



Renewable Energy Policy review Latvia

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Executive summary

Latvia's energy supply is based on a balanced mixture of energy sources, in which renewable energy sources (RES) in 2002 represented 34% of the primary energy share. In terms of production of electricity by renewable energy, Latvia has the highest share of use of renewable sources among the ten new Member States.

The indicative target in the framework of the Directive 2001/77/EC for Latvia in 2010 is 49.3% electricity share from renewable energy against 42.4% in 1997. However, the Latvian Renewable Energy strategy is not developed yet and the Latvian Ministry of Economy still does not have a clear position towards the use of renewable energies and it is unable to produce a clear policy for future renewable energy sources development.

Since 2002, according to the Latvian legislation a quota system for renewable energy development was in force. Every year the Cabinet of Ministers issues a regulation defining the total amount of allowed installed capacities for electricity from renewable energy. For example, in the Regulation of Cabinet of Ministers No. 40 (2004) it is stated that total capacity for electricity production using renewable or local energy sources is 2 MW: 1 MW for electricity production from biomass, wood or peat and 1 MW for production of electricity using waste or biogas.

The quotas assigned for RES are typically very small (from 30 MW in 2002 to 2 MW in 2004) and even these are not used for different reasons like prohibitive conditions for grid connections and too restrictive quotas which exclude bigger projects. The bureaucratic system for obtaining all the necessary agreements from authorities concerning land use, environmental requirements, interconnection to the grid etc., is rather complicated.

The political will to support RES in Latvia has decreased in recent years - too restrictive quotas, decreasing feed-in tariffs, constant legislative changes, do not guarantee stability for investors.

Different Latvian energy experts in confrontation with the Ministry of Economy representative discussed these controversial issues during the workshop held in Riga on the 7th of May 2004 on *Renewable energy sources: Policy framework and progress in Latvia and in the European Union*. The result of the discussion showed that at the moment there is not a clear energy program at Ministerial level and renewable is seen as a big headache to be addressed with aspirins of 1 MW and the Latvian Ministry of Economy could not explain why the political will for RES is decreasing in Latvia while in the meantime the accession to the EU is very proactive to Renewable.

1 General information

Population and geography

Latvia is at the centre of the Baltic States, located in North-eastern Europe, on the coast of the Baltic Sea. The length of Latvia's Baltic coastline is 494 km. The total area of the country is 64,589 square kilometres. Latvia has common border with the following countries: Estonia (343 km), Russia (276 km), Belarus (161 km) and Lithuania (576). The total national border length is 1,862 km. Latvia is situated on a trading cross-road between Western Europe and Russia.



The largest towns and cities are Riga, Daugavpils, Jelgava, Jurmala, Liepaja, Ventspils and Rezekne. The capital of Latvia is Riga, which is located in the centre of the country and has a population of about 780.000 inhabitants. In total there are 2.331.480 inhabitants living in Latvia and almost 70% of all population lives in urban areas [1].

Political system and economy

Latvia is a democratic parliamentary republic (member of the EU since May 2004) divided into 26 districts, 7 main municipalities and 561 rural municipalities and towns. Legislative power is in the hands of a single parliamentary chamber – *Saeima*, consisting of 100 deputies. Direct parliamentary election takes place every 4 years. The country's head of state is the President, who is elected by the Saeima for a period of 4 years.

Since the restoration of independence from USSR in 1991, Latvia has been playing an active role in world affairs. In November 2002, Latvia was one of seven countries invited to join NATO in 2004 and in December 2002 Latvia was one of ten countries invited to become a member of the expanded European Union.

The most prospective production sectors are: information sectors, electronics and mechanical engineering, chemical and pharmaceutical engineering, wood processing, food processing industry and textiles industry.

Latvian legislation guarantees the protection of foreign investment, non-residents can repatriate profit and capital freely and equal terms are provided to domestic and foreign entrepreneurs. To create conditions for stable economic growth in Latvia, efforts have been made to maintain the stability and low inflation level; the budget deficit does not exceed 3% of GDP. A medium-term objective is a non- deficit budget.

Living standards in Latvia have improved and the unemployment rate is decreasing. Latvia's official unemployment rate at the end of 2002 was 7.6 % (7.8% at the end of 2001) [2]. Reforms accomplished in Latvia, in particular for the accession to EU, have left a positive effect on economic development. The GDP, between 1996 and 2002, has grown by 5.8% on average per year. Despite the slow-down of the world economic development in the last years, Latvia continues its rather speedy economic

development. In 2001 the GDP of Latvia grew by 7.9% and in 2002 – by 6.1%. The growth is based on the high domestic demand and ability to adjust to the changing external conditions. Agricultural outputs also grew, however low labour productivity and external competition are main obstacles to the development of this sector. Agricultural lands cover 38,4% of total territory of Latvia. Agriculture sector contributes 4,1% of the Latvian GDP [13].

Transit services for goods are very important for the economy of Latvia. They constitute approximately 15% of revenues from exports of goods and services of Latvia or approximately 6% of GDP.

Latvia's timber industry mostly produces goods for export – 85-90% of all products. Exports of timber and related products have more than doubled since 1996 to a level of 774 million Euro in 2002 (40% of all Latvian exports). The reason why the export value of products from the timber industry has increased is that there has been greater income from wood based fuel (particularly wood chips), from sawn wood (particularly profiled sawn wood), from furniture, from round wood, from bearings and packaging and from building materials [9].

2 Renewable Energy Policy

The Latvian Renewable Energy strategy is still under development. The workshop carried out the 7th of May 2004 in Riga highlighted that the Latvian Ministry of Economy still does not have a clear position towards renewable energy and it was unable to produce a clear policy for future renewable energy sources (RES) development.

The only recent study on RES, was developed in the framework of a PHARE program in year 2000: “*Renewable energy resource program*”, where three main objectives for a future RES strategy were proposed:

1. To increase the use of wood waste and low value wood and forest residues.
2. To improve efficiency of combustion technologies and to replace outdated plants.
3. To increase the use of wood resources in Combined Heat and Power plants (CHP).

However, the Cabinet of Ministers has not approved the program yet.

Energy and renewable energy country profile

Latvia's energy supply is based on a balance mixture of energy sources, in which renewable sources in 2002 represented 34% of the primary energy share [3]. In term of production of electricity by renewable energy Latvia has the highest level of renewable source use among the ten new Member States.

According to the Latvian Energy Law [4], RES are defined as energy resources (water, sun, wind energy, biomass and geothermal energy) the origination and renovation of which is determined by natural or anthropogenic processes and that can be applied for direct utilization or energy generation. At the same time in the Energy Policy of the Electricity Sector [5] peat is also considered as a renewable energy source (in 2002 peat was used for production of 279 GWh of electricity and heat [3]) however that is not official position stated in the Latvian energy policy.

According to the data of the State Geological Survey, peat land areas cover 9,9% of Latvia's territory, however mainly peat in Latvia is used for agricultural needs and only less than 20% of peat resources are used in heat production.

The structure of the supplied energy sources in 2002 is shown in Figure 1.

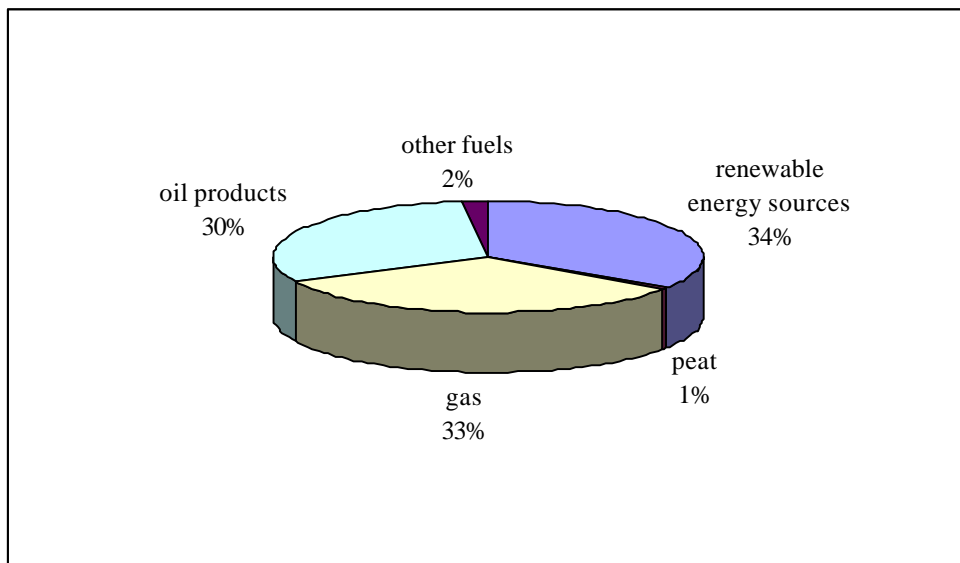


Figure 1. Structure of the energy balance in Latvia [3]

The production of energy resources in 2002 is summarised in the Table 1 below.

Table 1.

Production of energy resources [3]

Fuel	Energy produced, GWh	% of total production
Hydro energy	2463	4.82
Wind energy	11*	0.02
Fuel wood	15055	29.49
Peat	279	0.55
Gas	16822	32.95
Oil products	15389	30.14
Coal	813	1.59
Shale oil	154	0.30
Coke	74	0.14
TOTAL	51060	100

*In 2003 production has raised to 47 GWh

Domestic production of primary energy in Latvia accounts 35% of the total. Currently oil and natural gas, which are imported, are the largest source of primary energy in Latvia, representing more than 60% of primary energy consumption.

In Latvia, there is a technical potential for power generation based on renewable resources, especially wood and wind, but there is not an official detailed study available.

In Latvia 19% of the total energy is produced from wood and hydropower. In recent years, the use of local energy resources has increased along with the proportion of wood and hydro resources in energy production.

Electric power generation in Latvia hydropower plants is an important resource for all Baltic States, however given the high fluctuation – yearly, seasonal and sometimes monthly, of the Daugava basin (the main Latvian river basin) it is impossible to

forecast hydroelectricity generation and to base a energy policy on this resource only.

None of the Latvian legislation clearly states the definition of small-scale hydropower plants. However, the Energy law defines different requirements and advantages for small-scale hydropower plants with installed capacity less than 2 MW.

Sectorial overview

Hydropower:

Latvia has three major hydropower plants, and 150 small-scale, local facilities. There is still unused potential for electricity production on the Daugava River. Already now besides three large-scale hydropower plants on the Daugava River two large scale HPPs Jekabpils (30 MW) and Daugavpils (100 MW) are under discussion [8]. According to the data from the Renewable Energy Program, the technical potential of small-scale hydropower plants (SSHPP) in Latvia taking into account renovation of the old SSHPP is between 28-35 MW (78 GWh) [7]. At the moment 65% of the technical potential of the hydro energy has been exploited (50.84 GWh were generated in SSHPP in 2003 [6]).

Since 1992 in Latvia an intensive reconstruction of regionally important small hydro power plants has started. At the end of 2001 the total number of small scale HPP in Latvia was 103 and end of 2002 – 149 SSHPP (with total capacity 24.8 MW). The Law on Energy determines support for those small HPP that have started operations before January 1, 2003. The surplus of energy production in these plants should be purchased at a double average electricity tariff

Wind:

Latvia has a very good potential for wind energy development along side the Baltic Sea coastline, especially because a high voltage transmission line runs along the coastline. The total installed wind energy capacity in Latvia at the end of 2003 was about 24 MW. This figure represents a zero percent increase on the figures for the end of 2002. A new project for 100 MW installed capacity close to Ventspils is under evaluation [8].

According to the data from the Renewable Energy Program, technical potential for wind energy production has been estimated around 1277 GWh however the practical potential is estimated at 1000 GWh/year and it represents about 2000 MW of wind technical/or economical potential. Suitable sites for wind energy plants are the West coast and the eastern part of the Gulf of Riga (nearby Ainazi) [8].

Until 1st of January 2003 as well wind energy was one of the supported activities. Electricity from wind generators, which were installed before the 1st of January 2003 should be bought at a double average electricity tariff until 2008 – i.e. 0.11 Euro per kWh.

Biomass:

Wood is the most extensively and common local energy source used for heat generation, representing around 22% of primary energy consumption in Latvia.

Forests cover approximately 2.931 million hectares or 44.5% of the total land area of Latvia. According to experts, approximately 12.5% of the timber, which is harvested in Latvia every year, ends up being used as heating fuel, and a considerable percentage of scraps from sawmills are used to produce heat energy, too. Nearly 200,000 m³ of scrap (mostly chips from sawing) are used every year to produce heating fuel in the form of wood briquettes and pellets [9].

At the moment the potential use of forest residues is almost unexploited due to the fact that is not economically viable because of high cost involved for preparation, transportation and storage.

The main risks for the supply of wood based fuels are related to increasing export of wood products and potential construction of a pulp and paper factory, which would increase the price for this resource.

Straw available for energy production in Latvia is circa 0.57 million ton. Currently there is one installation for heat production. Straw has a local potential in Latvia mainly for heat production.

Today, the quantity of biogas produced in Latvia is approximately 1,8 million m³ per year, the potential is estimated at 170 million m³ per year. The major biogas volume in Latvia could be generated from agricultural waste (up to 60 million m³ per year) [8], sewage waters from food processing industry and from landfill gas. However, the decentralisation of agricultural production has largely reduced the potential basis for raw materials.

Geothermal:

Currently, the existing geothermal resources in Latvia are not used even if there are geothermal brines with temperatures up to 55°C. With rising heat prices, geothermal heat supply systems - with heat pumps – could become feasible; these could be plants up to 16MW_{th}. The most promising reservoirs are located in the Riga region and in southwestern Latvia. However, at the moment, the low heat prices for district heating, and the little experience in the field are serious barriers to the development of this resource.

Latvia does not have geothermal resources for electricity generation.

Solar energy:

The solar energy resource potential in Latvia is small compared to other European countries due to the geographic location and to the climatic conditions. During the winter months of the year solar energy reaches 0,5-0,8 kWh/m²/day [17] while the yearly average is up to 2,6 kWh/m²/day (year average [16]).

The creation of any large plants on converting the solar energy into electricity in Latvia is not expedient, while 2 pilot projects on solar thermal were implemented in Aizkraukle. One project concerns the use of Solar thermal for heating of a Gymnasium School and the other integrated solar thermal in a district-heating scheme.

RE policy outlook

Main RES policy actor

Responsibility of energy policy lies with the Ministry of Economy. The institutional framework of the Latvian energy sector is divided between three main actors:

1. State Institutions
2. Energy Suppliers
3. End users.

Here follows a description the structure of each actor:

1. State institutions;

The *Cabinet of Ministers (CM)* is the main institution of executive power which:

- Defines the rules on how energy supply utility should supply electricity, heat or gas to energy consumers and to interrupt the supply to the energy consumers according to the Energy Law;
- Defines the procedure for license issuing by PUC;
- Defines the volume of fuel security reserves;
- Determines the common procedure, according to which electricity supply utilities purchase surplus electricity that has remained after consumption for own needs and corresponds to the national electrical energy quality parameters from cogeneration plants situated in their license area and that are starting operation.

Ministry of Economy (ME) is the central government executive power office, which develops and implements the national policy in the national economy. One of the main functions of the ministry is to prepare and implement the energy policy.

Energy department of ME works out the energy sector development concepts, manages and analyses the energy resource balance development, prepares draft international agreements in energy, coordinates efficient use of energy resources, analyses investment projects in energy and participates in the regulatory activities of energy utilities

State Energy Inspection has been established in the end of year 2000 and is a state administration institution, which accomplishes the state technical supervision and control of objects of energy supply enterprises and equipments and devices of energy utilization.

PUC is a new public utilities regulation institution started in October 2001, taking over the responsibilities of Energy Regulation Council, Telecommunication Tariffs' Council, Railway Administration and Ministry of Transport. The PUC is an independent state institution which one of the main activities is to develop methodologies for tariff calculations and to regulate energy (except for heat supply, if heat production is not combined with electricity production), telecommunications, post, and railway sectors on the state level and licensing [10].

Ministry of Environment is the central executive institution in the area of environmental protection and nature protection. Its main duties are to prepare and

implement a national policy and draft legal acts within its jurisdiction and ensure their implementation.

Latvian Investment and Development Agency (LIDA) (previously Latvian Development Agency (LDA)) is a non-profit state Joint Stock Company established in 1993 and is the executive arm of government responsible for attracting foreign direct investment to Latvia and plays a prominent role in stimulating an expansion in exports.

Energy department of LDA was a structural unit of LDA that was responsible institution for preparation of different programs related to energy. Due to reforming of LDA, in January 2004 Energy department was closed.

Latvian Privatisation Agency (LPA). Privatisation has almost been completed in Latvia. During four years LPA has privatised one enterprise a day. Thus, the Latvian government has attained the goal to privatise 95% of the former state owned enterprises until mid-1998. The majority of these enterprises are now privatised and ensure more than 65% of GDP and employ more than two thirds of the economically active population.

Until now is not clear the situation only with the privatisation of *State Joint Stock Corporation Latvenergo*.

Municipalities according to their competency and the Law on Municipalities are local independent government institutions. The state administration institutions and officials control the work of municipalities within the framework of the law and the activities of municipalities can be limited only in the legitimate cases. The Law on Municipalities states the functions of municipalities and one of the main is to organize services to the residents (water supply and sewage networks, heat supply, collection, disposal, keeping and processing of household waste, collection, disposal and purification of sewage).

2. Energy suppliers

Local governmental DH companies are municipal enterprises (district heating companies) that organize heat supply to end-users. DH company own boiler houses for energy generation, district-heating network for distribution and heat substations for heat transformation. This represents a big potential generation for biomass heat and biomass CHP.

With *private DH companies* municipality signs a contract for heat supply. The heat supplying company usually install a new boiler house, which will be its property.

State Joint Stock Corporation Latvenergo is an energy utility company engaged in the production and sale of electricity and heating energy, and that provides electricity transmission and distribution services. Latvenergo is responsible of:

- Generation: Large hydropower plants on the river Daugava: Kegums HPP (264MW), Plavinas HPP (870MW) and Riga HPP (402MW) and two large CHP plants: Riga TEC-1 (130MW_{el}) and Riga TEC-2 (390MW_{el})
- Transmission: HVEN (High Voltage Electricity Network) is the transmission network, which receives electricity from the hydroelectric and thermo-electric centrals located in Latvia, as well as from Lithuania, Estonia,

Russia and Byelorussia and passes this onto distribution network companies.

- Distribution: There are seven regional companies, which are all 100% subsidiaries of Latvenergo.
- District Heating: production and selling of heat energy to the district heating system of Riga

An attempt to privatise the company in 1999 was stopped because the public was opposed to a foreign takeover.

Existing RES policy

The indicative target for Latvia in 2010, in the framework of the Directive 2001/77/EC, is 49.3% of RES of gross electricity consumption (against 42.4% in 1997).

According to the Latvian policy, since 2002 a quota system was applied. Every year the Cabinet of Ministers issues Regulation that defines the total volume for the installation capacities if renewable energy resources are utilised for electricity generation. In the Regulation of Cabinet of Ministers No. 40 (2004) is stated that total capacity for electricity production using renewable energy sources for 2004 is 2 MW: 1 MW for electricity production from biomass, wood or peat and 1 MW for production of electricity using waste or biogas.

Different Latvian energy experts in confrontation with the Ministry of Economy representative discussed this controversial issue during the workshop held in Riga the 7th of May 2004. The result of the discussion showed that at the moment there is not a clear energy program at Ministerial level and renewable is seen as a big headache to be addressed with aspirins of 1MW.

The two main documents, which set the Latvian energy policy, are as follows:

1. National Energy Program (1997)
2. Energy Policy in the Electricity Sector (2001).

The National Energy Program defines the energy policy in the country until the year 2020 and it should be re-evaluated every five years. The program was supposed to be re-evaluated in year 2002 but still this activity needs to be undertaken.

The old 1997 program stated that energy supply has to comply in quality and quantity with consumer' requirements, at the lowest possible cost and least impact on the environment. Increasing the use of local energy production from RES is key issue in the Program. However, no particular targets for energy production from RES were defined.

In recent years the legislation in Latvia related to energy production from RES has undergone a number of changes due to the future EU accession and the *acquis communautaire*. In 2001 the Law on Energy was amended particularly with regard to the use of RES in Latvia. On the basis of this law, a number of regulations of Cabinet of Ministers were adopted in 2002:

- Requirements for CHP stations and the procedure of setting the price for the purchase of excess electricity (Regulation No.9). It sets a higher power purchase price if domestic energy sources are utilized;

- Regulations on total installation capacities for each type of electricity generation if RES are utilized (Regulation No.28);
- Regulations for the installation and dislocation of electricity production capacities if RES are used for production of electricity (Regulation No.29).

Environmental considerations are emphasised in the Regulation No.29, which states that electricity production from RES can be promoted within the whole territory of Latvia, except in areas having certain limits on the construction for reasons of nature protection [8].

Electricity - electricity market reform, electricity regulations and incentives, implementation of the RES directive

Policy and regulations

In accordance with the objective defined in the EC directive RES e, the Energy Policy in the Electricity Sector [5] sets objective to foster the use of renewable and domestic energy resources, which corresponds to approximately 6% of renewable electricity (the large hydro power plants excluded) in the balance of the total electricity consumption. A number of regulations of Cabinet of Ministers were adopted in 2002 based on the above-mentioned policy. The regulations on RES were changed from 1st January 2003, before the system was different and tariffs were defined in the Law referring to the average customers tariffs. Now the tariff for small-scale hydropower plants and wind farms is much lower than before and sometimes must be approved and/or negotiated by PUC.

In the table below are summarised all the legislation approved by Cabinet of Ministers or Parliament regarding RES in Latvia.

September 22,1998	Energy Law
May 10, 2001	Amendments to the <i>Energy Law</i> adopted in the Parliament (Saeima)
September 11, 2001	The <i>Energy Policy</i> in the sector of electricity was adopted by the Cabinet of Ministers
January 8, 2002	Regulations the Cabinet of Ministers No. 9 " <i>Requirements for co-generation plants and the procedure of setting price for purchase of excess electricity</i> "
January 15, 2002	Regulation No.28 " <i>On total installation capacities for each type of electricity generation if RES are utilized</i> "
January 15, 2002	Regulation No.29 " <i>On the procedure of installation and dislocation of electricity production capacities if RES are used for production of electricity</i> "
December 24, 2002	Cabinet of Ministers approved Regulations No.713 " <i>On annual consumption of electricity to obtain the status of a qualified user in 2003</i> "
September 30, 2003	Cabinet of Ministers adopted regulations No. 545 " <i>On total volumes of capacity installation in 2003 and concrete volumes of each type of electricity production if renewable energy sources are used for electricity generation</i> "
September 30, 2003	Regulation No.546 "Amendments to CM Regulations

No.29 of January 15, 2002 “On the procedure of installation and dislocation of electricity production capacities if renewable energy sources are used for electricity generation”

Electricity sector and Latvenergo

Latvia's electricity system is a part of the Baltic States electric power network and in collaboration with Russian and Byelorussia electricity transmission networks in connected in the joint circle. In details the network includes: Estonia, Latvia, Lithuania, Russia and Byelorussia. An ongoing project for the interconnection to Finland is under implementation.

The total installed generating capacity of electrical power plants which belong to Latvenergo in Latvia at the end of 2002 was 2 0557.5 MW_{el}, including 1 538 MW at the Daugava hydro power plants, as well as the hydro power facility on the Aiviekste river and the wind power farm in Ainazi. The share of renewable sources (including large hydro) used for electricity production in Latvia is 75%.

In 2002 Latvenergo's power plants produced 3 672 GWh of electricity, or 58 % of the total consumption of electricity in Latvia (the rest is imported) and 92,5 % of all electricity generated in Latvia [11]. The rest of the electricity is produced by cogeneration plants, small hydropower plants and wind farms.

Taking into consideration that hydropower power contributes a substantial share in the total energy output balance, the company's capability to produce electricity is largely dependent on meteorological conditions, that is, on the water flow in the Daugava. Therefore, the annual production of electricity in the company's hydropower plants can vary between 1 800 GWh and 4 500 GWh [11]. The shortfall of energy has had to be purchased from Estonia, Lithuania and Russia (in 1998 Latvia imported 6% of electricity demand, in 2002- 37%).

In October 2000, the Latvian government approved a plan for the utility's reorganisation. The reorganisation, which will be guided by the EU directive on energy market liberalisation, is geared to prepare the utility for free market conditions. The EU directive demands that production, transmission, and distribution of power be separated at least as far as necessary to review their accounting reports and operations as individually and transparently as if they were completely independent companies. A separate transmission system operator has been established at the end of 2001 but has not started to operate as of September 2002. Complete liberalisation of Latvia's electric power market is planned to take place by 2007 [12].

Electricity Tariff

Latvia has a feed in tariff system that guarantee to electricity producers of small hydro (less than 2MW) and wind a double average electricity sales tariff (AEST), which until January 2004 was 0.052 Euro/ kWh. The feed in tariff was created in 1995 for electricity produced at small-scale hydropower plants and wind farms. This tariff was successful in promoting the development of RES, but almost only in the small HPP sector. However, since January 2003 government decided to cancel this promotion scheme of RES of hydropower and wind energy.

Currently, the Law on Energy sets mandatory requirements for the licensed electricity from:

- Small scale hydropower plants (<2 MW) and wind turbine generators both launched by January 1, 2003, for 8 years, for a price that corresponds to double AEST. Thereafter, the purchase price will be determined by the PUC;
- Energy facilities that utilize household waste or biogas (<7 MW and launched by January 1, 2008), for 8 years, for price that corresponds to AEST;
- Wind turbine generators (erected after January 1, 2003), biomass, including wood and peat, biogas, solar, sea tide and geothermal energy for the market price or the price determined by the PUC.

There are administrative barriers for development of RES in Latvia. To start a project the investor must have a permit within a yearly quota of RES for electricity issued by the Ministry of Economy. The quotas defined are typically very small (from 30MW in 2002 to 2MW in 2004) and even these were not used for different reasons (e.g. prohibitive conditions for grid connections, too restrictive quotas which exclude big projects). The system to get all the necessary agreements from authorities regarding the use of land, environmental requirements, connection to the grid etc., before applying for a permit from the Ministry is rather complicated. The political will to support RES in Latvia has decreased in recent years - too restrictive quotas, decreasing feed-in tariffs. Legislation has been under constant changes, which does not guarantee stability for investors [14].

During the workshop carried out the 7th of May 2004 in Riga on Renewable energy sources: Policy framework and progress in Latvia and in the European Union the representative of the Latvian Ministry of Economy could not explain why the political will for RES is decreasing in Latvia while in the meantime the accession to the EU is very proactive to Renewable.

Heating

In Latvia in 2003 have been generated 9180 GWh of heat energy and the final consumption has been about 7310 GWh.

In Latvia, current legislation does not foresee promotion of the purchase of heat energy produced from RES. Although, Regulation the Cabinet of Ministers No. 9 of 2002 "*Requirements for co-generation plants and the procedure of setting price for purchase of excess electricity*" states that:

- If the electrical capacity installed is *not more than 0.5 MW* and a *renewable resource* or source has been utilised in its production process, the price for the purchase of surplus electricity shall be determined by applying the coefficient *1.12 to the average sales tariff* in the operating area of the relevant system operator's licence.
- If the electrical capacity installed is *more than 0.5 MW, but does not exceed 4 MW* and a *renewable resource* has been utilised in its production process, the price for the purchase of the surplus electricity shall be determined by applying the coefficient *0.95 to the average sales tariff* in the operating area of the relevant system operator's licence.

- If the electrical capacity installed *is not more than 0.5 MW and fossil fuel* has been utilised in its production process, the price for the purchase of surplus electricity shall be determined by applying the *coefficient 0.9 to the average sales tariff* in the operating area of the relevant system operator's licence but if the electrical capacity installed is *more than 0.5 MW, but does not exceed 4 MW and fossil fuel* has been utilised in its production process, the price for the purchase of surplus electricity shall be determined by applying the *coefficient 0.75 to the average sales tariff* in the operating area of the relevant system operator's licence.

To date only a few state investments have been earmarked for projects that increase the efficiency of the heat supply system and use biomass (mainly wood-based fuels) in boiler houses. For example, in 2002, within the frame of the State Investments Program 19 projects out of 220 were carried out with total state support about 1.2 million LVL (2.1 million Euro). In 2003, due to lack of financial resources, state support will be granted only for 13 new projects.

District heating in Latvia forms the backbone of the heat market. Approximately 70% of households are connected to a district-heating network.

Transport

The government on 16th of December 2003 accepted the Biofuel program on production and use of biofuels in Latvia from 2003 to 2010. One of the main objectives of the program is to reduce the dependence of the fossil fuels and to increase the use of biofuels as renewable energy sources. In the Program the existing situation and perspectives of biofuels (biodiesel, bioethanol, biogas) is analysed [15].

Bio diesel:

Although bio diesel fuel in Latvia is not used yet, there is already quite a successful production of rapeseed and rapeseed oil in the countryside of Latvia. Taking into account the forecasted growth of areas tilled with rapeseed, there is a good reason to forecast that growth rates in bio diesel fuel production could meet the following levels: 20.9 thsd. tones in 2002, 31.4 thsd. tones in 2005, and 60.7 thsd. tones in 2010. Experts predict that the support of the government of Latvia will be necessary to develop this sector and to ensure that bio diesel can compete with fossil fuels' prices.

Production and use of bio fuel in Latvia until 2010 is prescribed in the National Program on Production and Use of Bio fuel in Latvia. One of the key priorities in this program is to organize bio diesel fuel production for diesel engine application, which should equal to 40% of total diesel fuel used in agriculture.

Biogas:

The presently obtained quantity of biogas in Latvia is approximately 1.8 million m³ per year, potential production capacity – 170 million m³ per year.

The major biogas volume in Latvia might be generated from agricultural waste, sewage waters from food processing industry and from other waste. However, the

decentralisation of agricultural production has largely reduced the potential basis for raw materials.

Buildings

In Latvia buildings are one of the major thermal energy consumer. It is estimated that building space heating consumes some 65% of the total delivered heat energy.

Code *LBN 002-01 Heat Engineering of the Envelope of Buildings* has been adopted with required normative and maximum level of calculated energy losses for new and renovated buildings. The requirements for new and renovated buildings need to be applied from 2003. The Code requirements may be applied to reconstruction of buildings in order to increase the thermal performance of buildings.

On 14th of May, 2003 the first draft conception report on implementation of EU SAVE directive 93/76/EEC and Directive 2002/91/EC on Energy performance of buildings was presented for public discussions. Danish consultants in cooperation with Latvian consultant and Ministry of Environmental Protection and Regional Development Building Department prepared conception report. Four different alternatives were proposed how Latvia could implement energy audit system for buildings and then what happened to these four different alternatives.

Environmental, Agricultural policies - Indirect impacts on renewable

Latvia takes part in the global climate change mitigation progress and has acceded to the United Nations Framework Convention on Climate Change, thus undertaking to implement series of international commitments.

Latvia has ratified the Kyoto Protocol on June 2002. By signing the Kyoto Protocol, Latvia undertook to reach an 8% reduction (compared to 1990) of emissions of greenhouse gases responsible for global warming during 2008-2012. According to Kyoto protocol, Latvia has developed Joint Implementation Concept and Joint Implementation Strategy where Latvia has declared which projects would be of the greatest interest:

- Increase of energy efficiency;
- Use of renewable energy sources;
- Installation of cogeneration units;
- Increase of CO₂ removals.

Since Latvia has joined European Union on 1st of May 2004, Latvia has to adopt different EU directives and one of those is EC Emissions Trading Directive. According to this Directive, Latvia has prepared National Allocation Plan. Ekodoma, Ltd developed the plan.

Agricultural Policy Development

In 2000, the agricultural policy of Latvia continued its progress, building on the principles that had gradually developed since mid-nineties.

Harmonisation of the policy measures and the respective normative documents to the European Union policy and the World Trade Organization statements is one of the main principles of the general policy of national economy development, including also agricultural policy.

Forestry

Since 1930 forest covered areas in Latvia have nearly doubled – from 24% in 1930 to almost 45% in 2000. The trend is expected to continue, mainly due to the lands with low agricultural efficiency or non-efficient lands use. Forest coverage is not homogeneous across the country. It varies by administrative regions from 29% in Dobeles and Jelgava to 60% in Ventspils and Aizkraukle. There is 1.9 ha of forests per capita in Latvia.

The Latvian Forest Policy identifies one general goal – sustainable management of forests and forest lands. The policy was drafted in compliance with the EU approaches to forestry and approved by Cabinet of Ministries in 1998.

3 RE Highlights - National success story

Biomass in district heating



Wood chips storage and boiler house in Daugavgriva

In the last years several fuel switch projects have been implemented in Latvia, in particular from heavy fuel oil or coal to wood chips and saw dust. Within the framework of the Swedish An Environmentally adapted local energy systems 27 of these type of projects were implemented. For example in Broceni, Aluksne, Balvi, Daugavgriva and Jurmala. Here follows a description of the Broceni project.

Broceni switch fuel

Broceni is a small town with 3,500 inhabitants located 130 km south west of Riga. The main activity in Broceni town is the cement factory, just outside the city.

Until 1996, the cement factory in Broceni supplied heat for the district heating of Broceni. At the cement factory there were three steam boilers, and until 1996 approximately one boiler was producing steam for district heating in Broceni and two boilers were producing process steam. Steam was supplied through a 2km long pipeline to an old boiler house in Broceni, where a heat exchanger was installed. Until 1993 the boiler at the cement factory were fired with natural gas and mazout (HOF). Due to the low mazout prices compared to natural gas in 1993 and due to debts the natural gas company only mazout was burned thereafter.



Wood chips feeding system - Broceni

Starting in 1994, the cement factory stopped cement production during winter time and in winter they produced steam for the sole purpose of delivering heat for district heating. Since large mazout tanks needed to be preheated, the steam production during wintertime became very inefficient.

A new completely automated biofuel boiler (4,5MW, KMW, Sweden) was installed in the Broceni' boiler house that formerly served as heat exchange station. The installation consists of combustion equipment, automatic fuel storage, fuel handling equipment, flue gas cleaning equipment and heat exchangers

During the summertime only sawdust is burned, which the boiler house gets for free from local sawmills. In the rest of the year they mix sawdust and woodchips, depending on the heat demand. The wood chips are from one retailer who buys wood chips from different small suppliers. Sawdust and wood chips are wood waste and fuels difficult to handle in decentralized systems.

A natural gas boiler (5,0MW, VEA UNIVVEX HVSG 5.0 H-6) was installed with the biofuel boiler. Today, due to natural gas being more expensive compared to biofuel, the natural gas boiler is only operated during maintenance of the biofuel boiler (2 days every 3 months). The natural gas boiler may also be operated when the temperature drops below -20°C

The project has been a success not only from an environmental point of view (emission reduction), but economically feasible as well. The new technologies applied and the lower fuel costs have increased the level of comfort for the inhabitants. In addition, this design has been a solution for the surrounding sawmill waste disposal problem.

Small hydro power

In the last ten year there has been a boom in the sector of small hydropower in Latvia, in particular thanks to the government policy. Following are presented two significant projects, one implemented on the river Vaidava situated in the northern part of Latvia and the second on the river Gauja, which is the second important river in Latvia.

Small hydro power station – Grubes HES

The owner of the SHPS “Grubes HES” is Grube Hydro, established in 1998. Grubes HES is situated in the northern part of Latvia on the river Vaidava. Before World War II in this place there was a paper mill and after the war till 70-ies there operated a local HPS. In the 90-ies the company Grube Hydro took over the operation of the HPS and in 1998 started reconstruction work. The 5th of February 1999 the renewed SHP was put in operation. Today the installed capacity is 250 kW, and annual output of almost 1 million kWh.

In addition to economic benefit of the project in operation, it also solves environmental problems. The surroundings of Grubes HES were put into order with the further aim to develop recreation and tourism centre. It is planned to develop fish breeding with successive fishing and wild life tourism. The local landscape is one of the most beautiful nature spots in Northern Latvia and it is possible to include it in sightseeing tours for various visitors. The implementation of the project was fully supported by local inhabitants and municipality.

Political factors

The project success was based on the coincidence of two following factors: the adoption of Energy Law in Latvia

Awareness and Support

The owners' wish to renovate the HES and improve the environment made the project possible. At present the project is developing more as environmental and tourist site.

Small hydro power stations cascade on the river Gauja

There is a cascade of 6 SHPS on the river Gauja near Gulbene city in the North part of Latvia. The installed capacity is from 195-525 kW. The smallest SHPS is Lacites HPS, with installed capacity 195 kW. It was constructed on the basis of former watermill.

Completely new is Varinu HPS. Equipment produced by Latvian company “Hydrolats” is installed there with total capacity 395kW. The planned annual output is 1 million kWh. The financial sources are own capital – 330 000Euro and bank credit – 165 000Euro. Gaujas HES with total capacity 245 kW is also completely new.

Awareness and Support

Local municipalities and inhabitants supported the construction of all small HPP. During construction work local manpower was used and today the mentioned HPP also give working places for local inhabitants. The owners stress that HPP are important not only as a financial income but also as means for environment protection.

HPP are important taxpayers in local municipalities. All HPPs have been constructed in compliance with all environmental protection demands. Special attention has been paid to preservation of fish population in river Gauja, which is one of the most popular rivers in Latvia.

Renovation of Lacites HPP was the beginning of the development of sport and recreation centre in the region. There are plans to build a hotel, a camping, sport grounds and facilities for horse riding. They also give impulses for other business activities.

Solar

Aizkraukle is the first city in Latvia where heat partly is generated by renewable energy sources – Solar collectors that have been installed on the roofs of two buildings:

- On the roof of Aizkraukle Gymnasium – 33 m²;
- On the roof of the boiler house – 110 m².



The project was initiated in 2001 and was implemented in the framework of Danish and Latvian cooperation program. The solar collectors were installed in January 2003.

The main characteristics of solar thermal system are:

- Plate-shaped collectors;
- Angle of the collectors to the horizontal surface is 45°;
- Orientation to the South;
- Heat carrier: propylene glycol.

As this project is first one of such scale, there are a lot of advantages however in the mean time disadvantages:

Advantages	Disadvantages
<ul style="list-style-type: none"> ▪ Popularity in international scale ▪ For pupils in Aizkraukle as well as for students from universities are possible to examine the use of solar energy ▪ Reduction of consumption of natural gas ▪ Reduction of greenhouse gas emissions ▪ Reduction of expenses 	<ul style="list-style-type: none"> ▪ Heat energy produced has been less than forecasted due to some inadequate technical parameters ▪ School during the summer is closed

Wind

In Grobina (220 km to the West from Riga) in the end of 2002, 33 wind generators were installed. The capacity of each is 0,6 MW and in total 19,4 MW.

Due to the fact that Grobina wind farm was built until the end of 2002, the farm complied with the norms of the Energy Law and had an opportunity still to receive for next 8 years the feed-in tariff.



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