

Future of District Heating in view of EU Regulations on Emission and Energy Efficiency – Finnish Perspectives

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Wroclaw, Poland 13-15 March, 2012
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Brief presentation about Fortum and the speaker

Fortum's CHP plants in Europe



Fortum Corporation

- Key figures 2011
 - Net sales EUR 6.2 bn
 - Operating profit EUR 1.6 bn
 - Personnel 10,800
- Listed on NASDAQ OMX Helsinki since 1998

Kristian Rehnström

- Head of Customer Management and Regulatory Affairs, Heat Baltics
- Previous positions in Fortum
 - Head of Sales, Heat Finland
 - Development Manager, Heat Finland
 - involved with district heating since 2001
 - joined Fortum in 1997
- Experience as member of board of directors from several Finnish DH Companies
- M.Sc (Engineering)
Helsinki University of Technology

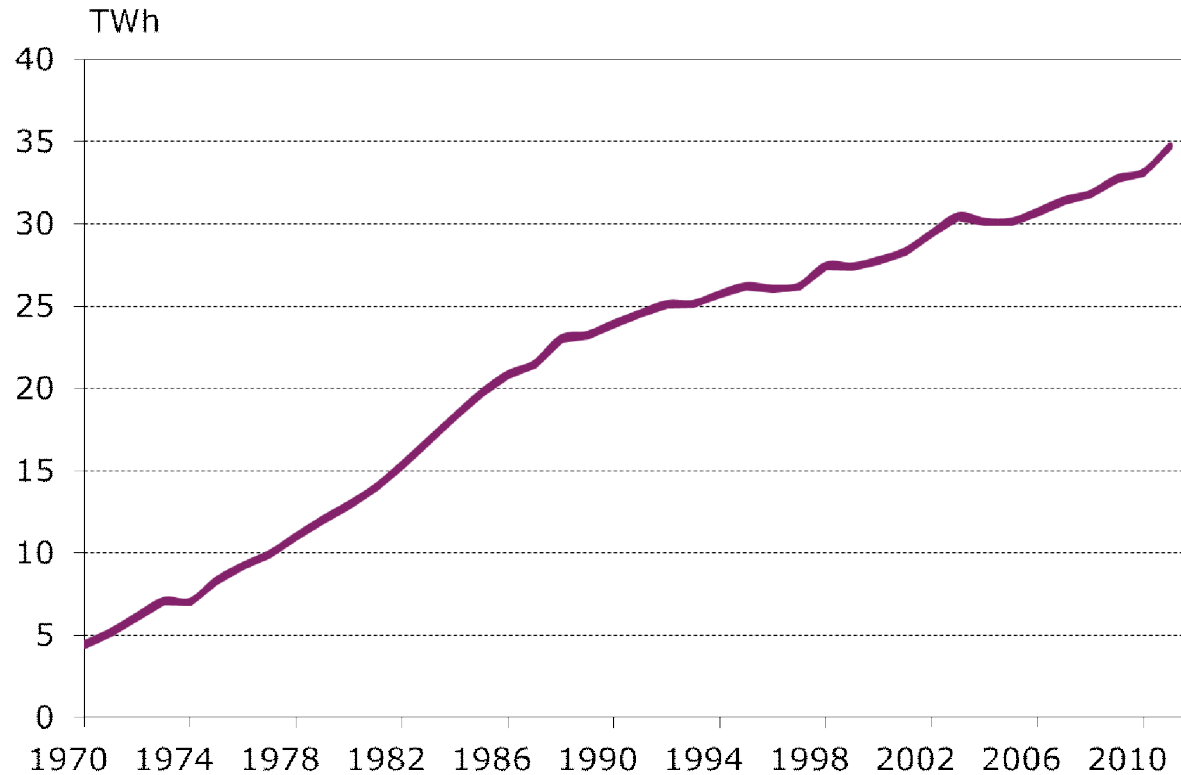


Contents

- Summary of District Heating in Finland
- EU regulations on energy efficiency
- EU regulations on emissions

District Heating in Finland 2011

Consumption of DH (weather corrected), TWh

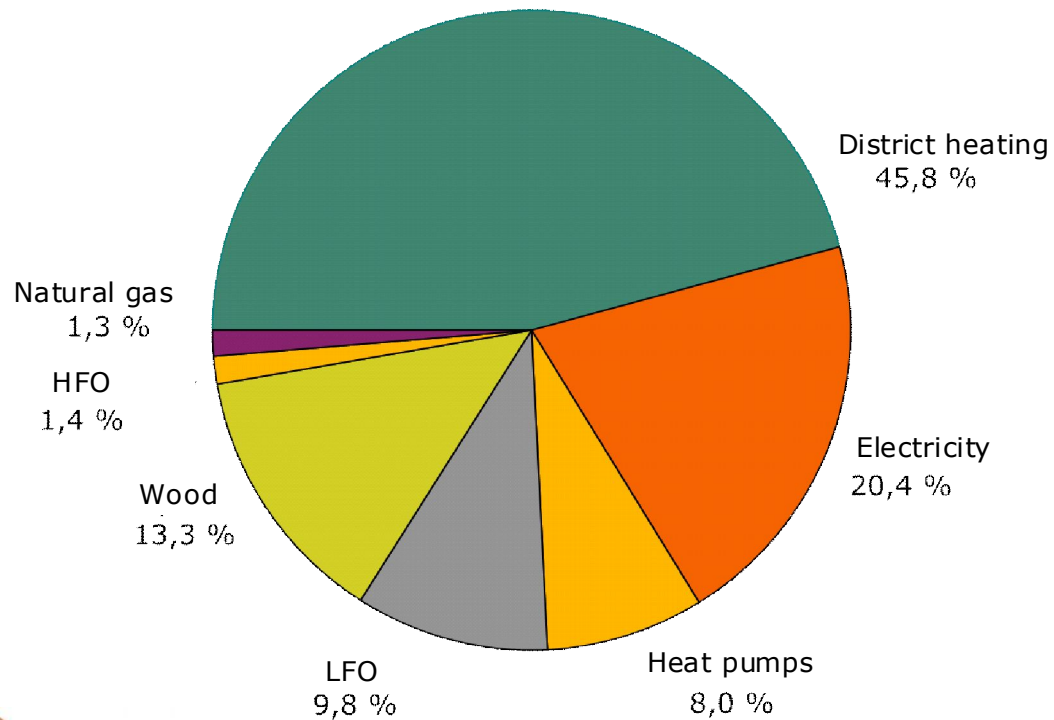


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District Heating in Finland 2011

Market shares of heating solutions

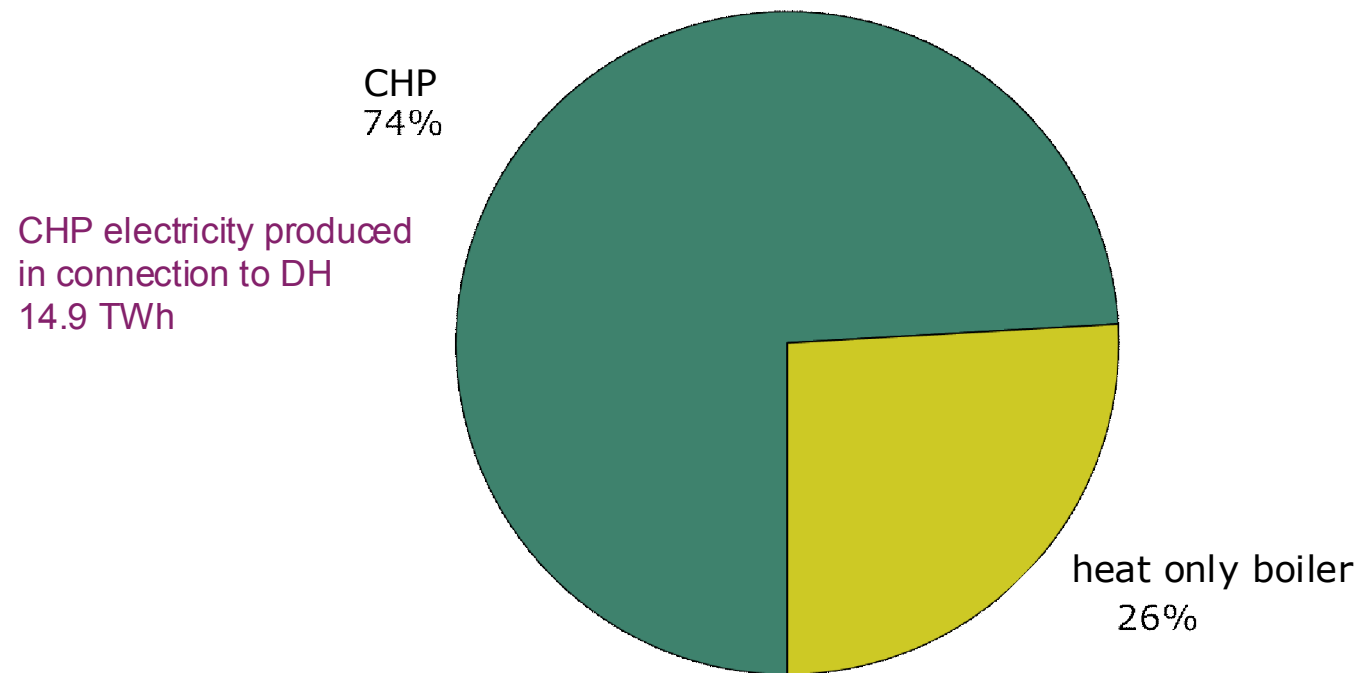
Source: Statistics Finland



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District Heating in Finland 2011

Production of DH 2011
33.4 TWh

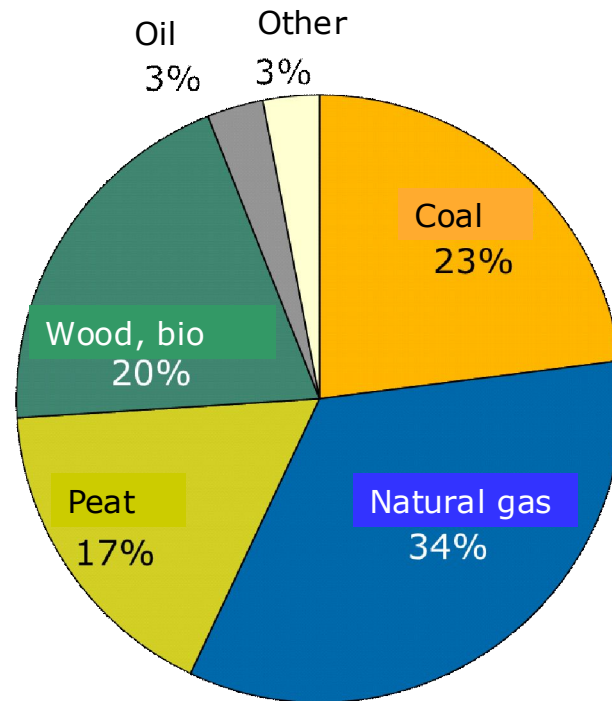


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District Heating in Finland 2011

Fuels used for district heating and CHP production 2011

- fuel energy content total 56.6 TWh

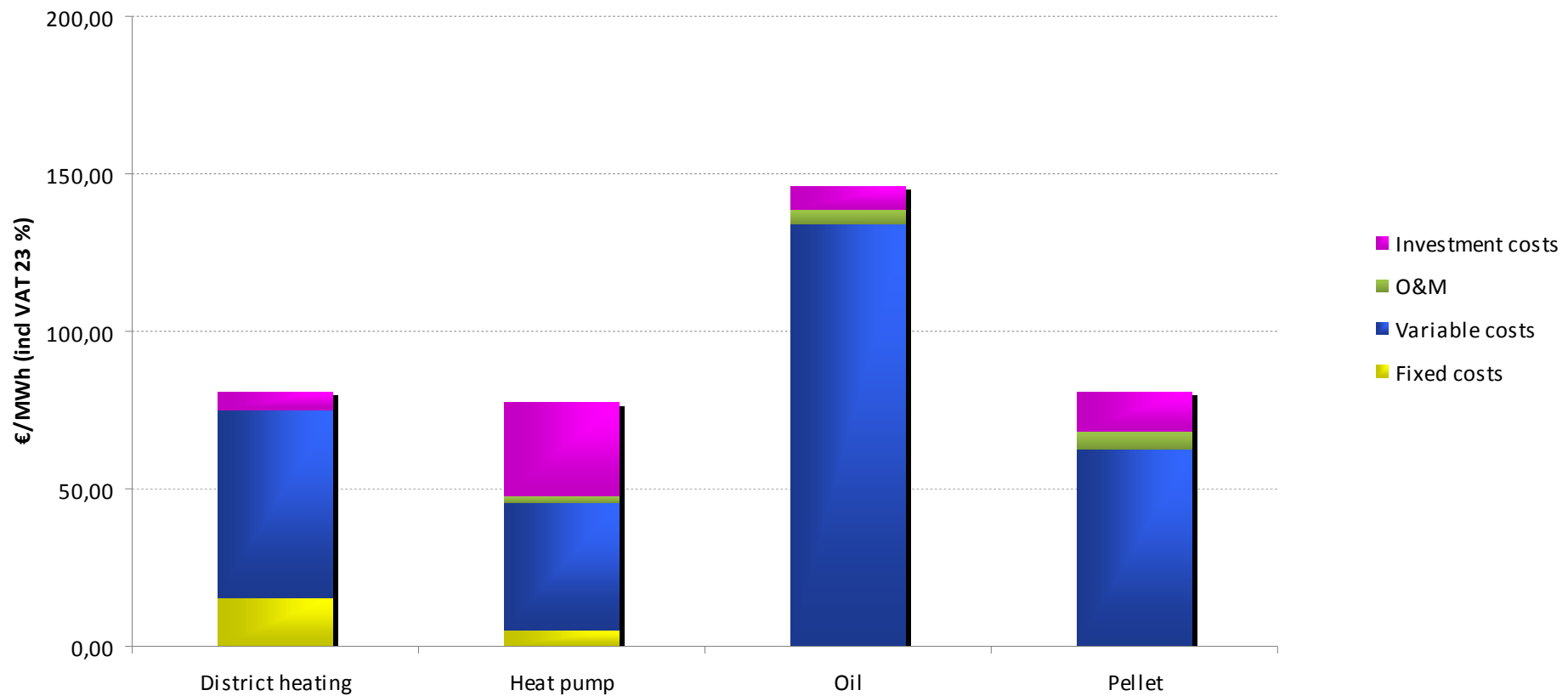


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Characteristics of the Finnish Heat Market

- No direct legislation on district heating
 - General statements of the Competition Law apply
- Heat price for the end-customer set by district heating company
 - Price changes reflect the changes in costs, e.g. fuel costs
 - Price competition from other heat products, e.g. heat pumps, electricity, pellets, oil, gas
- Voluntary connection to district heating
 - DH has several competitors on the heat market
- District heating companies have on commercial basis outsourced ~30 % of their heat demand to be produced by third party
 - Commercial contracts between DH-company and heat producer

District heating lives in a competitive environment with other heating alternatives



Exemple of action taken to beat the competition on the heat market

- Total change of pricing from Jan 1st
- Customers may choose heat product from three different alternatives
- In those products that have a capacity fee, the fee is based on measured and used capacity
- Change enables the customer bigger flexibility and a fair possibility to influence the heat price
- Fortum pioneer with multiple heat products in Finland



Mandatory vs Voluntary Energy Efficiency Mechanisms

- The Finnish EEA system covers years 2008-2016 and play a crucial role to meet EE targets in Finland
 - The primary tool in the implementation of ESD (2006/32/EC),
 - Signed by the industries (incl. energy sector), property and building, municipal, oil, goods and public transport, agricultural sectors,
 - Parties are ministries, industry, associations, companies and communities,
 - The EEA scheme covered 80 % of Finland's total energy consumption in 2010
- Results from years 2008-2010
 - Savings of **heating energy and fuels 2.6 TWh** per annum, **electricity savings 1.3 TWh** per annum (70 % in industry, 25 % in energy production, 5 % in other sectors)
 - Equal 1 % of Finland's total energy consumption
 - Savings in energy costs 130 M€, CO₂ emission reduced by 1.3 million tonnes,
 - Energy subsidies granted 23 M€(energy audits and investments),
 - Total of 190 M€ in investments reported for savings measures
 - Actions: Growing number of energy audits, speed up investments, continuous improvement of EE, energy saving guidance to customers (e.g. online information of hourly energy use)

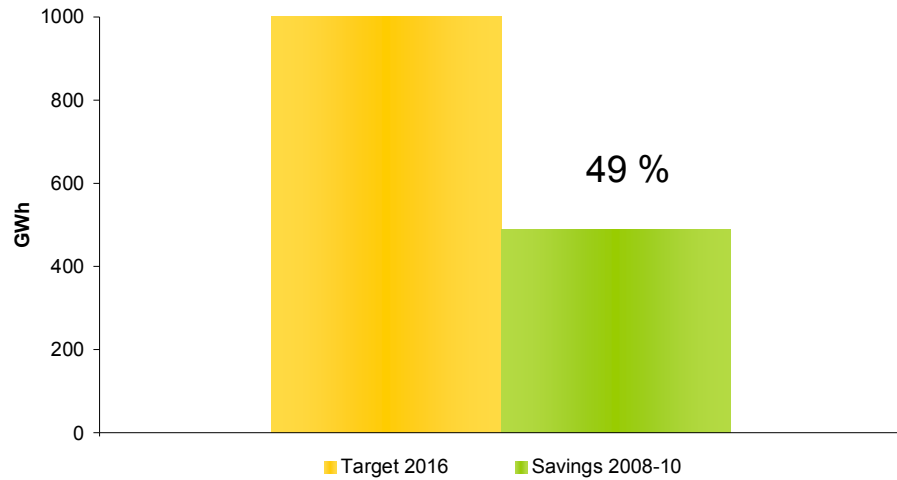
Details from the Agreement of the Energy Sector

- The agreement consists of:
 - Energy production actions programme
 - Energy services actions programme
- Target savings by 2016 are:
 - Improve efficiency of primary energy use by 1,000 GWh
 - Improvement of electricity production by 1,000 GWh
 - Electricity savings of 150 GWh in electricity and DH distribution and heat production
 - Heat or fuel savings of 150 GWh in DH distribution and heat only production

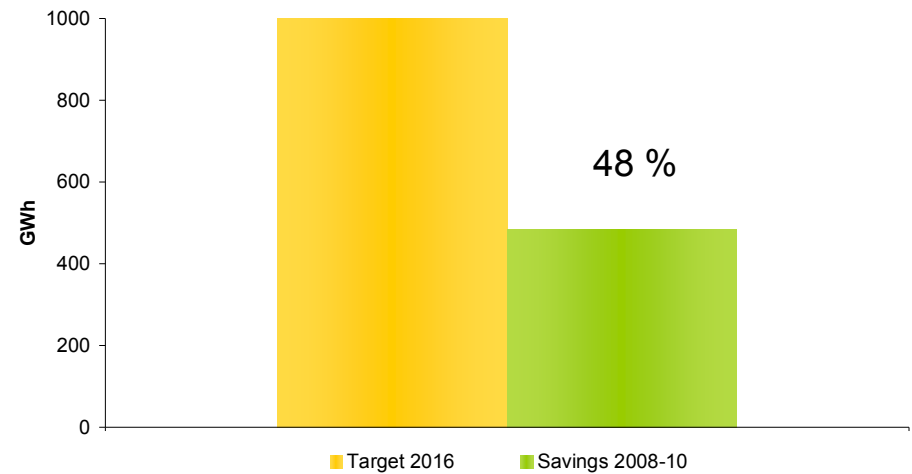
Results (Energy Sector only) 2008–10



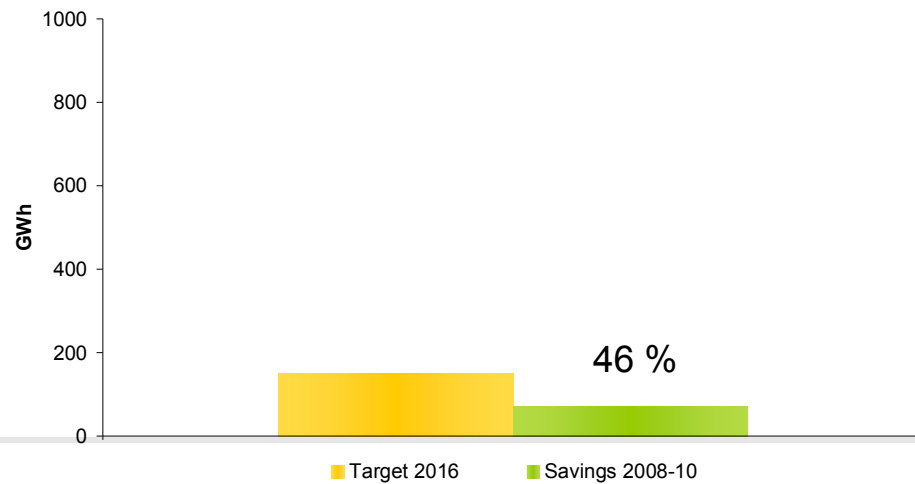
Primary Energy



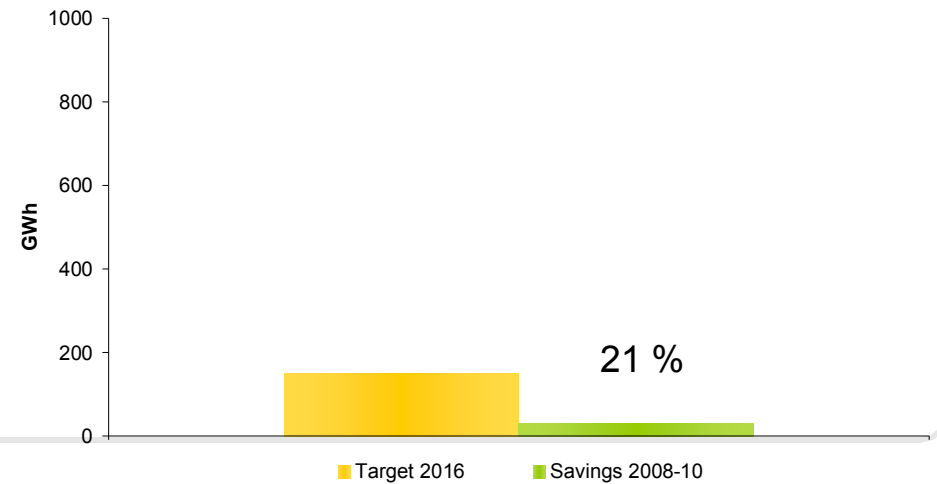
Electricity Production



Electricity Losses



Heat Losses



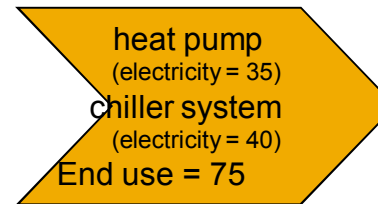
Key EED issues for the district heating sector

- Proposal aims to achieve 20 % **primary energy** efficiency improvement by 2020, compared to baseline projections

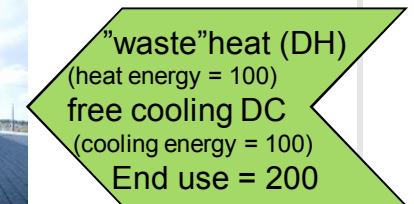
Heat demand = 100
solution: own heat pump
→ electricity 35



Heat demand = 100
solution: buy from neighbour
→ heat 100



Heat demand = 100
Cooling demand = 100

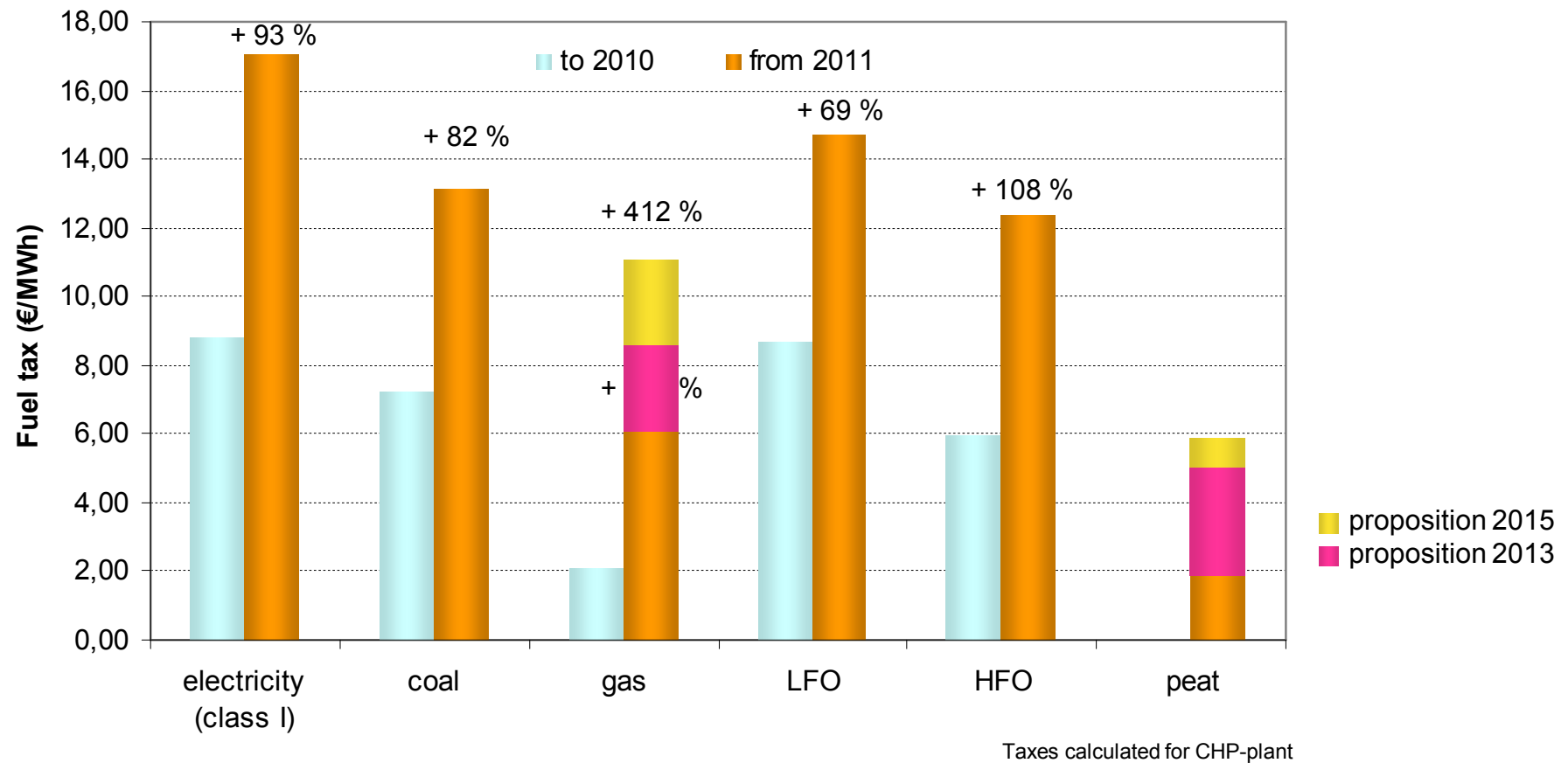


- Growth of district heating:
 - Connecting 10 % more customers. Does it increase consumption by 10 % or save energy by 10 %?
- Does disconnecting current customers save energy?

Key EED issues for the district heating sector

- Target is to reduce usage of primary energy.
- Savings should be calculated by the effect it has on the target.
- District heating and CHP is a solution to reach energy efficiency.

Steering of emissions by taxation – a Finnish exemple





Back up slides

Aim of the Proposal for the Energy Efficiency Directive

- Proposal aims to achieve 20 % primary energy efficiency improvement by 2020, compared to baseline projections
 - In absolute terms, this is 368 Mtoe in 2020 compared to projected consumption in that year of 1842 Mtoe
 - At the moment – with all the measures on EU and national level in place so far – we would only reach 1678 Mtoe, or 9% of savings

