



# Quo Vadis District Heating ?

## Statistics - Structural development – Market - Regulation

### Content of Presentation

- ✓ Market share of DH
- ✓ Energy consumption in apartments
- ✓ Market development
- ✓ Institutional barriers and opportunities of DH
- ✓ Examples of DH Rehabilitation
- ✓ Structural development
- ✓ Private sector participation - PSP
- ✓ Example of research in DH



## Market Share of District Heating in Europe

### Higher than 65%

- **Iceland**, Russia, Latvia, Lithuania

### 50 – 65 %

- **Denmark, Finland**, Estonia, Poland

### 20 – 49%

- **Sweden**, Czech Republic, Slovakia, Romania

### 10-19%

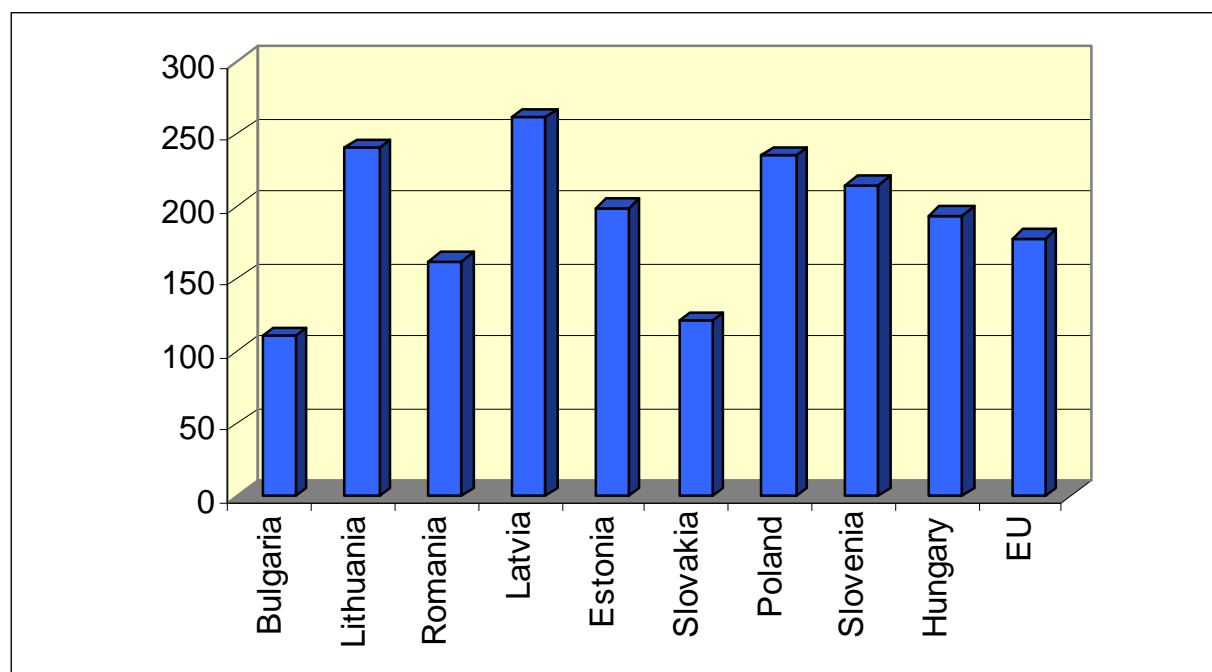
- Germany, Austria, Hungary, Slovenia, Serbia, Bulgaria

### 1 –10%

- **Norway**, United Kingdom, France, The Netherlands, Switzerland, Greece



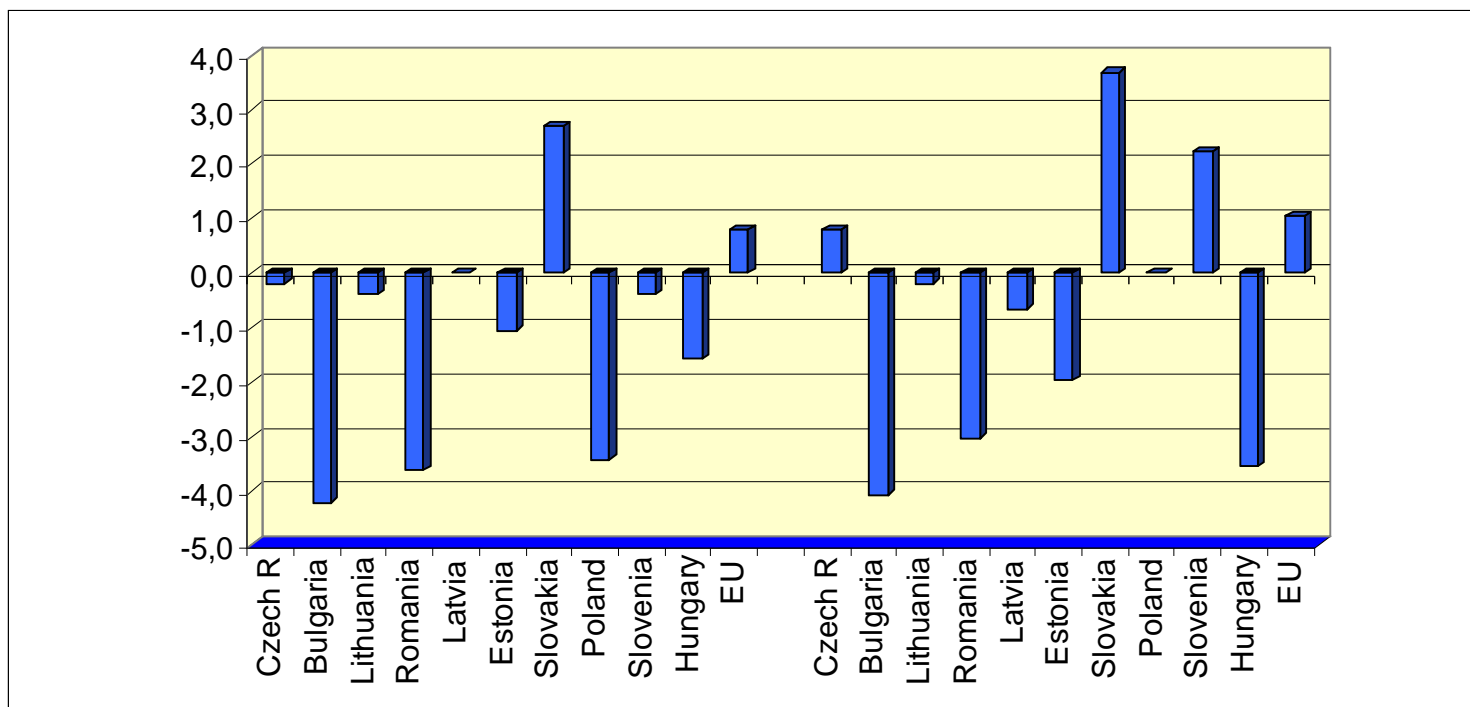
## Energy Consumption of Apartments (kWh/m<sup>2</sup>) - adjusted to EU average climate (2001)



- Source: Cross country comparison of energy efficiency trends and performance in CEEC – EU/SAVE project implemented by ADEME and ENERDATA, France



## Trends in Energy Consumption per Apartment (%/a) 1996 - 2001



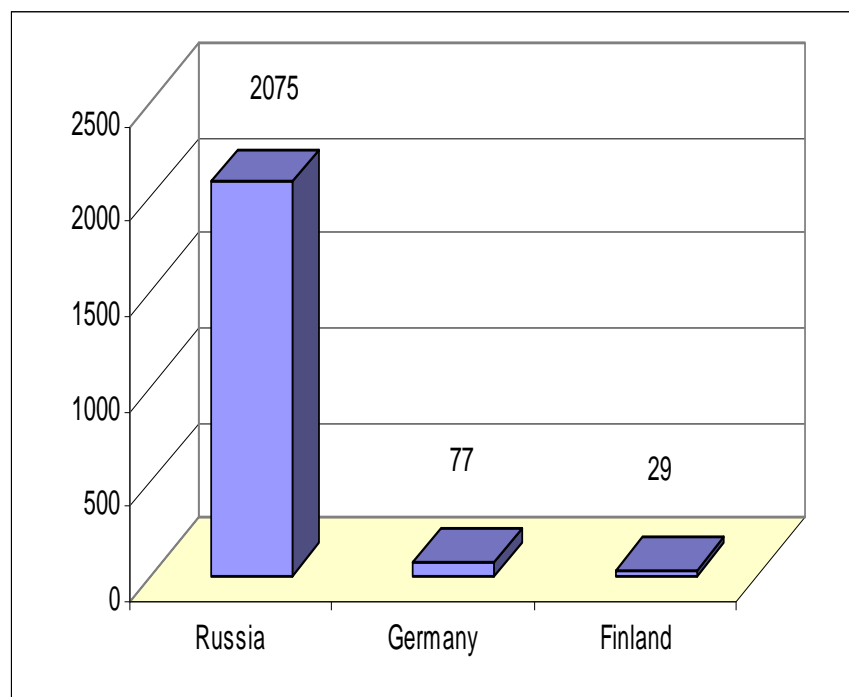
**Total**

**District Heating**

- Source: Cross country comparison of energy efficiency trends and performance in CEEC – EU/SAVE project implemented by ADEME and ENERDATA, France



## Sales of DH (GWh/a)



- DH in Russia is probably larger than the other European DH systems together
- 15 years past by at minimum replacement investments in Russia
- The World Bank: US\$ 85 million loan to rehabilitate a part of the DH systems in ten cities. This amounts to 0.2% of the network assets in entire Russia only.
- Similar rehabilitation need applies to other transition economies as well.



## Market Development of DH

- Expanding: Serbia
- Consumer disconnections: Romania, Lithuania, Bulgaria
- Consumer reconnections: Bulgaria
- DH system collapsing: Moldova, parts in Russia?
- Stable: in most other countries



## Institutional Barriers of DH Development

- National legislation does not recognize performance contracting (ESCO) type of business
- Discriminated pricing of fuels
- Insufficient sanctions to not paying customers
- Subsidies given to all customers but should be targeted to the poor only
- Housing co-operatives missing: Bulgaria, partly Lithuania
- DHW not connected to DH: Serbia
- Tariff regulation is inappropriate (does not accept all costs) or unpredictable (no reliance on the future)



## Example: Regulation of Heat Tariff in Poland

Activity	Fee category
Heat production	1. Fee of ordered heat output (PLN/MW)
	2. Fee of heat energy (PLN/GJ)
	3. Fee for heat carrier (PLN/m <sup>3</sup> of water or PLN/ton of steam)
Heat transmission and distribution	4. Fee of transmission services (PLN/MW)
	5. Lump sum fee for customer service (PLN/connection)
	6. Connection fee (PLN/m of connecting pipeline)
Heat sales	7. Fee of consumer services (PLN/MW)

- **The heat tariff is network specific: A DH company with ten networks would have 70 fees defined in the tariff booklet.**



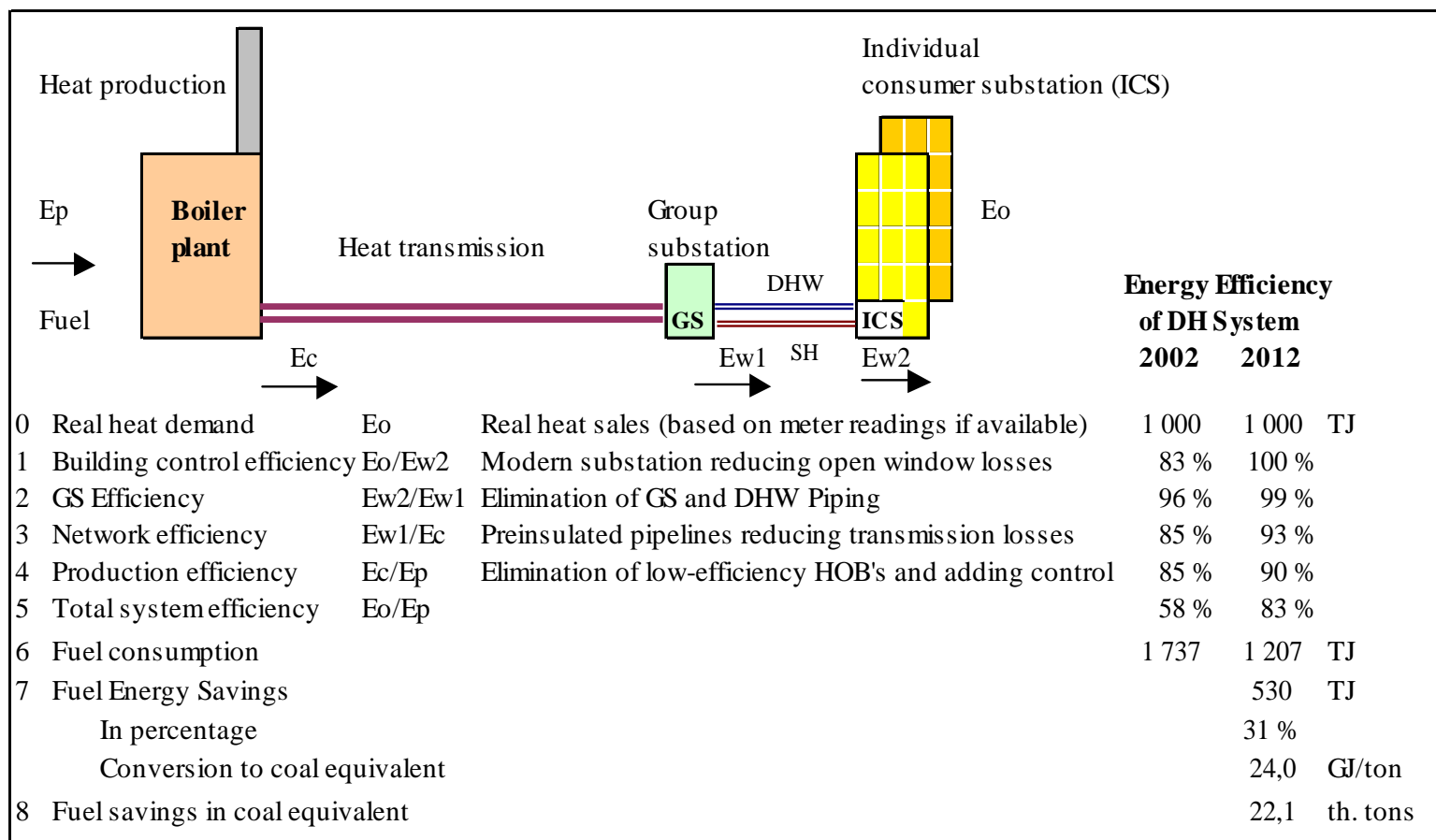


## Motivation to DH Development

- DH offers a huge potential for cogeneration of heat and power (CHP) in the economies in transition;
- EU strongly supports CHP development (CHP directive);
- Legislation and regulation develops fast in the new EU member countries and in the others being in the accession process, which effectively phases out institutional barriers for PSP; and,
- Highly positive experiences on the DH rehabilitation economy from Poland, Bulgaria and the Baltic countries will encourage PSP for investing in DH rehabilitation. DH system rehabilitation is necessary for CHP development and for customer satisfaction.

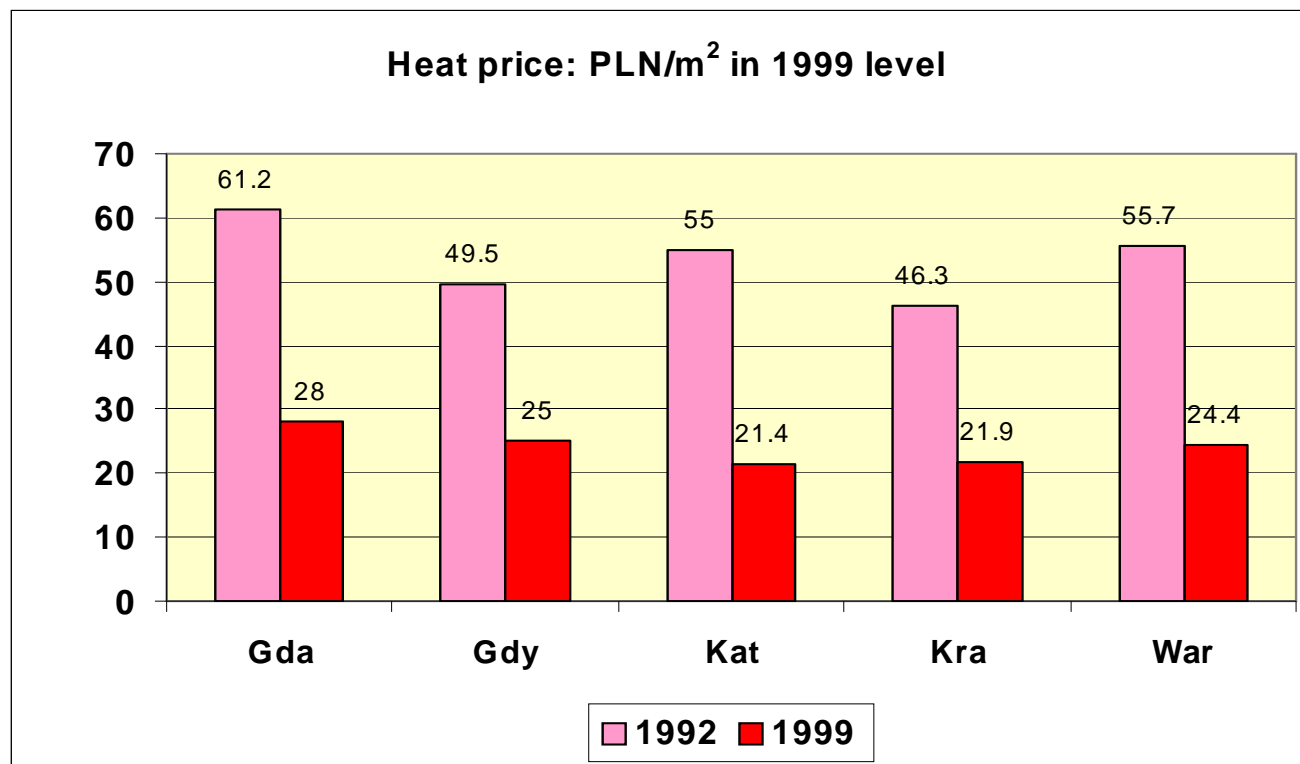


### Example: Rehabilitation of DH





## Example: Results of DH Rehabilitation in Poland





## Private sector participation - PSP

- International development banks (World Bank, EBRD;...) are not sufficient to finance DH rehabilitation even though they are willing to increase their portfolio in DH rehabilitation;
- Countries are not willing to provide with sovereign guarantees to the international development banks;
- Therefore, PSP is necessary in DH system rehabilitation in large scale;
- The risks and institutional barriers are still substantial for the PSP; and,
- Due to risks, only few companies are on the market: Dalkia, MMV, E-on, RKS, ..



## **Example: Research aimed at attracting PSP at Helsinki University of Technology**

- **Focus: PSP's point of view**
- **Objective: which measures and in which implementation order the economic/financial return would be maximized during a given period of time?**
- **Approach: A computerized Model for Strategic Planning of DH/CHP Systems in Economies in Transition**
- **Data: Model has been adjusted according to the materialized experiences of the comprehensive DH rehabilitation programs of the World Bank in Poland, the Baltic Countries and in Bulgaria**
- **Special feature: Impact of immaterial measures**
- **Programming tool: GAMS - General Arithmetic Modelling System**
- **Linear and Non-linear programming of benefits of investments**
- **Output: Strategic plan of rehabilitation for the given period of years**

**Therefore:**

**The Model should give the best estimate of the optimal order and quantity of investments for rehabilitation of a DH/CHP system in the economies in transition.**



## **Conclusion:**

**How to get Nordic companies involved in DH rehabilitation in economies in transition ?**

**Tusen takk for dere alle !**

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