

Chapter

**Short Description of Situation in
Wood Fuel and Biomass Heating
Business in Each Pilot Region**

6

6.1. Poland

General situation in Polish bioenergy sector for 2012:

- Produced biomass is 7 million tonnes per year.
- Outcome is guaranteed due to average, small and micro enterprises.
- Investments in the Polish market consumed 3 billion zł. 1.4 billion was a loan and 1.3 billion was donated from EU funds.
- Approximately 20,000 people are hired in companies related to supplying biomass for the energy market plus approximately 1,000 in cooperating companies.
- Polish agriculture from selling materials for biomass production logs creates additional revenues of 400 million zł/year (95.3 million €).
- Polish biomass production for energy each year recovers more than 1.8 million tons of waste from: wood processing, food industry, forestry, management of green areas.
- Majority of operating plants are located in areas with above-average unemployment and which are less industrialised, where there are no alternative employment possibilities.

6.1.1. Description and Situation of the Region

The county covers an area of 283,700 hectares and its total population is 120,850 inhabitants. It is located in north-east Poland, situated in central Warmia-Masuria County, 100 km from the Russian border. The county contains 12 municipalities. Barczewo, Biskupiec, Dobre Miasto, Jeziorany, Olsztynek are the biggest cities in Olsztyn County. The region has very varied fauna and flora. Warmian forests and lakes mean that Olsztyn County is called the “Green lungs of Poland”. Though the county is mostly rural: 48.5% only about 6.2% of the people work in agriculture. Forest land covers 38.8% and surface water 4.1%.

Waste and wood biomass

In Olsztyn County wood resources can be broken down into two categories: forest biomass resources and biomass waste from cleaning roadsides. Forests

and wooded areas covers 110,075.6 ha, which is 38.8% of the entire surface area. Based on statistics from 2009, the acquisition of wood intended for energy purposes from the county forests was 47,737.14 m³ which is 207.15 TJ of energy potential. The second category is wood residue from clean-up work at Olsztyn County parks and greenery maintenance. This annual clean-up yields 5,816 m³ of wood biomass with an energy potential of 28.74 TJ. All of this contributes to the 53,553.14 m³ of wood biomass produced annually in Olsztyn County. The total energy potential is 177 TJ.

Description and situation in the Ostróda region.

The county covers an area of 176,706 ha and its total population is 104,900 inhabitants. It is located in north-east Poland, situated in central Warmia-Masuria County, 130km from the Russian border. The county contains 6 rural municipalities and 3 urban-rural municipalities. The region has very varied fauna and flora. It has also many glacial lakes and wild areas of an uncontaminated nature. Though the county is mostly rural (54.4%) only about 19.5% of the people work in agriculture.

Waste and wood biomass

In Ostróda County wood resources can be broken down into two categories: forest biomass resources and biomass waste from cleaning roadsides. Forests and wooded areas covers 55,303 ha, which is 31.1% of the entire surface area. Based on statistics from 2012, the acquisition of wood intended for energy purposes in the county forests was 116,372 m³, which is 587 TJ of energy potential.

The second category is wood residue from clean-up work at Olsztyn County parks and greenery maintenance. This annual clean-up yields 5,438 m³ of wood biomass with an energy potential of 27 TJ. The total wood resources in the county amount to approximately 121,810 m³, which represents approximately 516 TJ of energy potential.

Bio energy situation in the pilot districts of Warmia and Masuria mainly focuses on solid biomass generated from state forest districts and crops grown for energy purposes. There are also other ways of obtaining biomass, such as wood from private forests, roadsides, processing residues from magazines and

fields of straw. In the pilot regions the following mechanism of promotion of bioenergy initiatives PromoBio will be used to improve efficiency in the use of biomass in the future.

The most popular business model in Poland consists of:

- power plants announcing an open tender for the delivery of a certain amount of biomass, for a defined period of time,
- contractor producing and supplying biomass.

The most common forms of biomass in heating plants are chips, because the lowest price of fuel can be obtained from the wood.

The biomass value chain in Poland

The forest district or private forest owner sells wood to companies which use it in their production processes. Wood or residue from this production are sold to companies that use them for heating purposes or resell them. Most often the value chain consists of the forest owner, state or private, a company using wood and the end user, as intermediate transport or harvesting companies rarely appear. The problem is the fact that the tenders announced by end users, are mostly won due to the lowest asking price and the quality of the delivered biomass is seldom considered. This also means that there is limited competition when it comes to the tenders. This can be shown in the Table 16 through the different colours. The same colour means the same entity.

Table 16. Model of Supplying biomass for heating plants in Poland

Biomass owner	Biomass harvesting	2008 Chip producer	Chip transport	Chip seller	Chip consumer
State forest enterprise	Contractor	Contractor	Contractor	Contractor	Power plant
Forest owner	Forest				
Farmer	owner				

6.1.2. Costs, Operation and Applicability

In Poland, there are close to 90,000 operating boilers for solid biofuels (firewood or pellets). Annual sales exceed 15,000 units, which means an

increase of 300 MW annually. Only in 2010, sales value reached more than 150 million zł (35.2 million €). Basic sales are in the segment of boilers up to 70kW. In the case of dedicated biomass boilers it is the segment with power less than 40 kW and 40-70kW that is dominant, while among the multi-fuel boiler segment below, 40kW is dominant. The unit costs of boilers in the most popular segment, which is up to 40kW, is at the level of 200 zł / kW (47 €/kW). The unit price per kW decreases with the increase of installed power. Currently available devices for biomass are becoming more efficient – even up to 94% in the automatic pellet boilers. The results of research and development are leading to greater automation of boiler operation and increasing the flexibility of their work with other sources while maintaining the ecological effect.

6.2. Romania

6.2.1. Description and Situation of the Region



Figure 74. The 8 development regions of Romania. Centru Region's territory is coloured in light orange



Figure 75. “Oasa” Dam Lake in the Carpathian Mountains (Madalina Anastasiu)



Figure 76. Forests – the green gold of Centru Region (Madalina Anastasiu)

Centru Region is located in the middle of Romania, on the riversides of Mures and Olt. The region is crossed by the 46°N parallel and the 25°E meridian. Due to its position, Centru Region borders six of the other seven regions. Centru Region has an area of 34,100 km², representing 14.3% of Romania’s territory and comprises 6 counties: Alba, Brasov, Covasna, Harghita, Mures, Sibiu.

The natural resources are various and include important deposits of methane gas, salt, nonferrous ores, construction materials, small deposits of inferior coal and numerous mineral water springs. As well as the resources of its subsoil, Centru Region has remarkable hydro-energetic potential and an extensive forest fund (the forests cover more than 1/3 of the region’s total area).

As of 2012, the population of Centru Region was estimated at 2.5 million inhabitants, with an average density of 74 inhabitant/km². The urban population represents 60% of the region’s population, Centru Region ranking the 3rd among the eight Romanian regions. The Centru Region’s biggest cities are Brasov, Sibiu and Targu Mures.

Bioenergy in Romania

Romania has a wide range of primary energy resources, but in small amounts. The Romanian Energy Strategy for the period 2007–2020 shows that the non-renewable resource potential, excluding uranium, is estimated at 929 million toe. The most important resources are represented by coal deposits,

ensuring energetic stability for the long term. It is estimated that the hydrocarbon reserves (gas and oil) will be exhausted by the end of 2020. The share of renewable energy in gross final energy consumption increased from 17.2% in 2006 to 21.4% in 2011 (electricity+heating) ([http://epp.eurostat.ec.europa.eu/tgm/table. able&init=1&language=en&pcode=tsdcc110&plugin=1](http://epp.eurostat.ec.europa.eu/tgm/table?table=tsdcc110&plugin=1)). According to the Eurostat data only about 3,618 ktoe of bioenergy sources produced in 2011 (out of a total of 27,783 ktoe representing primary energy production):

<http://appsso.eurostat.ec.europa.eu/nui/submitViewTableAction.do>).

Regional biomass potential

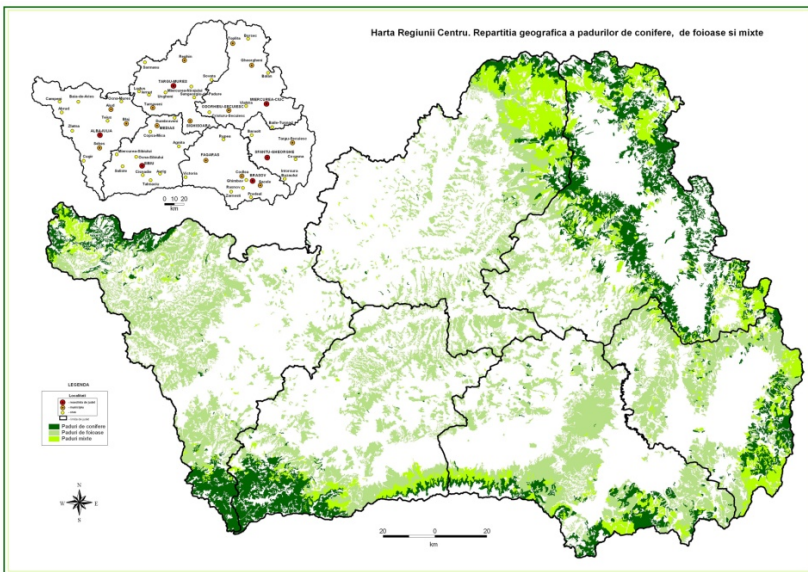


Figure 77. Forest area in Centru Region (RDA Centru)

The study drafted by ICEMENERG shows that the Centru Region also has a significant energy potential in other energy resources such as biomass and micro hydro power-plants. According to the previously quoted study, the biomass potential of Centru Region is estimated at 20,277 TJ, out of which 4,559 TJ is energy wood potential. Wood biomass potential is dominant in Harghita and significant in other two counties i.e. Covasna and Brasov.

Covering 36.5% of the total surface of Centru Region, the forests represent a valuable resource for the small communities situated in the mountain area and contribute to a healthier environment. Most forested area is covered by deciduous forests (55% of the forested area), followed by coniferous forests.

Table 17. Areas covered by forests, by counties in 2012 (in 1,000 hectares; National Institute of Statistics)

Romania	6,529.1
Centru Region	1,259.9
- Alba	206.1
- Braşov	204.7
- Covasna	170.2
- Harghita	262.4
- Mureş	219.8
- Sibiu	196.7

Table 18. Forested area in Centru Region by type of forest in 2012 (in 1,000 hectares; National Institute of Statistics)

Total	1,259.9
Forests, total	1,241
- Coniferous forests	565.9
- Deciduous forests	675.1
Other forested lands	18.9

With almost 4.3 million m³ of wood harvested in 2012, Centru Region is currently the second biggest wood harvesting basin in Romania (after North-East Region) and the biggest timber producer.

Table 19. Annual amount of harvested wood (in 1,000 m³; National Institute of Statistics)

	2007	2008	2009	2010	2011	2012
Romania	17,237.6	16,704.6	16,519.9	16,991.6	18,705	19,081.2
Centru Region	4,040.9	3,937.3	4,185	3,911.8	4,385.2	4,265.4
- Alba	413.5	426.5	397.8	526.3	665.3	664.7
- Braşov	600.9	646.8	695.3	815.7	761.6	738.7
- Covasna	485.4	443.6	495.7	511.6	545.3	576.4
- Harghita	1,172.1	1,279	972.8	999.8	1,031.2	983.9
- Mureş	922	674.3	708.7	554.5	877.2	809.3
- Sibiu	447	467.1	914.7	503.9	504.6	492.4

Ownership of forests in Romania

There are more than 800,000 forest owners in Romania. Most of them are private forests, which are relatively small and fragmented. According to the Romanian Forestry Law (Law 46/2008), depending on their owners (state or private), the forested areas fall into one of the following categories:

- State owned public property;
- Public property of territorial administrative units;
- Private property of natural and legal persons;
- Private property of territorial administrative units.

Forest Management Entities and Regulatory Bodies in Forestry

There are several organisations and bodies in Romania in charge of the management of the forestry fund:

- The General Directorate for Forests, which is part of the Ministry of Environment and Climate Change, is the central public authority responsible for forestry.
- ROMSILVA – The National Forestry State-Owned Company manages state-owned forests, which currently represent around 3.3 million ha. ROMSILVA works as an economic entity performing forestry operations.
- County Forestry Directorates. These Forestry Directorates perform at county level the tasks of ROMSILVA – The National Forestry State-owned Company. The County Forestry Directorates are in charge of implementing the national strategy in the field of forestry, and act for the protection, conservation and sustainable development of the public property forests.
- Forestry districts – territorial units subordinate to the County Forestry Directorates.
- The Institute of Forest Research and Management (ICAS) – was established in 1933 as a public research institution in the field of forestry.

Key stakeholders in the wood sector across Centru Region

- Regional units: County Forestry Directorates and Forestry Districts
- Research bodies: Transylvania University of Brasov – Faculty of Forestry and Forest Engineering
- Regional clusters: PRO WOOD - Regional Wood Cluster, REGIOFA

Cluster, Transylvania Furniture Cluster

- University/Faculty: Transylvania University of Brasov – Faculty of Forestry and Forest Engineering
- Vocational school: Four educational institutions with forestry profile (pre-university level)
- Business entities: multinational companies, regional SMEs, other types of smaller economic actors

Incentives for the development of renewable energies in Romania

Currently, there are several programmes at nationwide level dealing with different types of incentives in the field of renewable energies. The potential beneficiaries vary from individuals to public authorities and companies. All these programmes have been successful and aroused the interest of many companies and individuals.

Funding Sources:

A) The Fund for Environment is a financial tool initiated by the Romanian Government in order to support projects and environmental programmes.

National programmes funded from the National Fund for Environment:

1. Casa Verde (Green Building) Programme

The renewable energy solutions are promoted at national level through a special programme called “Casa Verde (Green Building)” - a programme through which individual households are stimulated to replace their old thermal systems with new heating systems using solar, geothermal and wind and biomass energy. The objective of the “Green House Programme” is to fund projects to improve the old thermal systems, through implementation of new renewable solutions such as those using solar, wind, geothermal or biomass.

The programme aims to improve the quality of air, water and soil by reducing the level of pollution resulting from burning wood or other fossil fuels currently used by classical heating systems. This objective can be achieved through replacing or supplementing thermal systems using clean renewable resources. The programme benefits from annual allocations from the Fund for Environment, established by government decision.

Individuals may submit their grant applications to county agencies for environment protection in their home localities.

The ceiling amounts for each type of project are:

- 6,000 lei (1,400 €) for installing solar panels;
- 8,000 lei (1,860 €) for installing heat pumps;
- 6,000 lei (1,400 €) for installing thermal power generation plants based on pellets, briquettes, wood and any kind of wood and vegetal waste.

This programme has been in place since 1st of July 2010. The funds allocated for the year 2011 to the six counties of Centru Region totalled approximately 53,560,000 Lei (12.4 mil. €).

2. The National Programme for Increasing the Energy Production from Renewable Sources

The overall objective of this programme is to fund environmental projects in order to increase the amount of energy production from renewable sources.

The aims of the programme are:

- a) to increase the use of renewable energy: solar, wind, hydropower, geothermal, biomass, biogas, gas from fermentation waste / sludge from treatment plants to produce electricity and/or heat;
- b) to improve the quality of environment;
- c) to contribute to the mitigation of CO emissions of greenhouse gases;
- d) to increase the efficiency of the use of primary energy resources;
- e) to contribute to the conservation and protection of ecosystems.

Projects that can be funded under this programme include any type of energy power system based on renewable sources: wind, solar, biomass, hydro, geothermal.

The applicant must be a Romanian company, carrying out business activities in Romania;

Funding is granted in amounts of up to 50% of the total eligible cost of the project. The maximum amount that can be granted is 30 million lei for each project.

3. Law no. 220/2008 regarding the setting up of a promotion scheme for

renewable energies

The national target for the proportion of energy produced from renewable sources is 24% of gross final energy consumption by 2020. The main provisions of this law are the following:

1) The incentive system will be applied to the electricity supplied in the electricity supply grid produced from:

- a) hydraulic power plants with an installed capacity of more than 10 MW;
- b) wind energy;
- c) solar energy;
- d) geothermal energy;
- e) biomass;
- f) bio-liquids;
- g) biogas;
- h) gas resulting from waste processing;
- i) fermenting sludge gas from wastewater treatment plants.

(2) The promotion system shall be applied for a period of:

- a) 15 years for the electricity produced in new power plants;
- b) 10 years, for the electricity produced in refurbished hydro power plants with installed capacity of maximum 10 MW,
- c) 7 years for the electricity produced in old plants, if they are operated in low access areas but not older than 10 years and which comply with environmental standards;
- d) 3 years for the electricity produced in other hydropower plants with an installed capacity of maximum 10 MW.

(3) The incentive system is applicable to all power plants if the new plants are put into operation or refurbished by the end of 2016.

Each month, the manager of the national energy grid gives energy suppliers a certain number of green certificates depending on the amount of electricity produced from renewable energy and delivered to final consumers.

Producers of renewable energy are given a certain number of green certificates for electricity produced and delivered according the amount of

electricity produced during the trial period, as follows:

a) for the electricity produced from hydropower plants with installed capacity of more than 10 MW:

(i) 3 green certificates for each 1 MWh produced and delivered, if hydropower plants are new;

(ii) 2 green certificates for each 1 MWh produced and delivered, if hydropower plants are modernised;

b) 1 green certificate for each 2 MWh produced by hydro power plants with an installed capacity of maximum 10 MW for older hydropower plants;

c) 2 green certificates until 2017 and 1 green certificate from 2018 for each 1 MWh produced and delivered by the producers of electricity from wind energy;

d) 3 green certificates for each 1 MWh produced and delivered by the producers of electricity from other renewable sources;

e) 6 green certificates for each 1 MWh produced and delivered by the producers of electricity from solar energy.

(3) The power plants located in low access areas will also benefit from the green certificates system.

(4) One additional green certificate is granted for each 1 MWh produced and delivered if the electricity is produced in high-efficiency cogeneration plants using renewable energy sources.

B) Structural Funds

1) Sectoral Operational Programme “Increase of Economic Competitiveness”

Priority Axis no. 4 “Increasing energy efficiency and security of supply, in the context of combating climate change”; Key area of intervention 4.1 “Sustainable efficient energy (improvement of energy efficiency and sustainable environment development of the energy system)”; Key area of intervention 4.2 “Valorisation of renewable resources for green energy production”.

The overall objective of this area of intervention is to support investments in modernisation and development of new electricity generation capacity and

thermal energy by tapping sources: biomass, hydropower resources (in plants with installed capacity less than or equal to 10 MW), solar, wind, biofuels, geothermal and other renewable energy resources. Potential beneficiaries:

- Companies that fall into the category of small, medium and large;
- Companies that fall into the category of micro, registered in urban areas (whose head offices are located in urban areas);
- Local authorities, intercommunity development associations (formed according to the law no. 215/2001).

The total costs for each project should be between 400,000 lei (including VAT) and the equivalent in lei of 50 M€.

The total amount allocated for this programme at national level amounts to 420 million lei. The maximum share of the grant in the total eligible cost (%) depends on the applicant's type:

- For projects developed by companies: the grant assistance awarded for a project as a percentage of eligible expenditure is calculated according to aid ceilings as follows:
 - For small and micro enterprises: 70%, except projects located in the Bucharest-Ilfov region, where the maximum funding is 60%;
 - For medium-sized enterprises: 60%, except for projects located in Bucharest-Ilfov region, where the maximum amount of funding is 50%;
 - 50% for large enterprises, except for projects located in Bucharest-Ilfov region, where the maximum amount of funding is 40%.
- For projects developed by public authorities, the maximum share of the grant relative to the total cost should be 98% the investment eligible.

6.2.2. Costs, Operation and Applicability

Depending on the size of the biomass heating plant and on the biomass supply chain we can describe three typical examples of biomass heating plants which operate in Centru Region:

1. Biomass Heating Plant in the municipality of Intorsura Buzaului

Main technical and financial information

The heating plant has been run since 2004 by Confort SRL which is a

company operating in the energy supply sector, owned by the municipality of Intorsura Buzaului (9,000 inhabitants). Installed capacity: 7 MW; production: 8,045 MWh/year; technological consumption: 0.496 tonnes of fuels/MWh. Temperature obtained by combustion of biomass: 90°C. Types of biomass used: sawdust. The necessary amount of biomass is around 18,000 m³/year. Final beneficiaries: approximately 2,000 residents of the town, 400 apartments, 50 companies, shops, public buildings: the Town Hall, Cultural Centre, schools, sport halls. Further extensions intended: the hospital building, the new church building, a bank building, the new Cultural Centre, other dwellings. The total cost of the investment amounted to 2,724,439 Euros. The financing is provided under the “Joint Implementation Sawdust” Programme by the EU, the Government of Denmark and the Government of Romania. Operational costs: 92 RON/Gcal (~20.4 euro/Gcal).



Figure 78. Biomass Heating Plant in Intorsura Buzaului (ISPE)

Supply chain

The suppliers of the biomass are mainly the companies active in the wood processing industry, located mainly in the following counties: Covasna, Brasov, Harghita and Buzau. The maximum distance from biomass origin to biomass utilisation is 100km. Due to the increased amount of biomass used for industrial purposes (wood processing industry), the amount of biomass available for bioenergy has decreased significantly. This is why the biomass users think that the Ministry for Environment should issue specific regulations regarding the use of biomass preferentially for bioenergy rather than for other

purposes.

The biomass is transported by trucks from the place of harvesting to the power plant. The biomass is not pre-selected. The parameters of the biomass are measured and analysed in the company's laboratory (moisture and calorific value).

2. Holzindustrie Schweighofer co-generation power plant in Sebes

This power plant was built in 2010 by the Austrian corporation Holzindustrie Schweighofer for its wood processing plant located in Sebes.

Main technical and financial information

Co-generation power plant; installed capacity: 32.5 MW (24 MW for heating + 8.5 MW for electricity); types of biomass used: bark, chips, branches and wastes from wood processing (mainly fir and spruce). The heat is used for the internal industrial process (drying of timber sawdust) and the electricity will be injected into the national energy grid. The total cost of the investment amounted to approximately 30 M€. Financing is assured entirely by the private sector.

Supply chain

Holzindustrie Schweighofer is a big company in the wood industry sector which is able to ensure the whole amount of biomass necessary and also be a supplier for other companies. That's why we consider this example of biomass supply chain hard for other companies to replicate.



Figure 79. Wood processing plant owned by Holzindustrie Schweighofer located in Sebes (SC Holz- industrie Schweighofer SRL, Romania)

3. New biomass heating system for the Business Incubator of Sfantu Gheorghe

Main technical and financial information

The heat producer: COVIMM Consulting Company is the beneficiary of the investment and is also the company which is responsible for the operation of the new biomass heating plant. The building that will be heated currently hosts the offices of 46 small companies. Installed (nominal) power: 135 KW; year of start: 2013; annual heat production: 240 MWh; annual biomass consumption: 450m³; storage capacity: 45m³; fuel: sawdust, chips; specific parameters: specific standards for sawdust: S 130W10-W20G30/50. The boiler is produced by a local company which is a member of the Green Energy Association.

Supply chain

The biomass is obtained from wood residues collected from the green areas of Sfantu Gheorghe Municipality. Afterwards, the wood residues are chipped. The wood residues are selected and dried. Only the residues with the right parameters are used for heating. These technical procedures are performed under the stipulations of the service contract. The average distance from the biomass origin to the biomass utilisation place is 10 km. It is important to highlight that fact that the cooperation between the suppliers and user of biomass is supported by the Green Energy Association which is a cluster active in the field of renewable energies.

6.3. Slovakia

6.3.1. Description and Situation of the Region

The development of the renewable energy sector in Slovak Republic is determined regionally, in terms of the state. Interest of investors in the use of renewable energy sources is based on utilising the best of local conditions, and therefore this is determined by geographic area. The energy policy is recommended differently for the each region (higher territorial units, one of them is the Banská Bystrica Region) so as to promote the use of renewable energy sources and identify suitable areas for their development. Considerable effort is taken to maintain the district heating systems at national levels.

Measures to promote renewable sources of energy for heating and cooling will be taken at the same time with increase of the pressure to make using of renewables more effective.

Forests covers 48.9% of the territory of the Banská Bystrica region, which is one of the eight regions in Slovakia, located in the central part of the country. The total forest stand area is 453,106 ha, i.e. 23.5% of its total in Slovakia. The total growing stock is 102.9 million m³ (41.3 million m³ of coniferous and 61.6 million m³ of broadleaved) wood under bark, i.e. 23.7% of the total growing stock in Slovakia. The mean annual felling in the region is approximately 1.7 million m³. This volume represents 25.2% of the total yearly volume felled in Slovakia. The administrative districts Brezno (18.5%, 22.1% and 23.9%), Rimavská Sobota (11.7%, 11.1% and 10.4%) and Banská Bystrica (10.4%, 10.9% and 10.8%) have the highest proportions in the region's forest area, growing stock and annual felling. Management and ownership patterns are not identical. The state forest enterprises manage 71.6% of forestland. Their higher proportion is either due to tenancy agreements with owners of non-state forests or due to the fact that the Forests of the Slovak Republic also administer forest lands not yet returned to their original owners due to land ownership restitution that is still not fully complete.

When the limiting criteria of the forest categories, their nature protection and site fertility are applied, the forest area for calculation of the total wood resources and energy biomass is decreased to 258,300 ha (57.0%) and the growing stock of biomass to 1,245.1 million m³. The application of another limiting factor of a technical nature (especially slope inclination), resulted in a potential volume of biomass for energy generation of 302.4 million m³, which equals 18.3% of the planned annual cut and 24.3% of the region's total available biomass resources. The highest calculated volume of biomass available for energy generation is located in the districts Rimavská Sobota (47,900m³), Zvolen (34,300m³) and Lučenec (31,700m³), while the lowest is in Brezno (5,800m³).

Currently, there are about 450,000 ha of agricultural land (18.5% of total agricultural land), which are not used for agricultural production. According to inventory performed, approximately 275,000 ha of these lands are planted with

forest trees, mainly as a result of natural succession. The supply of wood raw material could be around 36.5 million m³. Around 300,000 ha of permanent grassland could be used for energy purposes (11.3% of agricultural land).

6.3.2. Costs, Operation and Applicability

Woody biomass is currently used mainly in the form of traditional firewood and in the form of chips. Only very small amounts of woody pellets and briquettes are produced and used in the region. The use of traditional firewood has been steadily increasing during the last decade due to a rise in the price of fossil fuels. Firewood has been used mainly in private family houses in afforested mountainous areas. According to the official statistics some 500,000 m³ of firewood is used annually in Slovakia. Official statistics on the current use of firewood in the Banská Bystrica region do not exist. Assuming that the proportion of the production of firewood is identical to the proportion of annual removals in the region, in comparison to the whole country, which is 25.2%, then some 125,000 m³ of firewood is annually produced and used in the region.

Use of renewable energy sources leads to the decentralised production of electricity in smaller establishments. For smaller installations (up to 1 MW) there are simplified administrative procedures. The certificates required for the construction of such facilities are not necessary.

Operational programmes under the Structural Funds of the European Union are the main financial instrument of assistance in the field of energy in the Slovak Republic. In addition to supporting renewable sources, they are also aimed at improving energy efficiency, reducing energy costs, and reducing greenhouse gas emissions, along with reducing emissions of major pollutants in the heat. They are also supported by changes in the fuel base of fossil energy sources to renewable sources. Beneficiaries are mostly from the private sector. Assistance is provided as grant assistance for capital costs. Applications are accepted on the basis of calls within the Operational Programme Competitiveness and Economic Growth in the programming period 2007–2013.

The programme of higher use of biomass and solar energy in Slovak Republic aims to encourage households to install biomass boilers and solar

collectors. Supported devices for biomass boilers must meet the minimum requirements regarding efficiency and environmental criteria. The programme was launched in 2009 and is financed from the state budget. The support scheme for electricity from renewable energy sources was designed to use biomass and biogas to achieve efficiency. The production of electricity is supported, which is associated with the production of heat. In the case of using biomass only electricity produced by cogeneration is supported and the instalment must meet the requirements and parameters of quality and sustainability criteria.

Research into suitable fast-growing energy crops was funded for just few years ago. The modifications of legal regulations were prepared so it is possible to use soils of lower quality for planting high yielding crops on farmland.