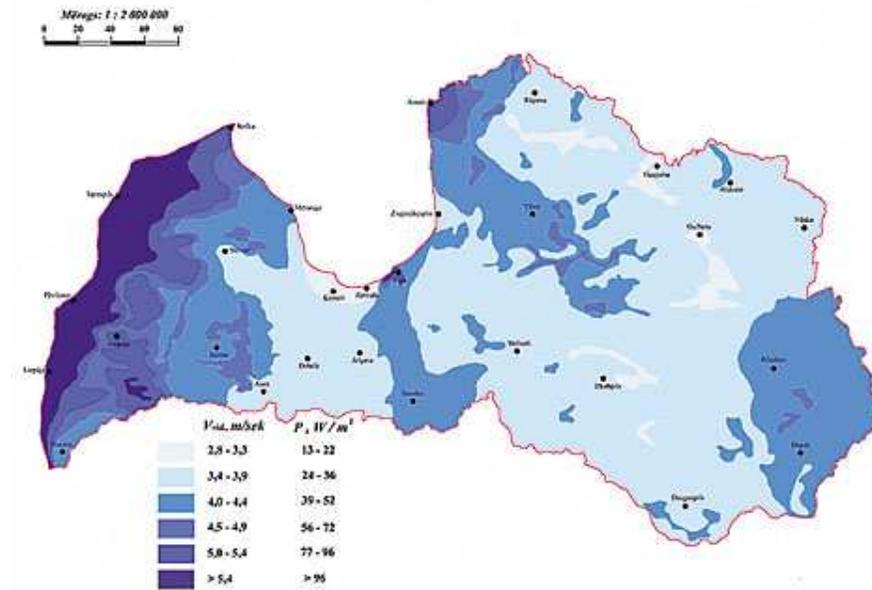
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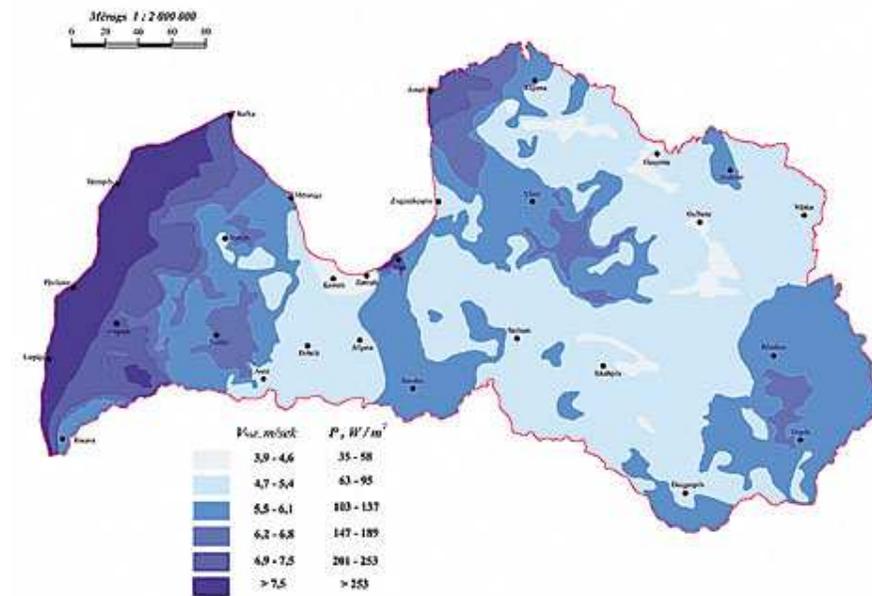
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APPENDIX 1. LATVIAN WIND MAP



Average wind speed at 10 metres.



Average wind speed at 50 metres.

Source: <http://www.windenergy.lv>