District Heating – Vienna´s Choice
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Fernwärme Wien

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Who is Fernwärme Wien?

Fernwärme Wien, meaning District heating Vienna, is the main district heating and waste incineration company of Vienna .

• Heat sold	5.168 GWh (18,6 PJ)
• Waste treatment	880.309 tons
• Domestic (household) customers	285.000
• Commercial customers	5.660
• DH-Network	1.092 km
• Heat production sites	15
• Staff employed	1.207
• Heat Market share Vienna	34%
• Revenues	EUR 417 Mio.
• Investments	EUR 99 Mio.

Fiscal year 2007/08

How did it start?

Setting prior to Vienna´s choice on district heating (in the 1960th)

- Rising sensibility for waste management.
- Increasing waste and finite landfills.
- Proven technology for district heating and waste incineration.
- Necessity for low-polluting heating
- Already existing activities by city administration: First waste incineration in 1963 as well as several heating stations for new developments in the suburbs

Milestones of company development

1969 Foundation of Company

- 1968 Decision as well as „Commitment“ of Vienna´s municipal city council to initiate waste management and utilisation by waste incineration followed by heat production.
- 22.1.1969 Foundation of „Heizbetriebe Wien“ (HBW) by construction of waste incineration plant „Spittelau“. First customer: Vienna General Hospital (approx. 30 MW_{th})
- Instruction of owner: „Realisation of heat supply for city inhabitants and corporate clients plus disposal of waste in proper licensed way.
- Since 1969 continuous expansion and enlargement of new heating plants.

The business activities started with the construction of the 2nd waste incineration plant

Milestones of company development

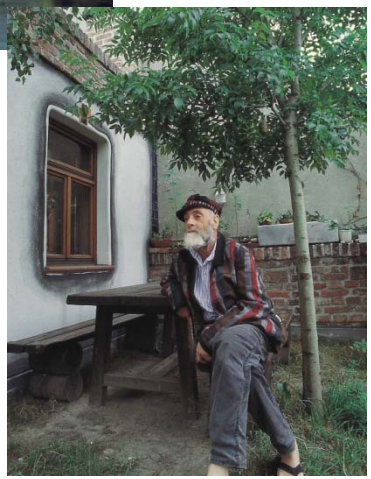
- 1975 Municipal decision with far-reaching impact in order to use industrial unused remaining heat (combined heat and power).
- 1978 Combination of heating plants „Arsenal“ and „Spittelau“ into one single network.
- 1979 Startup of first CHP-Plant (Combined Heat- and Power Plant) Simmering with a heat capacity of 350 MW_{th}.
- 1987 Serious fire disaster at waste incineration plant „Spittelau“.

The renewed Spittelau Incinerator

Before the fire

After fire disaster in 1987 today a tourist attraction as well as solution to waste!

- Re-Startup 1989 incl. new flue gas treatment to come up with modern standards of NO_x limits.



Artist and environmentalist Hundertwasser

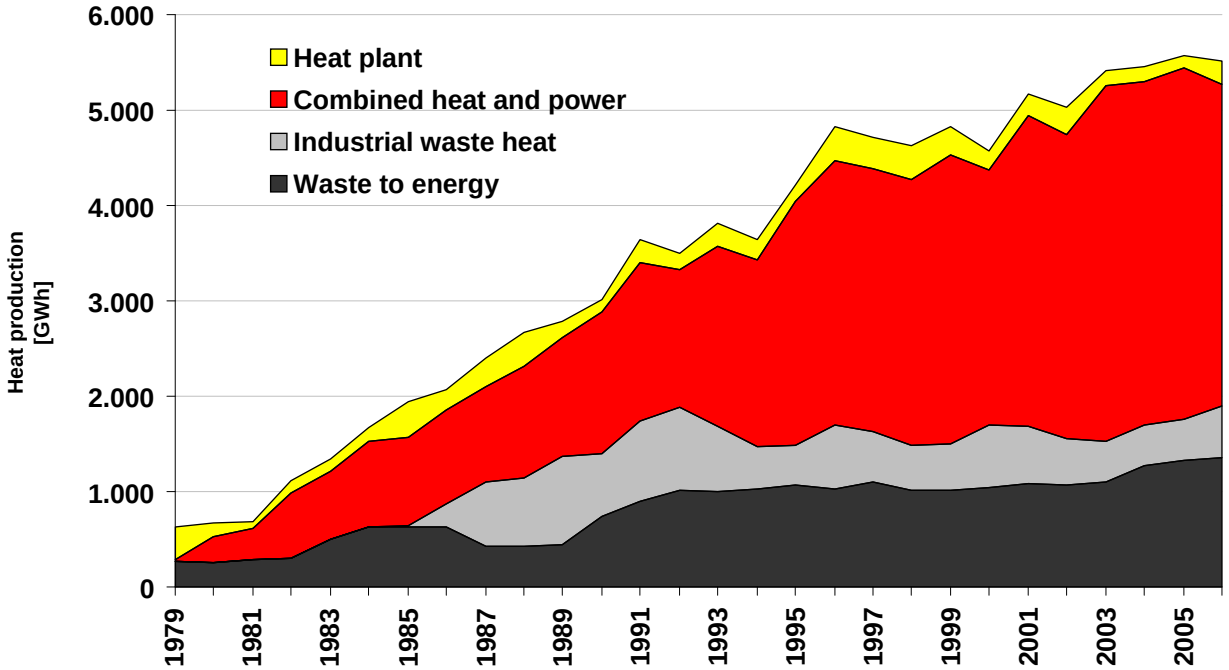
The Tower became one of town´s landmarks for environmental protection.

Today the waste incineration plant is one of the popular tourist attractions with around 10.000 visitors per year.

Strong Growth

- 1969 “Heizbetriebe Wien”, waste incineration and stand alone grids 350 MW_{th} capacity
- 1979 reached production 55% in heat plants and 45% in waste utilisation

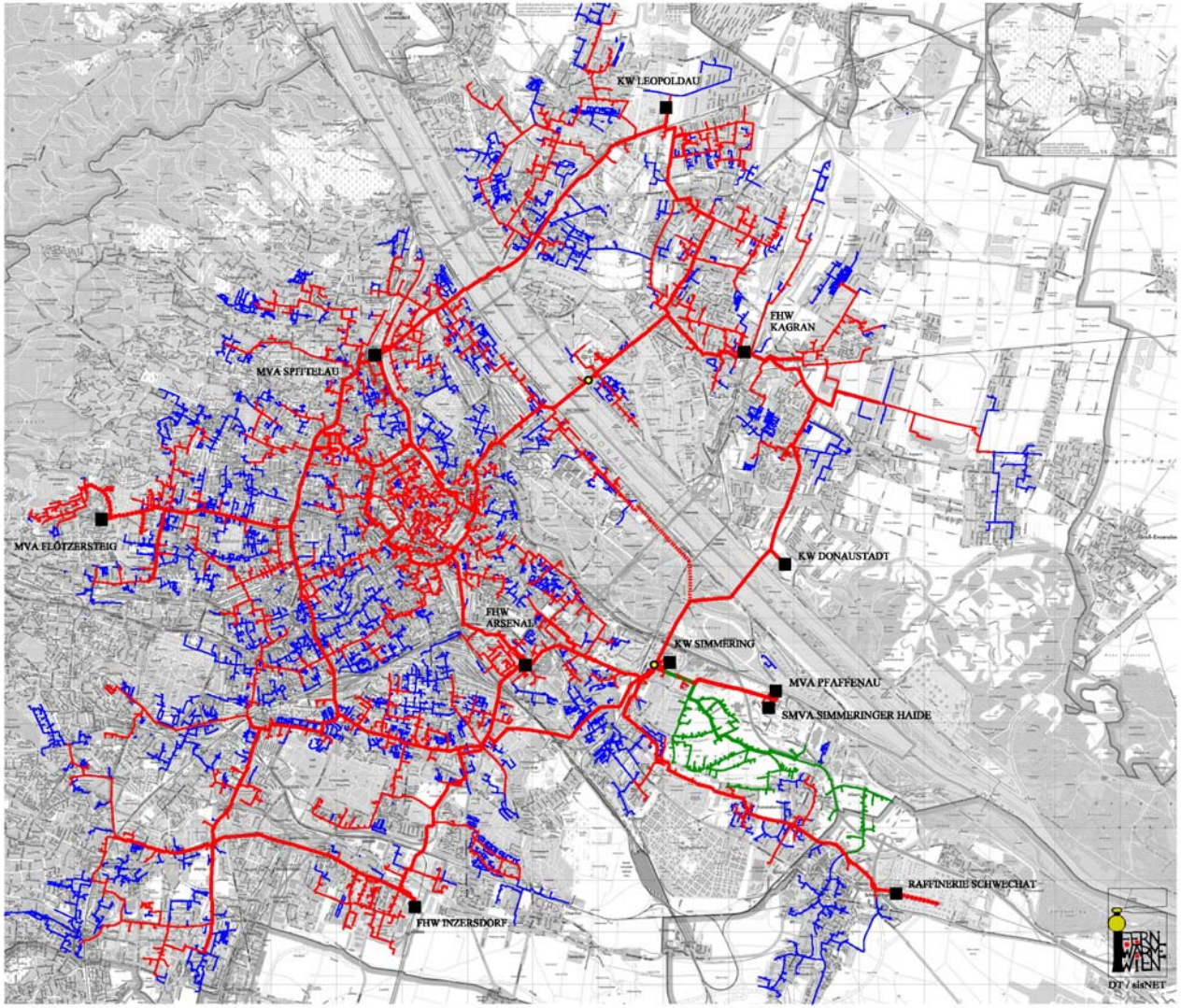
Since then new heat sources developed with the use of otherwise wasted energy.



SHARE 2006

PEAK LOAD	4,1%
CHP	61,4 %
INDUSTRIAL CHP	9,8 %
WASTE TO ENERGY	24,7%

The District heating Network today



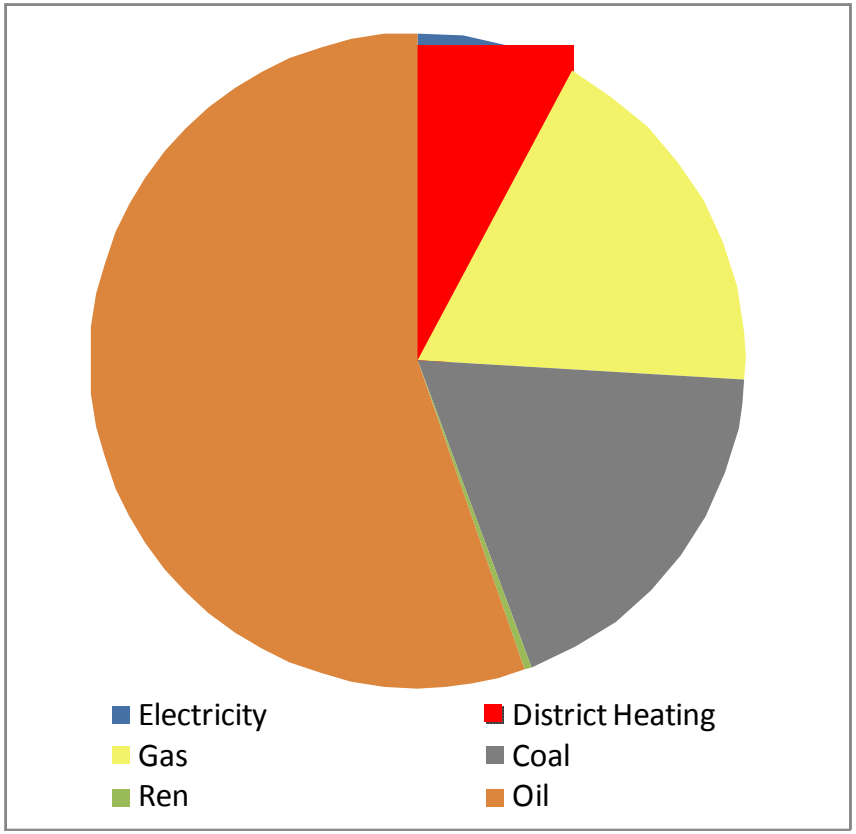
Today: 1100 km DH-Network

WIEN ENERGIE
– FERNWÄRME WIEN –

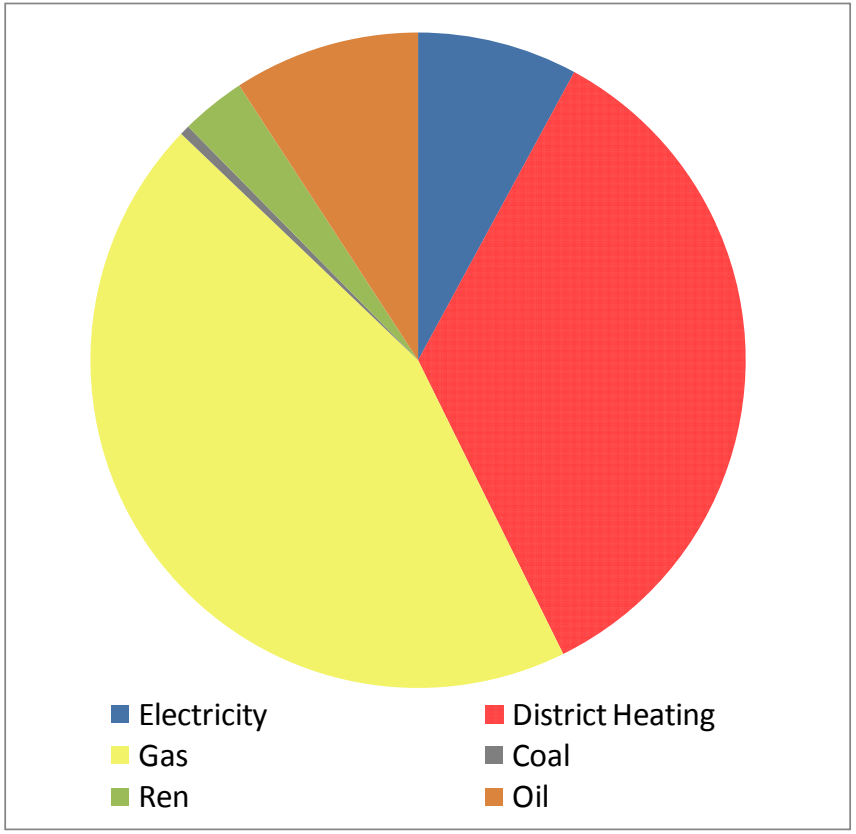
Some Impressions

Vienna´s development of the heat market

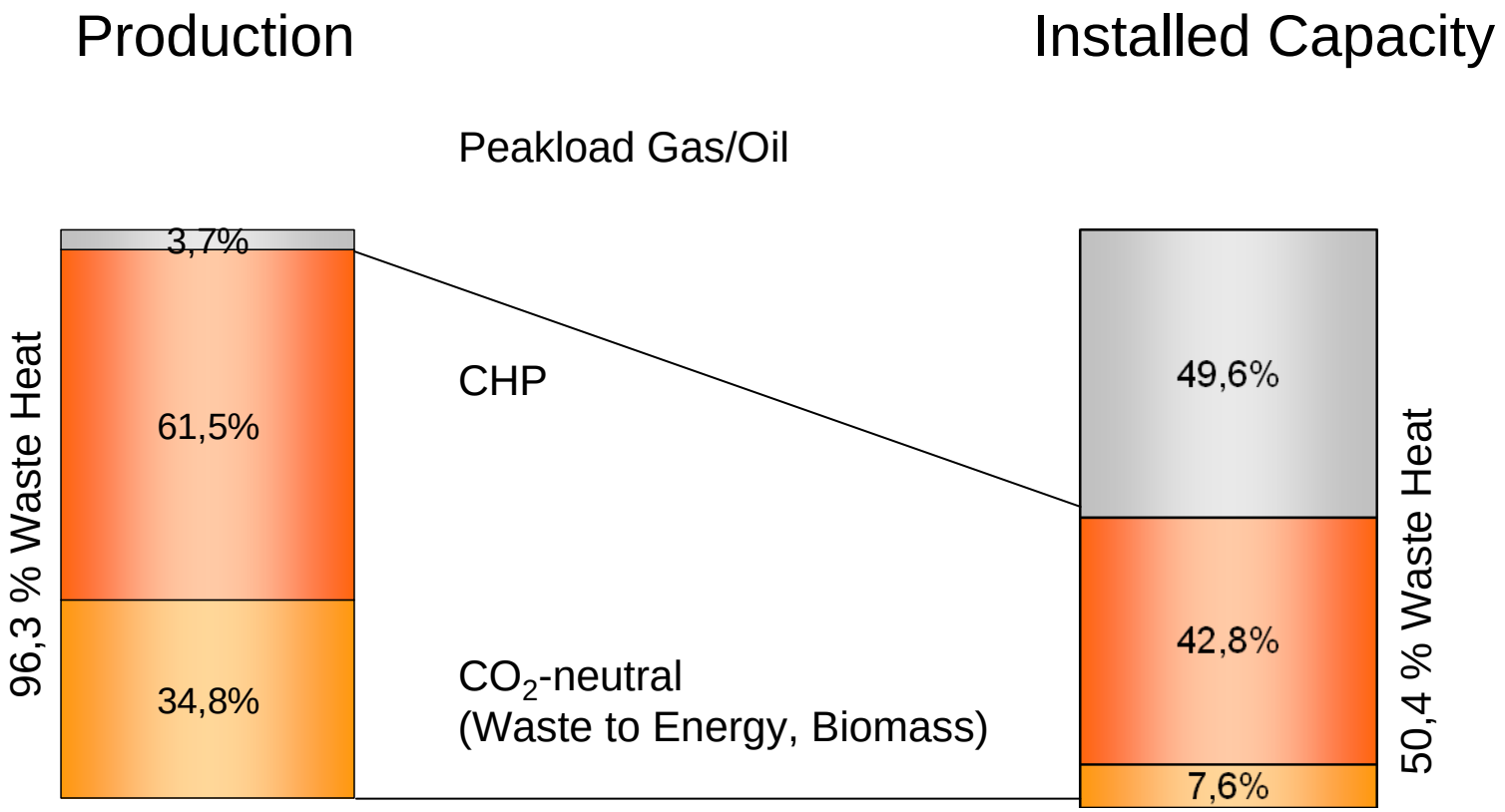
Market Share 1972



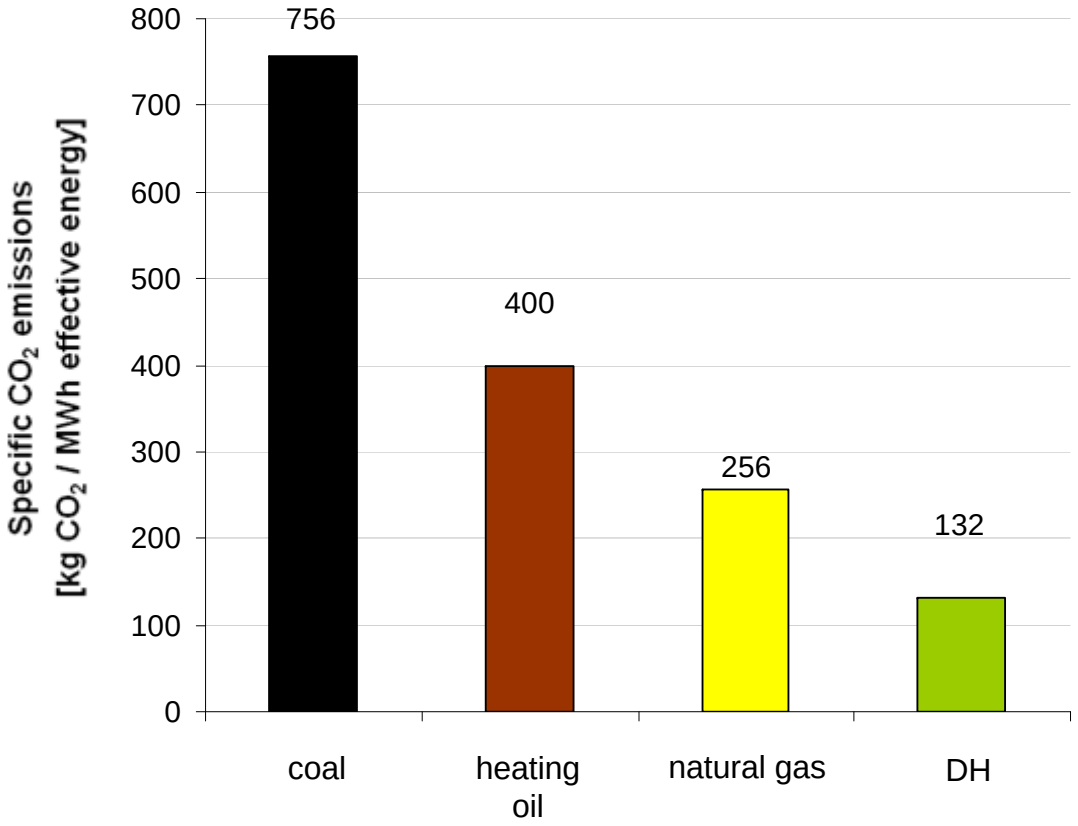
Market Share 2007



Where does the environmental benefit come from?



Environmental aspects of DH compared to other heating sources

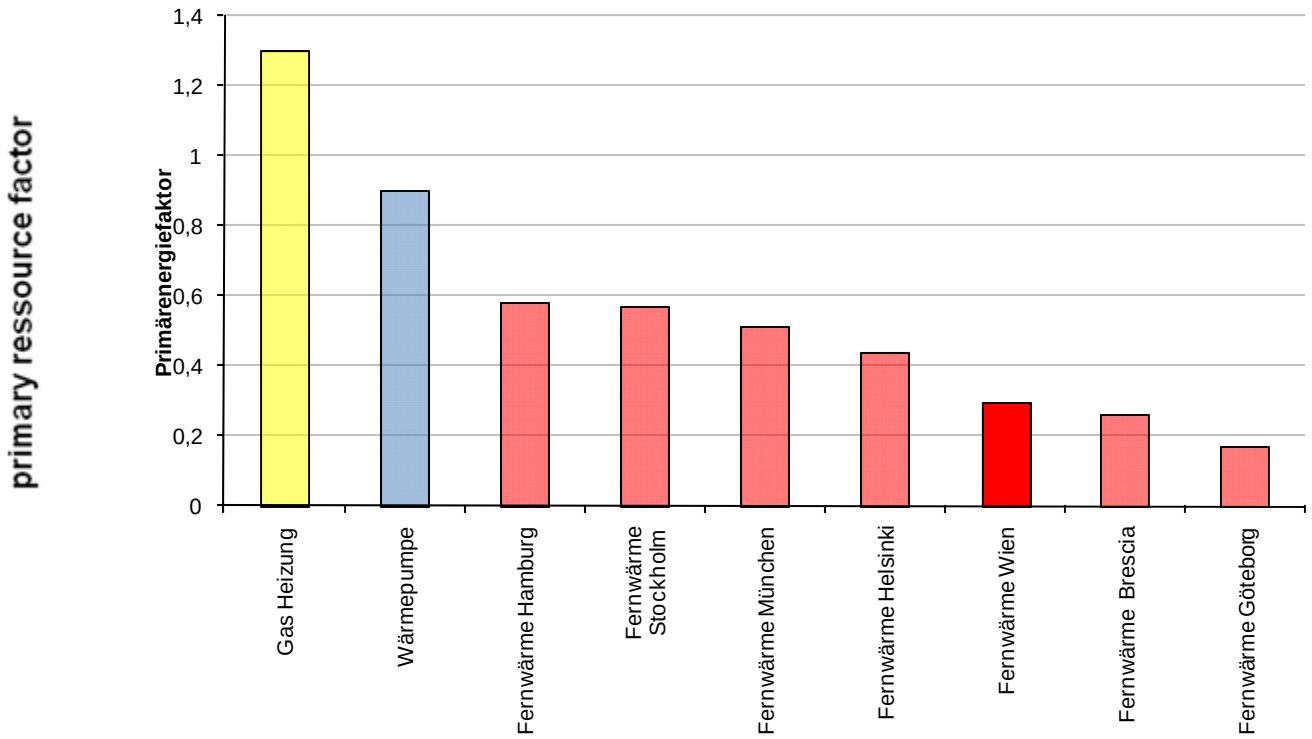


DH compared to conventional heating shows less CO_2-emissions!

Why to set focus on DH

Selected primary resource factors:

- Primary resource factor Fernwärme Wien: 0,32
- Compare with: heat boiler 1,2 / heat pump 0,9



Main indicators like industrial heat, other wasted heat as well as commercial waste incineration are responsible for a low primary resource factor!

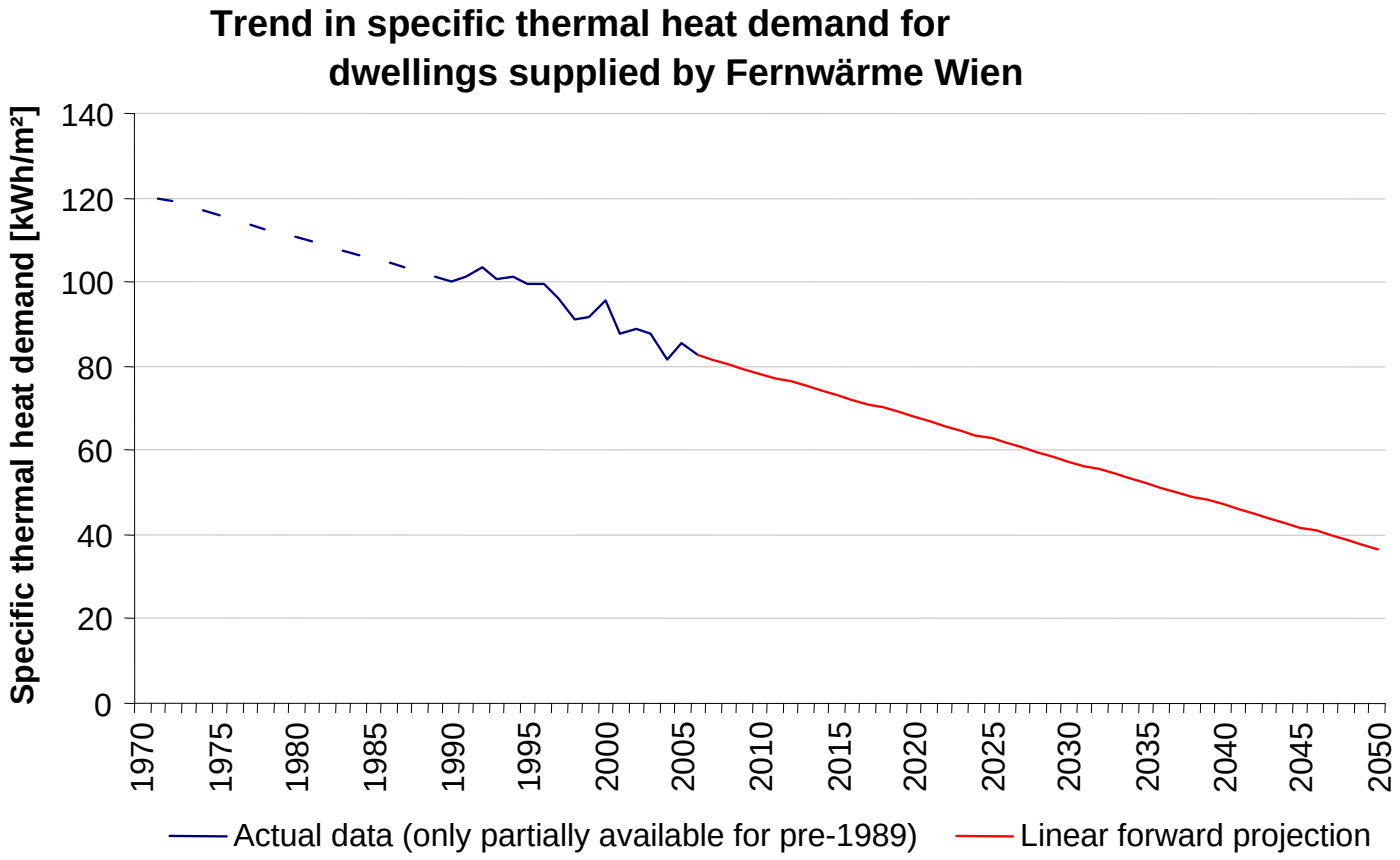
There is only one measure more efficient in saving energy for heating and hot water than connecting the building to district heating:

Break down the building.

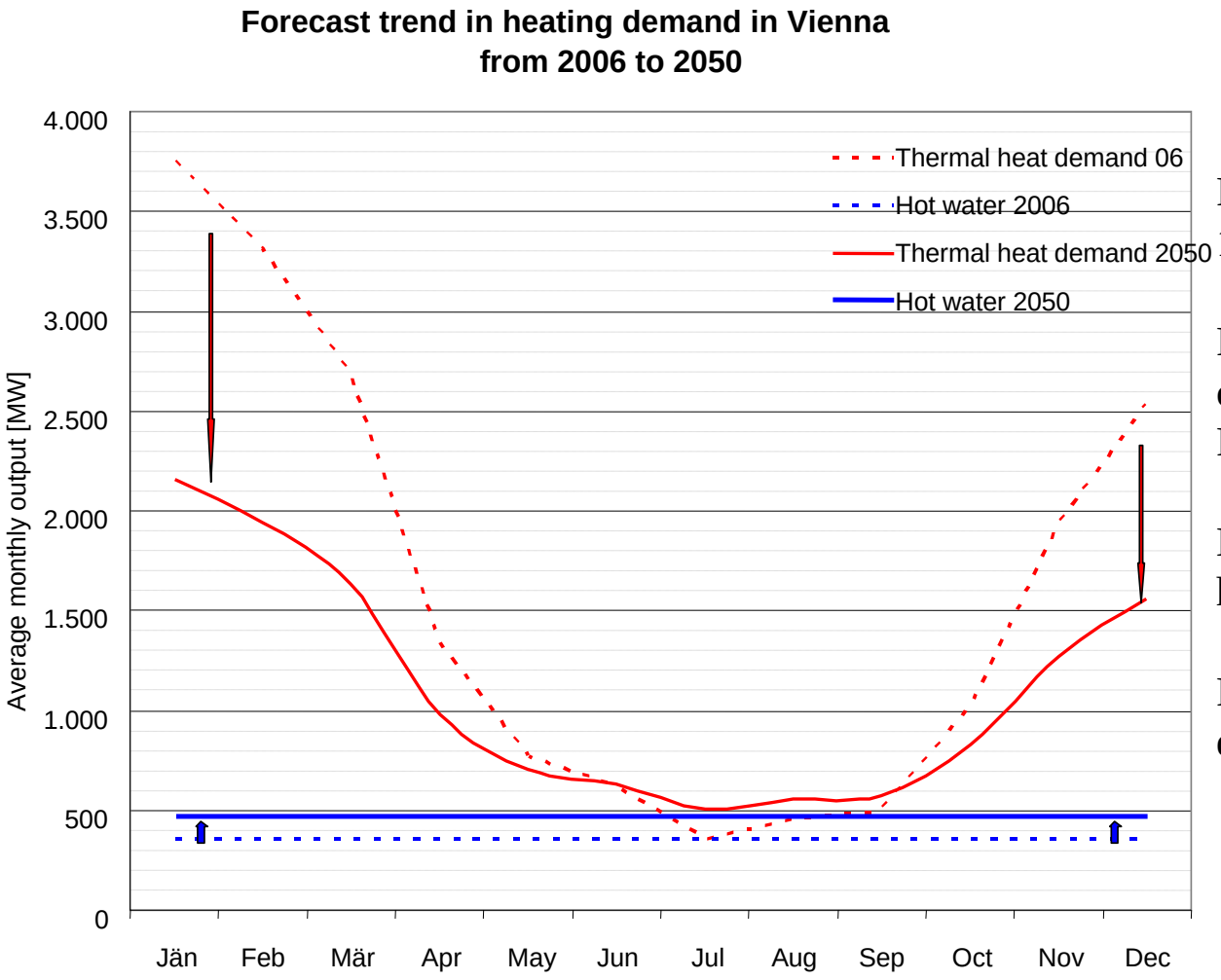
- DHC is today regarded as the most important of the 3 pillars in the strategy of the City of Vienna for reducing CO_2

- **Target of city administration: DH market share of 50% by 2020**

Trends for Vienna: Heat demand



Trends for Vienna: Heat demand incl. Hot Water



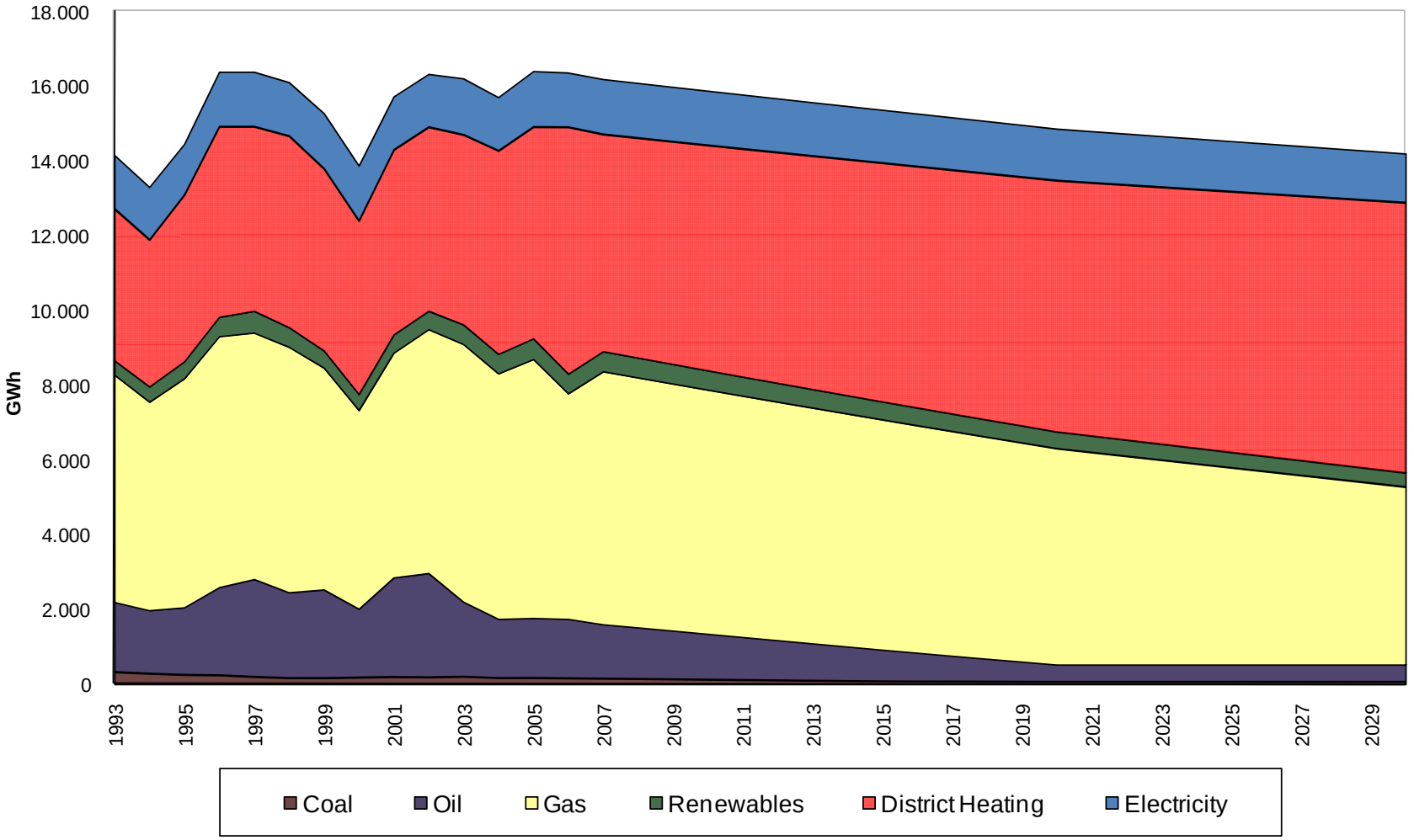
Population growth
1.6 → 2 million

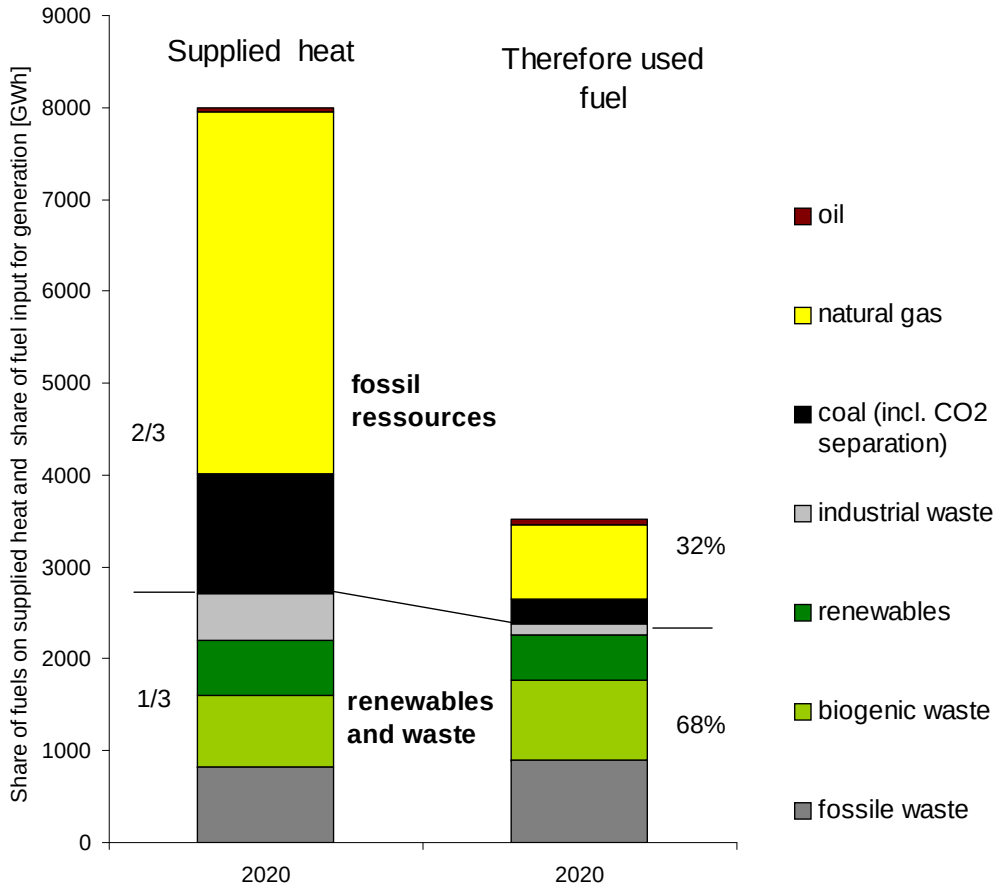
Rehabilitation and new construction low energy and Passive house standard

Efficiency enhancement in heating systems

Reduction in heating days due to global warming

Scenario for Vienna: Heat Demand incl. Hot Water





Initiated development

- 1/3 of the Heat produced in plants with renewable energy or waste as fuel
- 97 % of the heat is made in CHP (waste, renewables, fossil)
- To produce 2/3 of the heat the high efficient fossil CHP needs far less fuel input!
- Therefore the share of renewables and waste on used fuels is 60%

Challenges

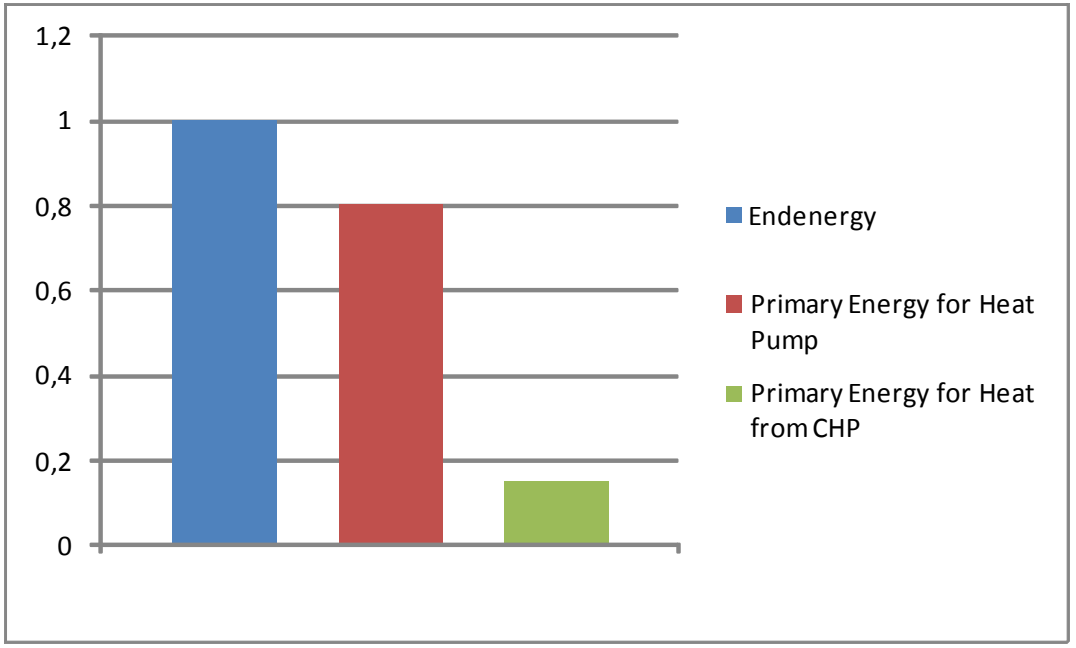
- Lower heating demand – adequate heating system
- Technology transition and industrial production
- Fossil transition and efficiency improvement

- Communication to society (customers, politicians)

Challenges: misleading political guidance

Different treatment of unused/surplus/ambient heat

- Heat pump with SPF of 3,0 has PRF of 0,8 (with a PRF of 2,5 for the electricity) and an acknowledged renewable share of 66% (Dir 2009/28/EG)
- Heat from CHP with PRF of 0 – 0,3 does not count as renewable



PRF … Primary Resource Factor
SPF … Seasonal Performance Factor
CHP … Combined Heat & Power

Building Blocks for the Future

- Large thermal storages
- Decreasing Primary Resource Factor
- Use of geothermal energy and other renewable energies
- Lower heating demand – adequate heating and hot water systems

New quarter Aspern

240 ha
8.000 flats
20.000 jobs
20 Years
development

- Energy-saving city quarter layout: passive house standard
- Use of geothermal energy

Thank Your For Your Attention!

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