Wind Energy Development in Latvia

Vice-director

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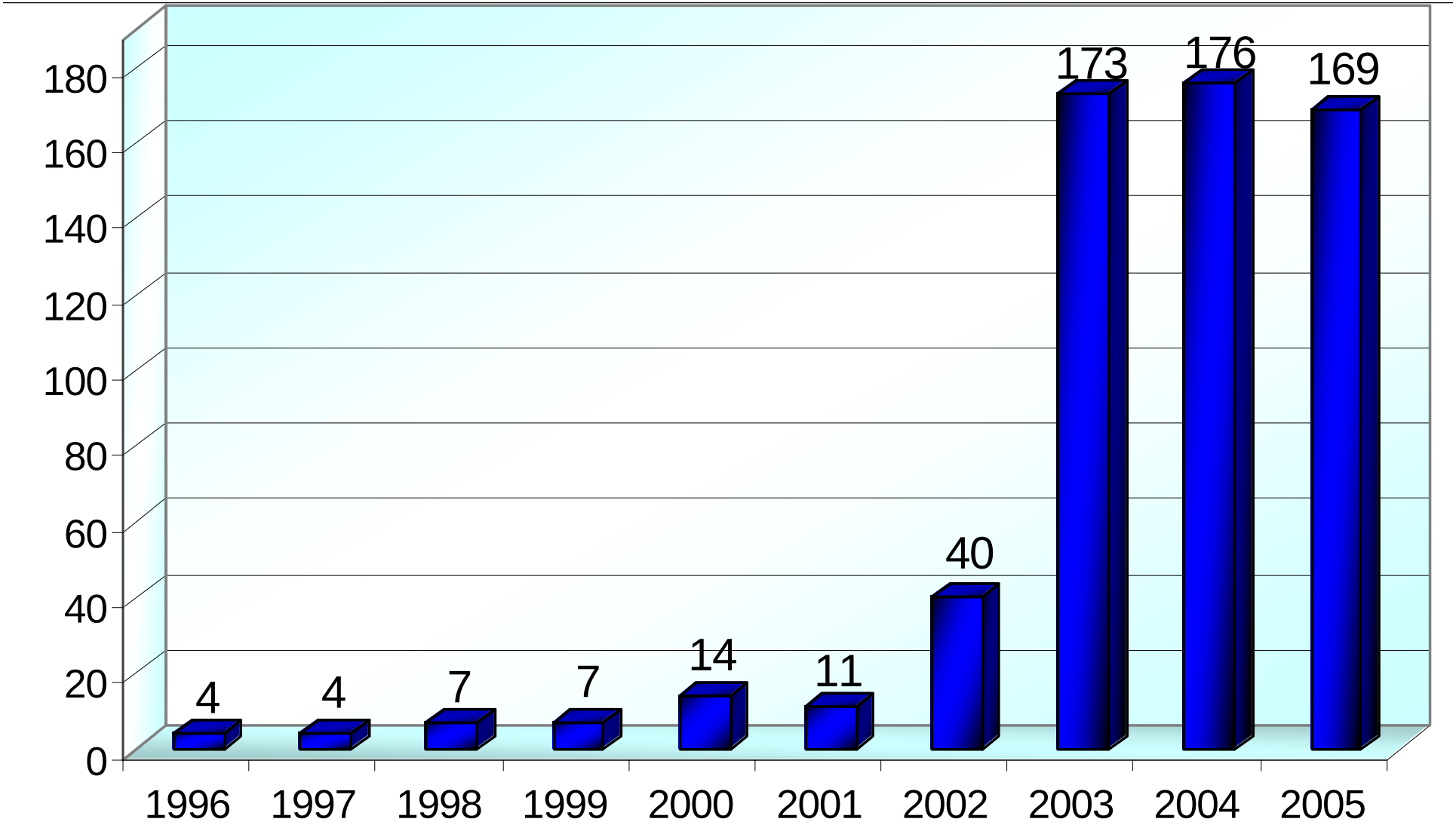
History of wind energy in Latvia

- From 1936 *State electrotechnical factory* produced aerogenerators (0.2–0.5 kW), in 1938 over 450 generators were installed providing low electricity prices compared with steam engines in cities. An average generator annually produced 50 – 70 kWh in central region of Latvia and up to 150 kWh in coastal regions.
- After regaining of the independence several small wind generators were installed in the first half of 1990-ies.
- 1995 in Ainaži first project with 2 wind generators (capacity 600 kW) was carried out, 70% of the costs were covered by the German government.
- Ainaži is located at the coast of Riga Gulf. Large area along the Baltic sea coast of Latvia in the end of 1994 was not available for installation of wind generators because of heavy presence of Russian army troops.

■ Small wind generators (8–60 kW) installed 1989 – 1994

✘ Ainaži wind generator (600 kW) installed in 1995

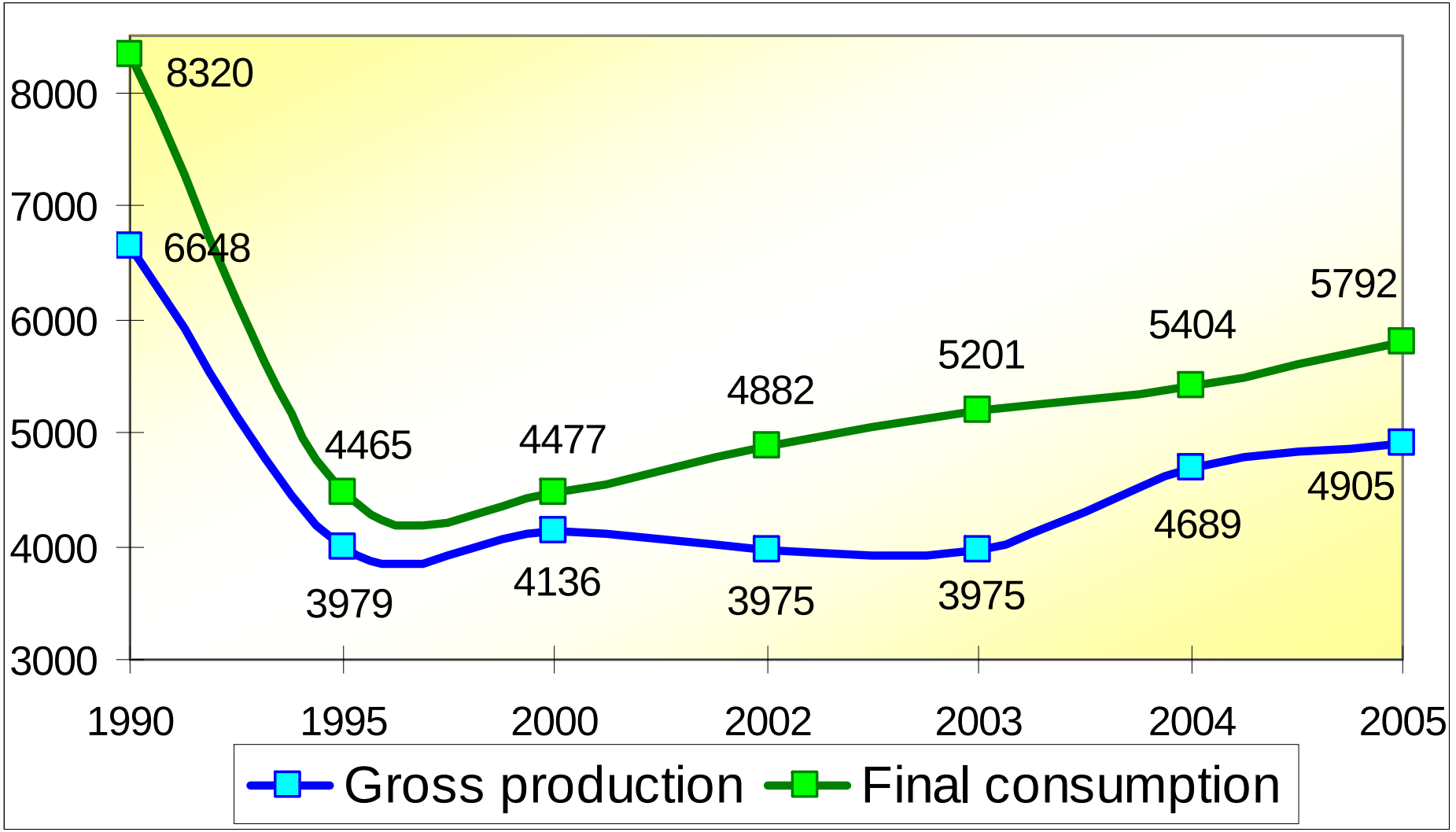
Production of wind generators in Latvia, TJ



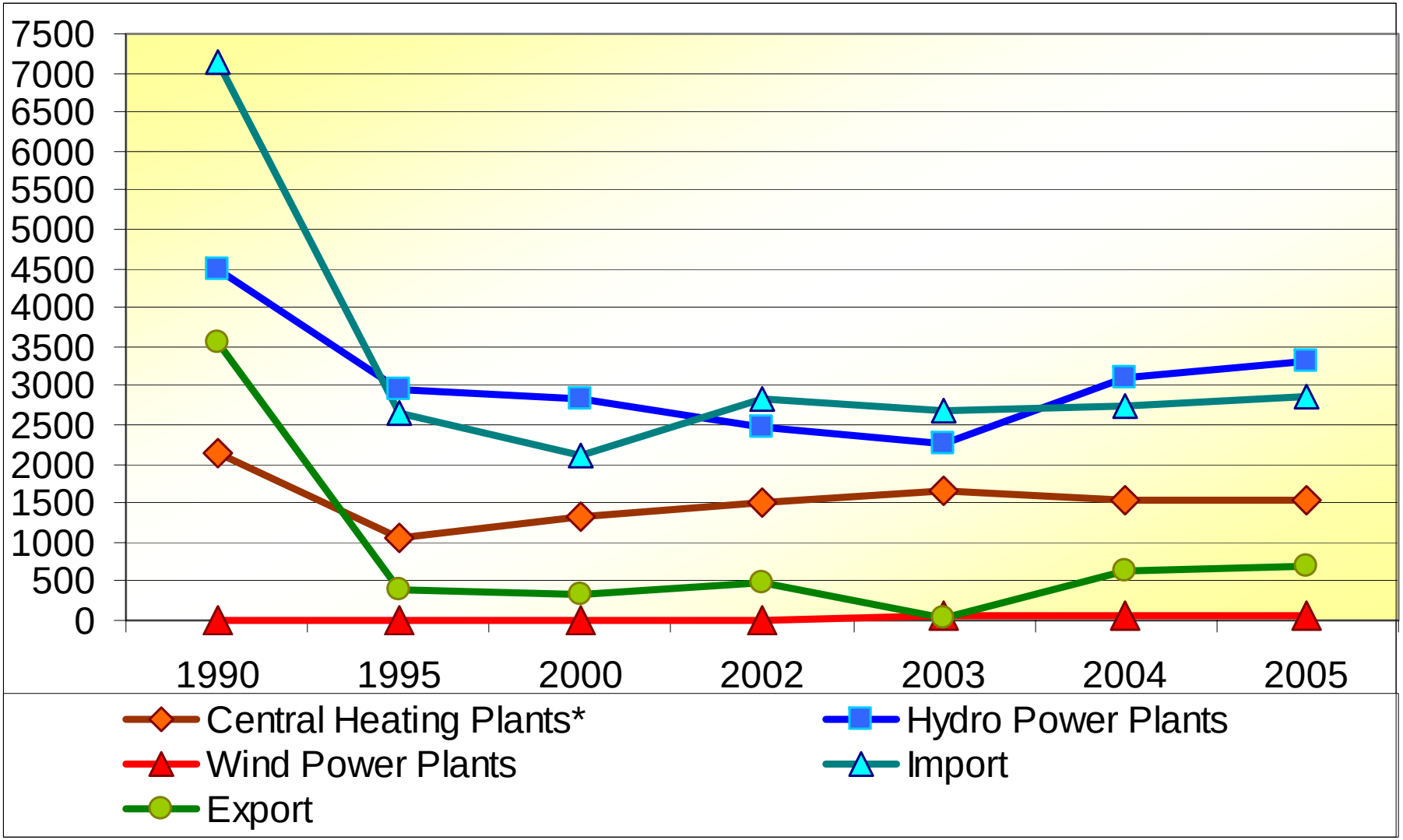
Current situation

- 41 wind turbines with total capacity 27 MW (2005)
- 7 entrepreneurs in the field of wind energy production
- Biggest project in Latvia – *Veja parks*, wind park located near the city Liepaja at the Baltic sea cost with total capacity 19.8 MW installed autumn 2002, 33 wind generators, each 600 kW.
- Ministry of Economics has received application for licence to install wind power plant with capacity of 100 MW.
- Positive trends – 1 licence was given by the Ministry of Economics with total capacity 12 MW 2005, but in the first half of 2006 total capacity of licences to install wind power plants is 160 MW.
- Wind energy potential 0,8 – 4,5 PJ

Gross production and final consumption in Latvia, Million kWh

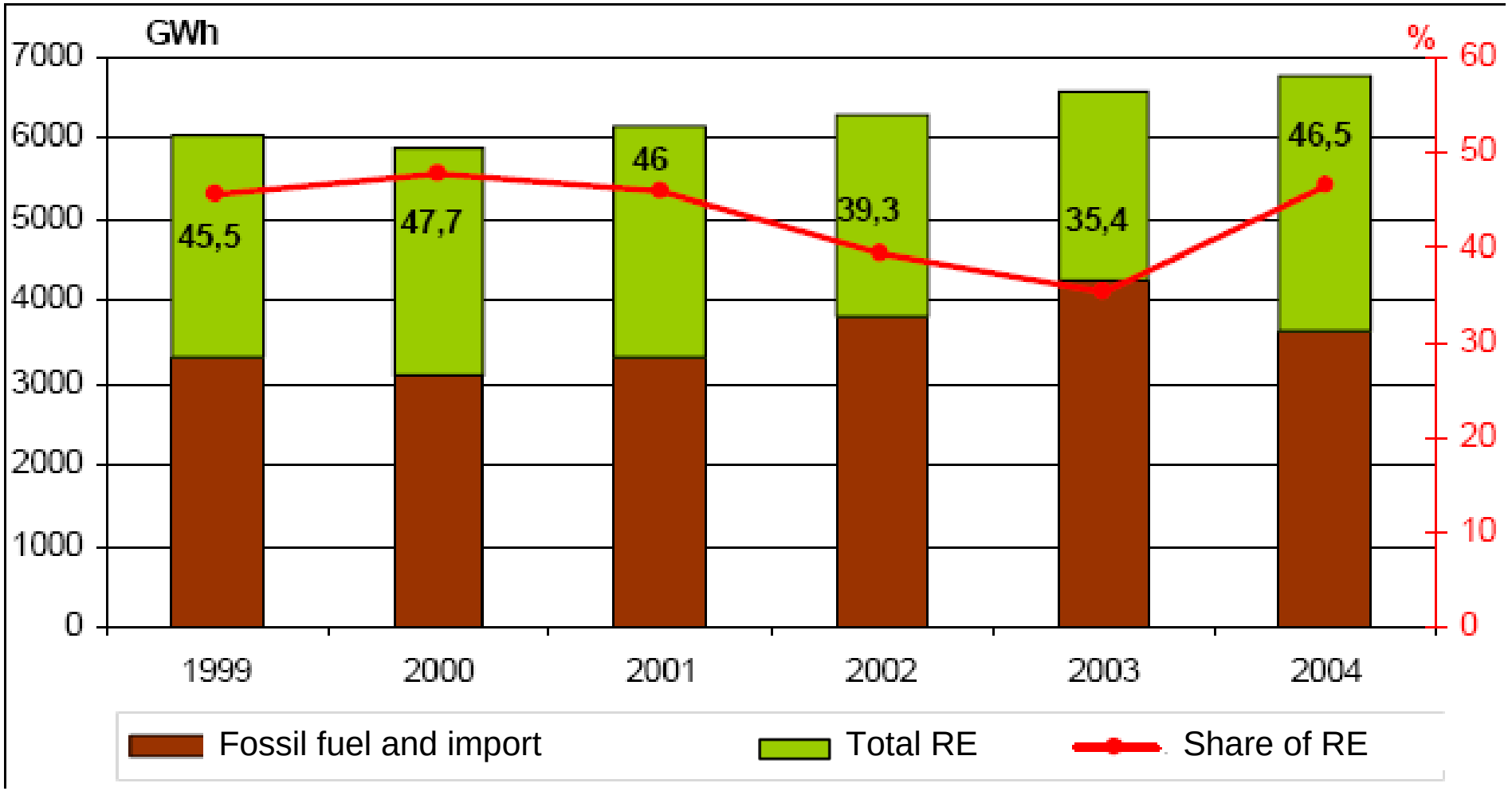


Production, import and export in Latvia, Million kWh



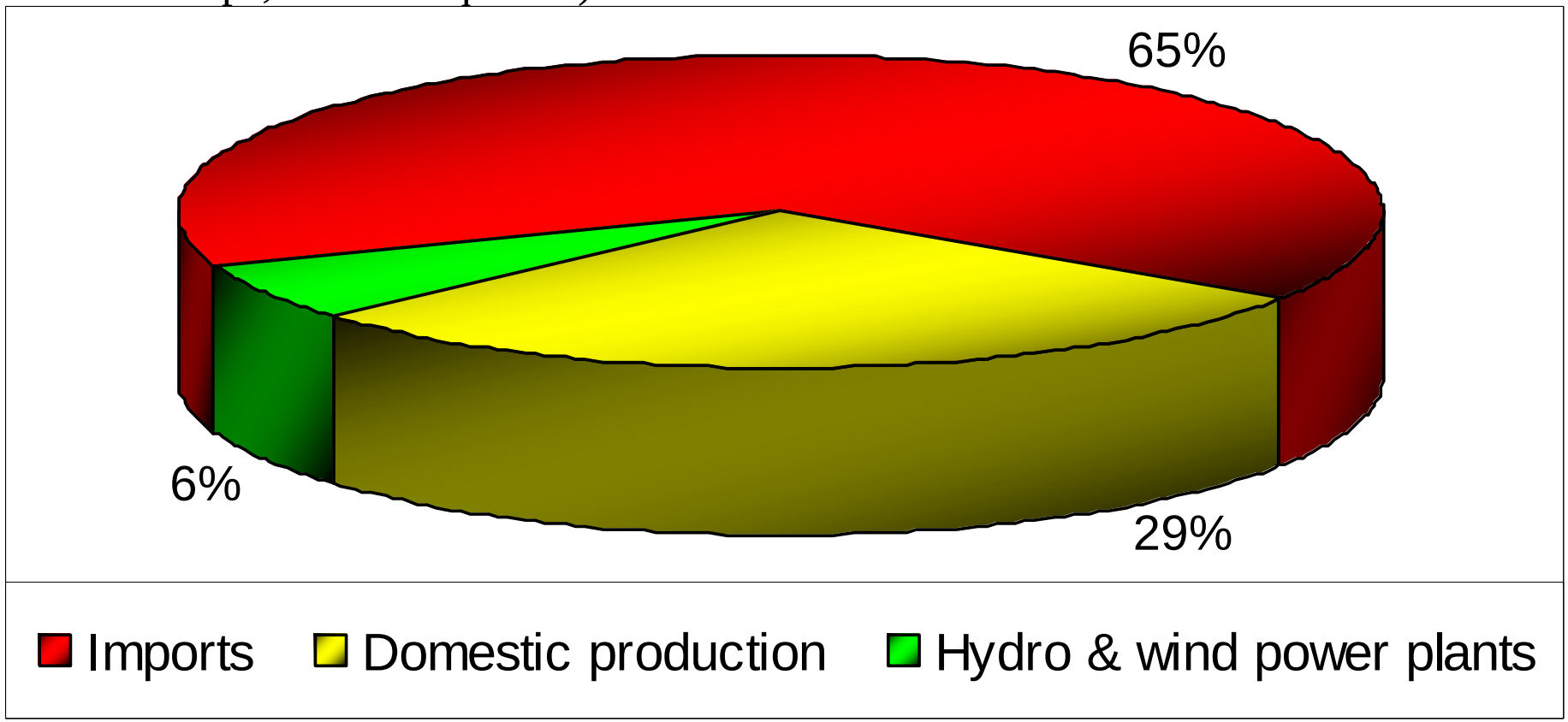
* Including public CHP, autoproducer CHP, autoproducer electricity plants

Structure of energy supply and the share of renewable energy (RE)

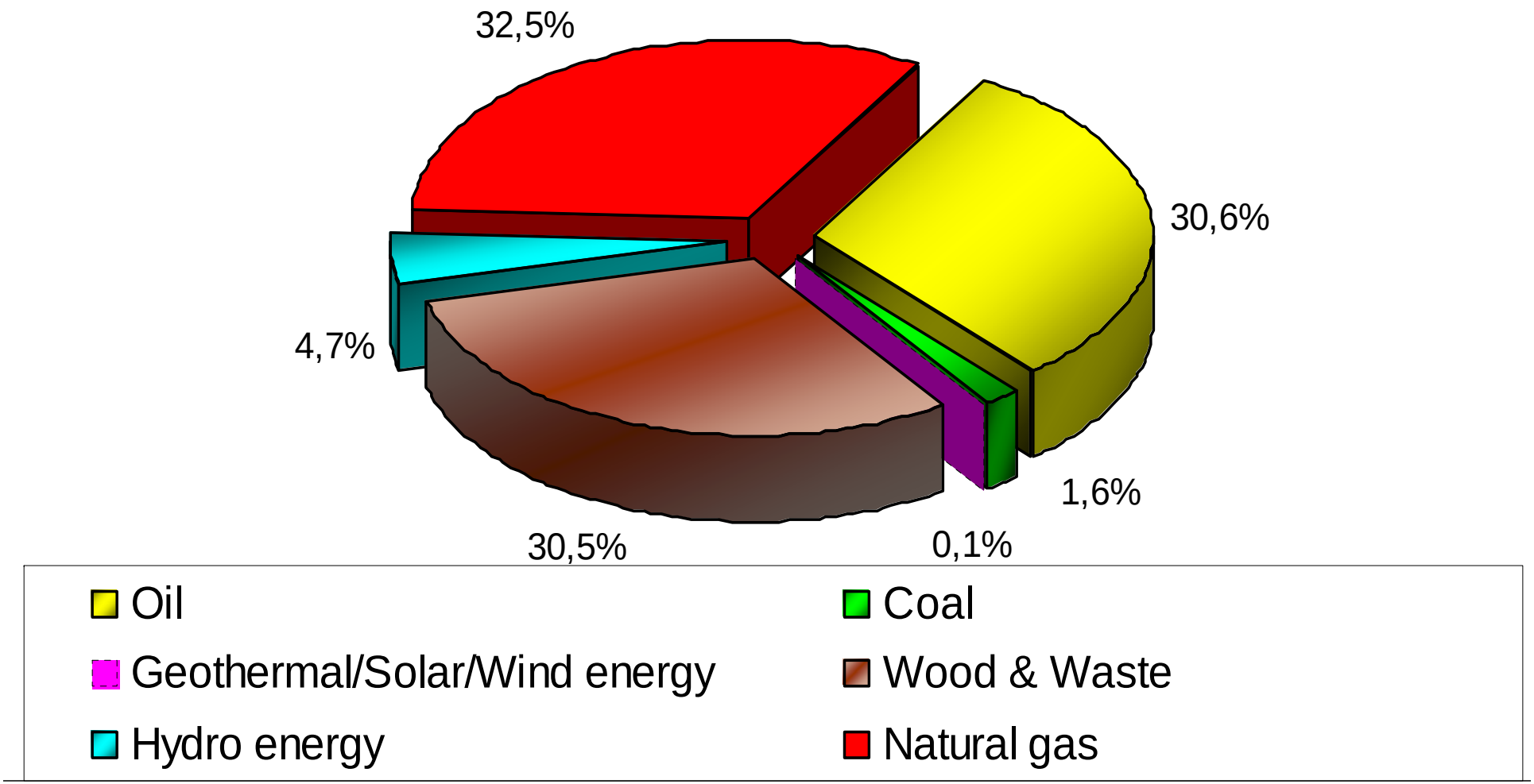


Total energy consumption in Latvia (2005)

- Total energy consumption in Latvia 2005 – 24 PJ
- Most of imported energy resources – from Russia (natural gas – 30.9 %, Fuel oil – 1.6 %, other oil products – 26.6 %, coal – 1.5 %).
- The highest share in domestic production of energy – wood (firewood, wood waste, wood chips, wood briquettes).

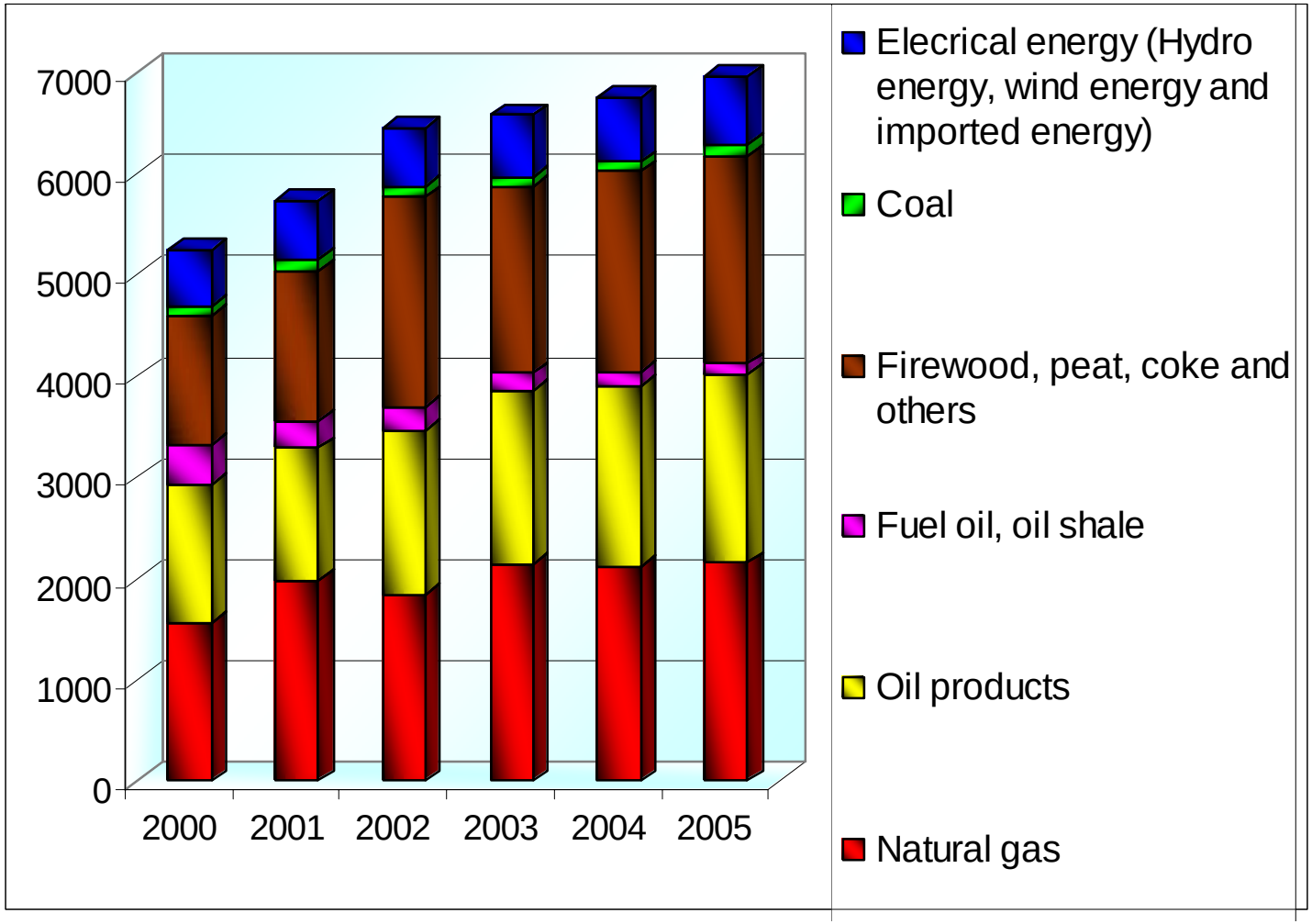


Structure of primary energy sources in Latvia

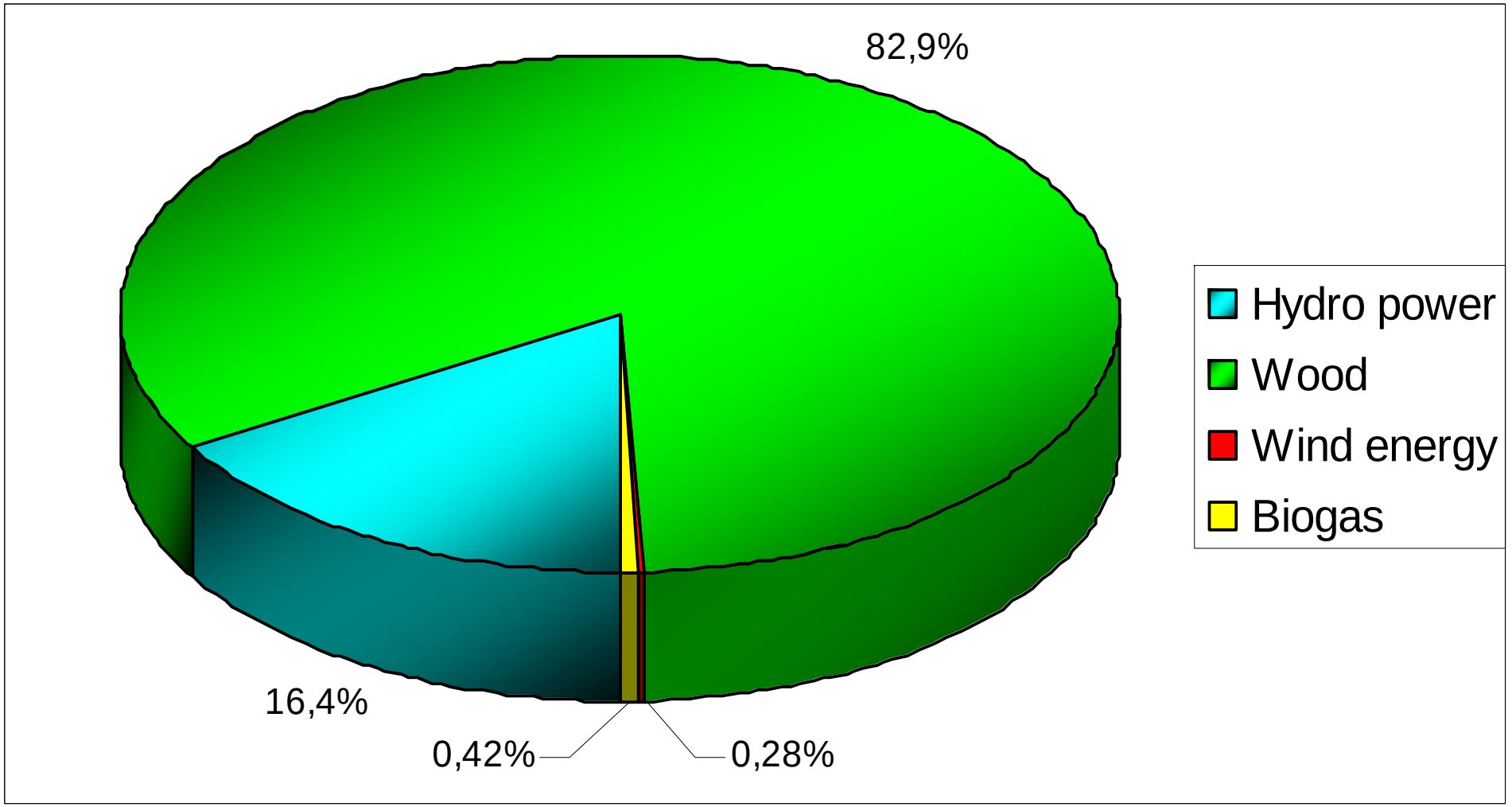


Consumption of energy resources in Latvia

(2000-2005, ktce, 1 ktce = 0.02931 PJ)



Structure of renewable energy sources in Latvia (2005)



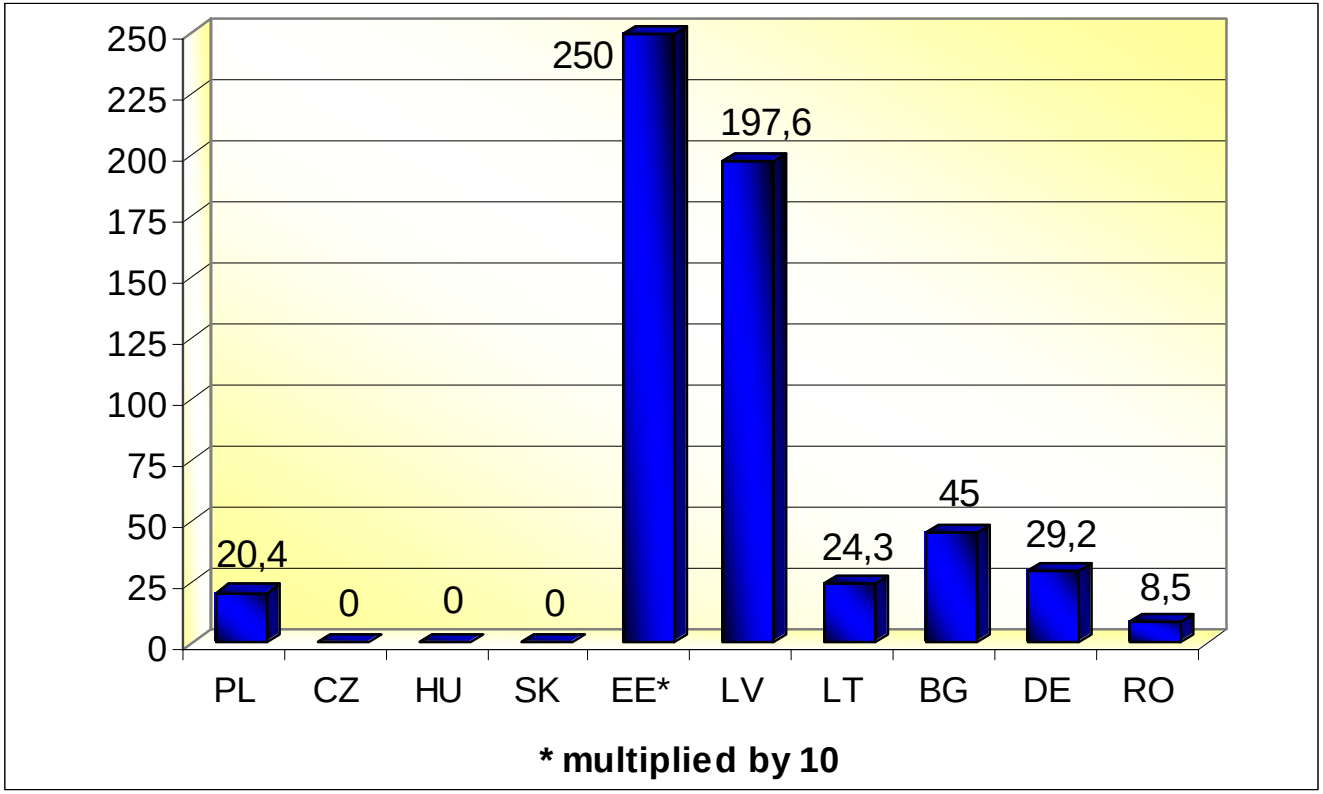
Structure of renewable energy sources in Latvia (2005)

	Big HES	Small HES	Biomas cogeneration plants (wood)	Wind generators	Biogas cogeneration plants
Number	3	149	3	41	3
Installed capacity (MW)	1534	26.2	2.0	26.9	7.8
Total produced energy (GWh)	4544804.7	58249.9	4018.7	45473.7	42544.6

Advantages of Latvia for production of wind energy

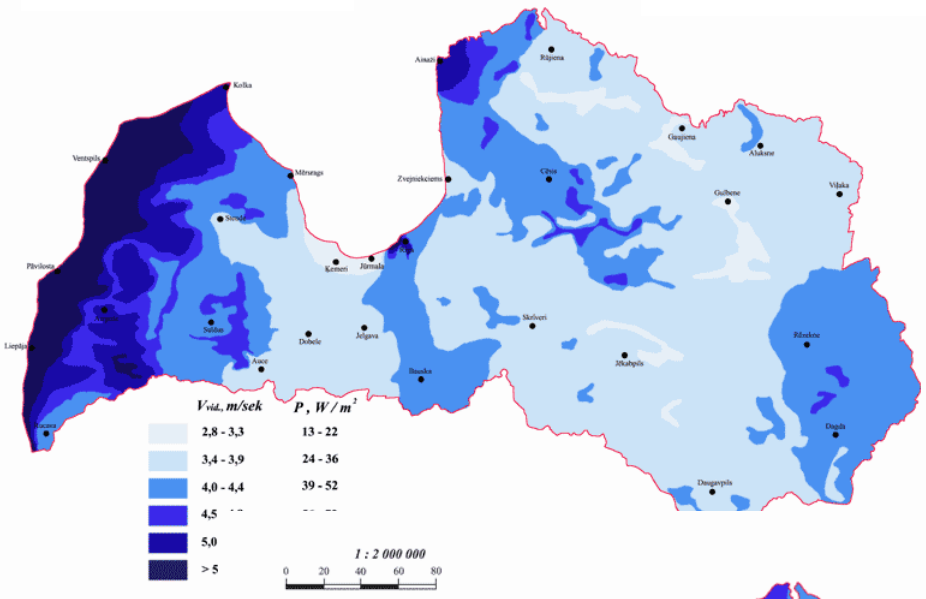
- The vicinity of the sea and therefore the length of coast play an important part especially for the wind power potential due to the wind speed and the number of hours per year in which the wind blows.
- Optimal conditions for wind generators installation is on the Baltic Sea coast. This territory is about 10600 square kilometres large, and all type wind generators could be installed here at the height 30–100m and offshore Baltic sea.

Advantages of Latvia for production of wind energy



Length of coast in km per million inhabitants

- While some countries (the Czech Republic, Hungary, Slovakia) do not have sea coasts, Latvia has the second longest coast with around 200 km per 1million of inhabitants, which is outstanding.
- Latvia and Estonia have very promising conditions for the use of wind power in the vicinity of the sea and at sea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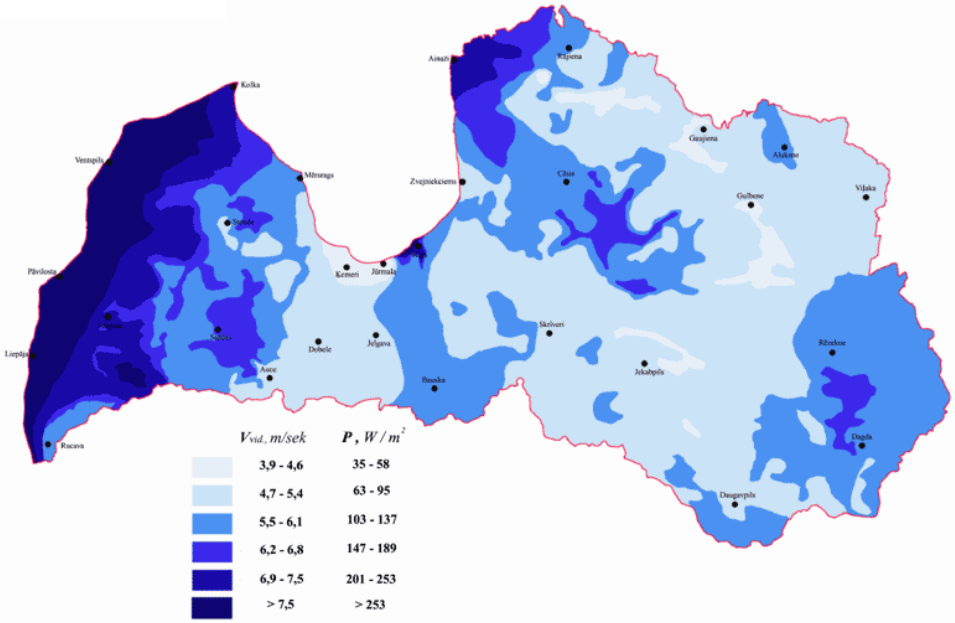
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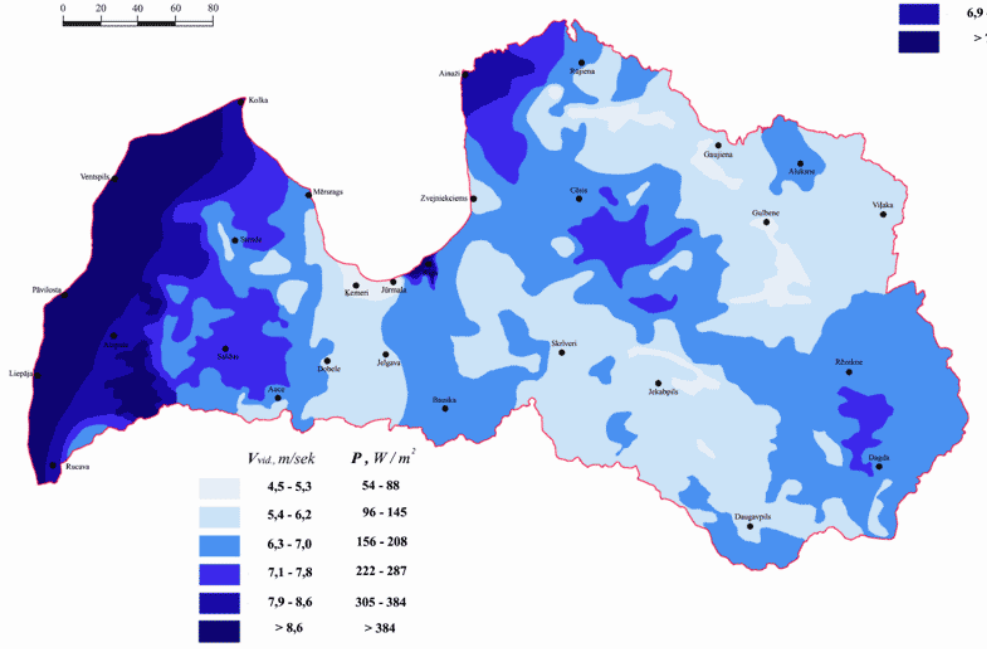
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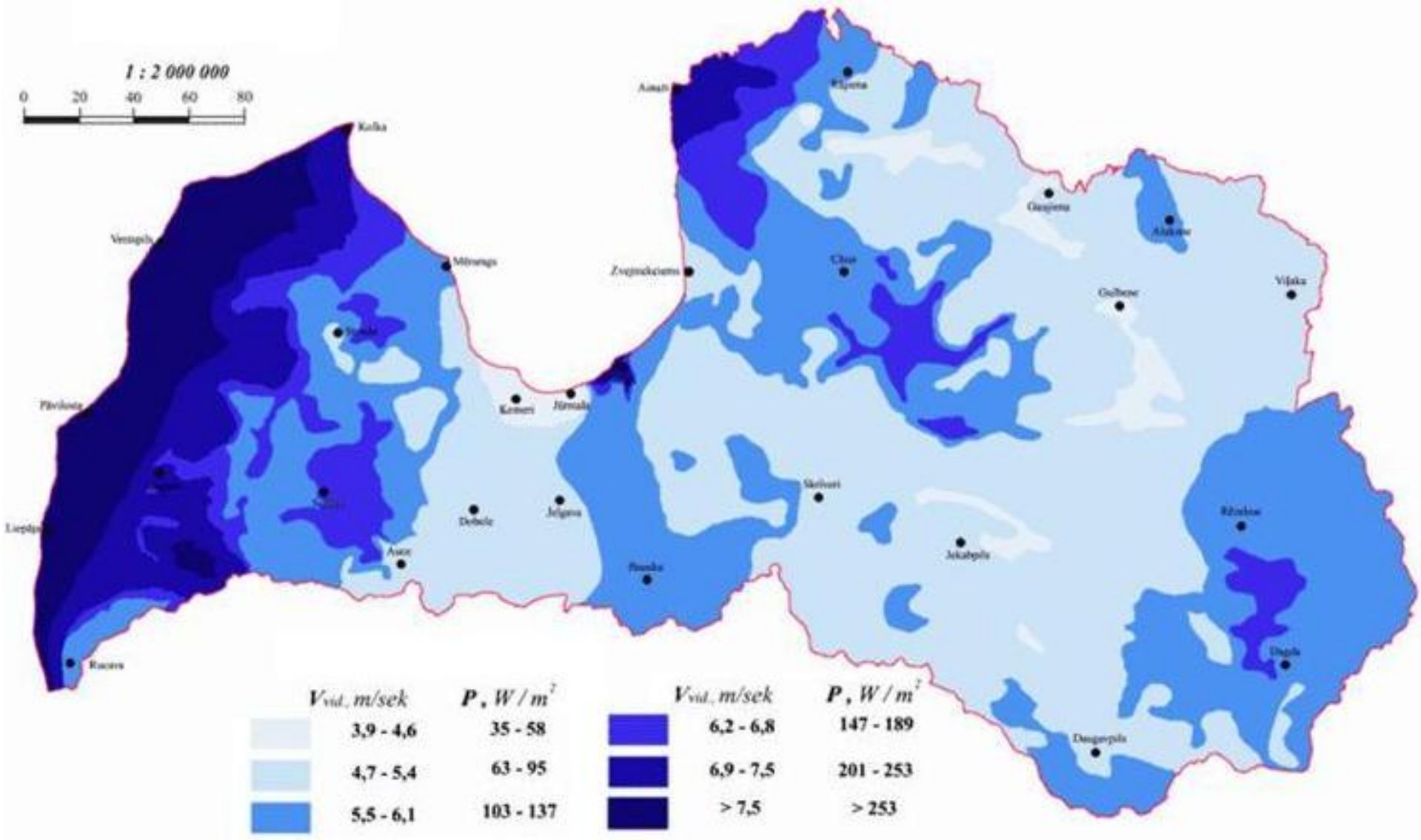
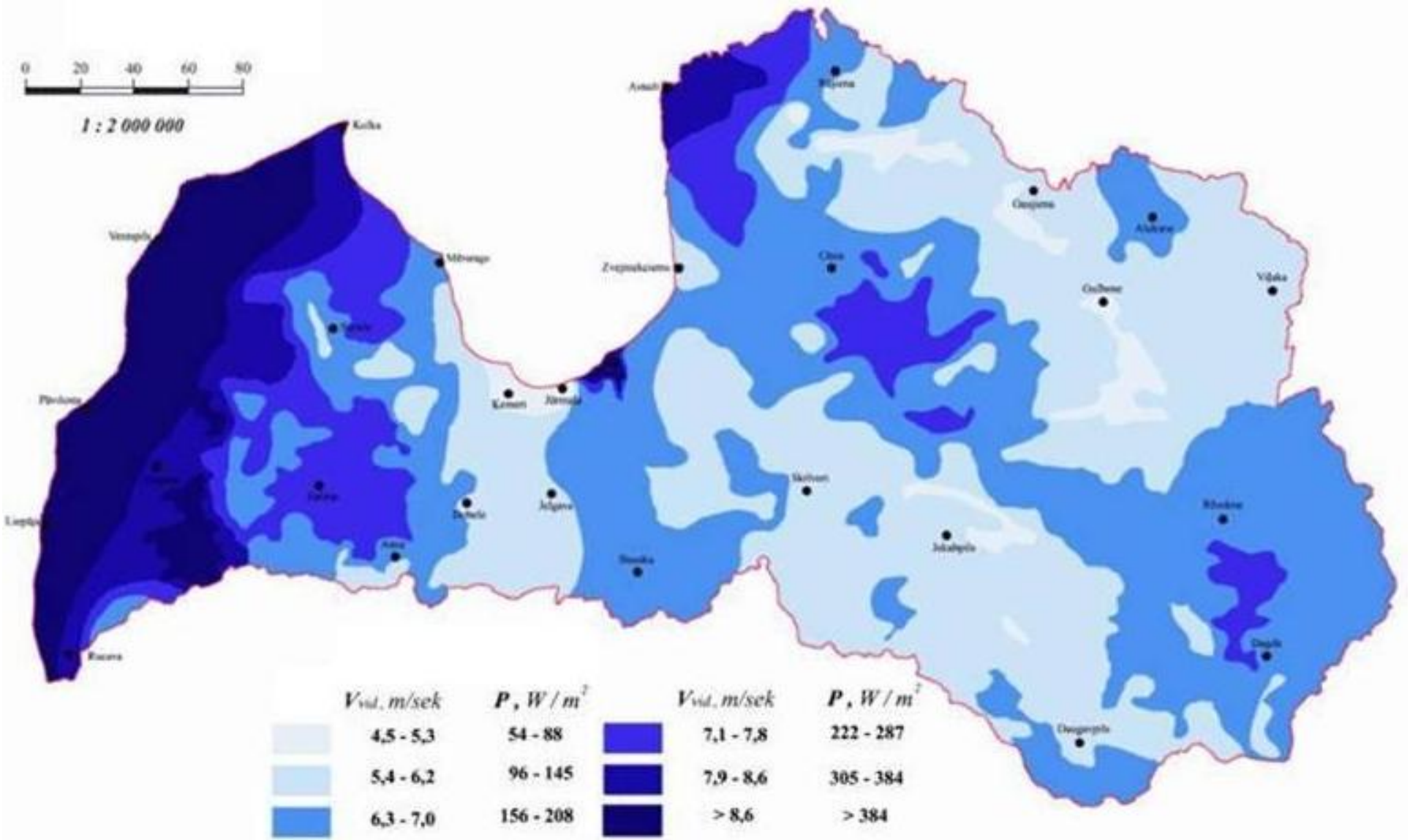
54 - 88
5,4 - 6,2
96 - 145
6,3 - 7,0
156 - 208
7,1 - 7,8
222 - 287
7,9 - 8,6
305 - 384
> 8,6
> 384

Estimated wind speed in Latvia (50 m)



Estimated wind speed in Latvia (100 m)



Documents of Political Planning

Recent political measures for the use of renewable energy resources were analysed in the following documents of the political planning:

- National Development Plan, 2003-2006 (adopted 2001),
- Conception for Sustainable Development of Latvia (2002),
- National Plan for Environmental Policy (2003),
- Program for Reducing of Climate Changes, 2005-2010 (2005),
- Energy Policy in the Field of Electrical Energy (2001),
- Conception for Creations of the Conditions for the Electrical Energy Market of Latvia (2004),
- National Program “Production and Use of Bio-fuel in Latvia (2003-2010)" (2003),
- Action Plan for Implementation of the Program " Production and Use of Bio-fuel in Latvia (2003-2010)" (2004).

Laws

- Law on Electricity Market (2005) – the main law regularizing the activities in the electricity market in Latvia,
- Law on Bio-fuel (2005),
- Law on Control of the Entrepreneurship Promotion (2002),
- Law on Excise Tax (2003),
- Law on Estimation of the Impact on Environment (1998),
- Law on Taxes on Natural Resources (1995),
- Law on Energy (1998).

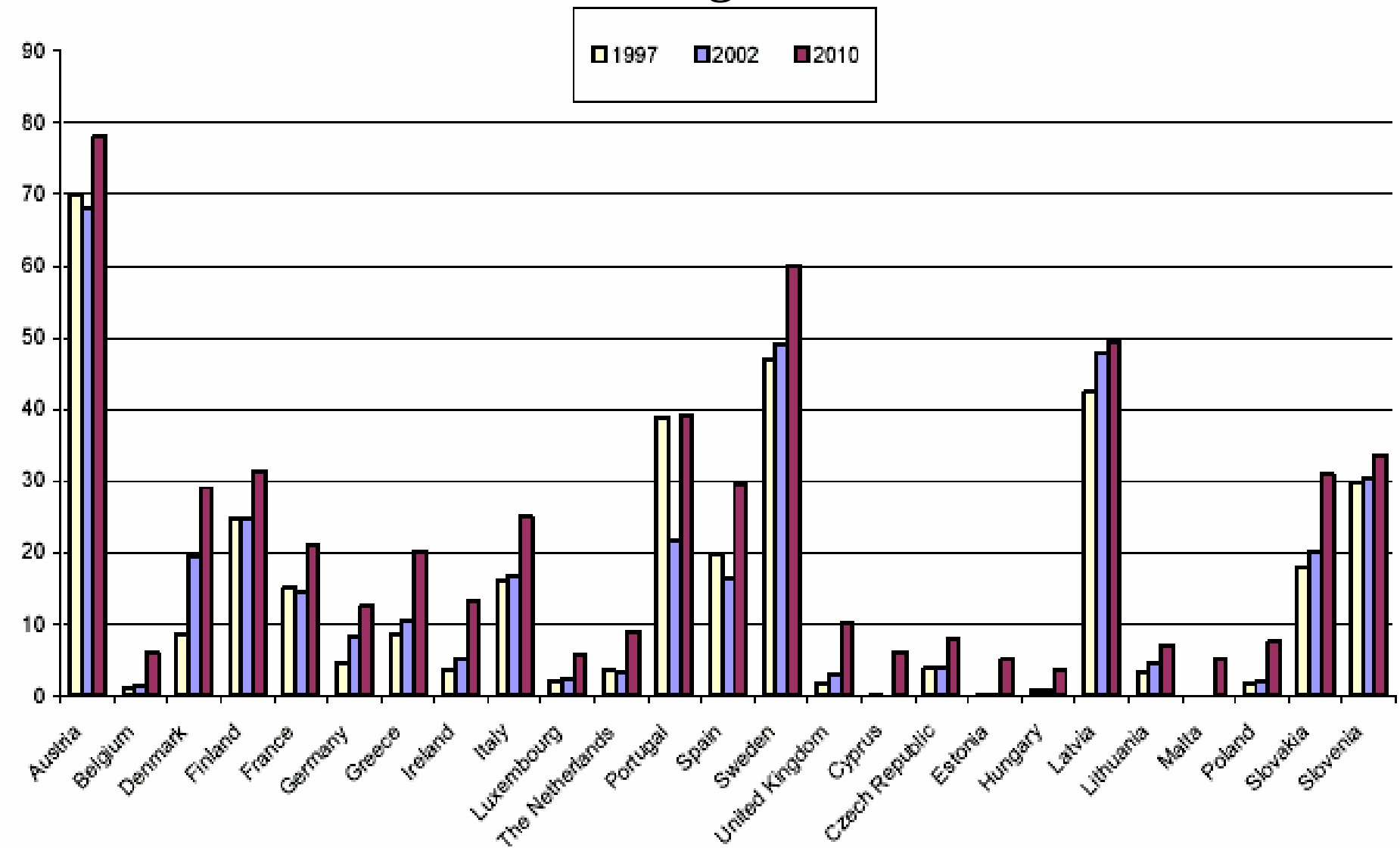
Rules of the Cabinet of Ministers of the Republic of Latvia

- Rules of the Cabinet of Ministers No. 9 “The Requirements of Cogeneration Plants and the Order of Determining of the Purchase Price for the Rest of Produced Electrical Energy” (08.01.2002)
- Rules of the Cabinet of Ministers No. 29 “The Regulation on Installation of Performances for Producing of the Electrical Energy from the Renewable Resources” (15.02.2002)
- Rules of the Cabinet of Ministers No. 250 “The Rules on the Total Amount of the Installed Capacity in 2005 and the Precise Amount of the Production of Electrical Energy, when the Regenerative Energy Resources Are Used for Producing of the Electrical Energy” (12.04.2005)
- Rules of the Cabinet of Ministers No. 712 “The Order on the Given State Support for Production of the Annually Minimal Required Amount of Bio-fuel and Determination of Quotas for Financial Support for Biodiesel and Bioethanol” (13.09.2005)
- Rules of the Cabinet of Ministers No. 712 “The Rules on Requirements of Bio-fuel Quality, Evaluation of the appropriate sorts of Bio-fuel, Control of the Market and the Order of Consumer Informing” (18.10.2005)

Current trends in legislation

- Rules of the Cabinet of Ministers "Conception for Development of the Energetics" (27.06.2006)
  - Conception defines main principles to provide energy independence until 2016,
  - 1236.32 million Lats (1759 million EUR) are provided for this purpose,
  - Energy independence – 80% until 2012 and 100% until 2016,
  - Capacity to be installed – at least 700 MW,
  - Potential capacity to be used – 300 MWth in big cities in Latvia and 100 MWth in small towns in Latvia.
- Conception has following targets:
  - To provide more security of energy supply,
  - To implement measures for increase of energy self-supply,
  - To facilitate the increase of self-supply in primary energy,
  - To diversify primary energy supply,
  - To prevent all hindrances related to successful development of energy market in the Baltic States.

Renewable energy consumption in the EU memberstates and national targets for 2010



- Targets of Latvia until 2010:
  - the share of renewable energy sources in energy production – 49.3 %
  - the share of biofuel – 5.75 % of all fuel
  - the share of renewable energy sources – at least 33 % of all energy sources.
- To achieve the goals it is necessary:
  - to install new wind generators with capacity 135 MW,
  - to install new biomass and biogas plants with capacity 78 MW,
  - to use biomass additionally also for combined heat and power generation.

Legislation on wind energy price

- In 1995 fixed tariffs were created under the Law “On Energy” for electricity from renewable energy sources produced by small hydroelectric power plants and wind plants in order to promote the development of renewable energy sources in Latvia.
- Law “On Regulators of Public Services” defines that electrical energy purchase tariff is set by the governmental Regulator (Public Utilities Commission).
- Amendments of the law “On Energy” in 2001 has defined that the Cabinet of Ministers will determine the Total Amount of Capacity of wind energy each year. Rules of the Cabinet of Ministers were issued from 2002-2005 and following capacity for wind energy was fixed:
  - Zero MW in 2002 – Rules of the Cabinet of Ministers No.28 (15.01.2002)
  - One MW in 2003 – Rules of the Cabinet of Ministers No.545 (30.09.2003)
  - Zero MW in 2004 – Rules of the Cabinet of Ministers No.40 (20.01.2004)
  - Zero MW in 2005 – Rules of the Cabinet of Ministers No.40 (12.04.2005)

Legislation on wind energy price

- In 2005 Law “On Energy” was amended and paragraphs that regulate the support for production from renewable energy sources were excluded. Law “On electricity market” was adopted, but without fixed tariffs. Therefore support in form of fixed tariffs is not applied anymore, but meantime there are producers who continue to receive support according to previously signed agreements. Now regulations issued by the Cabinet of Ministers are under preparation in order to regulate procedure of pricing for electric energy produced by renewable energy sources.
- Strategy of Energy development 2006-2016 and the Latvian Renewable Energy Strategy 2006-2010 was approved recently (June 2006) by the Cabinet of Ministers. The main goals of both strategies are definition of essential principles of policy planning of Latvian government, objectives and course of actions of renewable energy resources usage in Latvia.

Problems

- Bureaucracy and administrative barriers in the field of wind energy stopped many projects:
  - Slow process to get all necessary permissions, often caused by political decisions, for example:

    Baltic Wind Power Corporation project to install wind park with capacity of 100 MW – applications for the project were given July 2000, all necessary governmental permissions were given only 2005, however no installation activities have began yet,
  - Unwillingness from the local community, for example:

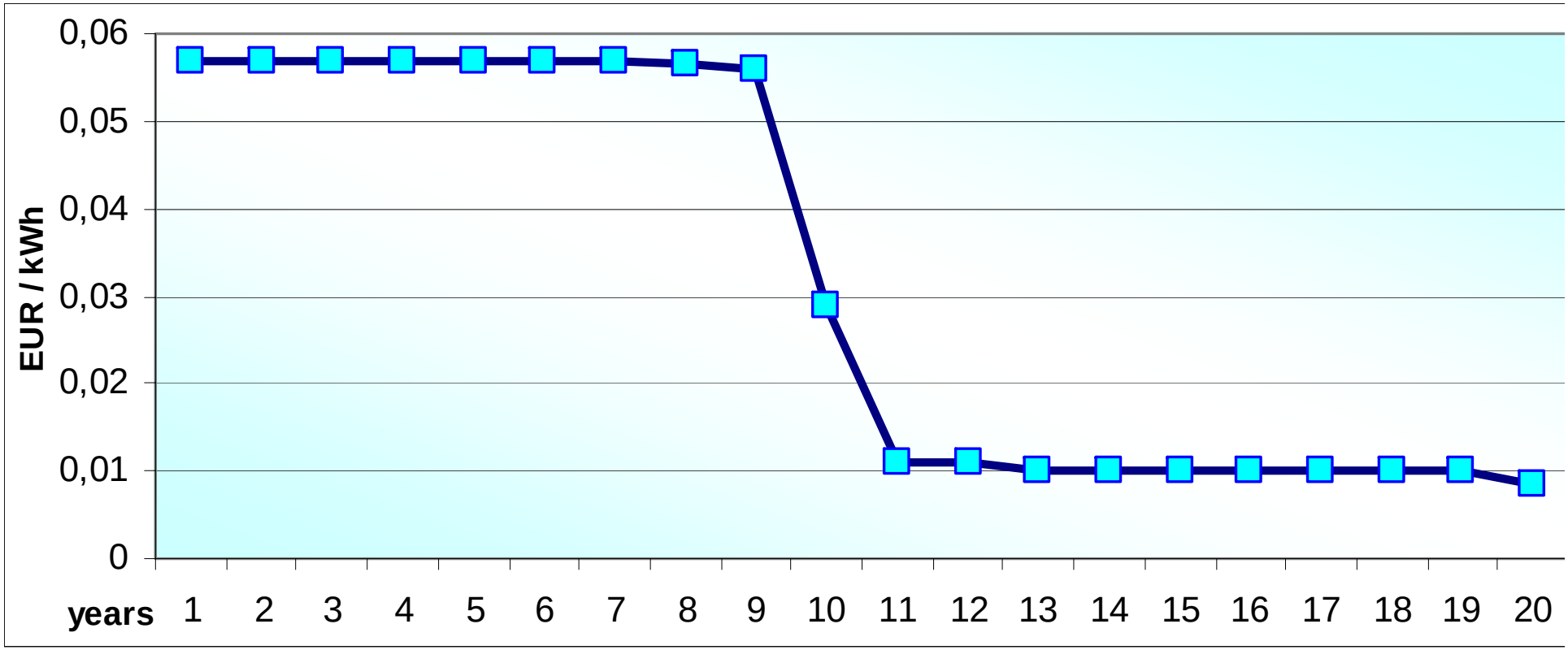
    Western Electrical Systems Ltd. wants to install 6 wind generators 3 km from Ventspils airport and failed to receive permission for installation from local government in Ventspils.
  - Unprofitable wind energy purchase conditions for small wind energy producers that are offered by Latvenergo:

    Eko Energy Standard Ltd. has plans to build 10MW wind park, but they failed to install it because of purchase price that is too low.

Problems

- Development of equipment for wind speed measurement because at present there are no public paid wind measurement (except meteorological stations at 10 m height)
- Composing of wind cadastre in Latvia because there is no cadastre based on real measurements (except some local measurements and measurements made during the Soviet time) and no offshore wind power estimations
- High investment costs and long pay-back period of projects related with implementation of modern technologies in renewable electricity generation:
  - To install 1 MW – 1 Million EUR necessary
  - The investment will pay off in 10-12 years
  - At the current development level wind farms cannot compete with hydro power stations and thermal power stations on the cost criteria.

Cost price of 1 kWh in western coastal region of Latvia (February 2005)



Problems

- Technical and economic justification of installation of wind turbines
- State Joint Stock Corporation LATVENERGO is monopoly company engaged in the production and sale of electricity and heating energy, it also provides transmission and distribution services. Monopoly situation is the barrier for development of small producers of electricity because of difficulties, especially, the need of financial investments to integrate separate wind generators in power grid of Latvia.

Thank you for your attention!

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