District Heating in Finland

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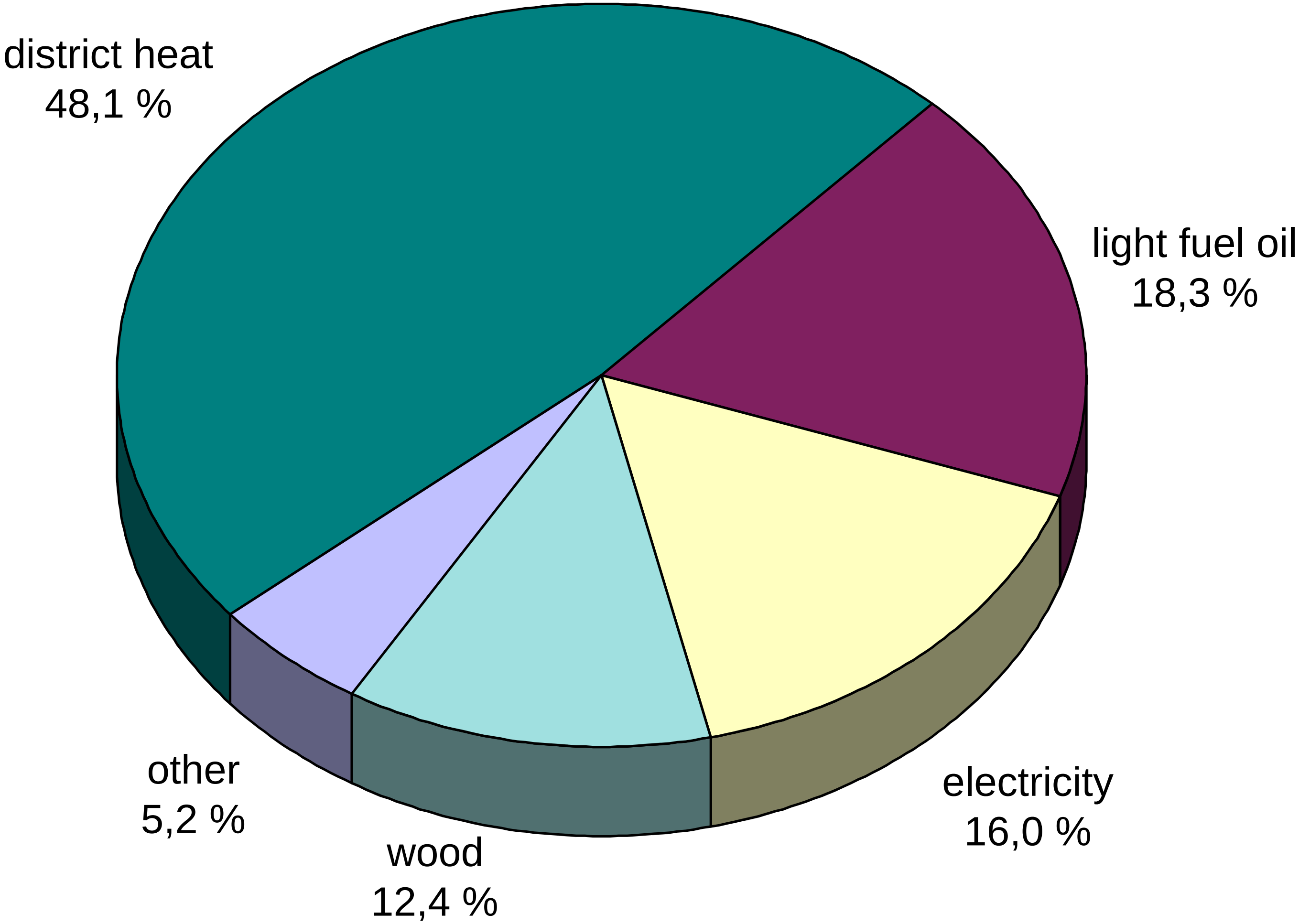
Suomen Kaukolämpö ry

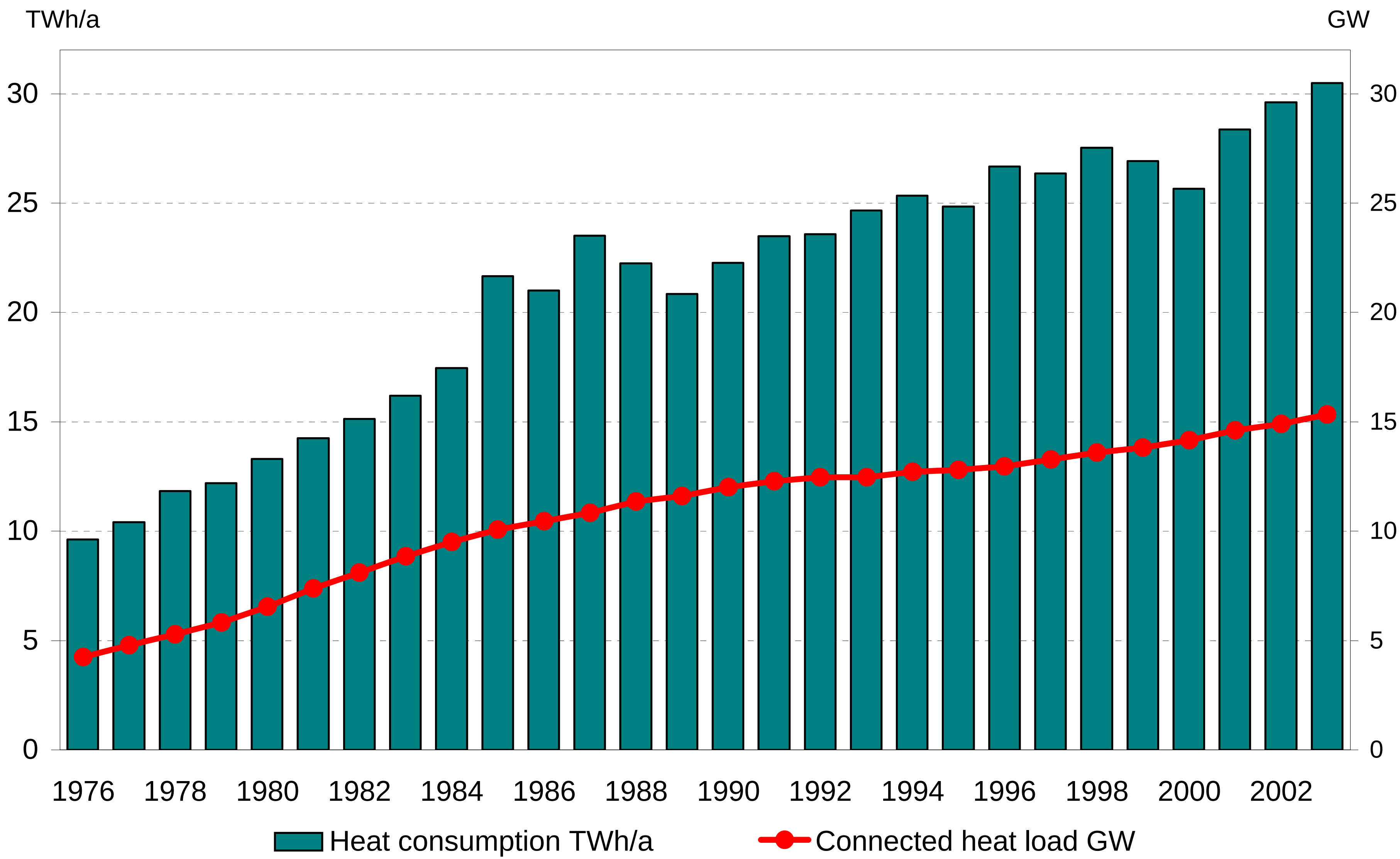
DISTRICT HEAT IN FINLAND, year 2003

* Heat sales	1,13 mrd €
* Sold heat energy	30,5 TWh
* Average price of district heat	3,8 c/kWh
* Inhabitants in district heated apartments	2,4 mill.
* Market share of district heat	48 %

Market share of space heating
year 2002



Heat consumption and connected heat load of the customers



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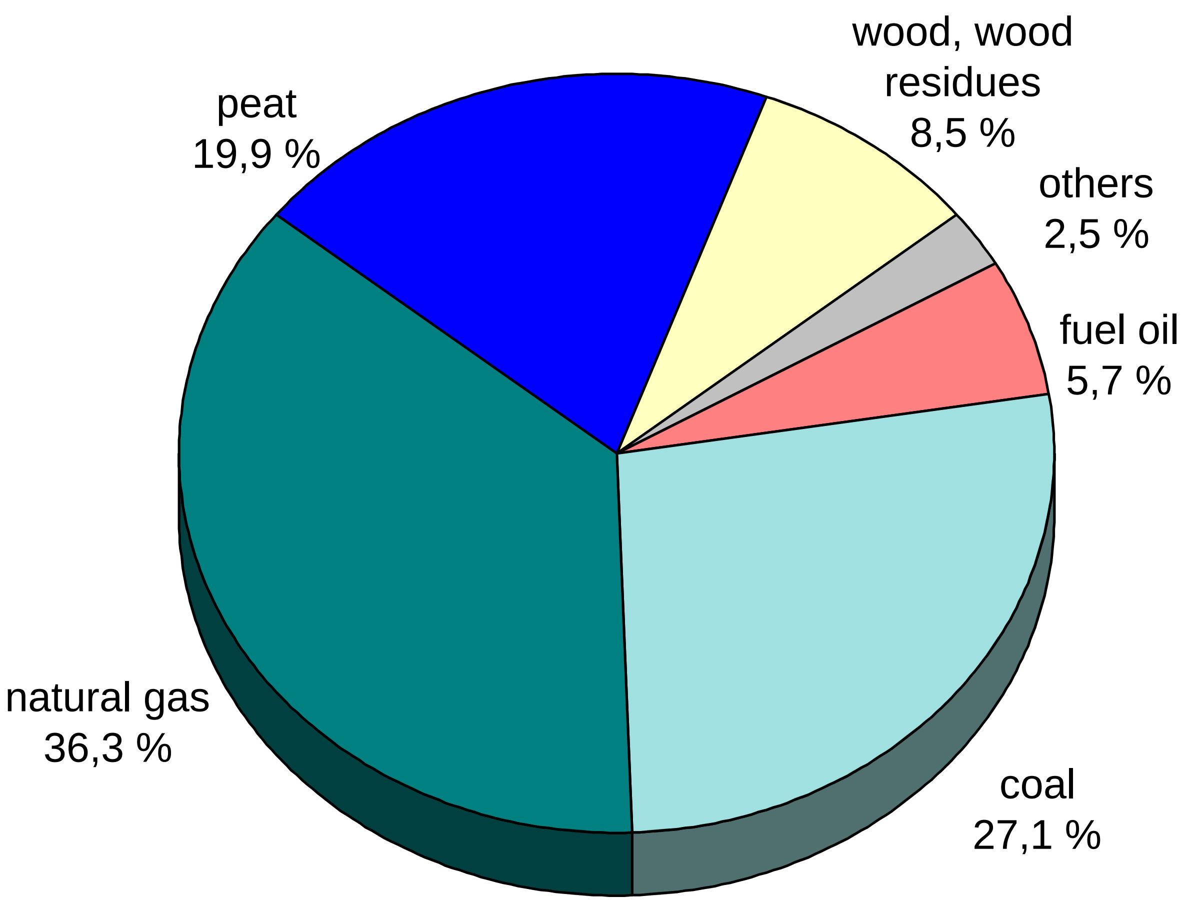
Fuels for district heat and cogeneration
56,3 TWh year 2003



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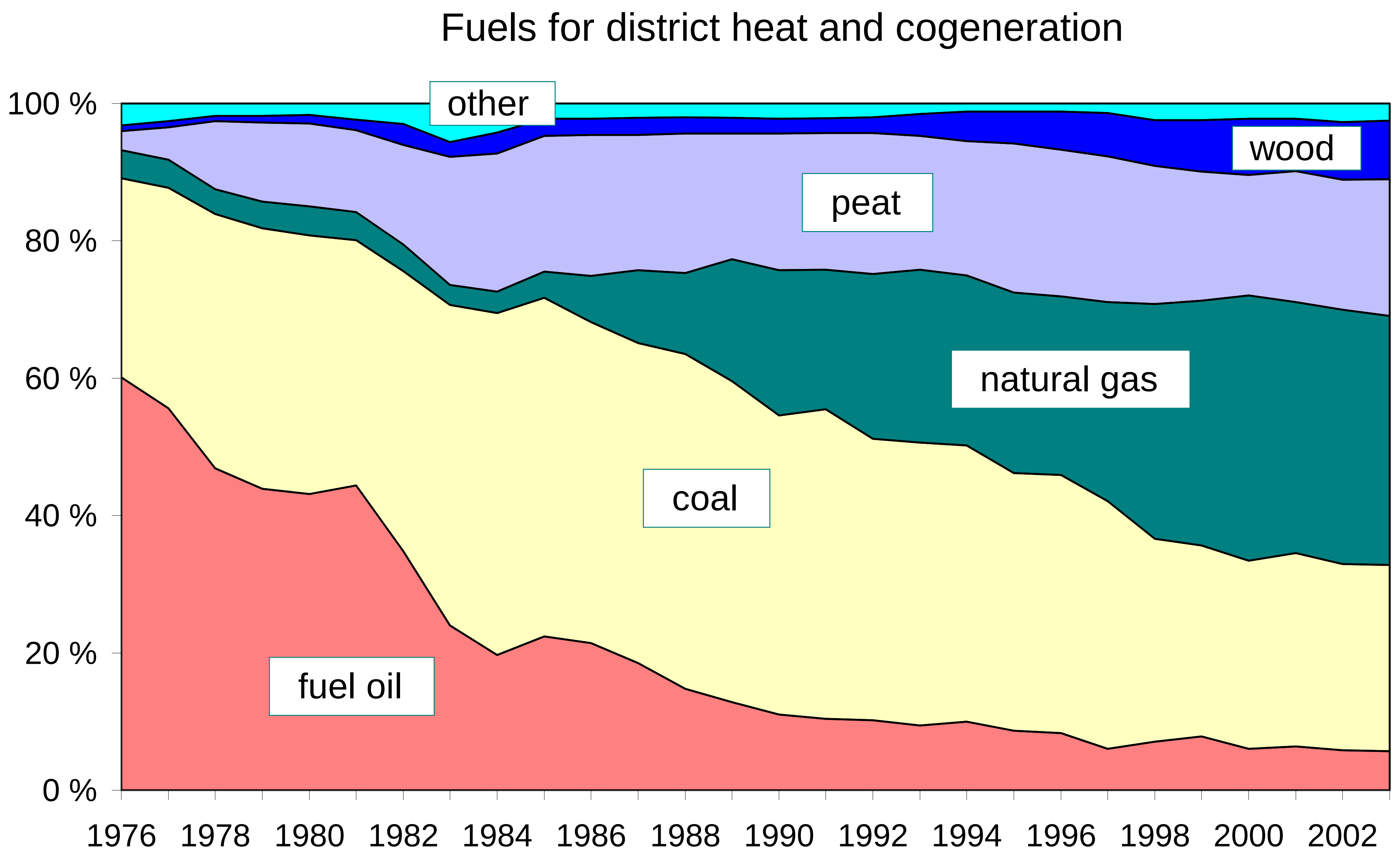

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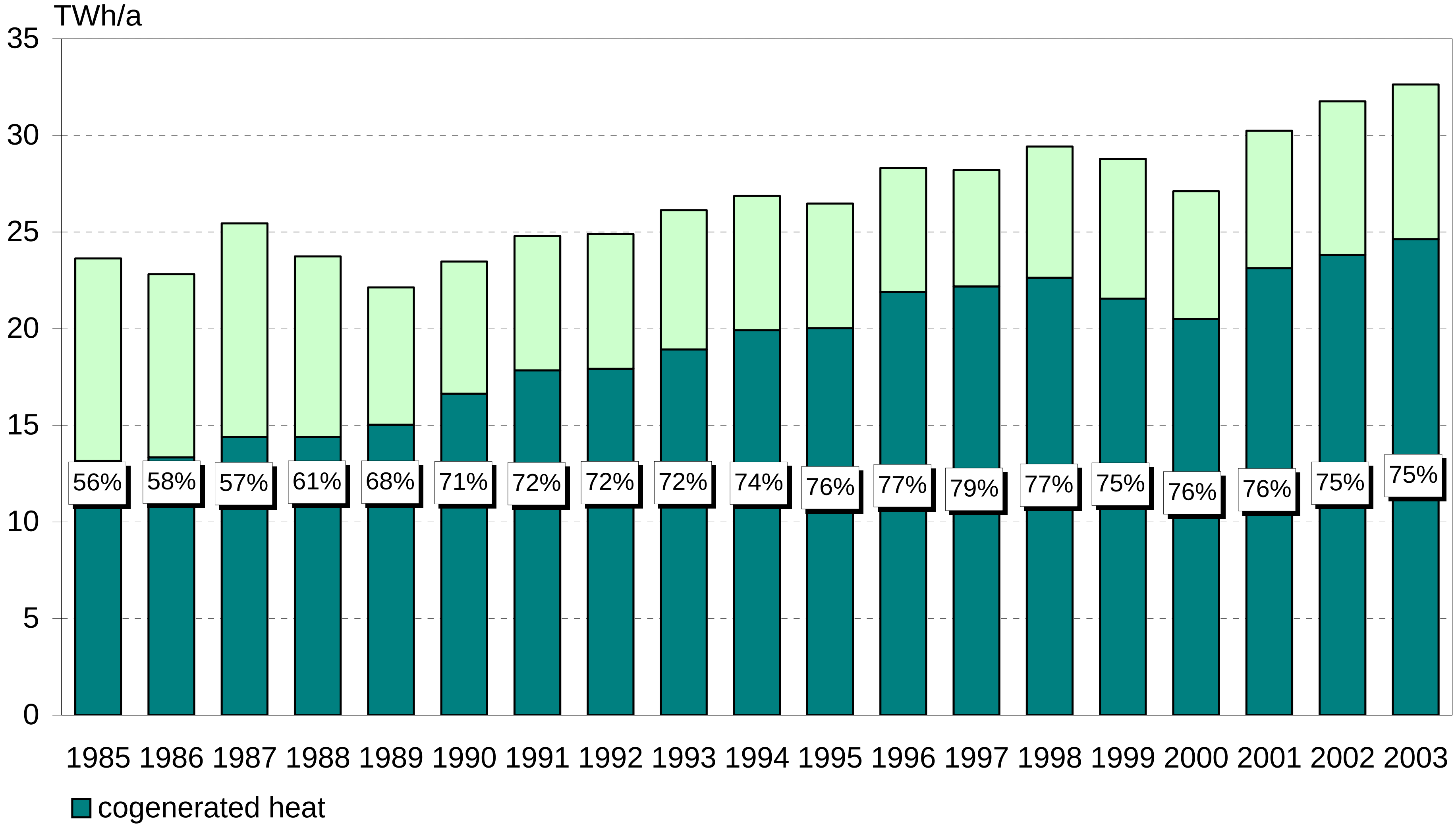
District heat production



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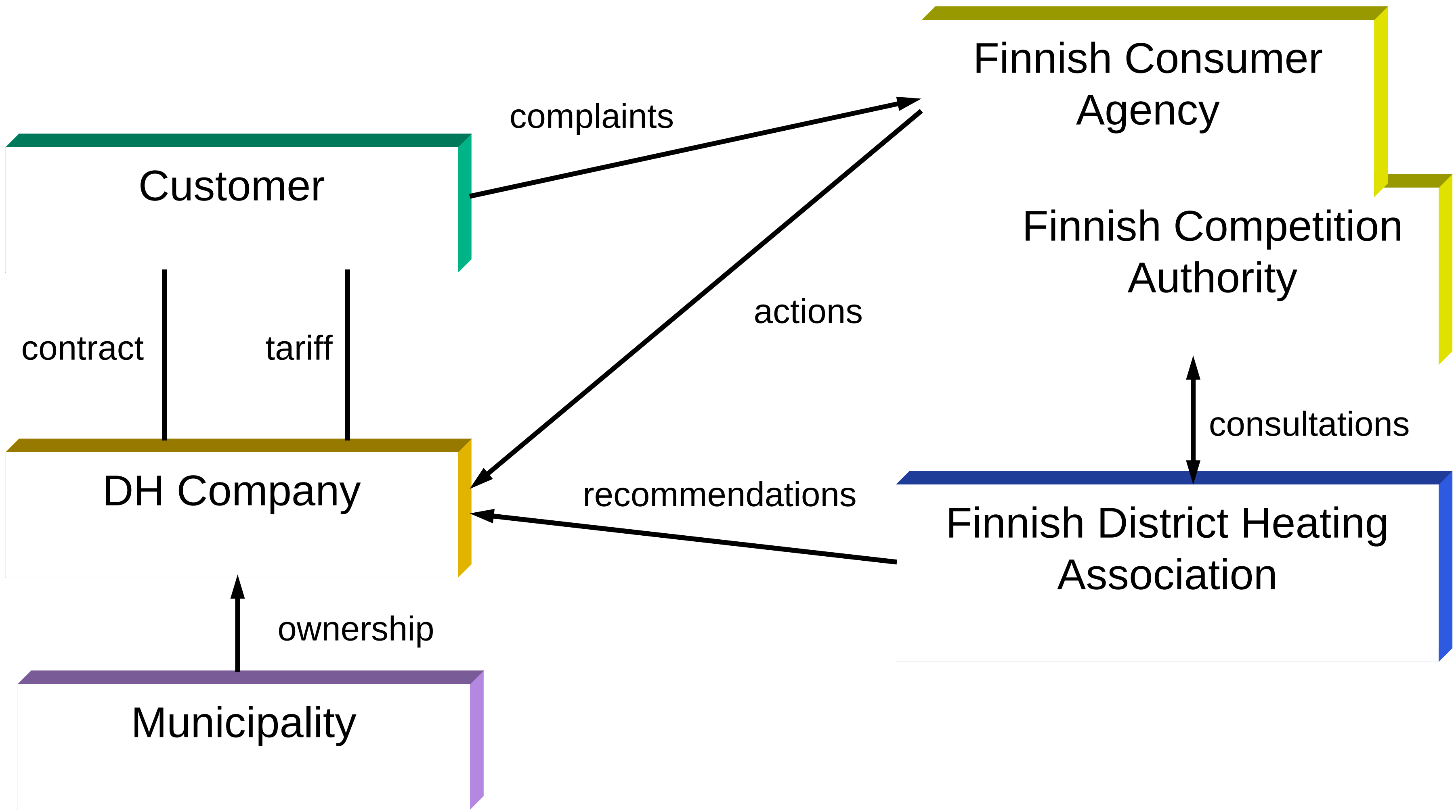
District Heating in Finland
Relations Between Different Actors



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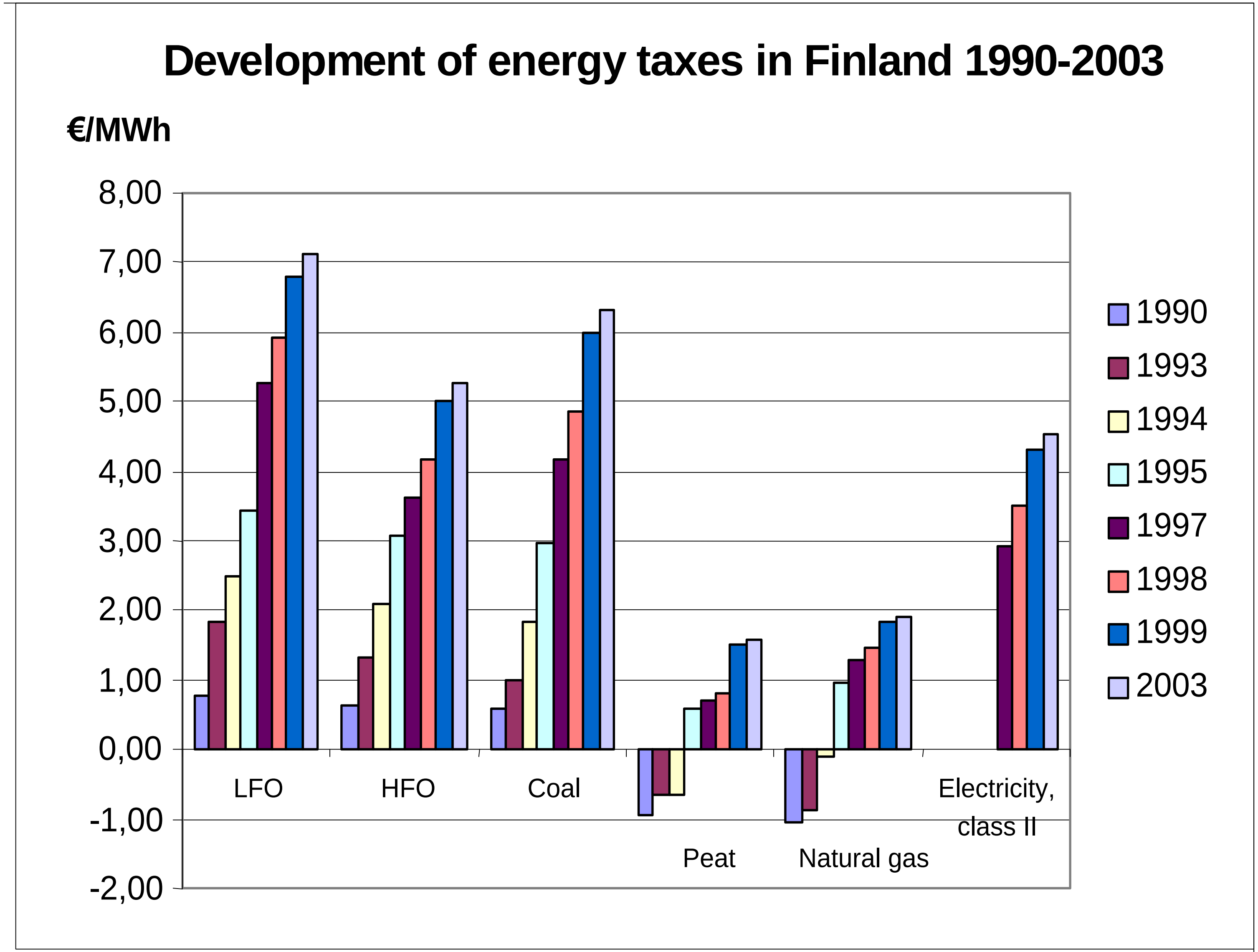

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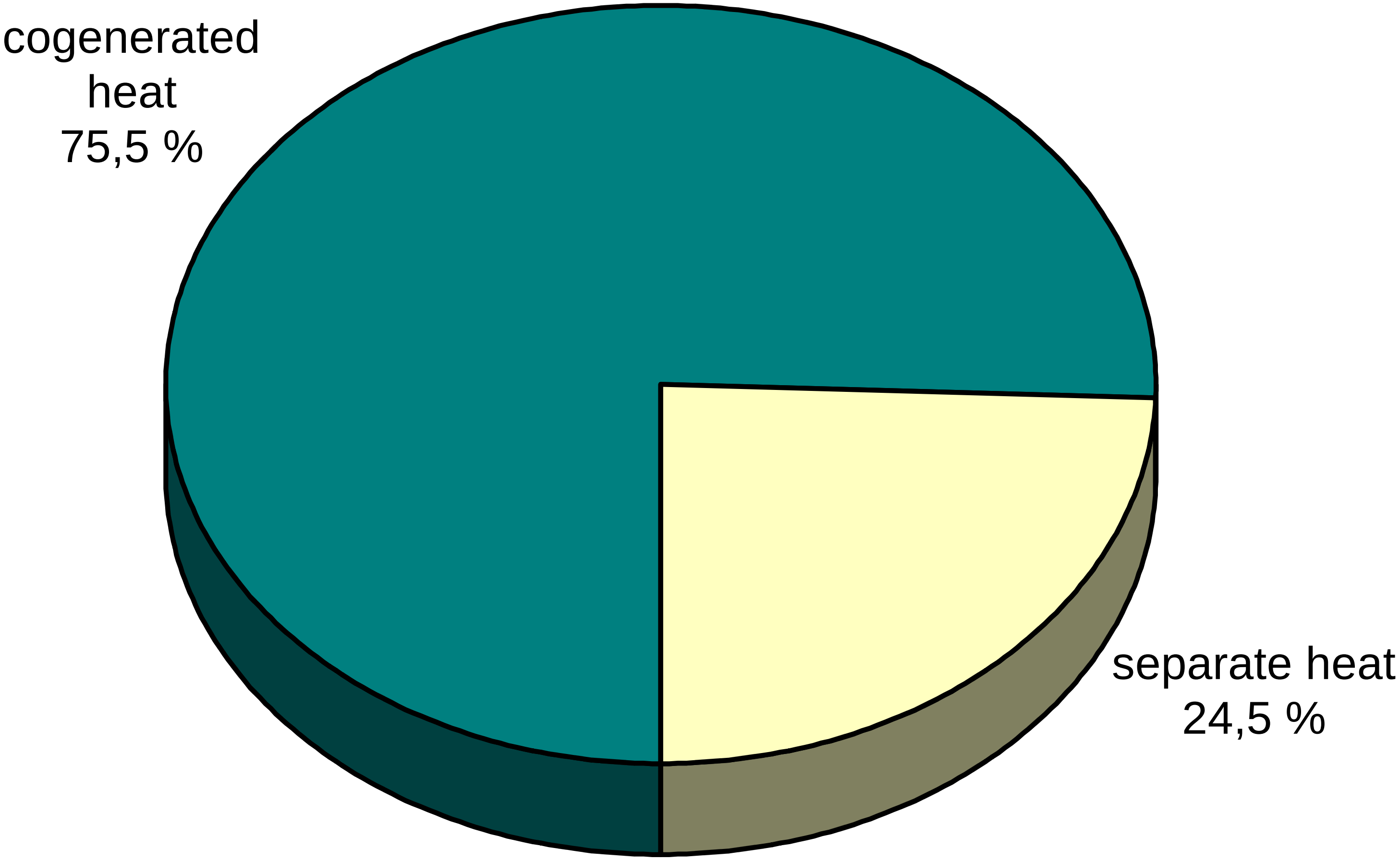
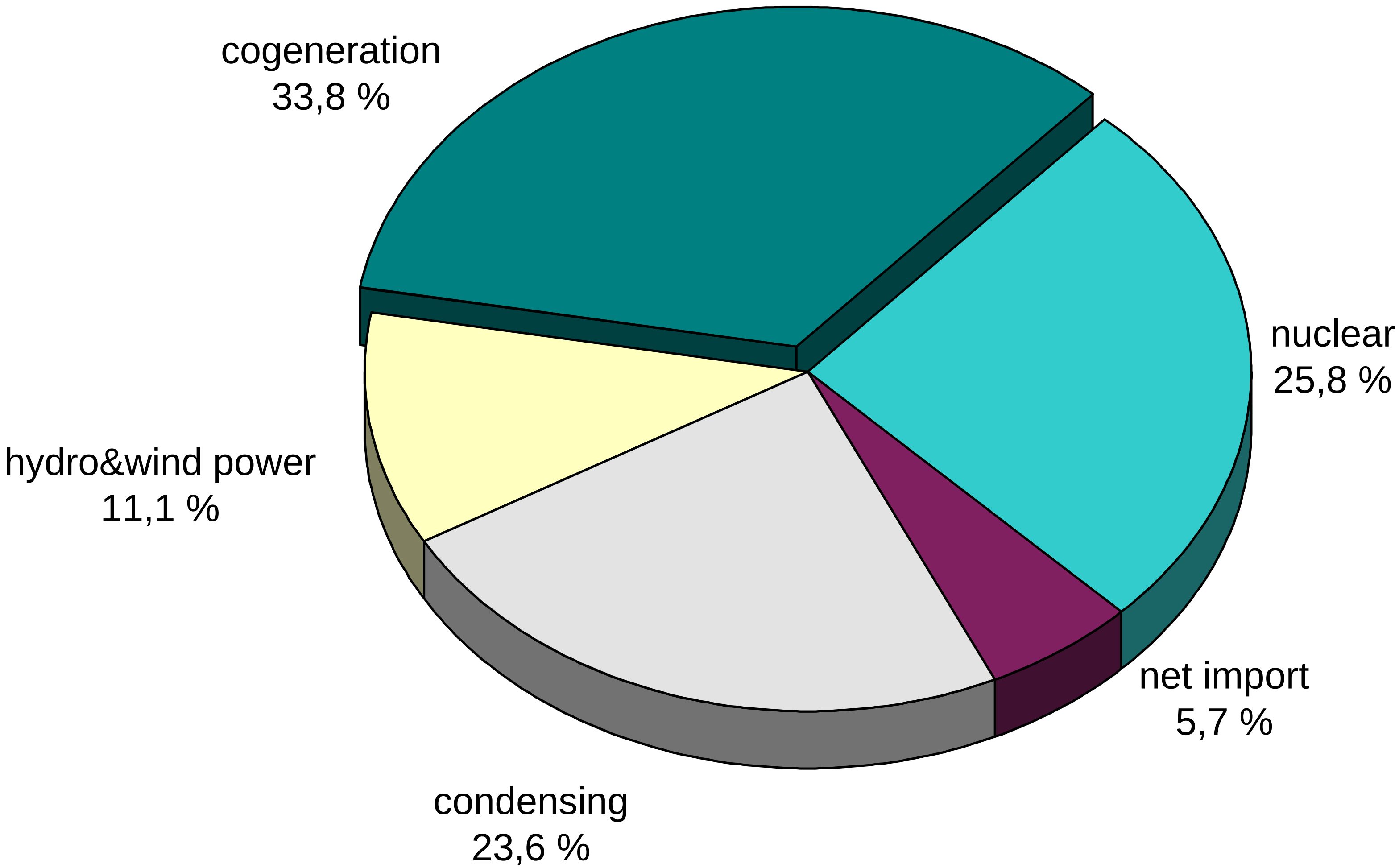
TYPE OF ORGANISATION MEMBERS OF FDHA

• Limited liability companies	75,0 %
• Public utilities	7,8 %
• Department of municipality	14,7 %
• Governmental organisations	1,7 %
• Co-operative	0,8 %

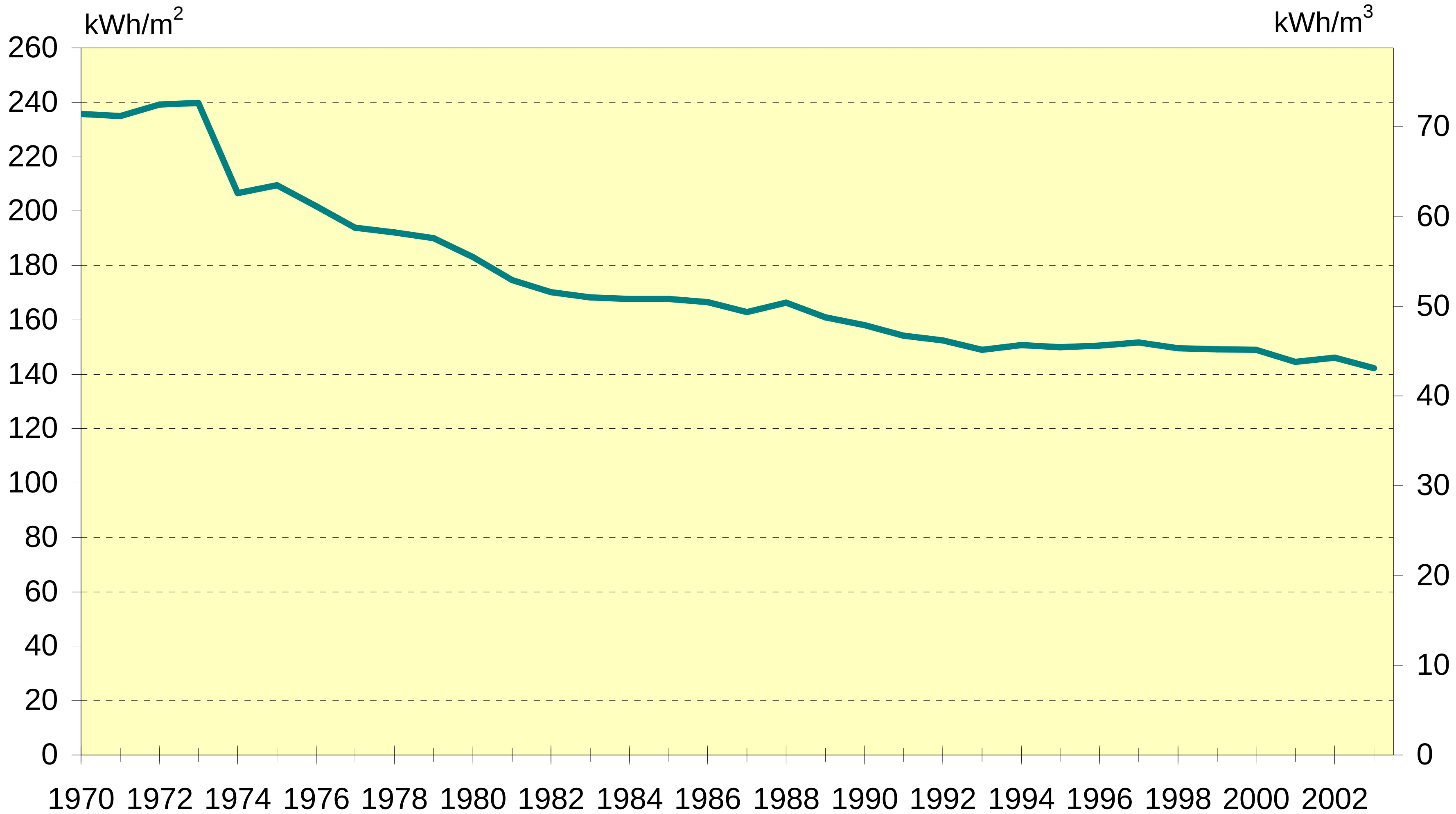
District heat production
32,6 TWh year 2003



Electricity consumption
84,7 TWh year 2003



Specific heat consumption in district heated buildings incl. energy for heating hot tap water



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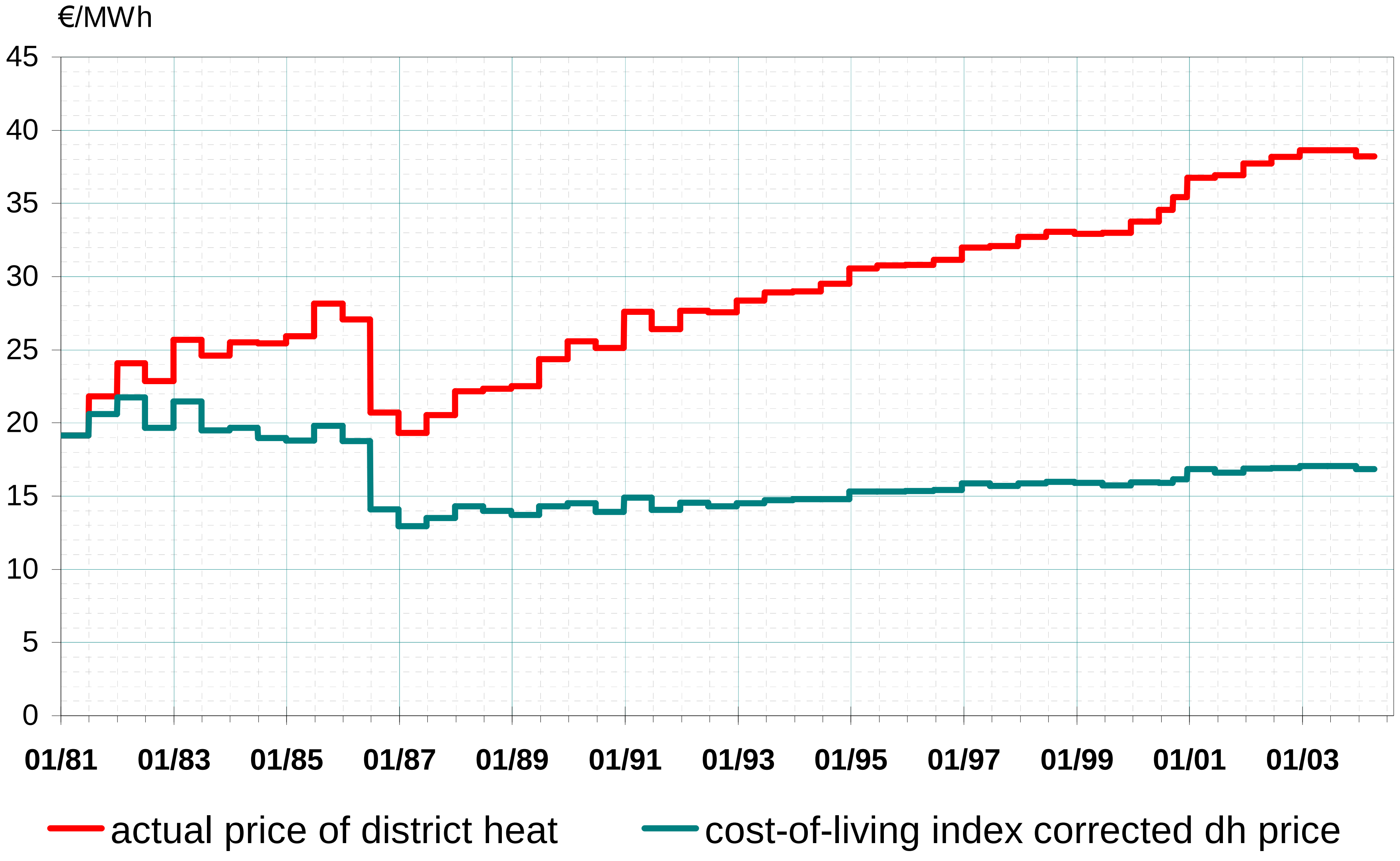
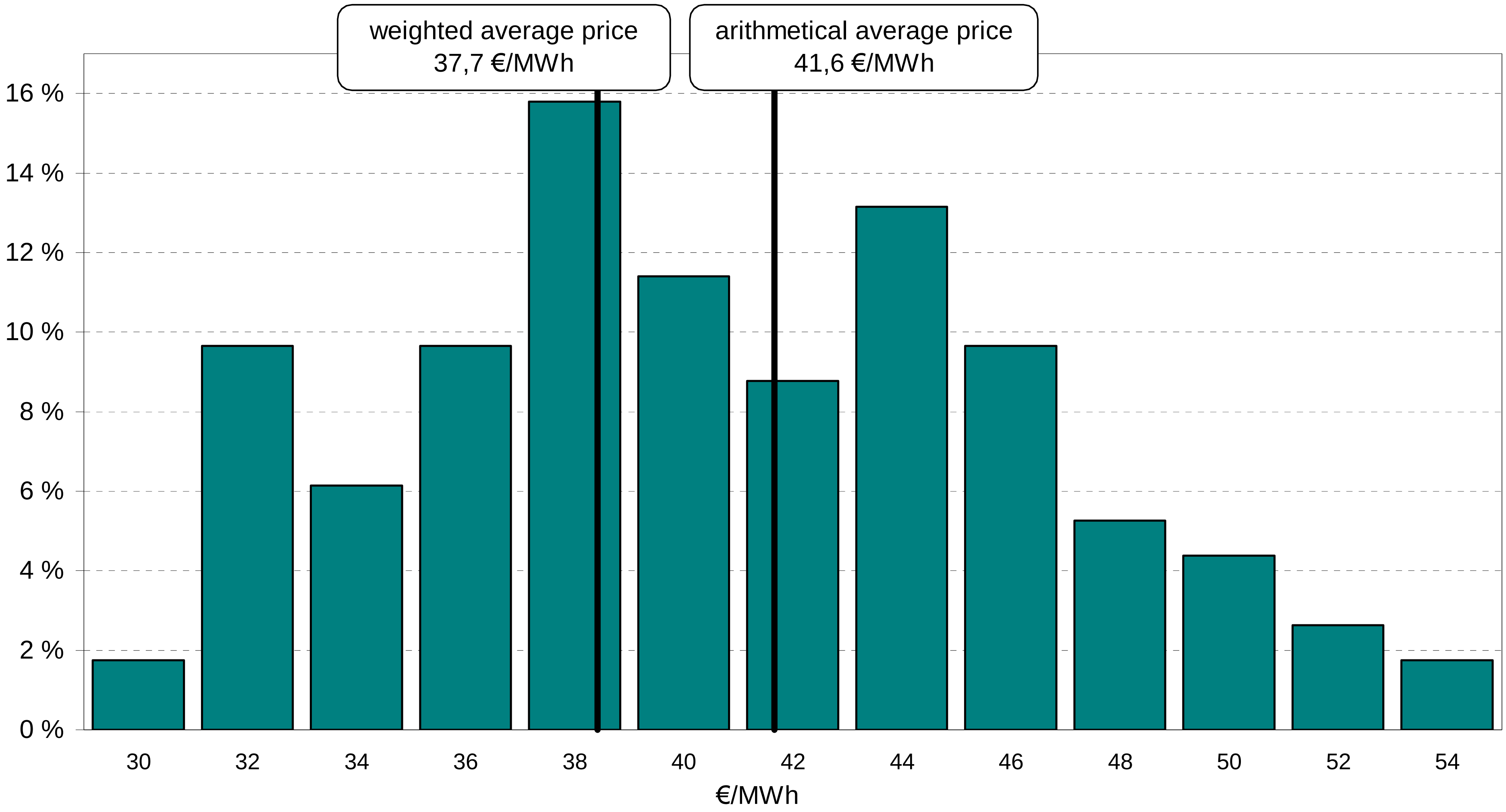
Average price of district heat





The share of district heating companies according to the average heat sales price (incl. 22 % VAT)

District Heating Tariffs in Finland

- The DH companies are operated on a business basis
- Each company decides its tariffs and prices itself
- No price regulation
- Same tariffs for all kind of customers (residential, industrial, public etc.)
- The prices vary much between different companies, depending on the actual operating costs

District Heating Tariff Components 2003

- Connection charge
  - Customer pays a connection charge once when connected to DH network
  - Depends on the size of the customer and also on the heating market competition situation
  - Average: 290 €/kW (type I: single family house, 500 m^3)
    80 €/kW (type V: big block of flats, 25 000 m^3)
- Fixed charge
  - Depends on the size of the customer
  - Average: 32 €/kW, a (incl. VAT 22 %, type I)
    20 €/kW, a (incl. VAT 22 %, type V)
- Energy charge
  - Average 29 €/MWh (incl. VAT 22 %)

CHANGES IN THE OPERATING ENVIRONMENT 1(5)

- The growth slows down but the market share expands
  - New buildings connected to district heating 2002:
    - Apartment buildings 97 %
    - Terraced houses 55 %
    - Single-family houses 12 %
    - Office buildings 95 %
    - All types of buildings 48 %
  - Densely built-up areas already connected to district heating
  - Strong migration from countryside to towns, cities etc.

CHANGES IN THE OPERATING ENVIRONMENT 2(5)

- From public service to energy business
  - Conditions for business are e.g.
    - Up-to-date ownership policy with clear goals
    - Efficient organisational structure and clear strategy
    - Competent management of economy
    - Versatile mix of fuels and cost-efficient production
    - Sustained environmental and personnel policy
    - Up-to-date customer service

CHANGES IN THE OPERATING ENVIRONMENT 3(5)

- Ownership is concentrating and structures are changing
  - Big national and international power companies have entered district heating business for good
  - Mixed ownership and management models g.e.
    - Operation or management contract
    - Leasing
    - Concession
    - Minority private equity partnership
    - Majority private equity ownership

CHANGES IN THE OPERATING ENVIRONMENT 4(5)

- Regulation is increasing rapidly
  - Especially regulation from the EU is increasing
  - Liberalisation of energy market
    - => Increasing regulation by authorities (EMA, FCA)
    - => District Heating Market Act?
  - Environmental norms
    - IPPC –Directive
    - LCP –Directive
    - Waste Incineration -Directive
    - Etc.

CHANGES IN THE OPERATING ENVIRONMENT 5(5)

- Environmental questions become more and more important...
  - Prevention of Climate Change (ECCP)
    - RES-E -Directive (in force)
    - **Emission Trading –Directive** (in force)
    - CHP -Directive (in force)
    - Energy End-use Efficiency & Energy Services –Directive (proposal)
    - RES-H –Directive (planned)
    - Etc.