Business oppurtunies and challenges on heat production

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Heat energy entrepreneurship – several stakeholders and challenges

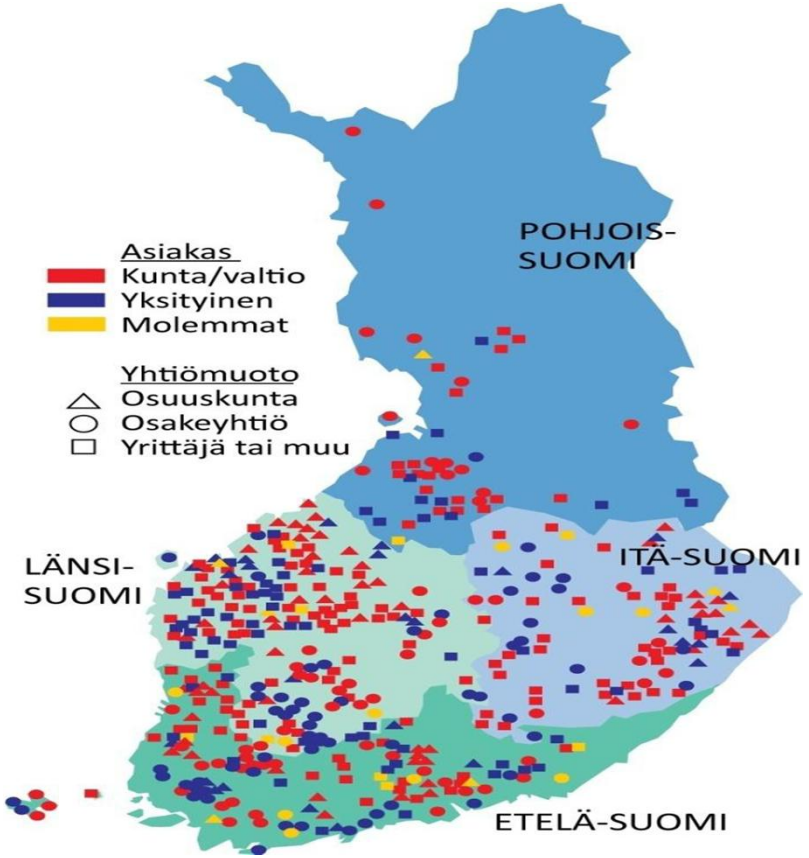
- Municipality and heat energy entrepreneurs providing the service
- Owners and the equitable owners of the real estates
- Actors along the raw-material supply-chain
- Requirements of the municipal energy solution
- Multiple objectives; politics, environment, economy, technology
  - Competition against the economics of scale
  - Competitive tendering
  - Profitability calculations
  - Demands know-how on technology, economics, legislation, negotiation skills etc.

Heat energy entrepreneurship in Finland

- Small scale business in rural areas, where the product to sell is heat produced by bioenergy
- Business started in Finland 1990 and first heated buildings were small schools in villages
- Nowadays approximately 530 heat plants which are owned by 200 enterprises
- Total heat power is approximately 280 MW
  - Produced energy 350 000 MWh/a
  - Use of biofuels 1,3 milj. loose-m³/a
  - Mainly wood chips but also pellets and peat
- Average boiler capacity is 0,60 MW

Heat production in Finland by small companies

Customers
Public
Private
Both
Modell
Co-operative Δ
Limited company o
Entrepreneur □



	Base of business	Challences Asko Puhakka
International Energy Companies	Strong business, high level knowledge, lot of own capital	High profit demand, Local partnership?
Energy Companies owned by Municipalities	Strong local connection, Based to municipal decission	Profit demand to owner municipality
National Ltd Companies	Network with different partners, Interest of growing	Amount of own capital, Achieving local partners
Small local Companies	Typical side business, Using of own machines and raw material	Limited to small scale, Learning by doing
Local Co-operatives	Strong local connection, Wide ownership, Raw material in ”own” hands	Locality, Easy to stay in passive owner’s role

Heat production and business, Case 1

- Example: 500 kW
  - Solid fuel boiler — 500 kW
  - Fuel — Woodchips
  - Amount of produced heat/a — 1200 MWh
  - Annual fuel consumption — 1900 m³ (loose) 1.2 *1200 = 1440 MWh
  - Heated building volume — Approximately 25 000 m³
  - Length of the grid — 400 m
  - Investment costs of the plant — 300.000 € + VAT

- Business volume:
  - Total price of the heat tex. 75 €/ MWh
  - Annual turn over by 75 € * 1200 MWh = 90.000 €
    - 50€ heat production + maintenance work
    - 25 € capital costs

Heat production and business Case 2:

1 MW boiler + heat network 1,5 km		
Investment:	600.000 € + 300.000 € =	900.000 €
Subsidies: 30 % > Investment for payback is		630.000 €
Production: 3000 MWh > * 75 €/MWh		225.000 €/a

Investment period (10 years for boiler and 20 for heat network)	
Investment costs	70.000 €/a
Raw material 3000 MWh * 1.2 *22 €/MWh	79.000 €/a
Salary and etc. 5 €/MWh	15.000 €/a
Energy, insurance, services etc. 5€ / MWh	15.000 €/a
Reserve for renovation and investments	10.000 €/a
	189.000 €/a
Profit for capital	x %

Benefits for municipality and entrepreneur

- For the entrepreneur heat energy entrepreneurship provides
  - Extra income and support for existing livelihoods (farming forestry, transportation)
  - Improved young forest management,
  - Use for under utilised harvesting equipment

- Important to ensure the reliability of the heat production
  - Operational reliability
  - Technical reliability
  - Need for good contracts between the entrepreneur and customer (usually municipality)

Heat energy entrepreneurship in Finland

Potential in Finland is > 5000 boilers (over 300 kW)

- Good business oppurtinies
- Is there enough courage for growing among entrepreneurs?

Challences:

- Investing modells and lack of money; collaterals
- Technology, hybrid solutions
- Quality of raw material

Challences to heat energy business

New services and business modells
- Full services to owners of real estates
- Planning, sizing and technology solutions,

Knowledge development
- Municipalities > Acquisition processes
- Entrepreneurs > Making offers
  > Acquisitions; technology, raw material, services

Co-operation with companies
- Economy management, procurings, education...

Business models from Europe

Bioenergie Pongau, Bischofshofen, Austria

- Investments 32 milj. €; heatplants 5 + 5 MW and CHP 7 MW.
- Subsidies 10 milj. € + guarantee price for electricity production
- 33 km district heating network and 220 customers

Ownership:

- Local Co-operative 51 % and there is 25 members in total; forest owners, sawmilling companies etc.
- SWH, State owned forests, owns 49% of Bioenergie Pongau.

Benefits for common ownership:

- Raw material resources
- Subsidies for investments are available (> 51 % owned by C-O)

Business Models from Europe

Naehwaerme, Energiecontracting GmbH, Graz, Austria

- Company is Ltd, main business is building Heat plants and selling heat
- Naehwaerme Company is owned by three companies

Business model:

- To build up local heating companies of which local and active partners own more than 50 %
- NWC offers training courses for local partners on business and on heat production

Aim of business model:

- To use local resources and knowledge
- To use knowledge in planning of heat plants and heating systems
- To keep limited demand for own capital.

Business Models from Finland
Local energy business in North Karelia

There is seven energy co-operatives in North Karelia:

Enon Energia – The biggest one

Basic for succes

- Good connection to local municipality and forest owners
- There is enough persons which are ready to put time on developing and to do basic work
- Enough interest
- Enough courage
- Good partners

Development projects, education and co-operation
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We make close co-operation with
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