



## BIOCLUS - Introduction to the participating regions

### BIOCLUS — Contact us

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This is the second volume of the BIOCLUS e-news bulletins devoted to the BIOCLUS project. The BIOCLUS objective is to boost the regional competitiveness and growth in five European cluster regions:

- Central Finland
- Navarre (Spain)
- Western Macedonia (Greece)
- Slovakia
- Wielkopolska (Poland)

The bulletin includes information about essential results, outcomes and events and is distributed via email as well as posted at the BIOCLUS website.

Below some information about the participating regions is presented.

### Wielkopolska (Poland)

#### Introduction to the region

#### Geographical features

- Total surface of 29 826 km<sup>2</sup>
- Total population of 3.4 mio people of which 1.9 mio lives in urban areas and 1.5 mio in rural areas
- Population per 1 km<sup>2</sup> is 114 (as of December 2009)

- Poznan, the capital city of Wielkopolska, is the biggest city, with Kalisz, Konin, Pila, Ostrow Wielkopolski, Gniezno, Leszno coming next



Map of Wielkopolska, Source: Wikipedia

#### Renewable Energy Sources

According to URE (Energy Regulatory Office; as of September 2010) the number of installations in the Wielkopolska Region:

- producing electricity from bio-gas generated on waste landfills, is 5 with total installed electric power of 3.624 MW
- producing electricity from bio-gas generated on sewage treatment plants, is 3, with total installed electric power of 3.495 MW

## Wielkopolska

### Renewable Energy Sources

- producing electricity from mixed biomass is 1, with total installed electric power of 1.5 MW
- producing electricity from wind power is 48, with total installed electric power of 200.355 MW
- producing electricity from small water power stations (up to 0.3 MW) is 23, with total installed electric power of 1.652 MW



- producing electricity from small water power stations (up to 1 MW) is 1, with total installed electric power of 0.5 MW
- producing electricity from small water power stations (up to 5 MW) is 5, with total installed electric power of 8.690 MW

**Energetic plants in Wielkopolska.** According to the Agricultural Market Agency (22/04/2010) the list of approved entities purchasing energetic plants and the list of the first energetic plants processing entities in the Region, include 58 entities:

Source: Marshall Office

- 36 entities purchase energetic plants,
- 47 entities processing energetic plants for the purpose of alcohol production including bio-ethanol,
- 4 entities deal with oleaginous energetic plants,
- 1 entity produces heating bricks,
- 1 entity produces heat (hot water) from biomass (Dalkia Poznan JSC in Trzcianka),
- 2 entities produce heat from energetic willow (cities: Krzyw Wielkopolski, Ostrow Wielkopolski).

**58 entities in Wielkopolska are processing energetic plants**

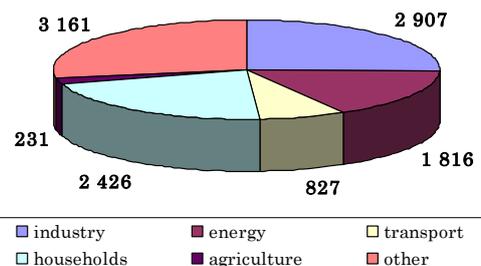
### Energy market

There are two main energy producers in the Region, i.e. ENEA Company and Dalkia. ENEA Company consists of ENEA JSC, ENEA Operator Ltd. and Power Plant "KOZIENICE" JSC. In the Dalkia group among others there are Dalkia Poznan and Dalkia Poznan ZEC S.A. operating in the Wielkopolska region.

**Two companies are producing energy in Wielkopolska, ENEA and Dalkia**

Dalkia Poznan ZEC JSC is the biggest energy producer for the municipality of Poznan. The company produces power and heat in the form of water and steam. The production process, applied by Dalkia Poznan ZEC JSC, is co-generation – joint production of power and heat. The current investment is the construction of biomass boiler for heat production for the municipality of Poznan.

**Electrical energy demand/usage in economy sectors in the Wielkopolska Region (GW.h) as of 2008**



In 2008 the total electrical energy demand in the Wielkopolska Region was 11GW.h:

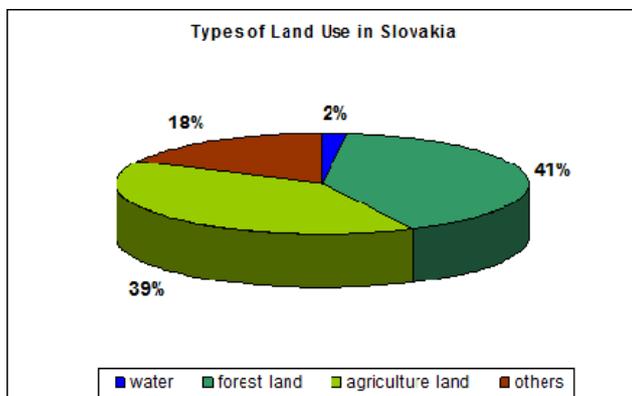
Source: Regional Data Base (BDR) of Central Statistical Office (GUS); 14-12-2009

## Slovak Republic

### Introduction to the region

#### Geographical features

- Total surface 49 033, 97 km<sup>2</sup>
- Total population 5 429 763 inhabitants
- Low-density 110,7 / km<sup>2</sup>
- Almost 50 % of the total surface is mountainous and semi-mountainous
- 43 % of population lives in rural areas



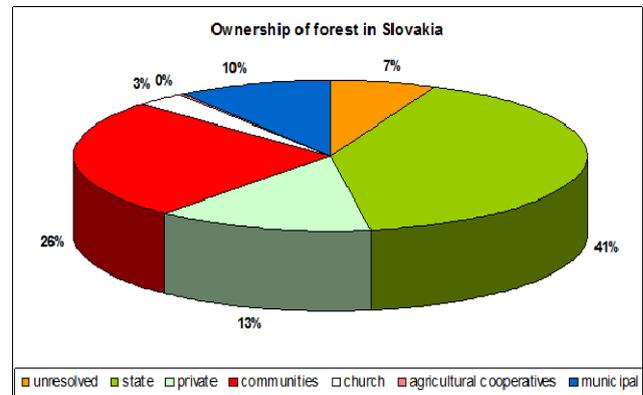
Types of Land use in Slovakia

### Resources and needs balance

**Almost 90% of the region's primary energy comes from non-EU countries**

The Slovak republic gains almost 90 % of primary energy by acquisition from outside the territory of EU internal market. The only rather substantial domestic energy source is lignite (brown coal), as domestic natural gas and oil production is insignificant. It is because of this reason that the meaning of renewable energy sources ever increases (biomass, water, geothermal-, solar- and wind energy).

Based on analyses we can anticipate that in long-term perspective (up to 2030), the key role in saturating consumption needs will be played by higher utilisation of nuclear power, natural gas and renewable energy sources. Such development trend is based on the assumption that as a result of stricter emission limits, coal consumption will be gradually decreasing.



Ownership of forests in Slovakia

**13% of the regional forests are privately owned**

The same scenario we may apply also in case emission limits do not draw back coal utilisation in sufficient volume. Owing to replacement of oil derivatives with bio-fuels, only mild growth of oil consumption is expected, mostly in transportation.

**Beech forests in Slovakia.**  
Source: Juraj Vysoky



#### Renewable resources

Currently, renewable resources are used in relation to production of some 5,2 TWh (including large hydroelectric power plant potential), which stands for some 16 % household electricity consumption. The total available potential of individual types of renewable energy sources enables to increase their share in the overall electricity production to as much as 19 % in 2010, 24 % in 2020 and 27 % in 2030.

The most promising renewable source for heat production is biomass, with total potential p.a. suitable for energy production purposes around 75.6 PJ. Biomass is also a prospective source for electricity production.

Despite the above, hydroelectric potential remains the highest utilisation rate source. As far as other renewable sources are concerned (wind, geothermal and solar energy), their utilisation will be exclusively additional owing of safety and reliability of electricity and heat supplies while question of cost of electricity and heat produced from renewable sources remains an important factor.

## Available potential of renewable resources in Slovakia

Source	Available potential	
	PJ	GWh
<b>Water energy</b>	<b>23,8</b>	<b>6 600</b>
Large hydro-electric power plants	20,2	5 600
Small hydro-electric power plants	3,6	1 000
<b>Biomass</b>	<b>75,6</b>	<b>21 000</b>
Dendromass	47,0	13 055
Agricultural biomass	28,6	7 945
<b>Bio-fuels</b>	<b>5,0</b>	<b>1 389</b>
Biogas	6,9	1 917
<b>Wind energy</b>	<b>2,2</b>	<b>600</b>
<b>Geothermal energy</b>	<b>22,7</b>	<b>6 300</b>
<b>Solar energy</b>	<b>18,7</b>	<b>5 200</b>
<b>TOTAL</b>	<b>154,9</b>	<b>43 006</b>

PJ = Peta Joule

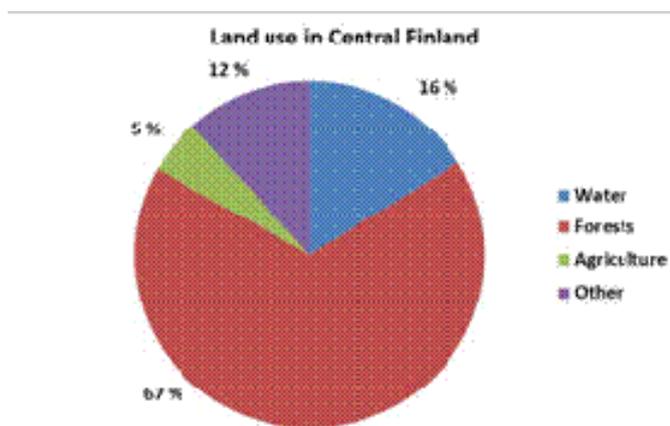
Source: MINISTRY OF ECONOMY OF THE SLOVAK REPUBLIC

## Central Finland

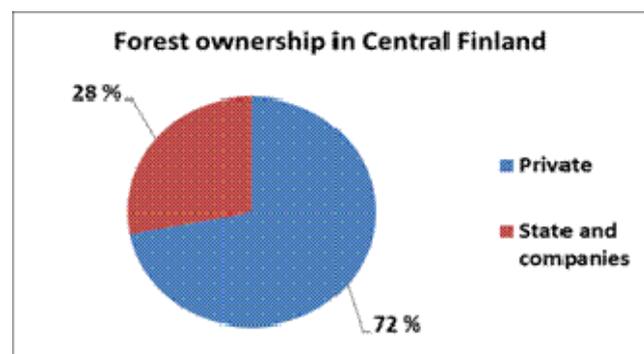
### Introduction to the region

#### Geographical features

- Total surface area about 20 000 km<sup>2</sup>, 16 % of surface is water and 67 % forests.
- Total population 274 000 inhabitants
- Population density is 16 per km<sup>2</sup>
- 77 % of population lives in urban areas



Types of Land use in Central Finland.



Ownership of forests in Central Finland

Central Finland has a long history in the development and utilisation of bioenergy. As a leading bioenergy area in Finland, Central Finland has expertise throughout the entire value chain. The key strengths of the companies and research centres in the area cover e.g. efficient bioenergy fuel chains, biomass combustion technologies and heating systems, biogas technologies, as well as energy solutions for the industry. (Source: Business from bioenergy: R&D Services in Central Finland).

The most remarkable biomass resources are forests, which cover almost 70% of the land area of Central Finland. The wood is typically processed into pulp, paper & timber products, converted into chemical products or used as bioenergy. Wood based industries also produce a lot of side products that are considered as valuable biomass based material. Other major bioenergy related industries in the area are machine industry as well as equipment and systems production industries. The region has also an important concentration of bioenergy and forest industry related research and education.

**Half of the regions primary energy demand is met by local biomass sources**

The forests and forest related businesses are remarkable driver in the regional economy. The pulp and paper industries supply annually more than 2 700 M€ in the regional economy, while paper machinery production provides 2 000 M€. The markets of pulp and paper have been in recession for some time now and there is a need to find new competitive products to replace that capacity. Therefore there is a strong drive of regional companies as well as the authorities to overcome these challenges.

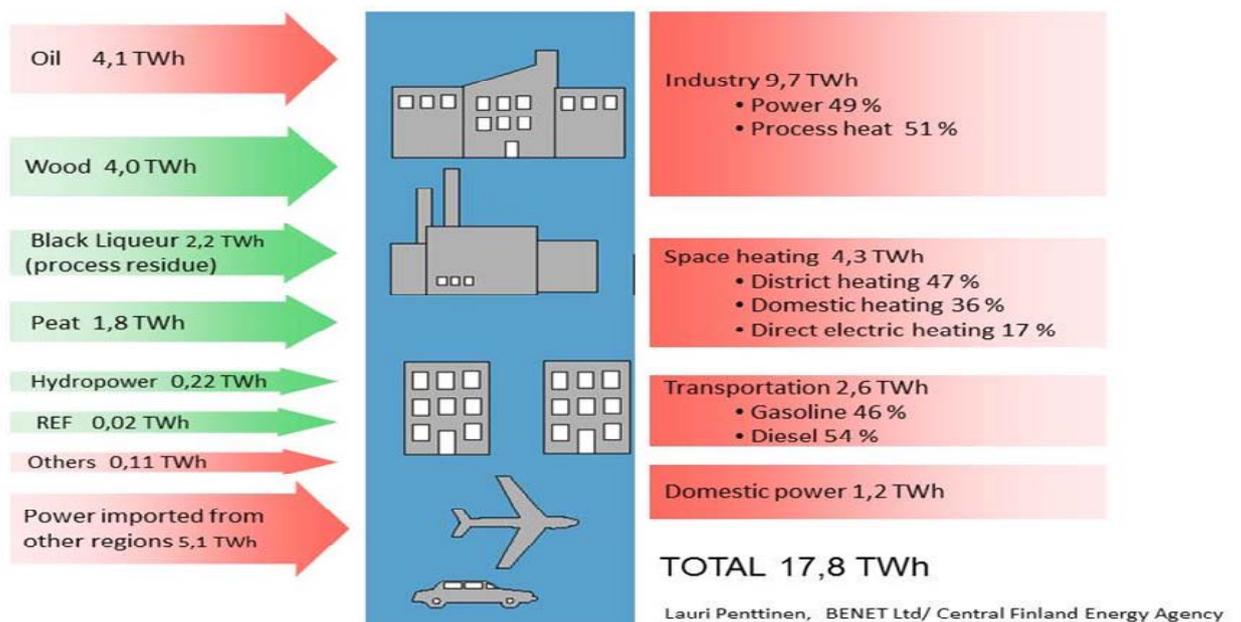
**67% of the region's total surface is covered by forests**  
**72% of the regional forests are privately owned**

Central Finland has also proper climate conditions for grass and crops production, however, the land area of fields is small. There are about 1000 km<sup>2</sup> of fields and 3400 km<sup>2</sup> of peatlands. The field origin biomass are mostly used for food and deed production, but also in energy production.

Central Finland is a region that is very depended on biomass. It has been really active on national, European and international level in bioenergy production and use technology and business model development, promotion and use.

Already half (almost 9 TWh/a) of Central Finland's primary energy demand is met by local biomass sources. Biomass based Combined Heat and Power (CHP) is produced in several plants from farm-scale applications to municipal and industrial boilers up to 500 MWth. District heating is in use in every town centre and wood chips, agrobiomass and pellets are used in thousands of heating units. In addition, Bio-gas is produced and used as a traffic fuel and heat. (Source: Business from bioenergy: R&D Services in Central Finland).

## Energy balance of Central Finland 2008



## The BIOCLUS team wishes you a **Marry Christmas** and a **Happy New Year!**

Below some Christmas stamps from the participating countries are depicted...



Christmas stamp from Poland.  
Source: [www.poczta-polska.pl](http://www.poczta-polska.pl)



Christmas stamp from Slovakia.  
Source: [www.pofis.sk](http://www.pofis.sk)



Christmas stamp from Finland. Source: [www.posti.fi](http://www.posti.fi)



Christmas stamp from Greece.  
Source: [www.elta.gr](http://www.elta.gr)



Christmas stamp from Spain.  
Source: [www.correos.es](http://www.correos.es)



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