

WP 4.2.4

Study on Biomass Trade in Slovenia



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1 Available biomass potential

1.1 Forest: wood, residues and by-products

Slovenia is a biomass rich country. The area of forests is increasing steadily for more than 130 years. The first recordings in 1875 showed only 36% of the today Slovenian territory covered by forest. According to the last official data the share in 2008 was already 60.26 % (MKGP, 2008).. This fact can be attributed to the longyear of what would be now called sustainable forest management. The large forest area is accompanied by other land uses which are often rich of woody biomass and by consistent areas of abandoned farmland which revert to forest. The demand for woodfuels is concentrated on firewood (the production and use of charcoal being marginal) for household consumption in rural areas. A large part of firewood trade is informal as it is either collected by farmers in their own lands and forests or bought locally. The proportion of firewood coming from non-forest areas is estimated at over 20 percent of the total household consumption. Industrial consumption, such as district heating systems, combined heat and power plants (CHP) and other industrial uses depend mainly on residues from wood processing industries. (WISDOM, 2006)

In 2006 total of 3,718,260 m³ of wood were cut down, of which 1,475,510 m³ of deciduous hardwood and 2,242,750 m³ of coniferous, which is 14.9% more than in 2005 and a maximum in the period after 1991. It was realized a 82% cut of potential commercial forest felling by forest economic plans. (Poročilo ZGS, 2007)

Assessment of non-forest wood biomass potential was determined from measurements of quantities of wood biomass in sample plots in different types of land use. Based on the measurements it was estimated that the total wood stock in non forested areas in Slovenia is about 11,430,000 m³. Sustained annual potential of wood biomass for energy purposes is 280,000 m³. (OP-ENLES, 2007)

Table 1. Forest, plantation and other virgin wood: 2006

FOREST, PLANTATION AND OTHER VIRGIN WOOD	Av. moisture (%)	Av. net calorific value as received (MJ/kg)	Amount	Unit	Amount (PJ)	Remarks
Forest area			1,173,847	ha		57.9 % of total area
Annual increment of wood in forests	50-60	19.2	7,652,022	m ³ (solid)	67.35	6.52 m ³ /ha
Annual final felling (average)	50-60	19.2	3,718,263	m ³ (solid)	32.72	the largest in last 15 years only 82% of possible felling
Annual thinning (average)	50-60	19.2	86,247	m ³ (solid)	0.76	
Annual resources of forest residues (theoretical)	50-60	19.2	2,150,000	m ³ (solid)	18.92	

Forest residue potential for energy use (technological)	50-60	19.2	1,400,000	m ³ (solid)	12.32	
Other forest wood for energy use (e.g. wood from gardens, parks, landscape management, vineyards etc.)	50-60	19.2	280,000	m ³ (solid)	2.46	

Approximately 1.9 million m³ of wood were used as an energy source in Slovenia in 2002, of which 1.3 million m³ is used by households 0.6 million m³ by industry - including biomass energy systems. It appears that there are two fairly independent woodfuel circuits: one household circuit that uses mainly firewood from forests and farmlands (and marginally charcoal) and one industrial circuit that uses mainly residues from wood industries and paper mills. (WISDOM)

Table 2. Domestic (residential firewood)

DOMESTIC (RESIDENTIAL) FIREWOOD	Av. moisture (%)	Av. net calorific value as received (MJ/kg)	Amount	Unit	Amount (PJ)	Remarks
Firewood (logs usually 1 meter long)	50-60	19.2	n/a	m ³ (solid)	n/a	
Chopped and splitted firewood (oven ready logs for stoves and fireplaces)	50-60	19.2	n/a	m ³ (solid)	n/a	
Total	50-60	19.2	1,288,000	m³ (solid)	11.34	

There are no present recordings and statistics on the wood residues in Slovenia. The best available information on wood residues from forest industries and their use for energy are to be found in the 1998 study by Slovenian Forrest Institute, which provides summary data with reference year 1995. For that year the total annual production of wood residues was estimated at 722,000 m³. The new data on wood industries that could be acquired in the frame of the project was limited to number of employees of primary wood industries (sawmills) and secondary wood industries (mainly furniture making) by settlements.

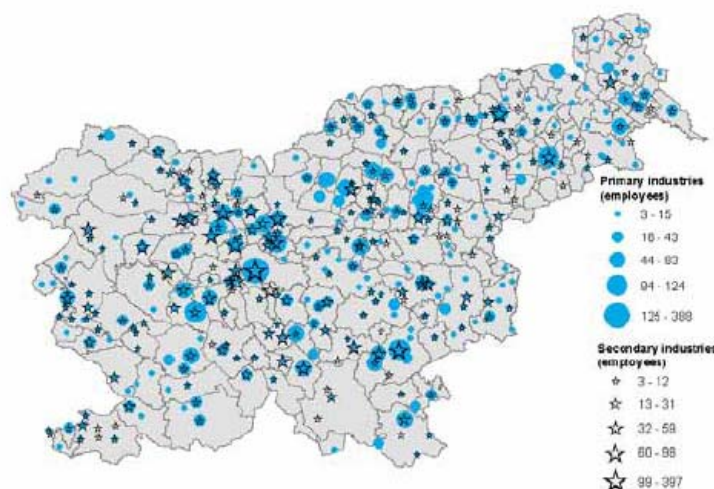


Figure 1. Distribution of primary and secondary wood processing industries (Source: WISDOM)

In the near future things should change and detailed data on wood residues and other waste material should be available, as a result of the full implementation of Government prescriptions (and EU regulations). For the time being, however, the information available is insufficient for a spatial analysis of residue production and consumption. In qualitative terms it is known that most residues are for industrial consumption, mainly by biomass systems within the wood processing industries or by district heating systems. (WISDOM)

Assessment of the potential of wood residues from wood industry is determined based on the analysis of data collected through questionnaires performed by Slovenian Forrest Institute. Data were collected on the structure of raw materials, wood residues, and general information such as number of employees in surveyed companies, and their future development, spatial distribution of wood residue from various regions etc. The total volume of wood residue, which was calculated from these data, is estimated at over 850,000 t. According to official information of Statistical Office of the Republic of Slovenia, the total annual volume of wood residues is 702,000 t. Most of these residues wood processing companies use to meet their own needs for heating and in some cases, electricity production. (OP-ENLES, 2007)

The majority of wood residues, i.e. 39%, were classified as clean (uncontaminated) wood, 31% as sawn dust, 11% as sawn powder and 5% as contaminated wood wastes. (WISDOM)

Table 3. By-products and residues from wood processing industry

BY-PRODUCTS AND RESIDUES FROM WOOD PROCESSING INDUSTRY	Av. moisture (%)	Av. net calorific value as received (MJ/kg)	Amount	Unit	Amount (PJ)	Remarks
Chemically untreated (sum of the rows below)			659,880	tons	12.97	
Sawdust (for pellet production and also direct combustion)	45-60	19.2	287,820	tons	5.53	

Bark	50-65	20.0	105,300	tons	2.11	
Chips, shavings and other chemically treated industrial residues (e.g. from sawmill for energy use)	50-60	20.0	266,760	tons	5.34	
Chemically treated (sum of the rows below)	50-60	19.2	35,100	tons	0.67	
Plywood, particle board or other solid biomass residues			25,204	tons	0.48	
Spent liquors (e.g. black liquors)				tons	0.00	
Paper and board residues			9,896	tons	0.19	
Total			702,000	tons	13.64	

Used wood potential was estimated from Slovenian Statistical Office data on municipal waste collected.

Table 4. Used wood

USED WOOD	Av. moisture (%)	Av. net calorific value as received (MJ/kg)	Amount	Unit	Amount (PJ)	Remarks
Chemically untreated (e.g. pallets, wood packages etc.)	50-60	19.2	8,513	tons	0.16	municipal waste
Chemically treated (painted wood, plywood residues from society, used furniture)	50-60	19.2	107	tons	0.00	municipal waste
Total	50-60	19.2	8,620	tons	0.17	

1.2 Agriculture: energy plants, short rotation coppice, residues

The potential energy value of harvest residue is estimated at 9,135 TJ gross and 8,577 TJ net. The actual energy value of harvest residues is less than potential. The reasons are of technological and operational nature. (OP-ENLES, 2007)

Taking into account data from Statistical Office, the annual volume of 1,224 tones of olives, it is possible to obtain 596 tons of dried olive residues with appropriate moisture content and energy potential of 2,792 MWh. If only stones would be exploited, 256 tons of biomass would be obtained, which would give 1,250 MWh of energy. (Energetika.net, 2009)

Table 5. Herbaceous and fruit biomass resources and other resources

HERBACEOUS AND FRUIT BIOMASS RESOURCES AND OTHER RESOURCES	Av. moisture (%)	Av. net calorific value as received (MJ/kg)	Amount	Unit	Amount (PJ)	Remarks
Energy grasses (reed canary grass, miscanthus, etc; specify) for energy use			0	PJ	0	
Land area for energy crops (wood, herbaceous, fruit)			0	ha	0	
Straw (potential)				tons		
Olive residues (potential)	53	18.7	596	tons	0.01	
Olive production area			1,470	ha		
Peat			0	tons	0.00	
Harvest residues (potential)		17.0	504,706	tons	8.58	
Short rotation coppice (woody, poplar, willow etc.)	50-60	18.8	0	m ³ (solid)	0.00	

1.3 Industry and households: organic waste

Table 6: Organic kitchen waste generated and collected from households and catering

		2004	2005	2006	2007
Generated	†	12764	28349	29878	25361
Collected from catering industry	†	6790	12214	15137	13956
Collected from households	†	4548	7839	12146	11405

Source: Zbirka Ravnanje z odpadki, Agencija Republike Slovenije za okolje, 2009, http://kazalci.arslo.gov.si/?data=indicator&ind_id=68

Table 7: Handling with organic kitchen waste

		2004	2005	2006	2007
composting	†	5944	5163	140	2912
processing in biogas plants	†	1050	2267		2799
other ways of processing	†	179	2052	5883	4609
delivered to landfill	†	1450	4632	6189	30
deferred	†	1486	1171	15	Not reported
as an overlay on the site	†				30
Delivered for the removal	†				508
exports to the EU	†	0	4156	8392	8323

Source: Zbirka Ravnanje z odpadki, Agencija Republike Slovenije za okolje, 2009

1.4 Pellets, wood chips, wood briquettes

The known major wood pellet producers in Slovenia are marked with red dots on the map below.

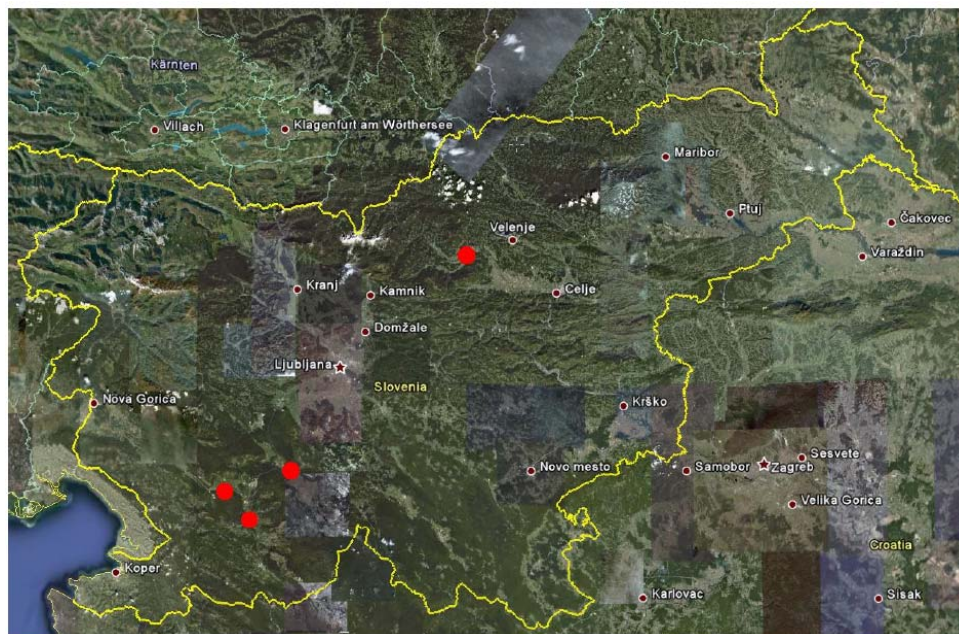


Figure 2. Major Slovenian wood pellet producers (map source: Google Earth)

Table 8: Major pellets producers

Producer	Location	Annual production	Pellet type	Raw material	Standard
GGP »ENERLES	Pivka,	60,000 t	6 mm 8 mm	pine	»GOLD« ITA
PROFILES	Razdrto	50,000 t	6 mm	85% beech 15% pine	»GOLD« ITA
MADJ d.o.o.	Cerknica/Martinjak	28-30,000 t			»GOLD« ITA
Mizarstvo Kovac d.o.o.	Mozirje	15,000 t	6 mm	90% pine 10% hard	

Three of these major pellet producers rely on exports to the Italian market as they produce according to the Italian standards/certifications and are situated close to the border.

In Slovenia forestry products (e.g. wood chips) have a long tradition in trading. A well organized online trading platform has been working for years already (<http://res.borzen.si/DesktopDefault.aspx>). This biomass-trading portal is powered by the Agency of Efficiency Energy Use and is available in English and in Slovenian. The portal was

initiated by a governmental project on “Removing barriers to the increased use of biomass in Slovenia” which was supported by the Global Environment Facility (GEF). The trade platform focuses on biomass goods and besides conventional forestry or wood processing industry products wood pellets are traded. The majority of the woodfuel trade however does not go through it and it is made locally and without recordings. The portal disseminates information on renewables (especially biomass) and even contributes to defining pellet fuels Pellet consumption is relatively small in Slovenia except for one case. According to Geonardo's research two power plants are purchasing pellets to substitute charcoal. The two power plants are in Trbovlje and in Šoštanj and use low quality pellets for combustion. As mentioned three companies use Italian standards. At the moment, the biggest share of wood pellets is exported. The relative location of Slovenia is more fortunate compare to other Balkan countries regarding the proximity of foreign western markets. Transport is made by trucks.

Table 9. Production of refined wood fuels

REFINED WOOD FUELS	Av. moisture (%)	Av. net calorific value as received (MJ/kg)	Amount of production	Production capacity	Unit	PJ	Remarks
Production in 2006							
Pellets	10	17.20	155,000	185,000	tons	3.18	
Briquettes	10	17.20	2,400	n/a	tons	0.04	rough estimation from 2002

According to the data from questionnaires medium size chippers prevail (capacity between 5 and 50 loose m³/h) with two-thirds of the whole. Recorded share of the so called light chippers (capacity up to 5 loose m³/h) is 11 percent. We estimate that their actual number in Slovenia is larger, but their production is negligible and the chips are mainly intended for needs of the owners. Among the manufacturers of chippers in light and medium categories dominates domestic producer Bider Bojan sp.-Agricultural machinery. Among medium powerful chippers an Austrian manufacturer Eschelböch has 35-percent share in the market.



Figure 3. Number of chippers; statistical regions

According to the survey responses the actual production of chips in 2007 was 460,000 m³ loose. Despite the fact that there are more middle sized chippers, the more wood chips were produced in large size chippers (capacity of 50 m³ loose). According to the questionnaires, most wood chips were produced in south eastern Slovenia, where there are a large number of large sized chippers. According to the theoretical capacity of chippers and assuming that the light and medium chipper worked at least 100 days and large chippers at least 150 days a year, we can estimate that the total annual theoretical capacity of chippers is 1.5 million m³ of wood chips. Comparison between the total capacity of chippers and actual production shows relatively low utilization of the chipping machines.

Table 10. Summary table of resources – techno-economical potential

PJ/a	Forest residues	Solid ind. wood residues	Fire-wood	Used wood	Herbac. & fruit biomass	Spent liquors	Peat	Other biomass	Total potential	Production of refined biomass fuels
Slovenia	18.9	13.6	11.3	0.2	8.6	0.0	0.0	0.0	52.6	3.2

1.5 Pellets/other solid capacities consumption

Producers of wood biomass in Slovenia can be divided regarding the type of biomass they produce into: producers of logs (firewood), producers of wood chips, producers of briquettes, and producers of wood pellets. The analysis of the consumption of logs and wood chips showed that the biggest share of biomass is consumed by biomass systems (47 %) followed by companies for further sale (31 %). The share of households is only 1 %, which confirms hypothesis, that the majority of wood biomass is produced by forest owners to cover their own needs while surpluses are sold on the so-called grey market - without records and without issued invoices. The analysis of further use of briquettes has shown that the majority of briquettes (80%) is sold to companies for further sale and a smaller share (20%) to companies for their own use. Quantities, sold to other consumer are negligible (less than 1 %). Wood pellets are practically entirely sold to companies for further sale only a small share is foreseen to be sold to biomass systems. At the moment, the biggest share of wood pellets is exported. (EnerGreen).

Table 11. National use of refined wood fuels

REFINED WOOD FUELS	Av. moisture (%)	Av. net calorific value as received (MJ/kg)	Amount of use	Unit	PJ	Remarks
National use in 2006						
Pellets	10	17.20	112,000	tons	1.93	
Briquettes	10	17.20	n/a	tons	n/a	

Table 12. Summary table of energy use (year: 2006)

PJ/a	Forest residues	Solid ind. wood residues	Fire-wood	Used wood	Herbac. & fruit biomass	Spent liquors	Peat	Other biomass	Use of re-fined biomass	Total
Slovenia	1.5	5.9	8.2	0.0	0.0	0.0	0.0	0.2	1.9	17.7

1.6 Biofuels

The biofuel production in Slovenia began in 2005 and reached 7 ktoe in that year. The use of biofuels is not in line with the objectives set at the moment. The only biofuel in Slovenia is biodiesel. It was mainly sold as a mixture of biodiesel and diesel, with less than 5 % being used as a pure biofuel, predominantly in the Ljubljana city buses (Civitas Mobilis project). Currently there is 1 service petrol station selling biodiesel B100, options are studied for the inclusion of additional service stations into the B100 system, there is one major buyer of B100 – (20 buses of the city Ljubljana).

The amount of biodiesel sold in 2005 represented 0.35% of the energy value of the fuels sold. The target value for the said year, which was considered a test year, stood at 0.65%, whereas the Decree on the Promotion of Use of Biofuels (2006) has envisaged a share of not less than 1.2% already for 2006. The meeting of target values in Slovenia will be aggravated in particular by insufficient agricultural production areas. Production of the pure plant oil reached 8000 t in 2007 and with the new plant in Pinus the refinery of biodiesel reached 50.000 tonnes per year production. Nafta Lendava - Eco and the Austrian partner CMB Maschinenbau & Handels GmbH of Graz in January 2007 signed a contract to build biodiesel plant in Lendava. Production was estimated annually 60 thousand tons of olive seed and 6 thousand tonnes of other oils and methanol from the oil, investment would be worth 23 million EUR. Since economic crisis also affected the economics of biodiesel production: crude oil price is relatively low, prices of raw materials for biodiesel production - oilseeds, which are mainly used for food – didn't followed a decline in oil prices. Therefore, the production of biodiesel is uneconomical in past years, so the petrol stations almost entirely stopped the sale of pure biodiesel; they maintained sales only for the legally obligated percentage of biodiesel in mineral fuels mixture. Biodiesel production has also declined in Germany and France, so Nafta Lendava decided to wait for with investments until the situation returns to normal. Since July 2009, the situation improved. The price of crude oil stabilized between 70 and 75 dollars a barrel, also partially adapted to the price of rapeseed.

Vegetable oil and biodiesel:

The biggest potential for liquid biofuel production in Slovenia is Vegetable oil and biodiesel. The main feedstock for production of both biofuels is oil from rapeseed compression process. For the final production of biodiesel further processing with esterification is needed. According to the Statistical office (SURS) in 2005 there was 2.500 ha of land planted with rapeseed, in 2006 2.839 ha and in 2007 there was already 5.358 ha of land used for planting rapeseed. From these amounts of rapeseed around 15.000 t of seed and about 5.000 t of biodiesel was produced. Specific data is given in the Table.

Table 13. Summary table of rapeseed and biodiesel production

Area of planted rapeseed	5.358 ha
Production of seeds	14.740 t
Production of biodiesel	4.913 t

The Ministry of Agriculture, Forestry and Food estimates that there is about 6000 to 7000 ha of land area appropriate for growing rapeseed. In 2007 there were only two bigger producers of biodiesel in Slovenia. According to the biodiesel producers the production of biodiesel was around 7.300 t in 2007, from which more than half was exported, mostly to Austria and Germany. Homegrown and imported rapeseed was used for the production of biodiesel.

Bioethanol in Slovenia is not at its full production and it is estimated that the production capacity of the plant would be around 60.000 t per year.

1.7 Biodiesel

Table 14. Estimation of the total contribution of all RES technologies in Slovenia, which will reach the mandatory targets for 2020 and indicative interim guidelines on shares of energy from renewables in the transport sector for 2010-2020

[ktoe]	2005	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Bioetanol/bio-ETBE	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
From which bio-fuels ⁽¹⁾ article 21(2)	0,00											
Imported ⁽²⁾	0,00											
Biodizel	0,00	58,57	79,00	99,43	119,31	139,19	159,06	173,65	188,24	202,82	217,41	231,99
From which bio-fuels ⁽¹⁾ article 21(2)												
Imported ⁽³⁾												
Hydrogen from RES	0,00	0,00										
RES Electricity	3,89	4,39	4,57	4,75	5,32	5,90	6,48	7,05	7,62	8,19	8,76	9,33
From which road transport	0,00	0,00		0,00			0,00					0,00
From which non-road transport	3,89	4,39	4,57	4,75	5,32	5,90	6,48	7,05	7,62	8,19	8,76	9,33
Other (biogas, vegetable oil, etc.)	0,00											
From which bio-fuels ⁽¹⁾ article 21(2)	0,00											
TOTAL	3,89	62,96	83,57	104,18	124,63	145,09	165,54	180,70	195,85	211,01	226,17	241,32

Source: IJS

Table 15. Accomplished shares of biofuels by 2008 and a commitment to 2020 from the total annual amount of fuel that is put on the market for motor vehicles.

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Commitment	2	3	4	5	5,5	6	6,5	7	7,5	8	8,5	9	9,5	10
Diesel														
Gasoline														
Accompl. total	0,83	1,2												
Accompl. Biodiesel	0,83	1,2												
Vegetable oil														
Accompl. Bioethanol														
Share of accomp.	42 %	40 %												

Source: IJS

2 Price developments

There's no price statistics on wood fuels available in Slovenia. Wood fuels market is not organized. Most of the wood fuels are sold directly from producer to user. Regarding prices analysis showed that prices fluctuate between € 29 and € 220 per unit, depending on packing type.

Table 16. Prices of wood biomass in Slovenia, August 2010 (various sources)

	€/t	€/stacked m ³	€/loose m ³
Logs	114	70	
Wood chips	29-90		10-20
Briquettes	194		
Pellets	180-220		

Only a small part of trade is conducted through the regulated market - through the biomass exchange, which was established in 2004. The main purpose of the establishment of exchange was the abolition of opacity associated with trading on unorganized market, but also to facilitate wood products trade.

Key features of the price of biomass are:

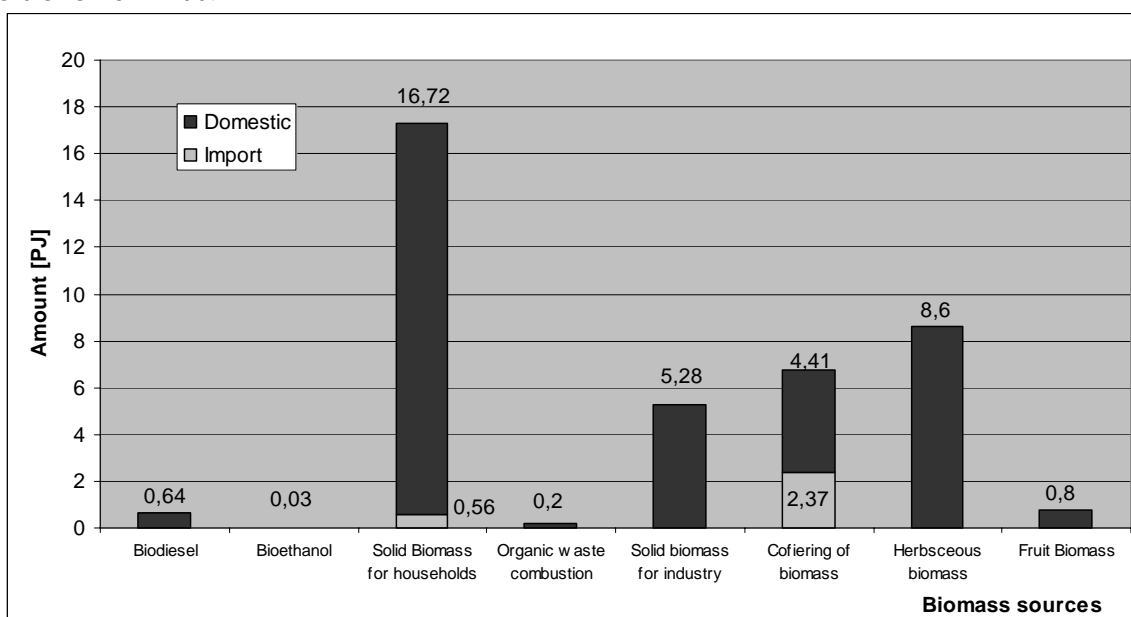
- Stability over a long period; any changes in prices are due modified long-term expectations or changes of competing fuels prices.
- A significant seasonal effect on prices. During the summer months the wood biomass is cheaper than in the heating season,
- The local nature of the wood biomass trading prices in Slovenia; prices are also geographically specific.
- There is no volatility in the market. This means that with the wood biomass there are no the daily price fluctuations.

3 Imports

Import is considered in terms of raw material import, especially in wood pellets production (Bosnia). The quantities however are minimal. (BAP Driver).

3.1 Import of solid and liquid biofuels into Slovenia

Graph 1: Amount of domestically produced and imported biofuels and solid biomass [in PJ] in the Slovenia in 2007



Import of 0,56 PJ was recorded for solid biomass in use of heating in households and a bigger amount of import 2,37 PJ was in Slovenia in 2007 used in co-firing in coal and gas power plants.

4 Export

Table 17: Major pellet trading companies in Slovenia

Pellet trader	Sales to:
Istrabenz – Gorenje, Nova Gorica	<ul style="list-style-type: none"> Italy (60 %) Slovenia (40 %) (power plants)
ENERLES d.o.o.	<ul style="list-style-type: none"> Italy (90 %) Slovenia (10 %) (small shops)
Profilles	<ul style="list-style-type: none"> Italy (80 %) Slovenia (20 %) (15 % to power plants)
LINDAP d.o.o.	<ul style="list-style-type: none"> Austria (20 %) Italy (20 %) Slovenia (60 %)
BIODOM	Slovenia
Peleti-Expres doo	Austria

Analysis of trade flows in 2006 compared to the previous year shows for about 26 % of increase in exports of coniferous logs. An export of industrial roundwood hardwood and hardwood timber remains at the level of 2003. Export of firewood has increased for three times. Import trends of conifer logs and firewood are similar, but the quantities are small and do not show an increase in compensation due to a deficit in the domestic market.

Table 18. Exporting of refined biomass (countries and amount in tons and PJ).

REFINED WOOD FUELS	Pellets (tons)	Pellets (PJ)	Briquettes (tons)	Briquettes (PJ)	Remarks
Export					
Italy (mostly) and Austria	42,000	0.72			
Austria (mostly) and Croatia			1,000	0.02	rough estimation from 2002

Export is considered as it is seen mainly as a threat from the national point of view and as an opportunity from producers' side. Destination is mainly Italy and Austria. The most timber and wood fuels are exported to Italy as well as slaughter waste that origin in western part of the country for instance. There are also some Austrian companies established in Slovenia that buy and produce wood for the Austrian market.

5 Transport

Average connectedness of Slovenian forests with roads in 2001 was 20.9 m / ha (SFS 2004), which means that the average distance between the roads is about 500 m. Connection of forest roads, which consists of a network of forest and public roads, to forest management areas vary considerably. From 2001 to 2005, the total length of 81 km of new construction of roads and sledges 1846 km. Construction of the sledge had been held in planning framework, while the construction of forest roads heavily stalled. In particular, private owners do not have sufficient funds for construction of roads which is 40-80 € / m at the sledge 7-21 € / m.

Transportation of woodlogs, roundwood and logwood

The transport may begin in the forest sledges where logs, logwood are manually loaded on agricultural trailer or forest semi-trailer. In this case transport to a forest road takes place as a form of harvesting, but it can continue without shifting to the end user or further processing site, which is not in the woods. Transport of wood is more likely to begin on the forest road, with truck with cable crane with or without (semi-) trailer. With forwarders a form of organization has developed with which the wood is transported from the forest road to the further production site with semi-trailers skidders, which are fitted with handles instead of sides.

Transportation of woodchips can be started already at the felling site, where the chips are processed with harvester, chipper and forwarder with chipper. In these cases, the chips are transported to the forest roads in containers or those machines or with forwarder with a special container. All these machines have the option to scatter content to truck or to the (semi) trailer, waiting along the forest road. Wood chips can be transported from the production site in agricultural tractors and trailers, but in practice this option is usually used with smaller or medium-sized chippers. If the timber has been packed to the forest road in stems, then the wood chips can be produced with different chippers in storage at the forest road, transport to storage or end user can be than made:

- agricultural tractors and trailers (approximately 10 loose m³, with larger sides 13 loose m³ if the attached two trailers 20 and 26 loose m³);
- tractors and trailers for special loose cargo (up to 50 loose m³);
- dump trucks by truck or truck trailers to tip up (up to 80 loose m³);
- by truck skidders (up to 90 loose m³).

6 Promotional measures favourable for regional/international trade

6.1 Legal framework and legislation

Several Slovenian policy initiatives address the use of RES (based on: Mr. Lojze Subic, AURE, 2005):

1. "Resolution on the Strategy of Energy Use and Supply of Slovenia" – February 1996, long-term objective to substantially increase the share of renewable sources within the primary energy balance;
2. »The Energy Act" - September 1999, places special emphasis on the promotion of the use of renewable energy resources and gives priority to the utilisation of renewable resources before the energy from non-renewable resources;
3. The Resolution on the National Energy Programme, National Assembly (ReNEP) - May 2004, The ReNEP proposes financial support of € 7.3 million per year for implementing the programme in the field of woody biomass, while the proposal for the yearly budget intended for efficient energy use and RES amounts to € 58.3 million per year.

Moreover, for the period 2007 – 2013 Operational Programmes have been launched, approved by the European Commission:

http://www.svlr.gov.si/en/main_gosp_areas_of_work/eu_cohesion_policy_department/.

The National Strategic Reference Framework states that programmes will be implemented that promote investments to increase energy efficiency and the use of renewable energy sources (e.g. use of modern technologies for heating). The indicative budget for the period allocated to the thematic area "Energy: Renewable energy: Biomass" is € 21.300.000.

The support of biomass as renewable energy source (i.e. production, usage, and technological development) is covered by programmes like the National Strategic Plan of Rural Development raising added value and the quality in production and processing of agricultural, food and forestry products.

Furthermore, the Operational Programme Strengthening Regional Development Potentials (The determination of measures enabling the modernization of the existing and the introduction of new technologies encompasses the environmental requirements concerning the use of renewable energy sources) and the Operational Programme of Environmental and Transport Infrastructure Development (rehabilitation of heating systems, installation of condensation and modular boilers, installation of boilers using wood biomass) are aimed at promoting renewable energy

The strategic objective of the ReNEP in the field of RES is to raise the share of renewable energy sources to 12 % (without big hydro) by 2010, which includes the following: increase in the share of RES in heat supply from 22 % in 2002 to 25 % in 2010, increase in the share of electric energy obtained from RES from 32 % in 2002 to 33.6 % in 2010, and achieving the share of bio-fuels in transport to 5.75 % in 2010. ReNEP has foreseen funds for implementation of biomass CHP systems in industrial sector and introduction of biogas systems at larger farms. There is new "National Energy Program" in preparation. Green Book for NEP is in public proceedings. Also new REAP is in preparation that will be substitution for nBAP. However, the goals are not going to be met.

6.2 Trade instruments

Biomass on-line trading portal Borzen is available from 2004 and its goal is to contribute to a better and clearer overview of the biomass market. It is freely accessible and is aimed for companies and individuals working in this market, as well as the general public. Access is controlled only to the trading section. RES-biomass trading on <http://ove.borzen.si> is actually a virtual market place for biomass where the demand and supply for the biomass (chips, pellets, and firewood) meet.

Firewood has an important role in the biofuel branch of Slovenia, although the market is of somewhat spontaneous nature. Firewood trade and delivery none the less is running well. There has been some internet trading going on and specialized producers are growing in the last years, the majority firewood trade, however, still means uncontrolled buy and sell from individuals (mostly farmers). There seems to be two fairly independent woodfuel circuits: one household circuit that uses fuelwood mainly from forests and farmlands (and marginally charcoal) and one industrial circuit that uses residues mainly from the wood, pulp and paper industries.

The greatest obstacle is better enforcing of the law on renewable sources. Acquisition of various subsidies is too slow. The country does not encourage the installation of large-scale biomass heating systems.

6.3 Financial instruments

The main financial instruments are the following: granting of aid from the national budget or extending loans with a subsidised interest rate for investments, providing favourable prices for the electricity produced either from renewable energy sources or by cogeneration from fossil fuels with high utilisation rate, exemption of CO₂ tax if certain measures are implemented, exemption from excise duties for biofuels, etc.

The support mechanisms for increasing the use of RES and efficient energy use (EEU) (buying-in prices, guaranteed purchase deadline, administrative obstacles) are insufficient.

7 Political approach to biomass trade

Opportunities for sustainable biomass trade

Firewood has an important role in the biofuel sector of Slovenia, although the market is of somewhat spontaneous nature. Firewood trade and delivery none the less is running well. There has been some internet trading going on and specialized producers are growing in the last years, the majority firewood trade, however, still means uncontrolled buy and sell from individuals (mostly farmers). There seems to be two fairly independent woodfuel circuits: one household circuit that uses fuelwood mainly from forests and farmlands (and marginally charcoal) and one industrial circuit that uses residues mainly from the wood, pulp and paper industries.

Increased use of forest wood biomass for renewable energy purposes is planned with the increased use of wood-quality in the woodprocessing industry. Increased extraction of biomass from forests is planned mainly due to increased production of wood products, which will have a positive impact on the use of renewable energy sources. Energy from forest biomass, together with the use of quality wood products in the wood processing industry will significantly add to the development of certain activities in the forestry and wood processing mills. Growth in energy use of wood biomass from forest will have basis on the mutual growth of other sectors that are related. Negative impact on other sectors based on agriculture and forestry is therefore not foreseen.

Chances for quick achievement of sustainable product chains

In part of the forest biomass this is already more or less the fact. Forestry sector with its forestry service has got long tradition in what would be now called sustainable forest management, which comprises selective felling and excludes clear cuts. Results are clearly seen as forests in Slovenia are as close to natural state as it gets and have grown from 36% forest cover (first official recordings in 1875) to currently over 60%.

As for the other biomass sectors this is not yet the case. As one of the steps technical specification for solid biofuels prCEN/TS 14961 were translated and are now in process of adoption.

The needed sustainability criteria definition, certification and monitoring for liquid and solid biofuels are to be addressed and regulated by an update to the Energy Act.

Still there is a lot of room for improvement in other sectors e.g. agriculture and transport.

No. Targets are not much translated and differentiated for single bio energy sectors due to lack of political interest. To some extent the definition of national targets & priorities is based on a sound methodology and reliable statistical data, however there is in some cases a strong political interference.

Chances of intraregional, transnational and international biomass/bioenergy trade

Export is considered as it is seen mainly as a threat from the national point of view and as an opportunity from producers' side.

Destination is mainly Italy and Austria. The most timber and wood fuels are exported to Italy as well as wastes from the western part of slaughter waste for instance.

Import is considered in terms of raw material import, especially in wood pellets production (Bosnia). The quantities however are minimal considered in terms of impact of foreign markets on the Slovenian. There is a fear that because of better price biomass would be exported rather than kept at home, in some extent this is already happening.

Barriers for development of unimpeded market activities

The greatest obstacle is better enforcing of the law on renewable sources. Acquisition of various subsidies is too slow. The country does not encourage the installation of large-scale biomass heating systems.

It is estimated that, in light of the criteria to achieve optimal stock of wood in Slovenian forests, the increase of extraction of biomass from forests could be reached in a sustainable way at least to the extent of the existing quantity of biomass from forests. There are several barriers to implementation of this measure to boost renewable energy source, main are poor infrastructure of forest roads and messy roundwood sawmills system, including the separation of deteriorating wood for the production of renewable energy from high quality wood suitable for the wood processing industry.

Importance of international biomass trade to balance national imbalances

Export of wood for example is considered, for other types of biomass the situation is not clear.

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