



AUSTRIAN ENERGY AGENCY

Ways of using wood

in Austria

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Timisoara, 16th of September 2008

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- Austrian Energy Agency – who we are
- Key information on energy supply in Austria
- Program of the Austrian Federal Government and the targets
- Power Plants and their demand
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Austrian Energy Agency – in a Nutshell

- Austria´s national energy agency (*1977)
- 80 employees and 7 Million € annual turnover
- 50 members from policy & economy
- Independent Think Tank: from basic decision-making to the implementation

President:
Minister of Environment
Josef Pröll



Vice -President:
Minister of Economy
Martin Bartenstein



Vice-President:
Governor of Vorarlberg
Herbert Sausgruber



50 Members: Various Interests – One Common Goal

■ Politics

- Federal Government, Federal Provinces, Association of Austrian Cities and Towns

■ Economy

- OMV, EVN, OMV-Cogeneration, Wiener Stadtwerke Holding, TIWAG, Energie AG, VKW, Feistritzwerke-STEWEAG, A&B, E-Control, KWI, Bundesforste AG, Bewag, VAMED, KPC, Hagelversicherung

■ Stakeholder and Organisations

- WKÖ, IV, Fachverbände, AEE, Austropapier, Biomasseverband, GBV, GDI, IWO, ÖAMTC, ÖEKV, ÖVE, ÖVFK, VKI, VÖWGW, etc.

■ Scientific Institutions

- WIFO, EIV, LEV

Main working areas...



- Innovative energy technologies
- Efficient energy systems and
- Renewable energy sources

Cooperation within projects and networks on national, EU and international level

Sustainable energy supply and development of the Austrian economy

Energy knows no borders! We carry out projects on the national, on the EU ...

■ National

- Advice & studies for policy makers & companies; energy and environmental concepts
- Energy scenarios, development of strategies, implementation of the governmental program in the field of energy and the environment
- Feasibility studies, evaluation and improvement of financial support mechanisms (e.g. feed-in-tariffs)
- national biomass action plan, national energy efficiency action plan

■ EU

- Advice for the EU-Commission (e.g. development and implementation of the building directive, eco-design directive)
- Projects for the decision-making process of the EU-Commission (monitoring bioheat, PV-Policy, evaluation and monitoring of energy savings, ...)
- Networking with national energy agencies: EnR (European Energy Network)

... and on the international level!

- Management of energy partnerships in the field of renewables & energy efficiency: CZ, SK, SLO, BG, RO, UA
- Advice for international organisations
 - EBRD, World Bank, UNIDO, USAID
- Know-how transfer and international positioning of Austrian technologies and services
- Organisation of study tours for international delegations
 - Azerbaijan, Montenegro, South Korea, Romania, Bulgaria, Macedonia, Turkey, Armenia, France, etc.
- Event management
 - Global Forum on Sustainable Energy (GFSE), Central European Initiative (CEI), etc.
 - Program design and field trips

*ener*CEE.net

- Information platform
 - energy market
 - energy policy and legal framework
 - administration
 - facts and figures on supply and demand
 - energy related funds and support mechanisms for renewable electricity

- **Country Profiles:** Albania, Bosnia & Hercegovina, Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Macedonia, Moldova, Montenegro, Poland, Romania, Serbia, Slovak Republic, Slovenia, Ukraine

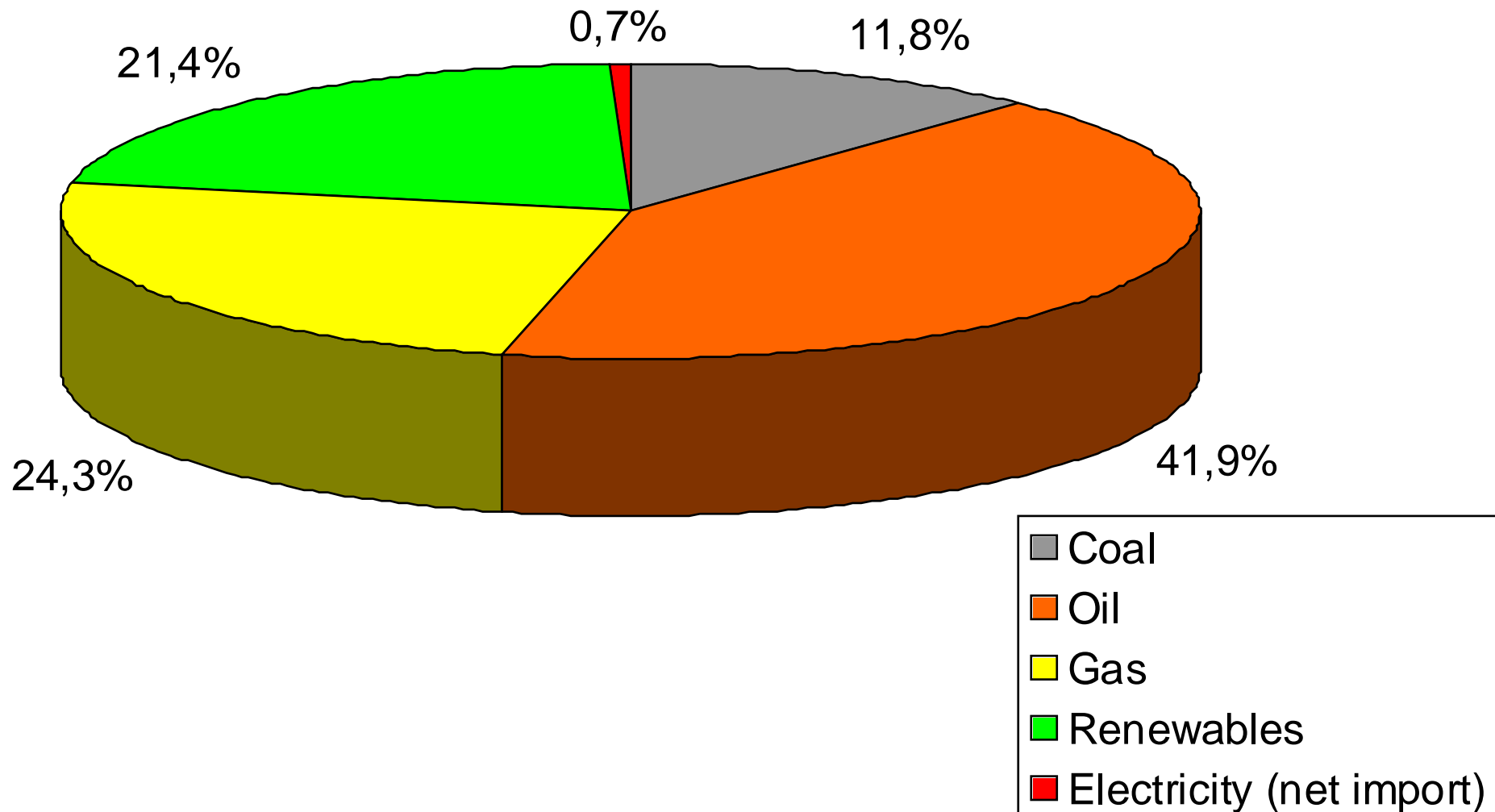
- Free **monthly Newsletter** – register at www.enercee.net

Situation in Austria

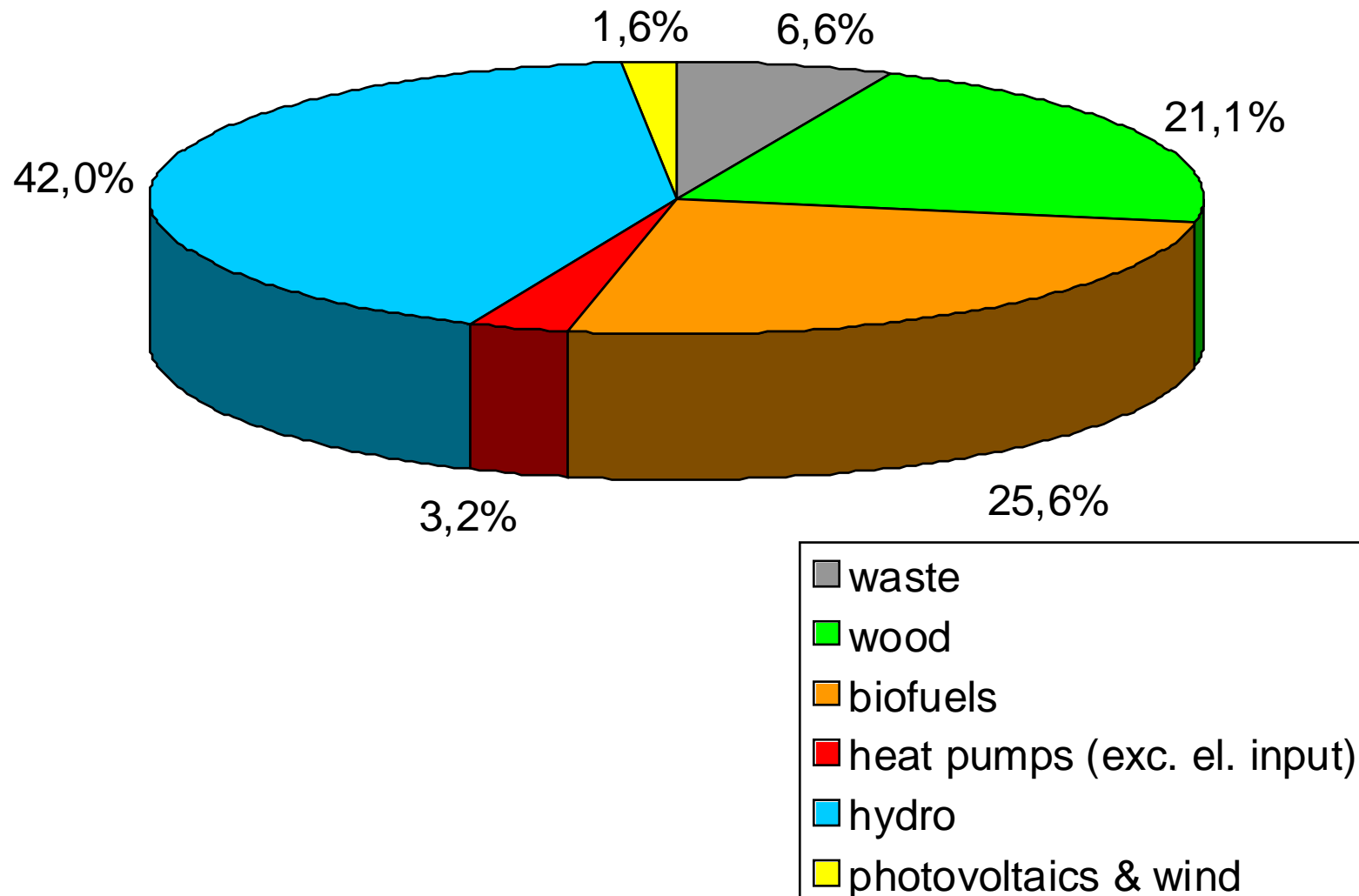
- **Austria: 83.871 km²**
- **of which 47% covered forest**
- **steep alpine region**
- **22 million m³ annual cut, 7.6 million m³ additional potential for forest biomass**
- **13.7 million m³ import, 9.9 million m³ export**

- **long tradition in forestry -> high expertise, but complex structures**

Austria's structure of gross domestic energy consumption (2005: 1.140 PJ)



Austria's structure of renewable energy (gross domestic consumption 308 PJ in 2005)



The program of the Austrian Federal Government from January 11th

- Increase the share of RES on total energy consumption from 21% in 2005 to a minimum of 25% until 2010, and further double the share up to 45% until 2020
- Increasing the share of renewable electricity production from 59% in 2005 to 80% until 2010, and 85% until 2020
- Switching a minimum of 400.000 households to renewable energy sources until 2020, 100.000 households of which until 2010
- Revenue neutral increase on the share of alternative fuels in the transport sector to 10% until 2010, and to 20% until 2020
- A Masterplan for using hydro power to its optimum
- Doubling biomass consumption until 2010
- Establishing a methane based fuel with a minimum share of 20 % bio-methane until 2010
- An area wide network of E85 and methane gas stations until 2010
- Improvement of the statutory framework conditions for the feed-in of biogas

General information

- shortage of resources
- rising prices
- rising energyconsumtion

thus we know we need

- mobilisation of timber in the forests
- improving energy efficiency for the timber sector
- Short Rotation Forestry

Political goals for Austria

<p>2020: 34 % Renewables in final energyconsumption (about 500 PJ)</p> <p>→ ac. RES-directive-proposal 2007/19/EG</p>	<p>2016: 9 % Energysavingsbenchmark or 80,4 PJ energysavings</p> <p>→ ac. Energyefficiency- and Energyservices directive 2006/32/EG</p>
<p>2020: 20 % Improvement of energyintensity</p> <p>→ ac. Program of government</p>	<p>2020: Decrease of energyconsumption for 20 % (as measured by forecasts)</p> <p>→ ac. EU Council in March 2007</p>



The core element of the climate protection initiative launched by the Federal Ministry of the Environment and managed by the **Austrian Energy Agency**

programmes provide and aim at

- **information and awareness raising**
- **consultancy and training**
- **market transformation**
- **introduction of quality standards**

in close co-operation with market actors and regions

Volume: 10 million Euro

klima:aktiv objectives

- reduce greenhouse gas emission at low cost
- increase market shares of climate protecting products and services
- bring main stakeholders to support the common goals
- contribute to an innovative Austrian economy

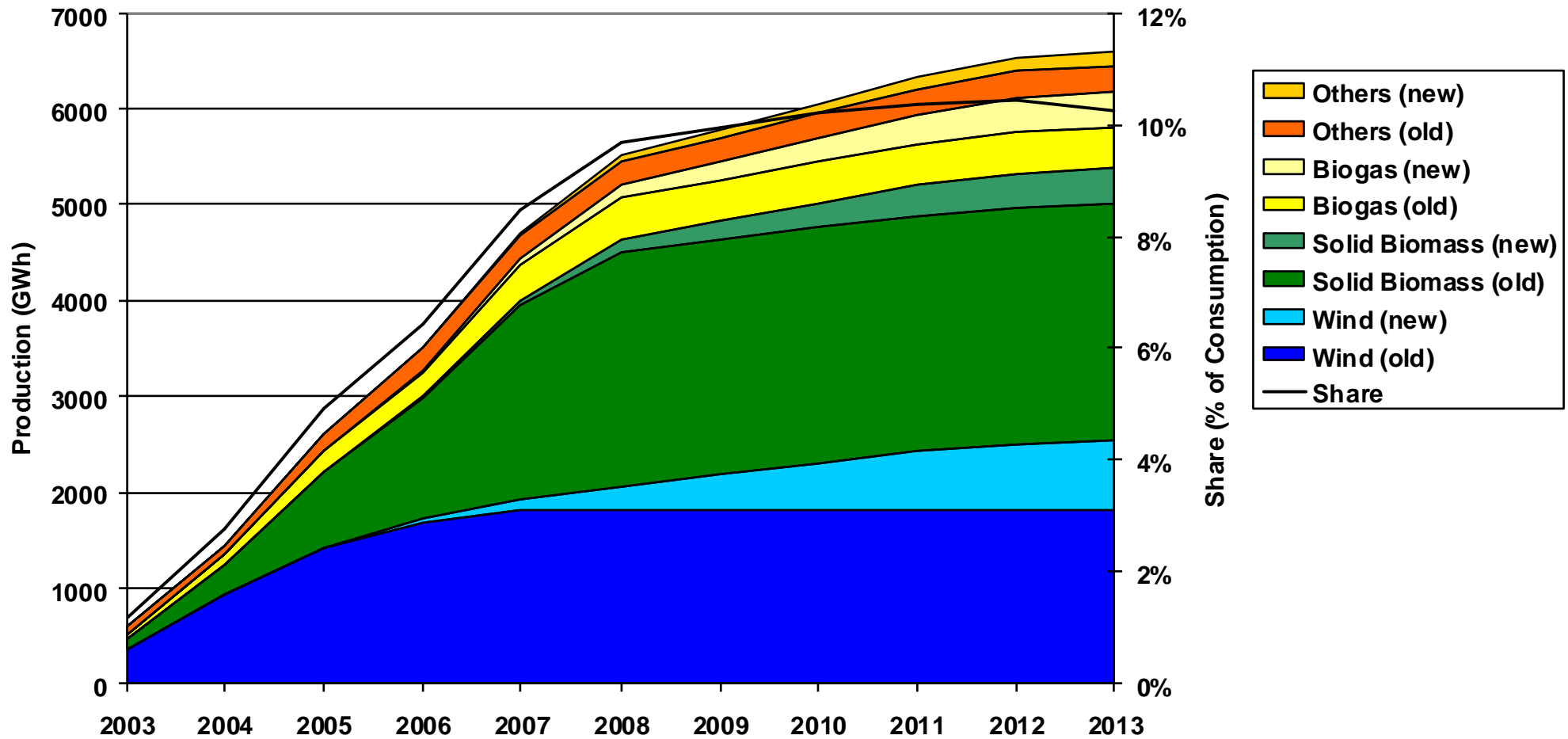
Activities and success factors

- typical activities of programs
 - activate stakeholders and create a network of business partners
 - develop further education of market partners
 - introduce quality management of new products and services
 - marketing and public relation
 - lobbying for better framework conditions

klima:aktiv program „timber for energetic use“

- lasting 4 years
- goal: support in mobilisation of not yet used resources of timber for energetic use
(goal + 2 mio. m³ per year from 2007/2008)
- workpackages:
 - WP1: building an strengthen networks
 - WP2: improvement of transparency on the market
 - WP3: improvement of services
 - WP4: steps for increasing energy efficiency
 - WP5: improvement of education
 - WP6: strengthen R&D activities
 - WP7: political lobbying
- resources:
 - 1 program manager, 3 assistances

Development of eco-electricity in Austria

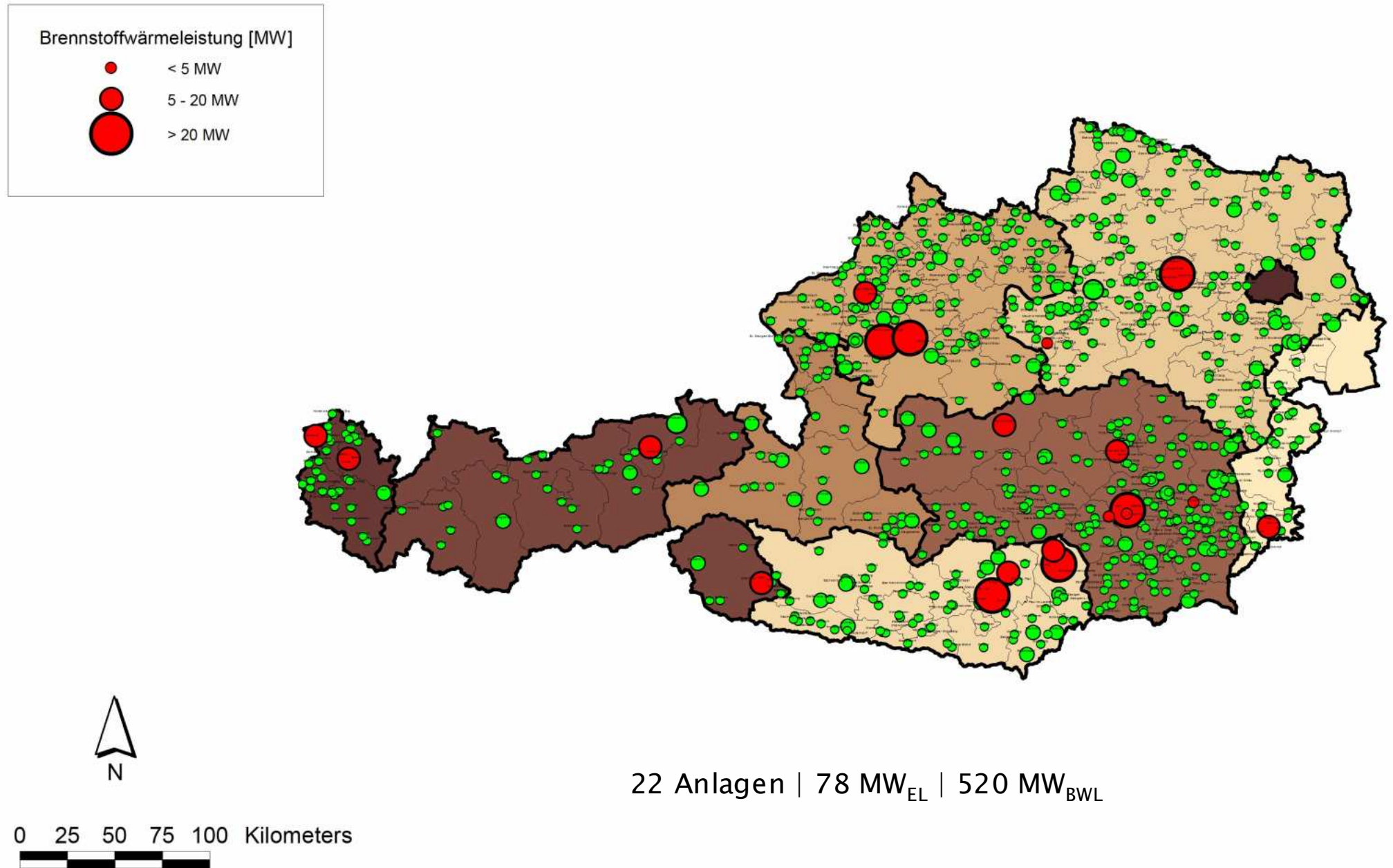


Eco-electricity biomass power plant Example of Wien Energie

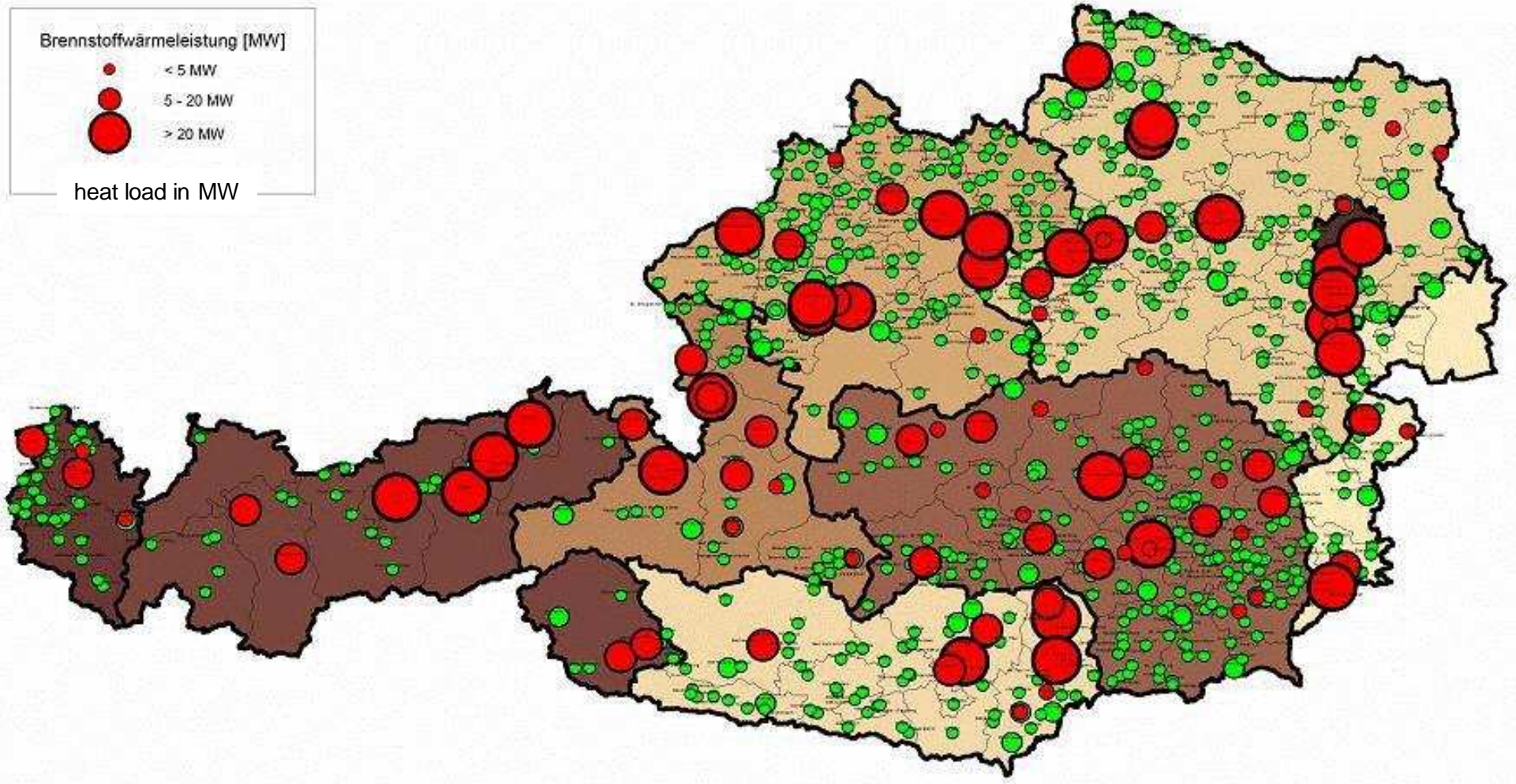
- investment
52 Mio. €;
66 MW heat load,
15 MW/25 MW_{el}
- Fuel demand
600.000 m³/year
190.000 t/year resp.



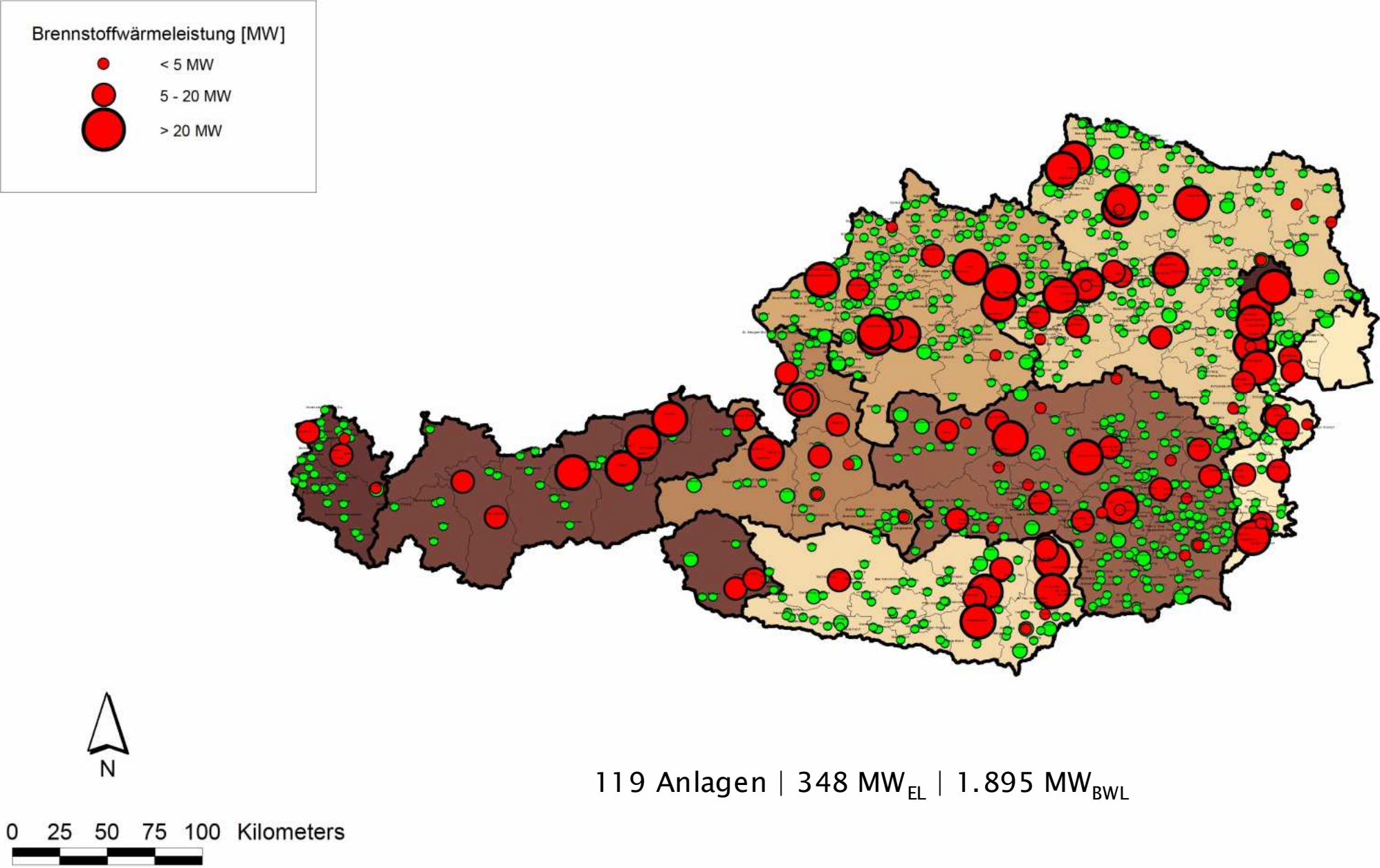
Biomasse-KWK-Projekte in Österreich | Stand 2002



Location of biomass CHPs (2006)



Biomasse-KWK-Projekte in Österreich | Prognose 2008

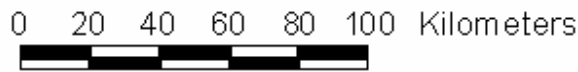
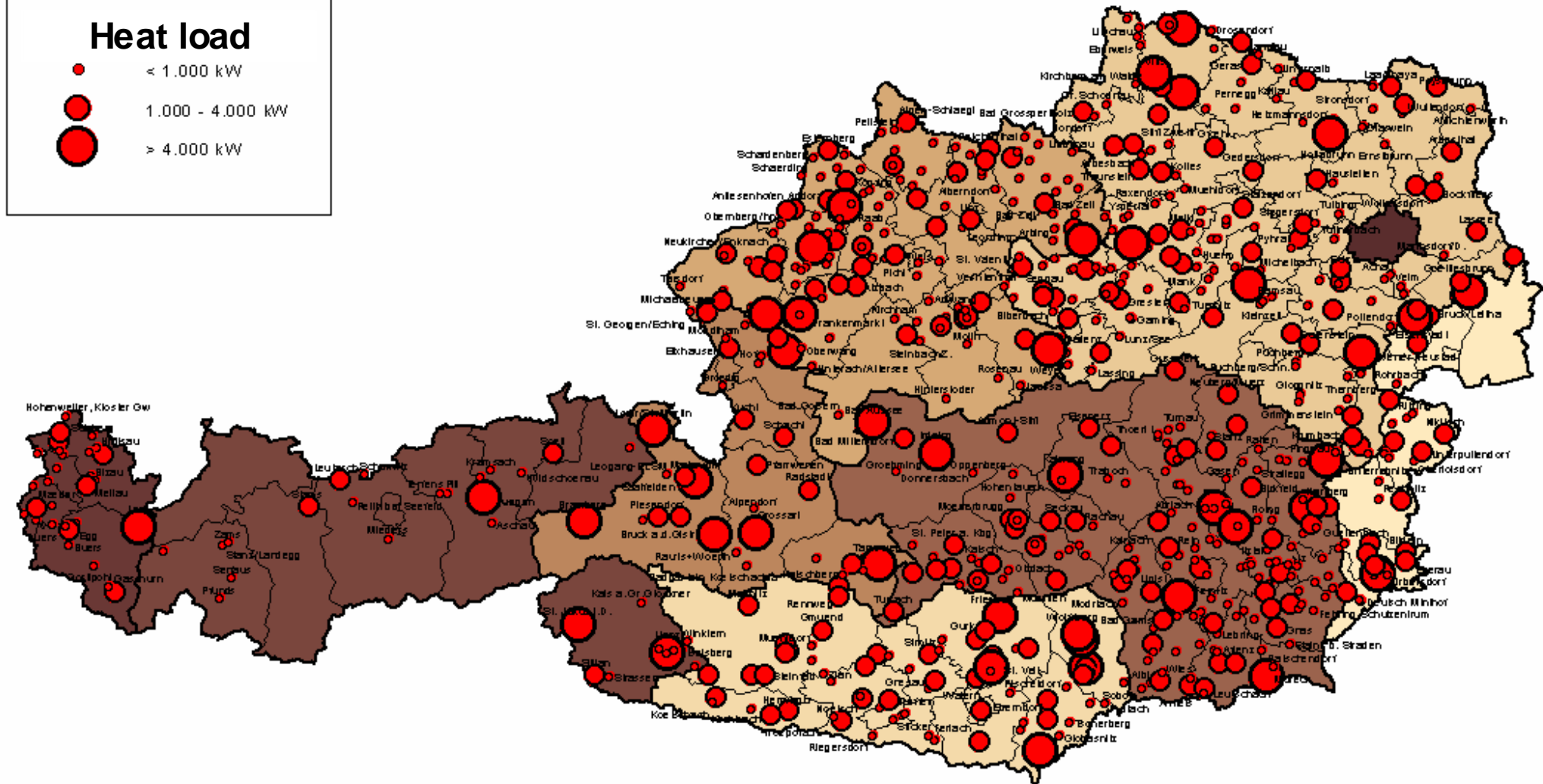
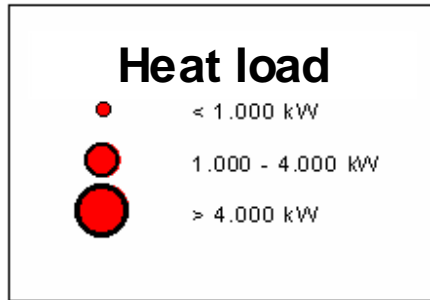


Heat production with biomass: District heating

- 500 kW - 30 MW
- distribution with hot water pipes
- modern flue gas cleaning
- since 1980 more than 1.000 plants, 1.000 MW heat load
- mostly based on local initiatives
- Investment subsidies 30 % (in specific cases up to 50%)



Location of biomass heating plants (2005)



1.002 Anlagen mit insgesamt 1.132 MW (über > 100 kW)



Heat production with wood chips



**fully automatic,
competitive**

High comfort: Heat production with pellets

- 10 - 30 kW
- automatic fuel supply, ignition, and cleansing
- > 90% efficiency
- very low emissions
50 mg CO / m³



Picture: KWB

High standards of pellets supply and logistics

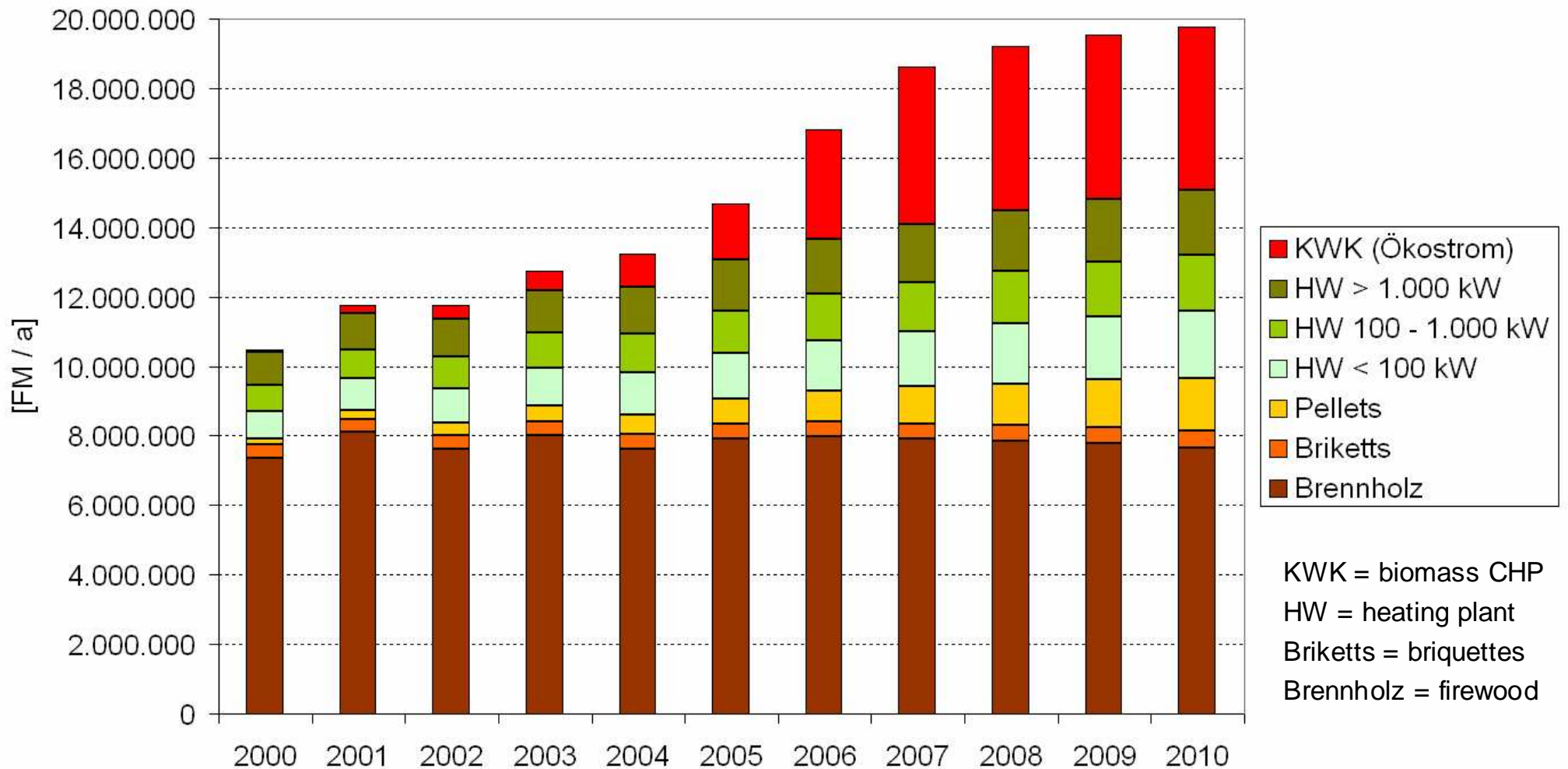


Pictures: Nemestothy

Not only for households: Pellets for SMEs (Example 80 kW)



Biomass: High demand for fuel



Spreadsheet for the calculation of parameters and prices of wood fuel assortments			
Version 1.6-ENG			
Please enter your variables in the light red cells.			
For the calculations to work as intended, macros have to be activated in the Excel settings => Tools Macro Security Security level set to "Medium".			
Move the cursor over the red triangle in the respective cell to show the hidden comments containing additional information on the respective parameters.			
Parameters			
Basic parameters	Wood species/ fuel type	Selection in the drop-down menu	non-coniferous wood
	Fuel group	Assignment to fuel groups	NCW (mixed)
	Assortment	Selection in the drop-down menu	wood chips G30
	Conversion factor	1 m ³ (solid) = x m ³ (stacked) or x m ³ (loose)	2.50
	Unit	Customary unit	m ³ (loose)
Moisture	Moisture content (H ₂ O)	% (by weight, FS)	35.0
	Hydrogen content (H)	% (by weight, DM)	6.0
Higher heating value (HHV)	HHV of dry matter (DM)	MJ/kg DM	19.3
	HHV of DM	kWh/kg DM	5.37
Lower heating value (LHV)	LHV of dry matter (DM)	MJ/kg DM	18.0
	LHV of DM	kWh/kg DM	5.00
	LHV of fresh substance (FS)	MJ/kg FS	10.8
	LHV of FS	kWh/kg FS	3.01
	LHV of FS	MJ/m ³ FS	3,613
	LHV of FS	kWh/m³ FS	1,004
Density	Mean oven-dry density	kg/m ³ (at 0% H ₂ O)	640
	Mean shrinkage	%	15.4
	Bulk density	kg/m³ (at x % H₂ O)	333
	- Proportion of wood substance	kg/m ³ (proportion of DM at x % H ₂ O)	217
	- Proportion of water	kg/m ³ (proportion of H ₂ O at x % H ₂ O)	117
	Ratio m ³ per t FS	m ³ /t FS	3.0
Ash	Ash content (estimate)	% (by weight, DM)	1.50
	Ash density (estimate)	kg/m ³	700
Price per unit	Enter the fuel price in one of the input fields, the price will immediately be converted into the other price units!	Euro/t DM	88.05
Activate macros!		Euro/t FS	57.23
		Euro/m³ FS	19.87
		Euro/MWh	19.00
		Euro/GJ	5.28
Installation parameters	Fuel demand per year	MWh/a	20,000
	Fuel ratio	%	100%

Step 1: Selection of the Wood species non-coniferous wood

Step 2: Selection of the assortment wood chips G30

Step 3: Input of the moisture content 35 %

Step 5: Results of the calculation

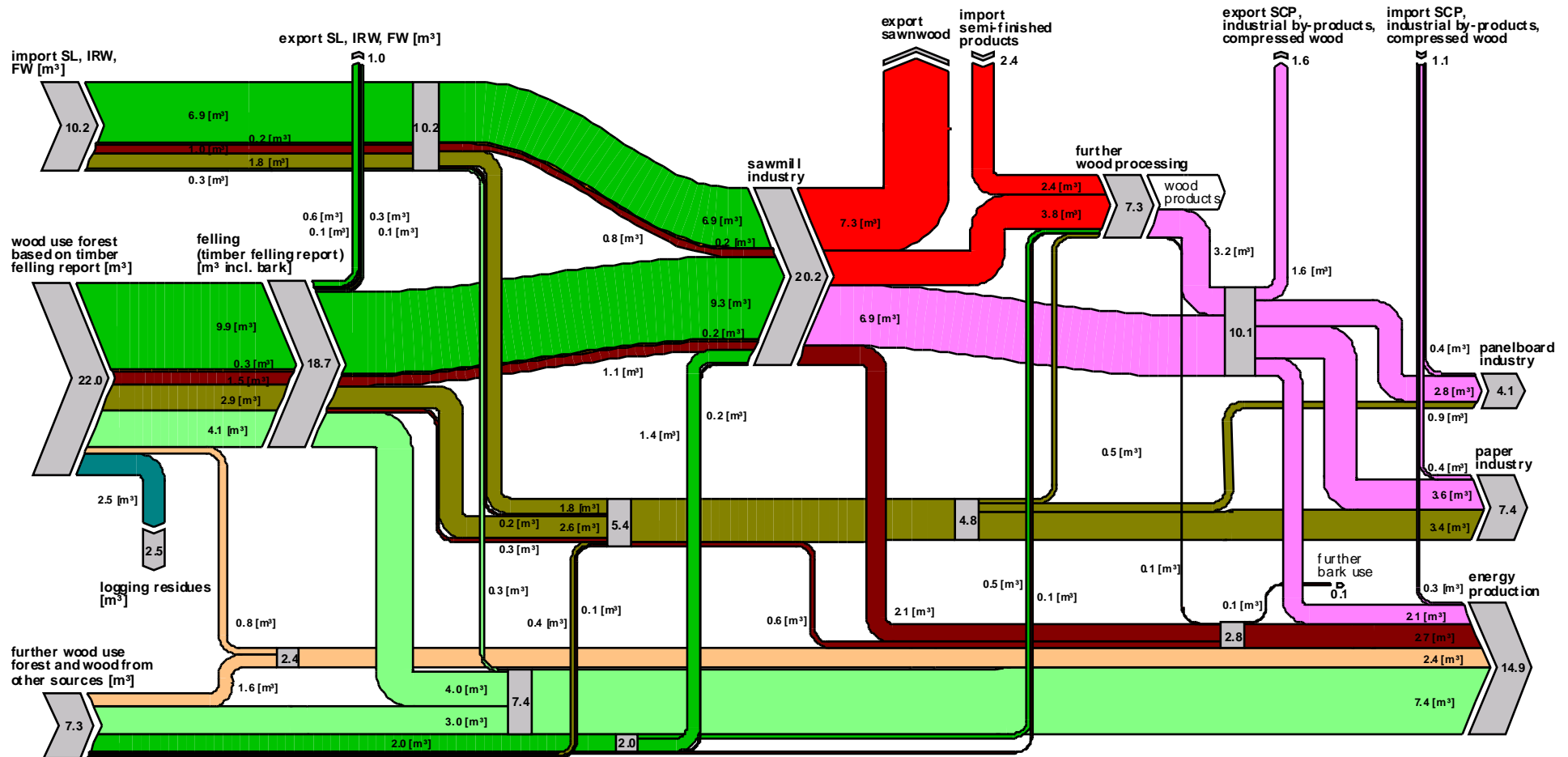
Step 4: Input of the price 19,00 Euro/MWh

Conversion factors for wood fuels (volume – weight – energy content)

Microsoft Excel - Umrechnungsfaktoren_20071029_Gesamt

Sortiment	Wasser- gehalt [%]	sm (lose)	fm (w/Feuchte Holz-masse)	t-turo	(t-atro)	HW (MWh)	HW (GJ)	pro	Anmerkungen	Kontr. HW/ sm	Kontr. HW/(t- lu)	Kontr. HW/(t- at)	Kontr. HW/ pro EH
Flinde (Nadelholz)	50%	1.000	0.300	0.236	0.118	0.542	1.951	sm (lose)	Umrechnungsfaktor für: Aufkommen Inland Außenhandel (Import und Export) Verwendung Inland	0,54	2,30	4,59	0,698
		3.333	1.000	0.786	0.393	1.807	6.504	fm (= m³)					
		4.242	1.272	1.000	0.500	2.299	8.277	t-turo					
		8.475	2.545	2.000	1.000	5.278	19.000	(t-atro)					
		1.845	0.553	0.435	0.189	1.000	3.600	MWh					
		0.512	0.154	0.121	0.053	0.278	1.000	GJ					
Pellets (Fichte)	8%	1.000	1.459	0.652	0.600	3.131	11.272	sm (lose)					
		0.687	1.000	0.448	0.413	2.163	7.750	fm (= m³)					
		1.534	2.232	1.000	0.920	4.801	17.284	t-turo					
		1.667	2.421	1.087	1.000	5.278	19.000	(t-atro)					
		0.316	0.459	0.206	0.189	1.000	3.600	MWh					
		0.088	0.128	0.057	0.053	0.278	1.000	GJ					
Briketts (Nadel- und Laubholz)	8%	1.000	1.541	0.761	0.700	3.623	13.043	sm (lose)					
		0.649	1.000	0.494	0.455	2.353	8.472	fm (= m³)					
		1.314	2.024	1.000	0.920	4.762	17.342	t-turo					
		1.429	2.198	1.087	1.000	5.235	18.846	(t-atro)					
		0.273	0.420	0.208	0.191	1.000	3.600	MWh					
		0.077	0.117	0.058	0.053	0.278	1.000	GJ					
Brennholz hart (Hartholzholz, Mischsortiment)	20%	1.000	0.500	0.365	0.292	1.411	5.079	sm (lose)	Umrechnungsfaktor für: Aufkommen Inland Verbrauch Inland				
		1.700	0.850	0.621	0.497	2.398	8.634	rm (Stück)					
		1.400	0.700	0.511	0.409	1.975	7.111	rm (Scheit)					
		2.000	1.000	0.730	0.584	2.822	10.158	fm (= m³)					
		2.740	1.370	1.000	0.800	3.864	13.911	t-turo					
		3.425	1.712	1.250	1.000	5.000	18.000	(t-atro)					
0.685	0.342	0.250	0.200	1.000	3.600	MWh							
0.190	0.095	0.069	0.056	0.278	1.000	GJ							
Brennholz weich (Nadelholz, Mischsortiment)	20%	1.000	0.500	0.250	0.200	1.021	3.675	sm (lose)	Umrechnungsfaktor für: Aufkommen Inland Verbrauch Inland				
		1.700	0.850	0.425	0.340	1.735	6.248	rm (Stück)					
		1.400	0.700	0.350	0.280	1.429	5.145	rm (Scheit)					
		2.000	1.000	0.500	0.400	2.042	7.350	fm (= m³)					
		4.000	2.000	1.000	0.800	4.086	14.711	t-turo					
		5.000	2.500	1.250	1.000	5.278	19.000	(t-atro)					
0.947	0.474	0.237	0.189	1.000	3.600	MWh							
0.263	0.132	0.066	0.053	0.278	1.000	GJ							
Brennholz (Nadel- und Laubholz, Mischsortiment)	20%	1.000	0.500	0.308	0.246	1.216	4.377	sm (lose)	Umrechnungsfaktor für: Außenhandel (Import und Export) Verwendung Inland				
		1.700	0.850	0.523	0.419	2.067	7.441	rm (Stück)					
		1.400	0.700	0.431	0.345	1.702	6.128	rm (Scheit)					
		2.000	1.000	0.615	0.492	2.432	8.754	fm (= m³)					
		3.252	1.625	1.000	0.800	3.975	14.311	t-turo					
		4.065	2.033	1.250	1.000	5.139	18.500	(t-atro)					
0.791	0.396	0.243	0.195	1.000	3.600	MWh							
0.230	0.115	0.060	0.054	0.278	1.000	GJ							

Woodflow Austria 2005



LEGEND (all values in millions [m³]; streams < 0.1 million m³ are not shown)

- Green: sawlogs (SL)
- Brown: industrial roundwood (IRW)
- Light Green: firewood (FW) incl. bark
- Blue: logging residues
- Pink: sawmill co-products (SCP), industrial by-products, compressed wood
- Orange: off-cuts
- Dark Brown: bark
- Light Orange: forest chips
- Red: sawnwood and semi-finished products

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Thank you for your attention!

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