

Latvia

Country Profile

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1. Overview of Electricity Supply

Latvia achieved its independence in 1991 following the collapse of the former Soviet Union. The newly formed government immediately initiated a comprehensive package of reforms including price and trade liberalization, small-scale privatization, and macroeconomic stabilization. Many of these initiatives were successfully implemented and in the later part of the decade, Latvia experienced strong economic growth, single-digit unemployment, and increasing government stability (the national credit rating was raised in 2000 to investment grade by Moody's Investor's Services, Standard & Poor's, and Fitch IBCA). Through Latvia's efforts in privatization and economic reform it was invited to the EU summit in Helsinki in 2000 to begin accession talks.

Latvia's energy supply is based on a balance mixture of energy sources, and renewable energy sources in 2002 represented 34 percent of the primary energy share. In terms of renewable energy production of electricity from renewable energy resources Latvia has the highest percentage of use amongst the ten new EU members.

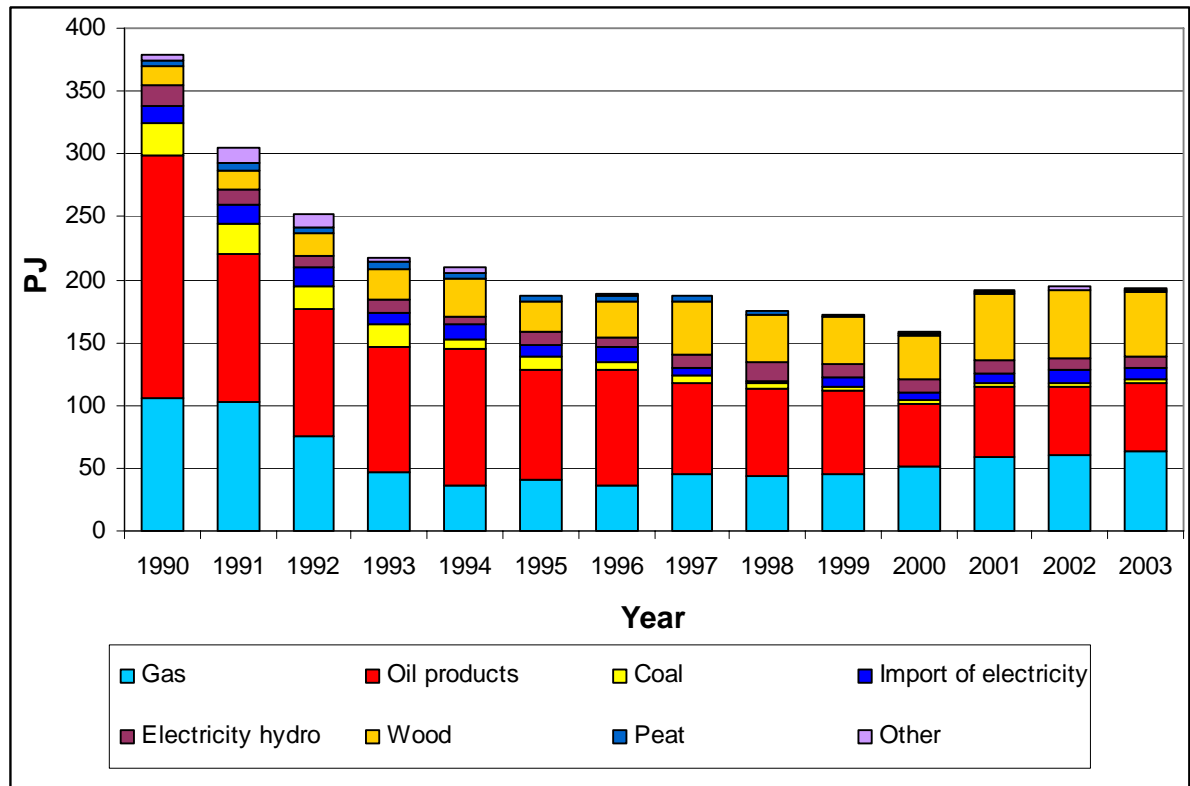
The state-owned electric company, Latvenergo, owns 97 percent of the generation capacity in Latvia. The primary source of electric generation is hydroelectric power from a cascade of dams on the Daugava river, all of which have recently undergone modernization and reconditioning. Additional generation and district heating is provided by two large thermal plants and several smaller privately owned facilities.

Transportation of electricity within Latvia is handled by seven regional transmission networks, all owned by Latvenergo. In 1998 utilities in Latvia, Lithuania, Estonia, and other surrounding countries organized the Baltic Ring Electricity Cooperation (BALTREL) with the goals of interconnecting the individual power markets into a regional exchange, and upgrading production and transmission systems in the region.

Privatization has proceeded gradually since 1994 when the Latvian Privatization Company was formed to privatize all state owned businesses. To date, only a small percentage of companies, other than the electricity sector, remain in government hands. Progress towards privatization of the electric sector is expected to accelerate as the World Bank has already set a December 2001 deadline for the restructuring of the state-owned electric utility. Further, as Latvia nears accession into the EU, the restructuring is expected to follow the European model.

**Latvia
Country Summary Table**

Demographical Information	
Population, millions (2003)	2.3
Land area, thousand Ha (2002)	6,460
Macroeconomic Information (2003)	
GDP, billion US\$	11.1
Real GDP growth rate, percent	7.50
Foreign direct investment (net), million US\$	328
Electricity sector	
Electricity tariff, US¢/kWh (2002)	6.5
Collection rate, percent (2002)	99
Load utilization factor, percent (2000)	NA
Feed-In Tariff (€)	0.110
Renewable Target (2010)	49%
Electricity disposition, billion kWh (2003)	
Generation	3.57
Consumption	5.84
Exports	0.30
Imports	2.82
Generation capacity, million kWh (2003)	
Nuclear	0.0
Thermal	0.6
Hydro	1.6
Other renewables	0.0
Total	2.2
<i>Sources: European Bank for Reconstruction and Development, U.S. Energy Information Administration, Food and Agriculture Organization of the United Nations.</i>	



Electricity use by source in Latvia

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2. Energy Policy, Barriers and Incentives

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

The 1997 National Energy Program defines activities for the reliable supply of energy resources in the country until the year 2020. The program states that the energy supply has to comply in quality and quantity with the requirements of consumers, at the lowest possible cost and with the least impact on the environment. Increasing the use of local energy production from RES is key issue in the Program. However, no particular target for energy production from RES has been defined.

The main objective of the 2002 Energy Policy in the Electricity Sector is promoting of the development of power sector in accordance with balanced and sustainable development of national economy. Promotion of the use of renewable and local energy resources as well as coordination of environmental protection and energy production, transportation and consumption costs are among the tools to achieve the objectives in the electricity sector.

The Energy Policy in the Electricity Sector sets the objective to foster the promotion of the use of renewable and domestic energy resources, which corresponds to approximately 6 percent of

renewable electricity (with large hydro power plants excluded) in the balance of the total electricity consumption.

The complete liberalization of Latvia's electricity market is planned to take place by 2007.

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3. Wind

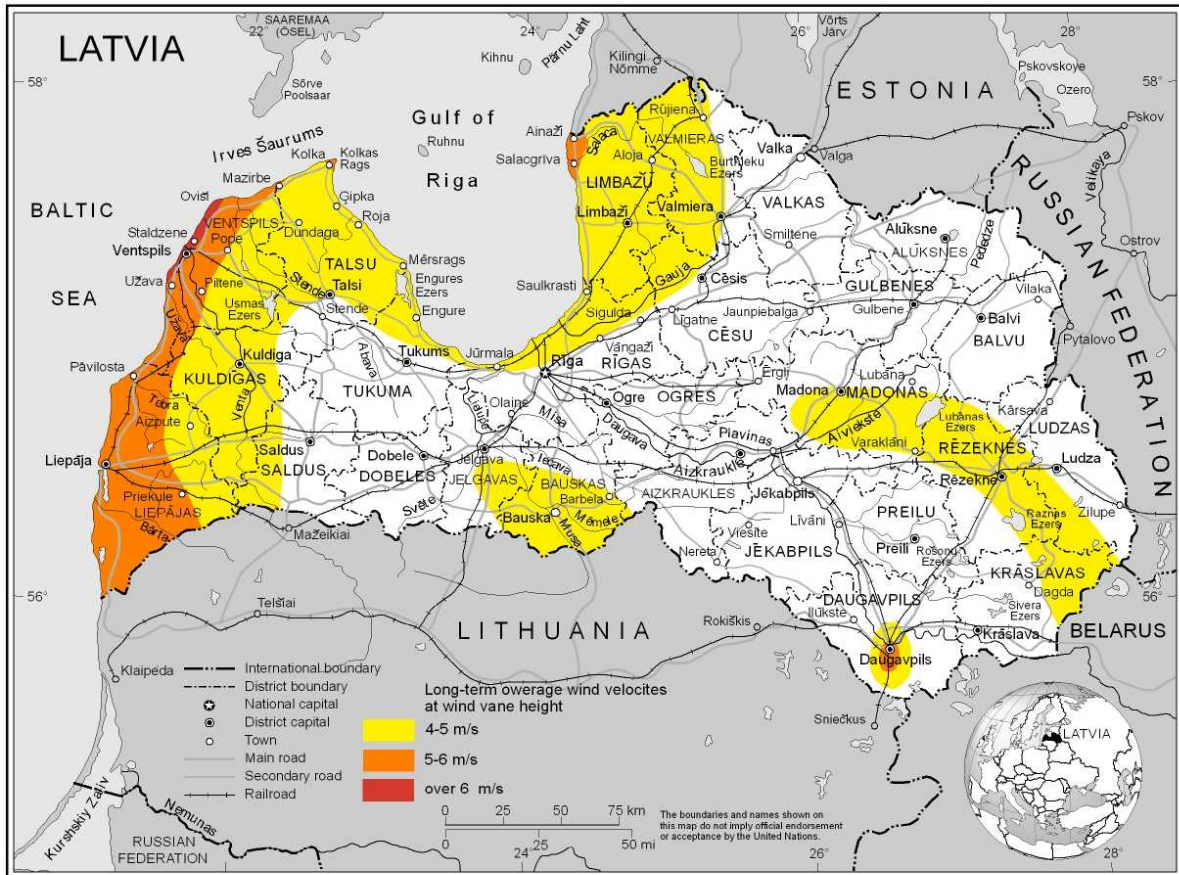
Latvia has a very good potential for wind energy development. The total installed wind energy capacity in Latvia at the end of 2003 was about 25 MW. This figure represents a zero percent increase on the figures for the end of 2002. At the current development level wind farms cannot compete with hydro power stations and thermal power stations on the cost criteria. There is great potential for development however, and several projects are reportedly planned.

According to the data from the Renewable Energy Program, technical potential for wind energy production has been estimated around 1,277 GWh however the practical potential is estimated at 1,000 GWh/year and it represents about 2,000 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).

A country wide wind-atlas is available, where several areas with annual average wind speeds over 6 m/s at 30 m height were identified. Institute of Physical Energetics seems to be the leading institution in wind energy issues.

According to Latvia's laws regarding renewable energy, electricity from wind generators 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.

Latvia has a very good technical potential for wind energy development.



MAP NO. 3782 Rev. 1 UNITED NATIONS
JANUARY 1994

Wind Atlas of Latvia

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4. Biomass

The use of biomass in Latvia for power production is growing and electricity from wood and wood waste totaled 6 GWh in 2002. Additionally, landfill gas use started in November 2002 with a total installed electricity capacity of 5 MW. Wood is the most extensive and common local energy source used for heat generation (22 percent of primary energy consumption in the country).

The use of wood and agricultural biomass for power generation is not considered to be economically viable even with the guaranteed minimum feed-in tariffs in place. The potential use of forest residues is unexploited due to high cost involved for preparation, transportation and storage. In addition, biomass competes in electricity and heat production with peat, which is considered as renewable energy source in the country.

Approximately 12.5 percent 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. 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.

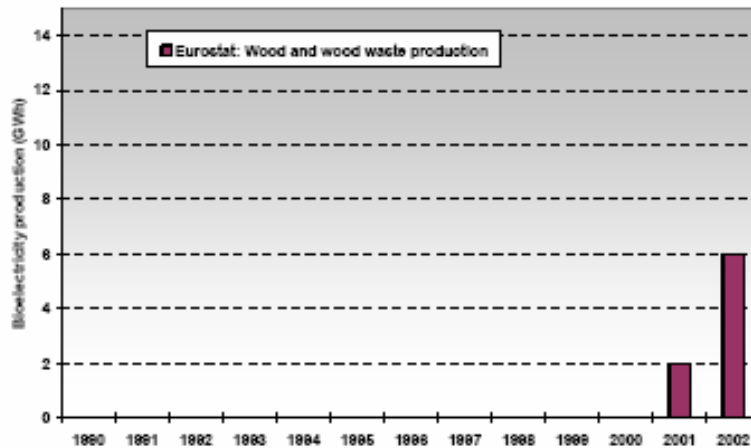
The major threats for the supply of wood-based fuels are related to increasing export of wood products and potential construction of a pulp and paper factory, which would increase the price for this resource. Decentralization of agricultural production has greatly decreased the

potential basis for raw materials for biogas production. The future increase in renewable energy systems is estimated to result mainly from more extensive use of biomass in CHP plants (325 MWe to 2020)220. Mid-term potential for bioelectricity production for Latvia has been determined as follows: biogas 0.5 TWh/year; solid biomass almost 3.5 TWh/y; biowaste less than 0.1 TWh/y (total 4.6 TWh/y).

Latvia Biomass Resource Data

Biomass resource type	Total production	Production density
Percent of total land area covered by		
Forests	24%	
Shrublands, savanna, and grasslands	0%	
Cropland and crop/natural vegetation mosaic	73%	
Urban and built-up areas	0%	
Sparse or barren vegetation; snow and ice	0%	
Wetlands and water bodies	2%	
Primary crop production, tonne	(avg. 1999-2001, tonne)	(tonne /1000 Ha)
Total primary crops (rank among COO)	22,546,497 (10)	3,634 (3)
Top 10 primary crops		
Grasses (misc), Forage & Silage	14,833,333	2,391
Mixed Grasses, Legumes	5,200,000	838
Potatoes	749,433	121
Sugar Beets	435,133	70
Wheat	398,565	64
Barley	249,954	40
Vegetables and Roots, Fodder	226,567	37
Rye	102,539	17
Oats	78,662	13
Cabbages	60,902	10
Animal units, number	(number)	(number / 1000 Ha)
Cattle	406,398	65
Poultry	3,223,000	519
Pigs	413,006	67
Equivalent animal units	603,830	97
Annual roundwood production	(1996-98, 000 m ³)	(m ³ / Ha)
Total	8936	1440.1
Fuel	2746	442.5
Industrial	6189	997.4
Wood-based panels	311	50.1
	(1996-98, 000 metric tons)	(metric tons / Ha)
Paper and paperboard	18	2.9
Recovered paper	32	5.2

Bioelectricity production 1990-2002



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5. Solar

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 while the yearly average is up to 2.6 kWh/m²/day (year average).

There is little use of solar resource in Latvia; however, two 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.

The solar energy resource potential is small due to the climatic conditions and the northern latitudinal location of the country (between 56^o and 58^o north). It is characterized by the data presented in tables below.

Monthly and annual total solar radiation incident on horizontal surface, MJ/m²

Riga	
Jan	43
Feb	98
Mar	254
Apr	376
May	566
Jun	589
Jul	593
Aug	458
Sep	288
Oct	131
Nov	43
Dec	25
Yearly	3464

Monthly and annual direct solar radiation incident on surface normal to sunlight beams, MJ/m²

	Riga	
Jan		53
Feb		112
Mar		312
Apr		374
May		542
Jun		565
Jul		547
Aug		431
Sep		304
Oct		147
Nov		50
Dec		30
Yearly		3467

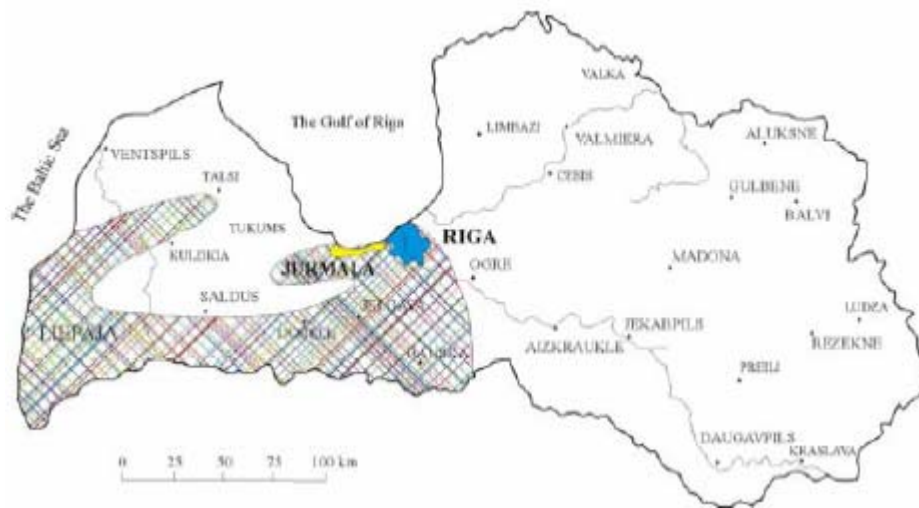
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6. Geothermal

The existing geothermal resources in Latvia are not used, although there may be geothermal brines with temperatures up to 55°C. With rising heat prices, geothermal heat supply systems with heat pumps could become feasible and there could be plants up to 16MWth. 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 sufficient geothermal resources for electricity generation.

The results of geological exploration testify that in the central and southwestern part of Latvia there are geothermal anomalies where the temperature of rock and underground water in the depth of 1300 -1950 m is 30 -65°C.



The geothermal anomaly of Latvia

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7. Hydroelectric

Hydropower contributes to approximately 72% of Latvia's energy supply. Latvia has three major hydropower plants and 150 small-scale local facilities. There is still unused potential for electricity production on the Daugava River. Currently three large-scale hydropower plants on the Daugava River are being discussed as well as two large scale HPPs Jekabpils (30 MW) and Daugavpils (100 MW).

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 equal to about 78 GWh. Currently, 65 percent of the technical potential of the hydro energy has been exploited; 50.84 GWh were generated in SSHPP in 2003.

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

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8. Relevant Links

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10. Country Contacts

Contacts made in the preparation of this assessment are gratefully thanked for their contribution to this report. Contacts include: