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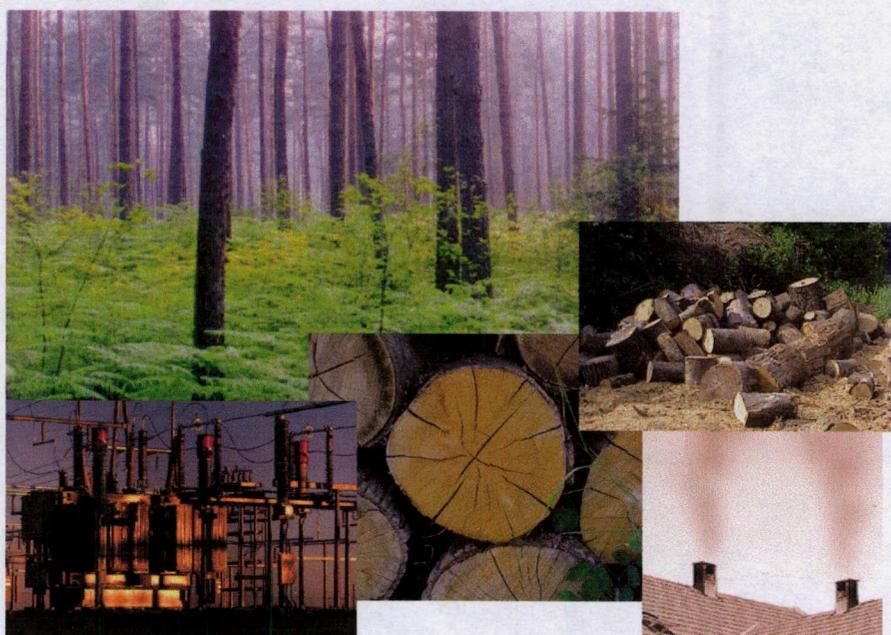
WP3: MARKET ANALYSIS OF BIOMASS CHP

County report for Slovenia

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Ljubljana, July 2002



GDK 331 : (497.12)

K.b.: biomasa, lesna biomasa, vršne razmere, trgovanje, Slovenija

T.D.: 2.13

GOZDARSKA KNJIŽNICA

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TABLE OF CONTENTS

| | | |
|-----------|--|---|
| 1. | MARKET SURVEY | 2 |
| 1.1 | BIOMAS POTENTIALS | 2 |
| 1.1.1 | Wood biomass | 3 |
| 1.1.1.1 | Wood waste | 4 |
| 1.2 | POTENTIAL CLIENTS AND THE BIOMASS POTENTIAL ASSOCIATED .. | 5 |
| 1.2.1 | Short description of planed projects in wood processing industry | 6 |
| 1.2.2 | Other biomass CHP projects | 6 |
| 2. | BIOMASS CHP TECHNOLOGIES IN SLOVENIA | 7 |
| 3. | BARRIERS FOR FURTHER BIOMASS CHP MARKET PENETRATION | 7 |
| 4. | CONCLUSIONS AND RECOMMENDATIONS | 8 |
| 5. | REFERENCES | 8 |

1. MARKET SURVEY

1.2 BIOMAS POTENTIALS

Slovenia is with 55% of area covered with forest one of the most wooded countries in Europe. There is 0.56 ha of forest land per capita. The forest area has grown considerably (180,000 ha) in last 40 years. The problem lies in the process of abandoning agricultural land. Theoretical biomass potential in Slovenia was estimated on 64 PJ (MEDVED at all, 2000). At the moment only wood biomass is used in CHP plants. Agricultural products and wastes are not used for energy purposes. Production of biodiesel will start in next few years.

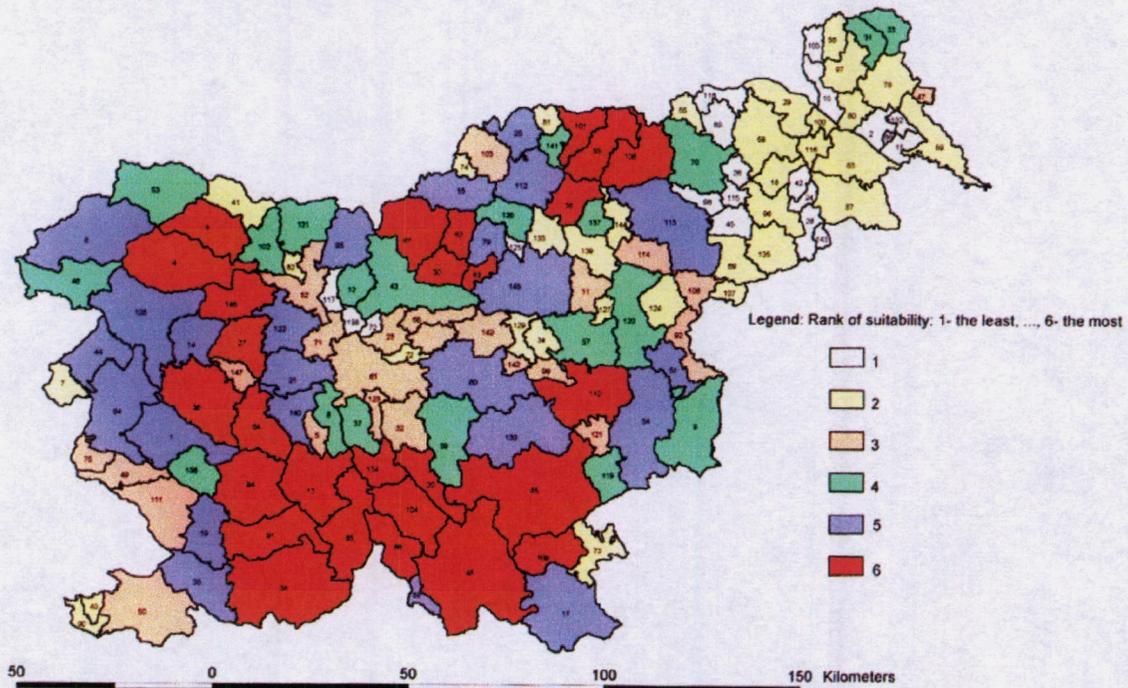
1.1.1 Wood biomass

Wood biomass was and still is an important source of energy for rural population in Slovenia. According to official data more than 30 % of Slovenian households are using wood or wood waste for heating. Beside small users there are 78 medium size wood biomass heating installations in industry and few biomass district heating systems.

Detail analyze of wood biomass potentials was done by Slovenian Forestry Institute (ROBEK at all, 1998). According to this study potentials of wood biomass in Slovenia are:

- 450.000 dry ton of wood biomass per year from forests. In long run we can count with 1 m³ of wood biomass per ha of forest. Important source of wood biomass for energy purposes is thin wood from thinning in early stages of forests. To develop stable and quality forest, regular thinning is necessary. This means of forest management results in large amounts of thin wood. Most of this wood is still remaining unused in the forest, which is ecologically desired, but economically inadmissible.
- 120.000 dry t of wood biomass per year from abandoned agricultural land. Uncontrolled overgrowing of abandoned agricultural areas remains an open issue in environmental management, and, it appears, that in the foreseeable future there will not be any increased interest in a more intensive exploitation of these areas.
- The documented quantity of wood residues in the industrial sector (about 200 enterprises with more than 10 employees) amounts annually to about 361.000 tons (oven dry substance). About 230.000 tons is already used for energetic purposes in existing medium sized boilers. But there are about 5.000 smaller wood processing enterprises – not included in above mention documentation. So the additional/untapped biomass potential in industrial sector is estimated to be at least 280.000 dry t of wood waste per year.

Map 1: Wood biomass potentials in local communities in Slovenia (ROBEK at all, 1998), local communities are divided in 6 groups: 1 – local community less suitable for biomass projects ... 6 - local communities most suitable for biomass projects. Suitability of local communities was estimated according to different wood biomass potentials.

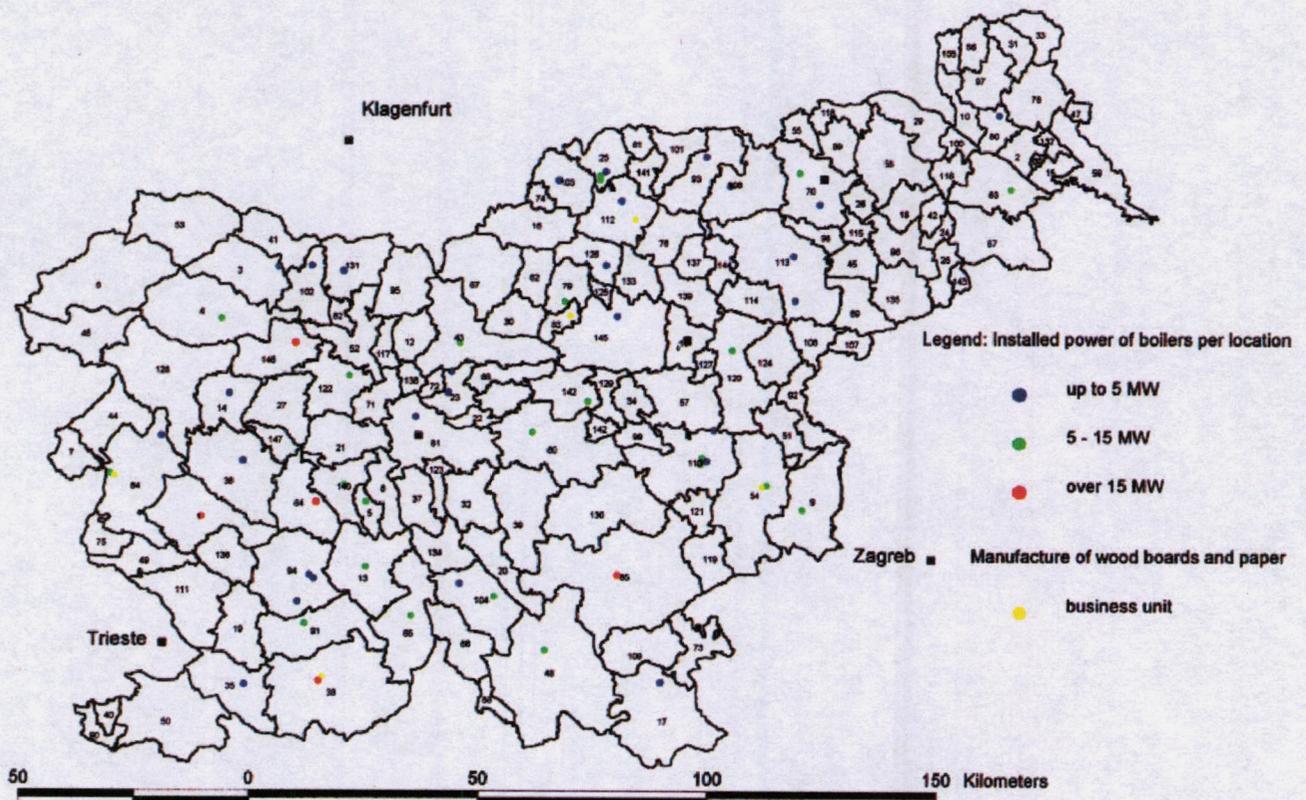


1.2.2.1 Wood waste

The existing heating installations using wood biomass represent places of consumption of wood residues. In 1998 78 medium-sized heating installations were registered which operate at least on a seasonal basis (average age of installations was 24 years). In Slovenia, the average rated heating power of the boilers and heating places fuelled by wood residues is 4,4 MW, and the average input heating power is 4,8 MW. The total rated heating power of boilers is 340 MW. On average, the installations operate between 5.500 and 6.000 hours per year. The installations mostly operate only on wood residues, and mixed heating is rather the exception than the rule. The estimated total use of wood residues in medium-sized heating installations amounts to 313.000 tons for 1997, which corresponds to 4.127 TJ heating power (ČRETNIK / ŠLIBAR / TORNIČ / SMRDELJ 1998)



Map2 Existing sinkholes of wood biomass (without chemical industry) (ROBEK at all, 1998) – Existing wood biomass installations – mainly in wood processing industry



1.2 POTENTIAL CLIENTS AND THE BIOMASS POTENTIAL ASSOCIATED

According to our data there are 6 Biomass CHP project in preparation in Slovenia. There are four wood processing factories (KLI Logatec, SP Polskava – Stavbno pohištvo, LIP Bled and Javor Pivka) interested for biomass CHP projects. They are thinking about installations with capacity above 1 MWe. The main characteristics of these projects are:

- They all have wood biomass residues to use;
- They are already using wood wastes for heat production but the installations are very old (more than 20 years);
- In the future (with CHP installed) they will all have to buy wood biomass on market.

Since all feasibility studies are not done yet it is hard to estimate capacity or investment costs for this CHP plants.

Beside wood processing industry there are 2 CHP project, one in small town and one in monastery.

1.2.1 Short description of planed projects in wood processing industry

1. KLI –Logatec is large wood processing factory with more than 500 employees. They already produce heat to cover their heat demand. They have two installed boilers each with nominal plant heat output 11 MWh. They would like to install also steam turbines for production of electricity (up to 2 MWe) and start selling heat – like district heating for small part of settlement Logatec. In this case they would have to buy wood biomass on the market.
2. SP Polskava – Stavbno pohištvo is wood processing factory with 90 employees. They already have a boiler with 2 MWt installed power for heat production – for drying of wood. They have wood biomass residues to use (130.000 m³/month) and they have to buy 400.000 m³ of wood waste per year. They are thinking to sell heat (settlement in close neighbourhood) and electricity in the future.
3. In Javor Pivka they have a feasibility study prepared, but they have some financial problems so the investment is not so likely. Planed capacity is 2 Mwe.
4. LIP Bled is wood processing factory situated in Bled – small but tourist town in alpine region. Planed capacity is 2 MWe. They are planing to sell heat to hotel and new (planed) swimming baths.

1.2.2 Other biomass CHP projects

Interesting project is in town Železniki – small town in alpine region. They already have wood biomass district heating of major part of town and they would like to install steam turbines for electricity production. At the moment the installation power of two boilers is 16 MWh. Planed capacity for electricity production is 2 MWe.

The smallest project (below 1 MW) with feasibility study prepared is CHP project for big monastery near Ljubljana.

2. BIOMASS CHP TECHNOLOGIES IN SLOVENIA

At the moment there are no producers of biomass CHP technologies in Slovenia. We have some larger importers of these technologies as: Järnforsen from Sweden.

3. BARRIERS FOR FURTHER BIOMASS CHP MARKET PENETRATION

The most important barriers at the moment are economical barriers – to high start-up investments, lack of state subsidies. Unorganised wood biomass market and lack of informations on wood biomass potentials are also important barriers.

Economic barriers:

- Relatively high investment costs. High costs of imported technologies;
- No subsidies for modern technologies;
- Market for wood biomass is not organised;
- Lack of information's on biomass potentials and no data basis about wood waste potentials in different regions in Slovenia;
- Inadequate price and tax policy in the energy sector.

Regulatory:

- Undefined strategies for the development of the energy economy at the local, regional, and national level;
- National energy programme and Action programme for use of wood biomass in Slovenia (from 2001 to 2010) are not adopted jet;
- Incompatible financial instruments among the individual state institutions (Ministry of Trade and Commerce, Ministry of the Environment, Ministry of Finance, Ministry of Agriculture).

Institutional:

- Lack of relevant regional registers and information on the local wood biomass potential according to sources, quantities and type;

Technical:

- Lack of research and development;
- Lack of modern domestic technology and equipment for economical and ecologically acceptable extraction, preparation and exploitation of wood biomass;

- High project development costs;
- There is no data on the quantity of exploited wood products on dumps and disposal sights, and nor we do not know the quantity of wood residues obtained in the construction industry and in major national companies, e.g. electric power stations, the mails;
- Lack of successful references.

4. CONCLUSIONS AND RECOMMENDATIONS

The interest for biomass CHP projects in Slovenia has grown in last few years. But some barriers remain. Important step forward was new act, which anticipates, fixed prices of green energy - energy produced from renewable sources of energy.

It is necessary to begin creating the conditions for a market of raw materials i.e. wood biomass. The market of wood biomass will have to comprise several sources. For local biomass CHP projects, concentrated potential is of crucial importance, i.e. companies obtaining major quantities of unpolluted wood residues.

Different measures taken through loan, tax and customs policies (loans, taxes, customs, ecological taxes, subventions) for increasing the competitiveness of wood biomass versus fossil fuels (inclusion of external costs into energy price) are crucial for realisation of CHP projects in the future. More guaranteed financial resources for research and development in the area of identification, extraction and use of biomass in the energy economy (foundation of a special development fund) is also very important. Acceleration of research and development in technologies and in the production of domestic equipment should be one of important government goals. Also the question of appropriate financial mechanisms mitigate the risks of project investment by the public sector is very important and should be one of first priorities of state policy.

Local communities should be obliged to first establish energy plans with an analysis of the biomass potential and their possible exploitation, also communities where a gas supply system is being introduced.

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