

Biomass: Implementation and Support Schemes

Jaroslav Knápek, Jan Weger,
Kamila Havlíčková

Reinhard Haas, Lukas Kranzl,
Gerald Kalt

STRUCTURE - CONTENT

1. Biomass policies

- Czech Republic (RES-E Act, National Programme on RES, support of agriculture non food production)
- Comparison of promotion schemes for bioenergy in CEE countries
- Biomass promotion schemes in Austria

2. Biomass potentials and cost

- Biomass yield investigation in ČR (SRC, permanent grassland, forest residuals, energy crop)
- Biomass potentials in selected CEE countries (ČR, SR, Slovenia, Poland, Hungary)
- Cost resource curves (CEE countries, Austria)

STRUCTURE - CONTENT 2

3. Market analysis

- Biomass market in ČR (energy utilization of biomass, biomass export and import, briquettes and pellets production, competitiveness of biomass with other fuels, present barriers of biomass market development)
- Development of Austrian biomass demand in the near future (biofuels, biomass CHP, pellets)

4. Conclusions

- Prospects for biomass availability in Austria
- Biomass potentials and utilization in ČR
- Barriers for energy crop and biomass market development in ČR
- Trade with biofuels for transport

BIOMASS AND RES POLICIES IN ČR - NEWS

RES-E act 180/2005

- Came into force in August 2005
- Only electricity covered
- Feed-in tariffs and green bonuses scheme (paid by distribution companies), producers have right to choose scheme at the beginning of the year
- Bonuses should reflect higher business risk
- Feed-in tariffs assured for 15 years (annual adjustment by PPI), principle of time matrix
- Tariffs and bonuses should assure 15 years payback time
- Economic preference of energy crop (planted biomass) utilization

BIOMASS AND RES POLICIES IN ČR – NEWS 2

Proposed feed-in tariffs for 2006

Type of RES	Kč/kWh	cE/kWh
Small hydro (<10 MW)	2,34	7,8
Photovoltaic	13,2	44
Wind energy	2,46	8,2
Geothermal energy	4,5	15
Biomass	2,68	8,93
Biogas stations	2,98	9,93
Landfill gas	2,23	7,4
Biogas - sewage plants	2,23	7,4

Green bonuses

- Reflect higher business risk
- Market price + green bonus
- Depends on share of market price in feed-in tariffs (increase from 2-3 % up to 9 % for different RES)

BIOMASS AND RES POLICIES IN ČR – NEWS 3

Support of non-food agriculture production

- SRC: 2070 EUR/ha for establishment, many restrictions

Plantations	2001	2002	2003
Reproduction	3,45 ha	0,75 ha	3,8 ha
Production	6,89 ha	15,5 ha	10,2 ha

- Energy crop: 69 EUR/ha, area in ha

Energy plant	2003	2004	Growth
Sorrel (dock) 'Uteusa' (<i>Rumex</i> sp. hybrid)	788	938	19%
Brom grass (<i>Bromus inermis</i>)	15	0	0
Jerusalem artichoke (<i>Heliantus annuus</i>)	2	0	0
Hemp (<i>Cannabis sativa</i>)	11	31	182%
Amaranthus (<i>Amarathus</i> sp.)	42	23	0
Hair-grass (<i>Agrostis</i> sp.)	2	2	0
White melilot (<i>Melilotus alba</i>)	92	0	0
TOTAL	952	994	4,4

- Permanent grass growth (LFA): 97-161 EUR/ha, currently no energy utilization

ROLE OF BIOMASS AND BIOMASS MARKET

- Share of biomass on PES (2003)

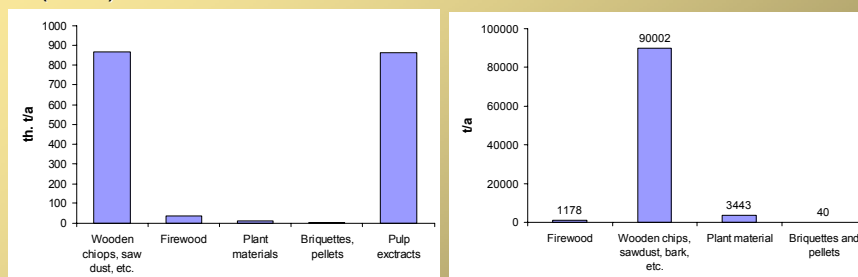
	Heat production (GJ)	Gross electricity generation (GJ)	Produced energy (GJ)	Share on PES	Share on energy production from RES
Biomass*/	29 625 688	1 342 701	30 968 389	1,7462 %	73,97 %
Biodegradable part of waste	2 047 484	34 519	2 082 003	0,1174 %	4,97 %
Biogas	780 639	388 282	1 168 921	0,0659 %	2,79 %
Hydro power	0	4 980 481	4 980 481	0,2808 %	11,89 %
Wind power	0	14 040	14 040	0,0008 %	0,03 %
Liquid fuels **/	2 660 000	0	2 660 000	0,1500 %	6,35 %
Total/**	35 113 811	6 760 023	41 873 835	2,3611 %	100,00 %

- Biomass and electricity generation (2004)

Type of biomass	Number of installations	Installed capacity [MW]	Electricity generation [MWh]	Own consump. [MWh]	Electricity		Biomass consump. [t]
					to grid [MWh]	other [MWh]	
Chips, waste	32	1081	272949	41472	201275	30202	243834
Pulp extr.	5	133	296297	156855	0	139442	157203
Plant mat.	8	180	20840	1169	19671	0	11590
Pellets	2	94	2620	483	1882	255	1227
Total	47	1488/*	592706	199979	222828	169899	413854

ROLE OF BIOMASS AND BIOMASS MARKET 2

- Heat production and solid biomass utilization in companies: 16,9 TJ (2004)



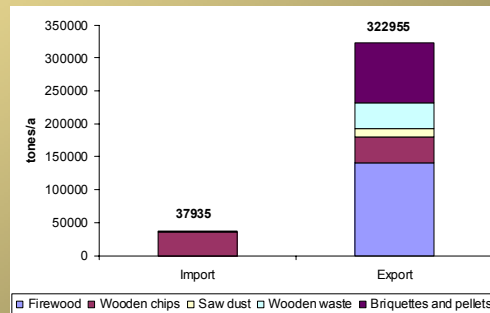
- 643 registered biomass users for heat generation, 36 municipalities with central heating system (94 MWth, 766 TJ of heat, 95 th. tones of biomass used)
- Households: 19,5 PJ (2004 CZSO investigation)

ROLE OF BIOMASS AND BIOMASS MARKET 3

● Briquettes and pellets

	Briquettes [t]	Pellets [t]
Estimated production	125000	12800
Export	81100	9000
Import	980	0
Inland consumption	44880	3800
- herein bigger consumers	2290	2100
- herein smaller consumers	42590	1700

● Biomass market and biomass export (firewood 44% of export)

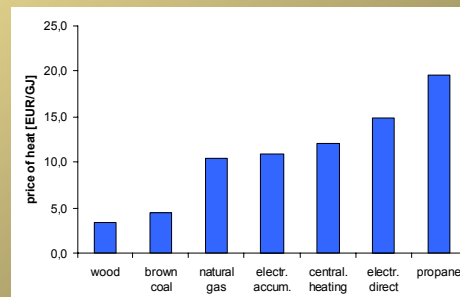


ROLE OF BIOMASS AND BIOMASS MARKET 4

● Competitiveness of biomass with other fuels

Type	CZK/t	CZK/GJ	EUR/GJ
wooden chips	800 – 1 200	70 – 110	2,3-3,7
straw	800 – 1 200	57 – 86	1,9-2,9
pellets	2 300 – 4 500	130 – 200	4,3-6,7
briquettes	2 400 – 2 900	109 – 140	3,6-4,7
sawdust	1 000 – 1 400	50 – 80	1,7-2,7
bark	1 300 – 1 500	100 – 120	3,3-4,0
firewood - waste	300 – 450	25 – 50	0,8-1,7
firewood	1 400 – 2 200	60 – 120	2,0-4,0

● Cost of heat from different sources, family house 90 GJ/year



BARRIERS FOR ENERGY CROP AND BIOMASS MARKET

- Knowledge and technology barriers
- Legislation barriers
- Limitations by nature protection
- Risks of biotic and abiotic damages to energy crops

Biomass market barriers:

- Barriers on side of consumers
- Barriers on side of legislation
- Barriers on side of biomass producers

