

RES in Vienna

Strategies and Projects

Herbert Ritter

City of Vienna

MD 27 - Municipal Department for EU-Strategy and Economic
Development, Unit Energy and SEP-Coordination

Email: herbert.ritter@wien.gv.at



CitYof+Vienna
Vienna is special.

Content

- Energy situation in Vienna: some key data
- Energy policy in Vienna: strategies
- Viennese implementation schemes: some realised RES-projects



CitYof+Vienna
Vienna is special.

MD 27 - Municipal Department for EU-Strategy and Economic Development, Unit Energy and SEP-Coordination

- MD 27 has been set up for optimal positioning of the business location Vienna in Europe.
- Develops strategies and implements measures in the following sectors: EU-funding schemes; public services; technology and labour market; energy; research & development.
- Energy unit responsible for:
 - energy policy
 - management of the Municipal Energy Efficiency Programme (SEP)
 - funding schemes for eco-electricity
 - energy consulting in Vienna
 - energy statistics



Unit Energy and SEP-Coordination: Tasks

- Strategic:
 - Analysis and monitoring of energy markets
 - Policy observation at local, national and EU level
 - Preparation of energy related policy positions
 - Development of local energy related concepts
- Coordination:
 - Management of Municipal Energy Efficiency Programme (SEP)
 - Administration of the funding scheme for Eco-electricity installations
 - Expert opinion in authorisation procedures (power plants, large infrastructure projects, etc)
 - Special representative for energy issues in municipal buildings according to climate protection concept



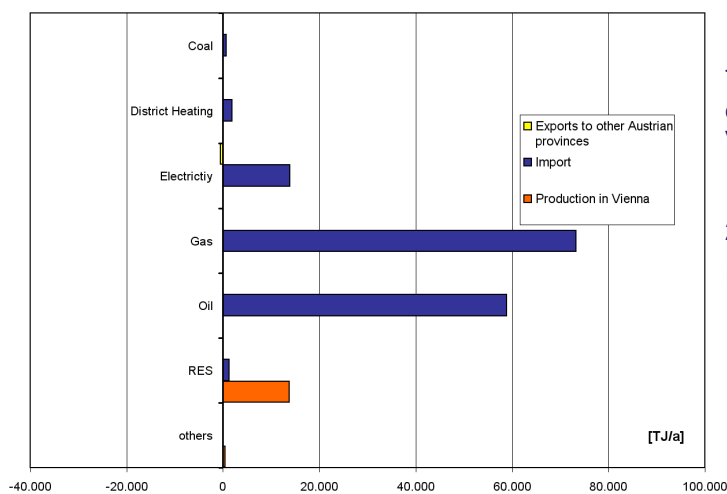
Basic Data of Vienna

- Population: > 1.6 Mio inhabitants
- Forecast: over 2 Mio up to 2050!
- GDP Vienna: 56.500 Mio EUR (27% of Austria)
- Households: 910.000



City of Vienna
Vienna is special.

Primary Energy Supply



Total primary energy supply for Vienna:

1993: 132 150 TJ

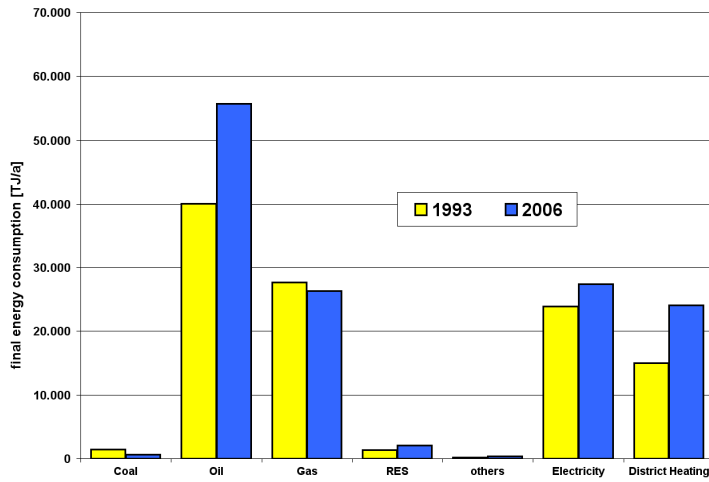
2006: 163 300 TJ

Increase: + 24 %



City of Vienna
Vienna is special.

Final Energy Consumption



Final Energy Consumption in Vienna:

1993: 109 600 TJ

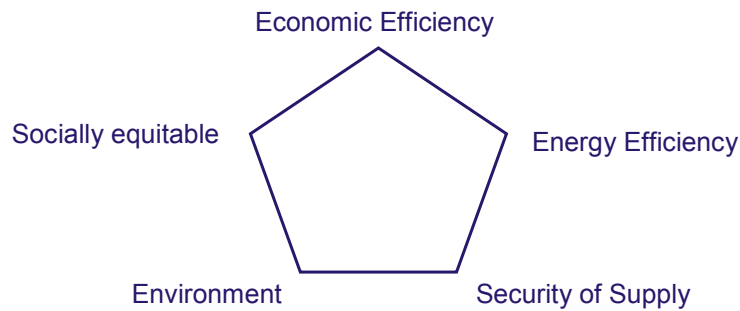
2006: 136 000 TJ

Increase: + 25 %



City of Vienna
Vienna is special.

Principles of Energy Policy in Vienna



City of Vienna
Vienna is special.

Energy policy of Vienna in the past

- One energy supplying company belonging to the City of Vienna (100%)
- Local energy concepts since 1978, the latest 1998
- Main focus on supply side:
 - One big hydropower plant
 - Three natural gas CHP plants
 - Two big waste incineration plants
 - Big amount of grid-connected energy sources
- Low CO₂-emissions
- Little focus on demand side
- Climate protection programme (KliP I) in 1999

Energy policy of Vienna in the future

- Strong focus on demand side management
- Energy efficiency and energy saving measures
- Cooperation with partners in Austria and in Europe by:
 - Common strategy development
 - Implementing common measures
 - International projects
 - Networking activities

Energy policy implementation strategies

Key measures:

- Municipal Energy Efficiency Programme (SEP)
- Law for Grid Extension for district heating and cooling
- Climate protection Programme (KliP I, II)

Key implementation strategies:

- Forcing energy efficiency in all sectors
- Reduction of transmission losses
- Increasing the use of public transport
- Exploration of renewable energy potential
- Forcing use of combined heat and power
- Keep low CO₂ intensity and emissions



City of Vienna
Vienna is special.

Solar Energy in Vienna

- **Solar energy is an important energy backup in urban areas**
- **Due to present economics no broad implementation up to now**
- **Technical final energy potential for solarthermal applications in Vienna:**
5,57 TWh/a (Heat Market in Vienna amounts to 16 TWh/a)

Due to low operating hours per year (~900h) and present efficiency such installations are not competitive by now.

Nevertheless it is important to gain experience by implementing of solar applications.



Support schemes are necessary to push the market for solar technologies.



City of Vienna
Vienna is special.

Solar heating

Support scheme exist for:

- Solar heating systems for domestic hot water
- Solar support for space heating (in combination with heat pumps, biomass boilers, gas condensing boilers, etc.)

Funding scheme „solar heating systems for domestic hot water and/or with solar support for space heating “

- 40 % of eligible investment costs
- fix amount of max. 1000 € and
- additionally 100 € per m² absorber area



CitYof+Vienna
Vienna is special.

Viennese funding scheme for photovoltaics

- Funding scheme in Vienna is managed by Municipal Department for EU-Strategy and Economic Development
- Investment subsidy: 2400 € / kWp or up to 40% of eligible investment costs
- Already 190 installations with total capacity of approximately 1,5 MW
- These installations produce 1,2 GWh electricity p.a.
- Lots of installations are placed on public buildings



Solarstrom in Wien
Die Wiener Photovoltaikförderung



StoDt+Wien
Wien ist anders.



CitYof+Vienna
Vienna is special.

PV-Installations in Vienna



Winery Cobenzl:

Capacity: 42 kWp

PV area: 304 m²

El. Generation: ~ 36.000 kWh/a

Bartensteinblock - public building:

Capacity: 34 kWp

PV area: 463 m²

El. Generation: ~ 34.500 kWh/a



City of Vienna
Vienna is special.

PV-Installations in Vienna



Austrian Economic Chamber:

Fassade integrated

Capacity: 57 kWp

PV area: 475 m²

El. Generation: ~ 31.300 kWh/a

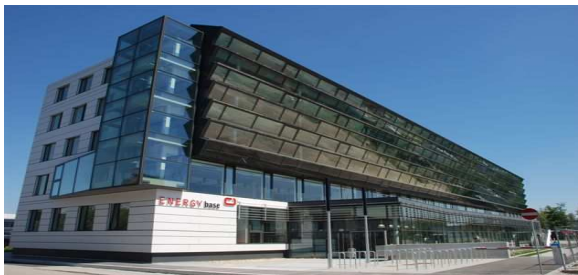
Energybase - innov. passive house office building

-) Extreme reduction of energy demand for building operation
-) RES cover 100% heating- and cooling energy demand (ground water and solar energy)

Capacity: 47,52 kWp

El. Generation: ~ 38.000 kWh/a

Total PV area: 800 m²



City of Vienna
Vienna is special.

Solar Cooling - Motivation and Targets

Motivation

- Large increase of cooling demand for buildings expected (triplication of power demand for cooling possible)

Targets

- Keep cooling demand low, use of solar cooling systems

Advantages

- Cooling demand is present with sun shine
- Multiple use of solar technology for cooling, space heating and hot water supply
- Reduction of power peaks on hot summer days
- CO₂-Reduction



Solar Cooling Projects

New technology – only few projects are implemented so far:

• Energybase:

- A solar sorption supported climatization system was implemented in Austria in big office building for the very first time.

- 300m² solar panels

• Municipal building from MD34

- Adsorption cooling

- Cooling capacity: 7,5 kW

- 32,4m² solar panels

- Project will be scientifically assessed



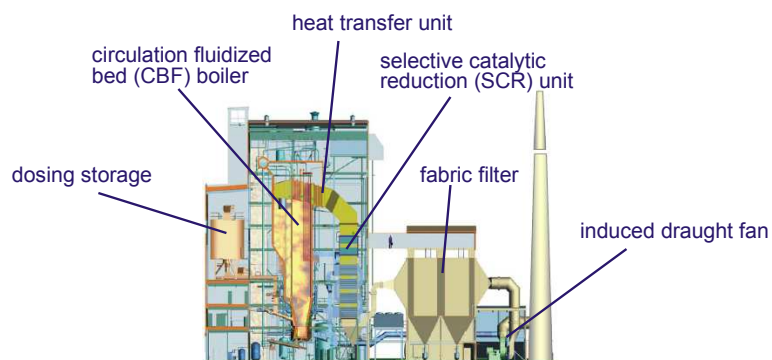
Biomass Power Plant Vienna

- **Forest-Biomass CHP Vienna Simmering**
 - One of the largest forest-Biomass CHP of Europe
 - Technology: circulation fluidized bed combustion (CBF) and steam turbine
 - In operation since 2006
 - Supplies 48.000 households with electricity and 12.000 households with district heating
 - Savings of 144.000 t/a CO₂
 - Financial key data:
 - Total investments: 58 Mio. Euro
 - Investment subsidies from the funding scheme for Eco-electricity installations
 - Fixed feed in tariff for generated electricity (based on the Austrian Green Electricity Law): 102 €/MWhel



City of Vienna
Vienna is special.

Biomass Power Plant Vienna



Source: ÖFB, Wien Energie



City of Vienna
Vienna is special.

Biomass Power Plant Vienna

Energy efficiency:

Summer: ~ 36% (condensing mode)

Winter: ~ 80% (CHP mode)

Input:

Fuel heat capacity: 66 MWth

Biomass need:

-) 600 000 m³ bulk volume/a

-) 245 000 m³ solid cubic/a

-) 190 000 t/a

→ 24 t/h



Output:

Summer: 21,3 MWeI

Winter: 12,9 MWeI &

37 MWth



Electricity for ~ 48 000 households

Heat for ~ 12 000 households

Source: ÖFB, Wien Energie



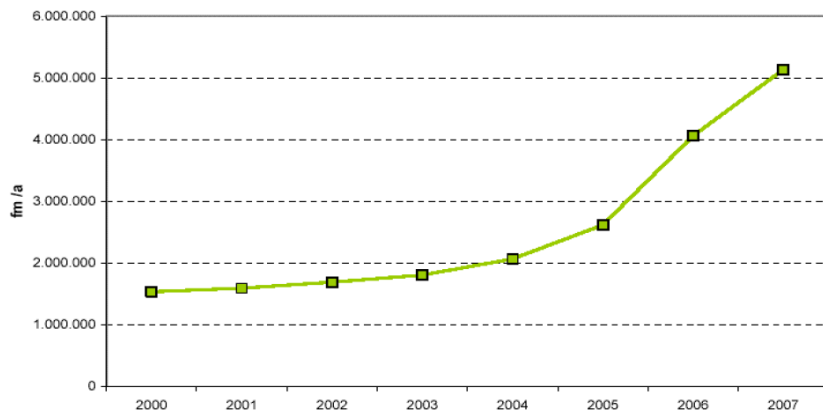
City of +Vienna
Vienna is special.

Biomass Power Plant Vienna



City of +Vienna
Vienna is special.

Development of fuel demand for biomass CHP in Austria



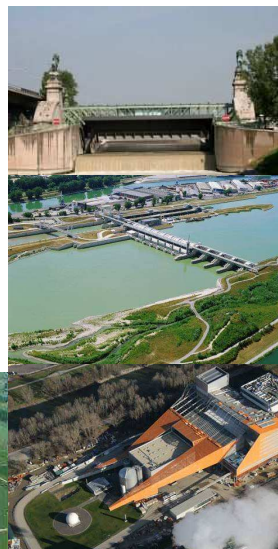
Source: AEA



City of Vienna
Vienna is special.

Other RES Projects in Vienna

- Small Hydro Power Plant Nußdorf (4,75 MW; 24,6 GWh/a)
- Power Plant Freudenau (AHP; 172 MW; 1052 GWh/a)
- Windparks Unterlaa and Donauinsel
- Biogas plant (max 35.000 t waste/a)
- Biodiesel Production Vienna (Output 95.000 t/a)
- Pilot-projects:
 - Tunnel-thermal Energy Hadersdorf
 - Geothermal Energy Aspern (in development)



City of Vienna
Vienna is special.

RES in Vienna

- Limited potential for RES
- Big projects are already implemented



- Further „exploration“ according to technical and economical possibilities.
- Improvement of energy efficiency!

Thank you for your attention!