

Towards 2050: Key Forces for Change

- Strategy for District Heating Sector of Finland

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Finnish Energy Industries

- Founded 29 September, 2004
- Operations started 1.1.2005 (same premises since 15.2.2005)
- Predecessors Finergy, Sky, Sener and Enerta
- Now 239 members and 61 co-operative members
 - DH division: 115 members and 43 co-operative members
- Budget 5,4 million €, staff 37 persons
 - DH division: 900 000 €, staff 5,5 persons
 - Based mainly on membership fees
- Adato Energia Oy: 4,6 million €, staff 15 persons
 - 100 % owned service company of the FEI
 - Services with extra fees
 - Dividend for the FEI

Activities

- Production, procurement, transmission, distribution and sales of electricity
- District heating and district cooling
- Design, implementation, operation, maintenance and construction of networks and power plants
- Labour market policy
- Provision of other services for the branch

General principles

- The national DH strategy aims to improve the economic and operational success of DH companies in the rapidly changing operating environment with the aid of common policies and measures.
- The strategy also provides guidelines for the Finnish Energy Industries to support the development of the DH sector. Several development projects have been launched on the basis of the strategy.
- The time perspective of the strategy is the year 2020, but the study takes also into account a longer view to the year 2050.
- The DH committee of the Finnish Energy Industries and employees of the organisation have taken part in the preparation of the strategy for the DH sector.

Analyses

- Analysis of the business environment (PESTE)
 - Political, economic, social, technological and ecological forces for change
- Analysis of the competition environment
 - Competition within the sector, threat of substitute products, market power of customers, market power of suppliers and threat of new competitors
- SWOT analysis
 - Strengths, weaknesses, possibilities, threats

Key forces for change and their impact on the DH sector - Global level

Key forces for change	Impact on the DH sector
<ul style="list-style-type: none">• Global actions to slow down climate change<ul style="list-style-type: none">- Post-Kyoto- Copenhagen• International market failures<ul style="list-style-type: none">- Commercial fuels- Raw materials- (Finance market)	<ul style="list-style-type: none">• Reducing carbon dioxide emissions<ul style="list-style-type: none">- Emission trading- Fuel switching• Increasing the security of supply<ul style="list-style-type: none">- Domestic fuels- Versatile fuel and supplier mix

Key forces for change and their impact on the DH sector - European level

Key forces for change	Impact on the DH sector
<ul style="list-style-type: none">• Increasing steering by the EU<ul style="list-style-type: none">- 20-20-20-10 in 2020 targets- Emission trading- Other emission reduction targets (IED)	<ul style="list-style-type: none">• Growing significance of international supervision of interests• Increasing the awareness of DHC and CHP• Reducing CO₂ emissions• Increasing the use of renewables• Achieving the energy efficiency targets• Forecasting and managing the impacts of emission trading• Reducing other emissions (e.g. NO_x, SO₂ and particulates)

Key forces for change and their impact on the DH sector - National level

Key forces for change	Impact on the DH sector
<ul style="list-style-type: none">• National targets in the climate and energy policy• Change in the social structure• Population changes	<ul style="list-style-type: none">• Increasing the awareness of DHC and CHP• Equal allocation of CO2 emission reductions to various sectors• Support for the production and use of renewables• Participating in energy efficiency agreements• Support for RTD and investments• Ensuring the availability of raw materials and goods• Influencing in urban planning• Development of expertise

Vision and mission

Vision

District heating is the best form of heating for the residents of densely-built areas, for companies and for the environment.

Mission

The district heating sector provides its customers with ecologically sustainable, reliable, effortless and competitive heating.

Strategic themes

- Making DHC and CHP more visible
- More efficient use of primary energy sources
- Reinforcing the position of DH in densely built areas
- Active promotion of the use of renewable energy sources
- Development of the skills of the personnel of DH companies

Strategic themes

Making DHC and CHP more visible

- Key interest groups:
 - DH is regarded as a good, reliable and safe form of heating.
 - On the other hand, DH is taken as a matter of course and is, in fact, not sufficiently well known.
- The drive for brightening the brand is to improve knowledge of the sector on both national and international level.
- The challenge is to raise the profile of DH in all interest groups, among politicians and the authorities, DH customers and end-users.
- Strengthening the co-operation with Euroheat & Power, Nordvärme and the IEA
- Continuation and Development of the Fair District Heating Quality Label system

Strategic themes

More efficient use of primary energy sources

- Raising the profile of DHC and CHP as energy-efficient solutions
- Promotion of the introduction of primary energy assessments
- Growth of the use of surplus heat of the industry
- Active participation in the energy efficiency agreement system and its development
- Stopping the use of electric heating in houses connected to DH network
- Promotion of the technology development in metering data and remote reading systems

Strategic themes

Reinforcing the position of DH in densely built areas

- Ensuring DH in densely built areas as the primary heating alternative
- Development of DH technology and creation of clear and transparent DH pricing models, which enable the success of DH also in more energy-efficient buildings and a warmer climate
- Growth of the use of DH in new and old areas of detached houses in a profitable way
- Influencing the planning for the preference of sufficiently dense construction
- To build regional networks in district heating in order to expand district heating operations
- Development of ancillary services related to district heating

Strategic themes

Active promotion of the use of renewable energy sources

- Recognition of the potential and potential uses of various sources of renewable energy and giving preference to them whenever it is sensible for the DH company
- Promotion of the development and introduction of new technology and the development of the entire bioenergy procurement chain
- Safeguarding the position of peat as a fuel for DH
- However, for the security of supply reasons, it's still important to maintain the possibility of using coal and oil in DH production

Strategic themes

Development of the skills of the personnel of DH companies

- Improvement of the image of the DH sector and increasing the awareness of the field
- Development of models and methods to support co-operation between DH companies and colleges
- Establishment of the manpower and competence needs in the DH sector
- Influencing the vocational qualifications and decision-making in education policy

The first set of development projects

- DH as a contributor for energy efficiency – getting more attention
- DH's influence on energy efficiency and CO2 emission reductions
- Criteria for feasible connection of regions/buildings to DH network
- Development of cost efficient DH distribution and customer technology for conditions of low energy demand
- Alternative DH tariff systems
- Increase of renewable energy sources and surplus heat from the industry in DH production
- Heat entrepreneurship as starting point for DH business
- Study on labour force structure and professional skills development
- Models of co-operation between DH companies and educational institutes
- Development of organisation and processes of FEI DH branch

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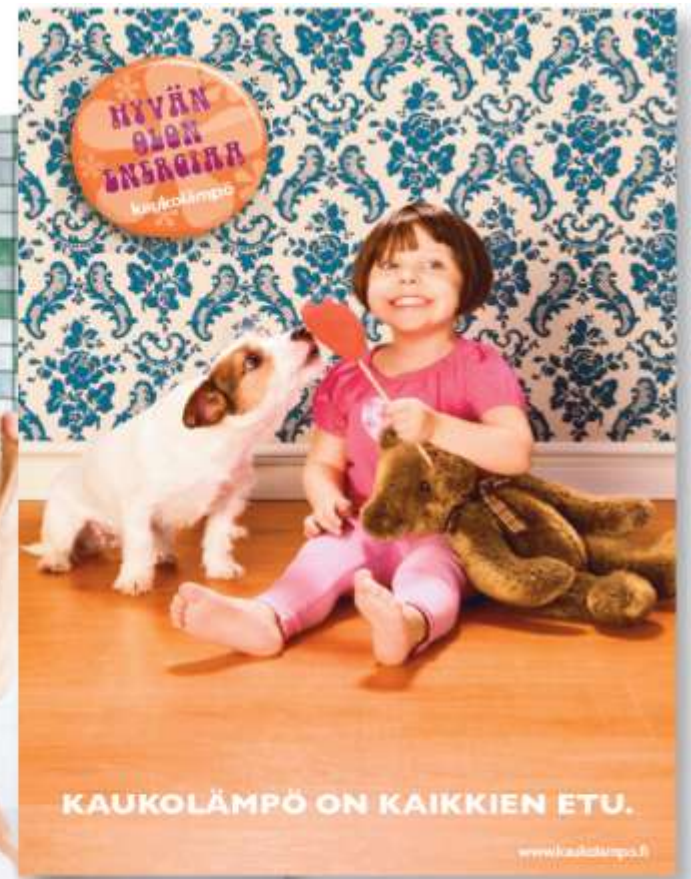
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Thank You!

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Analysis of the business environment (PESTE factors) - Political forces for change

- Binding steering by the EU is constantly increasing
- Short-sightedness' of policies (locally, regionally, nationally) seems to be on the increase
- You must not touch the voter's life, but emissions and energy consumption must be reduced
- Inconsistency of tax steering
- Local government reform (unification of municipalities)
- Emphasising social responsibility and national interests in DH operations
- Energy Services Directive and other similar rules and regulations

Analysis of the business environment (PESTE factors) - Economic forces for change

- Constant unpredictability of prices of fuels, raw materials, goods and emission allowances
- Growing demand for energy raw materials and goods on the global scale
- Increasing construction costs (e.g. lack of manpower)
- Emissions trading drives towards decentralised solutions (< 20 MW plants not covered by the emissions trading scheme)
- New direction of support actions (feed-in tariffs, certificate systems, technology aids)
- Changes in ownership (local authorities sell – prices go up)
- Large investments are made at the same time (risk-taking ability of municipalities will not be enough)
- Unification of local authorities
- In future, other places will also be heated and not just buildings (increasing use of heat)
- The demands of the EU CAFE programme on local emissions (SO₂, NO_x and particulates)

Analysis of the business environment (PESTE factors) - Social forces for change

- Increased living space
- Low-rise and dense building will increase
- People want convenience and safety and are interested in services related to living comfort
- Customers want to repair/ build with the turnkey principle
- Shortage of manpower and change of generation
- Attitudes towards waste combustion are turning more positive
- Climate reasons are generating an attitude that fossil fuels and peat should not be used
- Energy-saving trend is gaining strength

Analysis of the business environment (PESTE factors) - Technology-related forces for change

- Low-energy houses are becoming more common
- Mixed systems are becoming more common
- The need to replace pipes is increasing (age and conditions, planning changes, etc.)
- Demands to improve the power-to-heat ratio
- Building multifuel plants
- Waste combustion technology must be developed
- The demand for energy efficiency has an impact on the building-specific reporting demands for energy companies (metering data systems, remote reading and reports)

Analysis of the business environment (PESTE factors) - Ecological forces for change

- Increasing use of renewable energy sources
- Global warming

Analysis of the competition environment

- Competition within the sector

- Competition for customers is increasing
- Competition for
 - Contractors
 - Raw materials
 - Employees
 - Fuels
- No competition previously, now becoming keener
- Large companies buying smaller ones

Analysis of the competition environment

- Threat of substitute products

- Electric heating in houses connected to a DH network
- Ever-ready sauna stove, plasma TV and other electric devices in houses connected to a DH network
- Air source heat pumps (incl. indoor air cleaning)
- Low-energy houses
- Natural gas, zone heating plants
- Property-specific heating solutions with up-to-date technology for densely-built areas
- Electric heating in densely-built areas

Analysis of the competition environment

- Market power of customers

- Aggregators when the price of heat is rising (building an own centralised plant, in Sweden)
- Third party access to DH distribution network
- Requirements of the Finnish Real Estate Federation

Analysis of the competition environment

- Market power of suppliers

- Cartels (suspicions)
- Shortage of contractors
- Small size of suppliers, hardly any R&D
- R&D of pipes and heat exchangers mainly elsewhere than in Finland
- Not enough suppliers
- EU regulations guide the operation of suppliers (the Finnish market is small)
- Centralised fuel suppliers (natural gas, pellets)
- Suppliers of technology and fuels have a very strong position, not much competition

Analysis of the competition environment

- Threat of new competitors

- Ground heat pumps
- Low-energy houses

SWOT Analysis

- Strengths

- Energy efficiency (CHP)
- Environmental friendliness,
- Easy and effortless from the customers' point of view
- Top-rated customer satisfaction, a good image
- Competitive and stable price
- Security of supply
- Local presence (management of conditions)
- Varied range of fuels, flexibility

SWOT Analysis

- Weaknesses

- Self-satisfaction of the sector
- Local presence (small resources)
- Static operations
- Owner is conservative (low risk taking)
- Capital intensity
- Small R&D investment
- Communication about DH is too modest and shy, technocratic

SWOT Analysis

- Possibilities

- Market leader in the heating market, a wide customer base
- CHP (DHC, electricity, steam, etc.)
- Utilising surplus heat from industry
- Service production (turnkey, remote reading and monitoring services)
- Remote reading enables different tariffs (management of demand peaks)
- Opportunity to export technology
- Development of technology (distribution network, customer equipment, metering, production)
- District heat has an opportunity to become trendy, 'hip'
- Enabler of good internal conditions
- Generation change of employees

SWOT Analysis

- Threats

- Lack of knowledge about DH in the EU
- Risk related to centralisation
- Electric heating in houses connected to a district heating network
- Competitive heating forms
- Low-energy building
- Global warming
- Fuel supply failure
- Failure of fuel logistics
- Investment mistakes and risk investments
- Short-sightedness of the decision environment
- Regulatory supervision (unreasonably tight production regulation)
- Unpredictability of emissions and environmental requirements