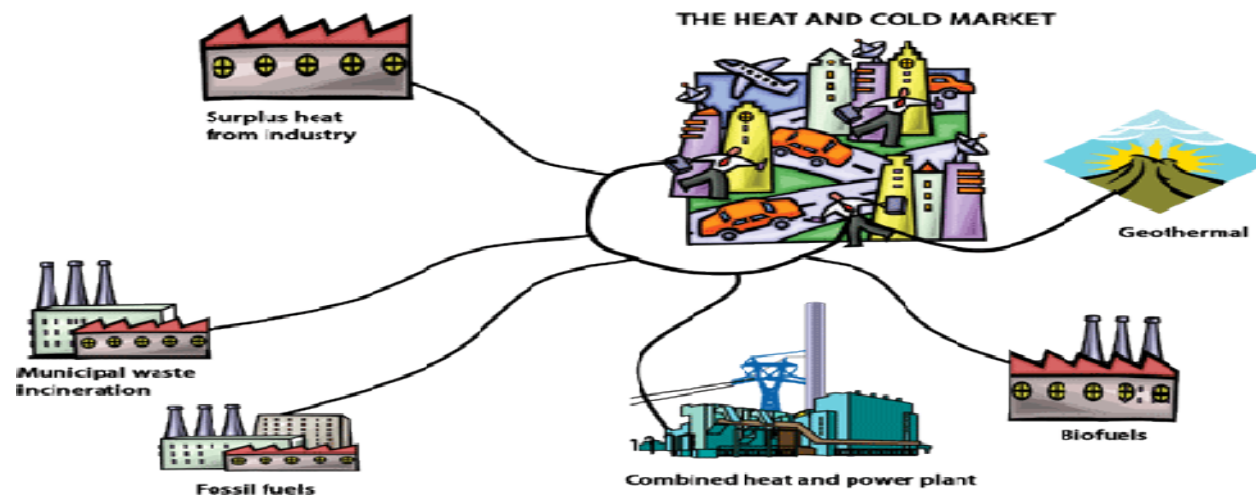


DHC – Highway for Low-Carbon Heat

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Danish District Heating Association



Contents

- Welcome to Copenhagen/Denmark
- Danish District Heating Association
- EU objectives
- The potential
- Challenges
- The district heating SWOT
- DHC – highway for all kinds of heat
- Questions for debate



District heating has been a part of the infrastructure of Copenhagen for many years

- 1925: First district heating from "Gothersgade Elværk"
- 1932: Steam supply to the western part of Copenhagen
- 1930-
1940 During the thirties the steam supply was expanded to cover the city center
- 1953: Supply of both steam and hot water and supply to the northern part of the city. The capacity makes it possible to expand the supply to cover half of Copenhagen
- 1971: "Amagervaerket" was established
- 1992: Obligation to connect to district heating (aim 97% of all households)
- 2000: 97 % of all households in Copenhagen heated by district heating

Danish District Heating Association

- App. 400 members representing 99% of national DH-sale
 - From 100 consumers in villages
 - To 100.000 consumers in towns
- 56 members are public utilities
 - Supplying 2/3 of sold district heating
- 335 members are private cooperative utilities
 - Supplying 1/3 of sold district heating
- 10 members are owned by private companies
 - Supplying only a small amount of district heating



Origin of Heat in the Danish District Heating System

- 74 % surplus heat from combined heat and power
 - 2/3 owned by the electricity companies
 - 1/3 owned by the district heating companies
- 12 % surplus heat from waste incineration (CHP)
- 3 % surplus energy from industry
- 7 % from biomass
- 4 % from oil and natural gas

➔ DH to app. 61% of all Danish households



The Basic Principles in Denmark:

- (Major troubles in the 1970'ies - burning platform)
- Heat planning
- Heat supply law
- Connecting obligation
- None profit tariffs
- Cost reflecting tariff structure
- Split of costs between heat and electricity
- Governmental price committee
- Long term budgets



EU Objectives – 5 x 20

Council conclusions 2007:

- Firm target of cutting 20% of the EU's greenhouse gas emissions
- A binding overall goal of 20% for renewable energy sources
- Target of 20% higher energy efficiency

Overall tendency:

1. Less fossil fuels
2. Energy savings and higher energy efficiency
3. Development of new and better energy technologies



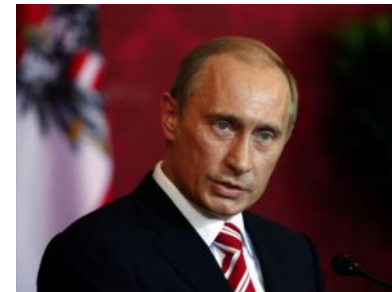
EU Objectives

Lisbon agenda:



- Competitive and dynamic knowledge-based economy, capable of sustainable economic growth with more and better jobs and greater social cohesion

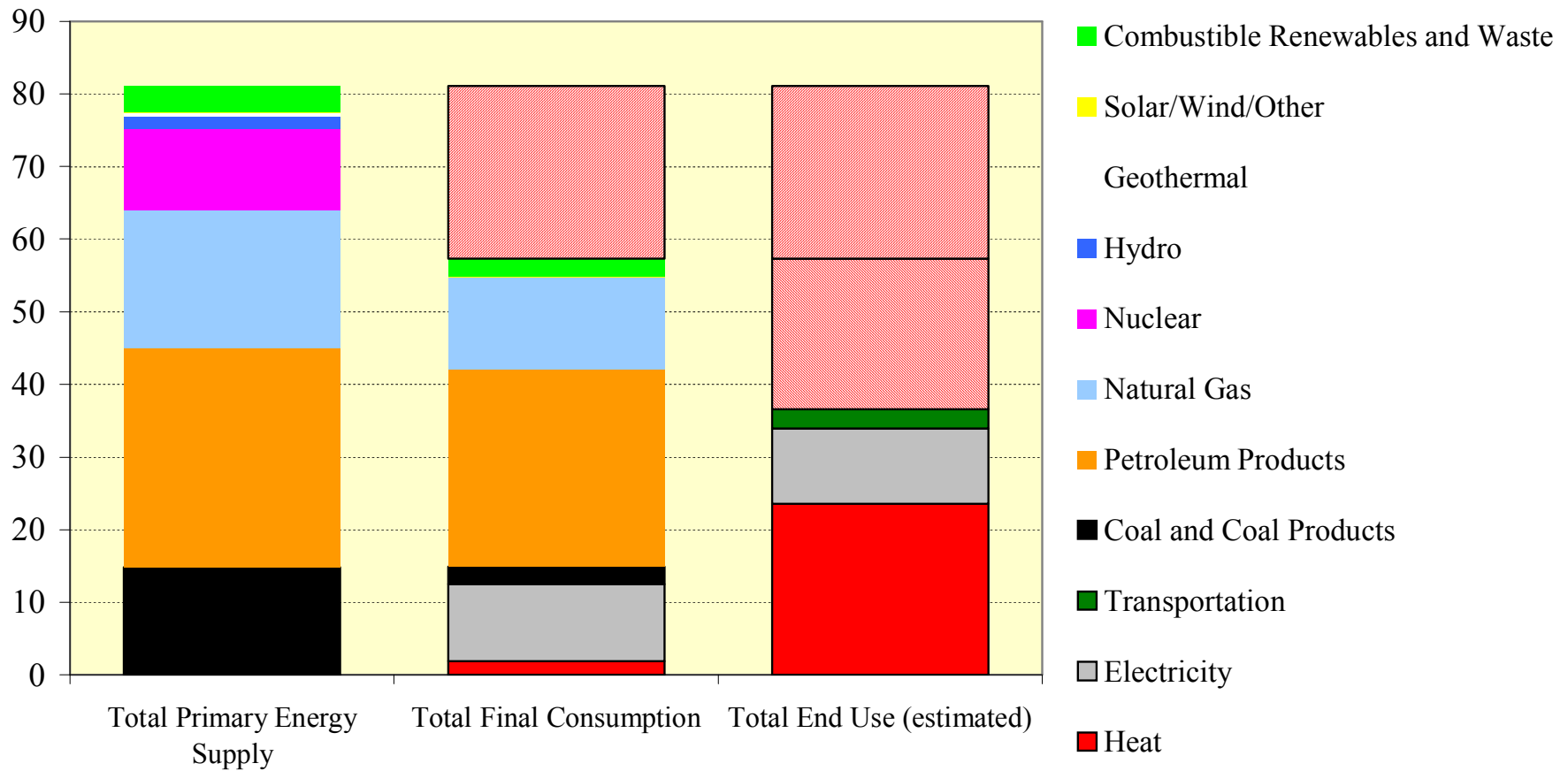
Security of supply (Moscow agenda):



- With external dependence on imports forecast to grow steadily, the EU has started to integrate energy aspects into relations with third countries

EU25 + ACC4 + EFTA3 during 2003
 Total Primary Energy Supply = 81,1 EJ

EJ



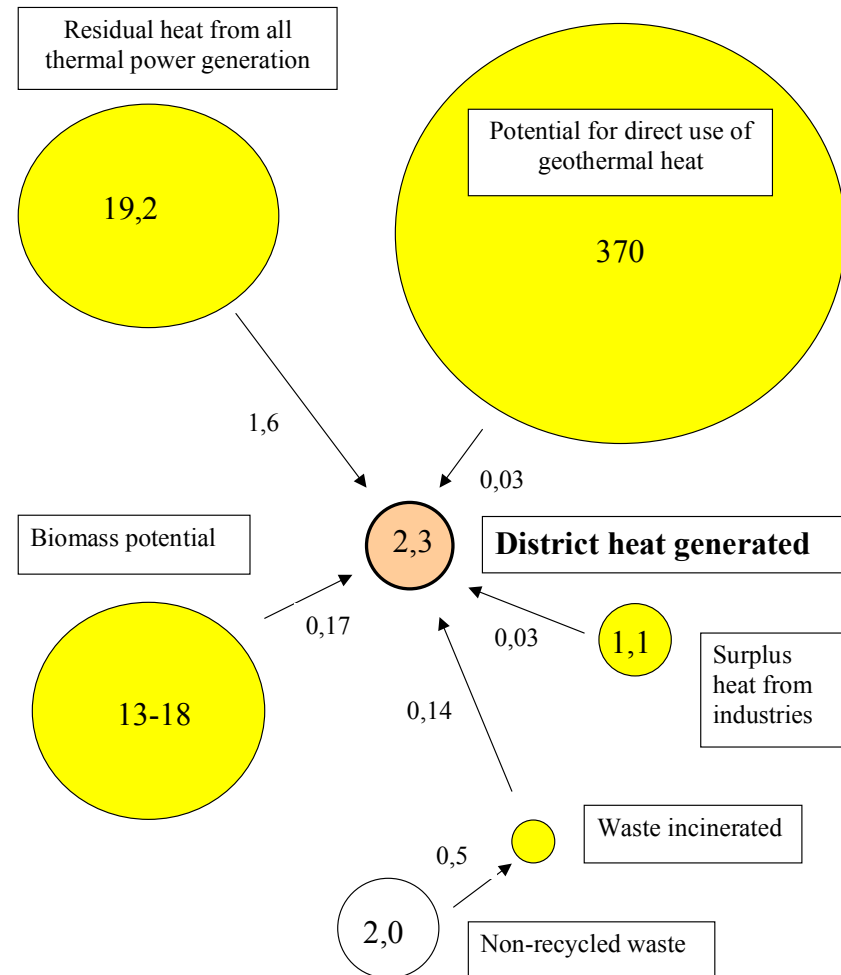
Five Major Strategic Heat Source Options:

- Combined heat and power (CHP/cogeneration)
- Waste incineration
- Surplus heat from industries and refineries
- Geothermal heat
- Fuel difficult to manage and handle in small boilers (wood waste, olive residues etc)

Strategic Heat Source Options

Heat flows in EJ during 2003 for the target area of 32 countries

Summary of the five strategic district heat sources with the current contributions to the district heat generated during 2003.



Improved District Heat Generation and Doubling Heat Sales

- **Higher security of supply:**
Will reduce the import dependency with 4,5 EJ/year
= primary energy supply of Poland
- **Higher energy efficiency:**
Will reduce primary energy supply with 2,1 EJ/year
= primary energy supply of Sweden
- **Lower carbon dioxide emissions:**
Will annually be reduced with 400 million tons, corresponding to 9,3 %
of the current emissions
= current emissions of France from fuel combustion

Barriers for more DHC in Europe

- Inappropriate legal frameworks
- Lack of political understanding of the importance of energy efficiency
Energy supply focus in energy policies
- Price regulations with social considerations/distorted market prices
- Inappropriate cost allocations
- Ownership shifts
- Short term investment preferred
- Low fuel and electricity prices

The Political Challenge

- Focus on the potential of DHC/CHP
- Integration of different sectors (heat, waste, agriculture etc..)
- Appropriate legal frameworks (political instruments: market/planning?)
- Understanding of the importance of energy efficiency
- Use of Primary Resource Factors (PRF)

The Real Challenge

How to tell/communicate the good story?



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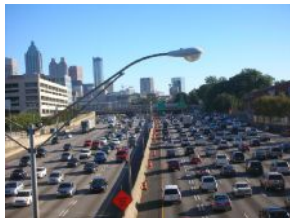


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The European District Heating SWOT

Strengths <ul style="list-style-type: none">● High DHC market share in some countries● High share of CHP in some countries● Surplus heat● Highway for heat based on renewables● High reliability● Secures energy efficiency● District cooling in drive● A basic good "story"	Weaknesses <ul style="list-style-type: none">● Invisible sector● No "district heating Gazprom"● Scattered suppliers● Lack of relevant official statistics● Low status● Reputation of low technology● No political focus● Low market share in many countries
Opportunities <ul style="list-style-type: none">● More visible sector● New energy/environmental objectives● Use of Primary Resource Factors● Better exploitation of the 5 strategic heat source options● Better official statistics● Better way of thinking in the EU	Threats <ul style="list-style-type: none">● Lack of overall perspective● Misguiding of energy savings● New norms of housing● New technology● Community benefits do not count● Lack of strong "DHC Industry"● Strong drive for individual solutions

DHC- Highway for all Kinds of Heat





Questions for Debate



DHC: Energy or infrastructure

When you compare with such services as renovation, water supply and draining off waste water, only a minority of society accepts that each household establishes its own individual system.

Is it relevant to think of supply of heating and cooling in the same light?



Questions for Debate



DHC: Market or planning – the best combination

The overall tendency in the EU and in the energy markets (gas, electricity etc.) is liberalization. The market, however, seems not to be able to establish infrastructure or ensure more DHC.

What kind of political instruments (weapons!) does a progressive legislative DHC framework require?



Questions for Debate



DHC: Statistics and measuring methods

Social benefits from CHP/DHC seem to disappear in common economic and statistic statements within the energy sector.

What would it take to make Primary Ressource Factors (PRF) the primary (obligate!) way to access energy systems?