

BUSINESS MODELS OF HEAT ENTREPRENEURSHIP

Asko Puhakka

North Karelia University of Applied Sciences

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Scottish School of Forestry, Balloch, Inverness

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Pictures: NKUAS and Biowatti Oy





OPERATIONAL FRAMEWORK

- The price-level of fossil fuels has increased
- Technological development and environmental awareness
- Resulting on implementation of back-stop technologies
- Back-stop technology means the introduction and implementation of new alternative technology or resource at the moment when the price of technology or resource increases



HEAT ENERGY BUSINESS MODEL

- **Definition the heat energy business model:**

Heat energy business model is a model for

- a) organising, and
- b) defining of responsibilities and ownerships

between all stakeholders involved, such as sellers and buyers of the service, subcontractors and fuel producers.



INVESTMENTS AND BUSINESS MODELS

1) Impact of risk to business and investments

- Heavy investments mean also economically significant risks
- People usually are willing to avoid risks
- In starting phase of heat entrepreneurship (early 90's), the investments were often made by the customer (usually municipality), which meant reduced risk for the entrepreneur
- Positive experiences have changed the situation: nowadays entrepreneurs are also investing in the heating units and taking the risk of the whole business



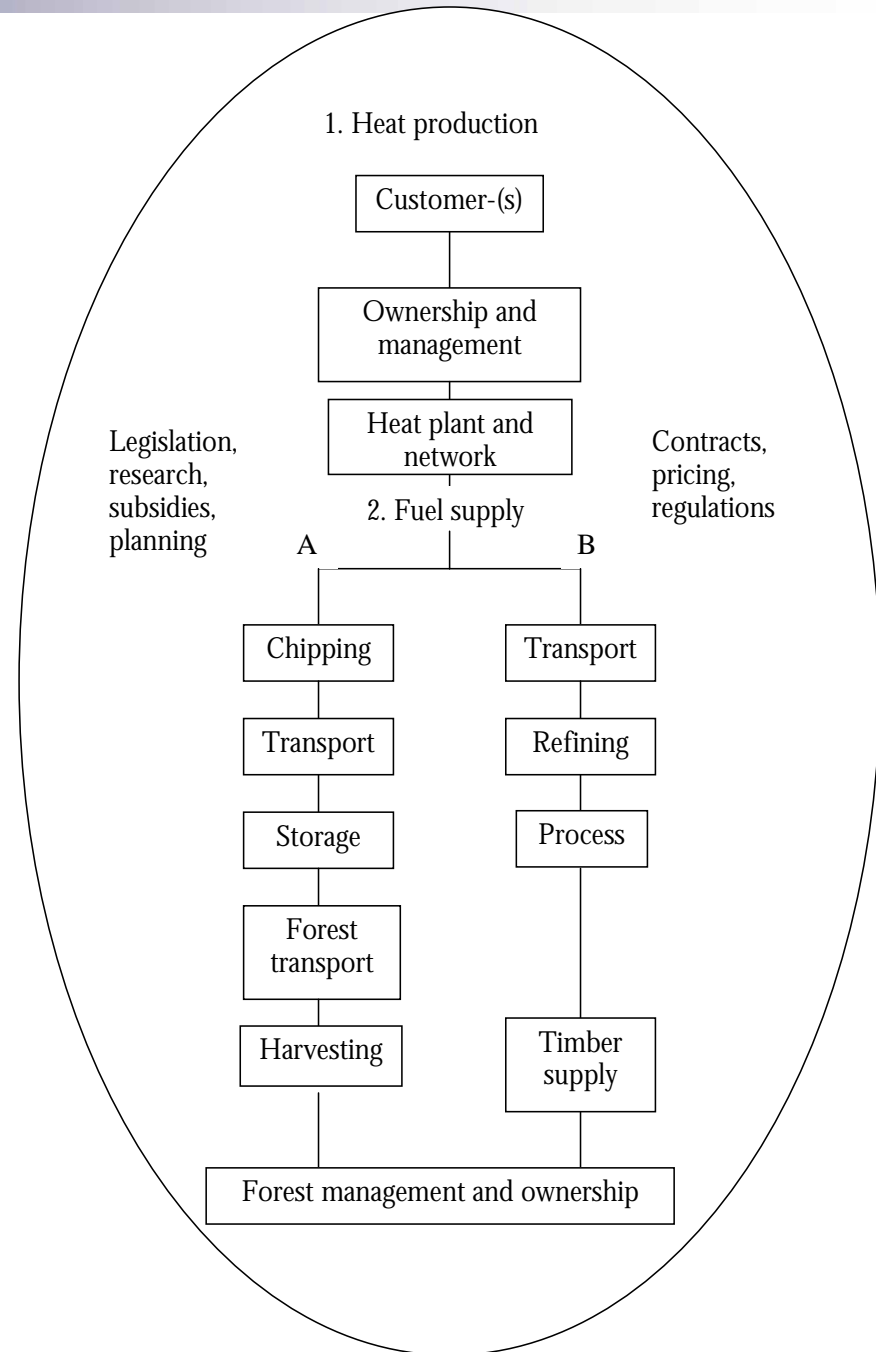
INVESTMENTS AND BUSINESS MODELS

1) Tying-up of capital

- The greater investments related to the use of alternative fuels tie up capital for longer time periods
- The investment decision is very much dependent on the entrepreneur's resources
- Profits will be gained after some non-profit years
- Therefore, entrepreneurs must be patient and persistent
- In theory: greater investments should also result in better profits (the economy of scale)

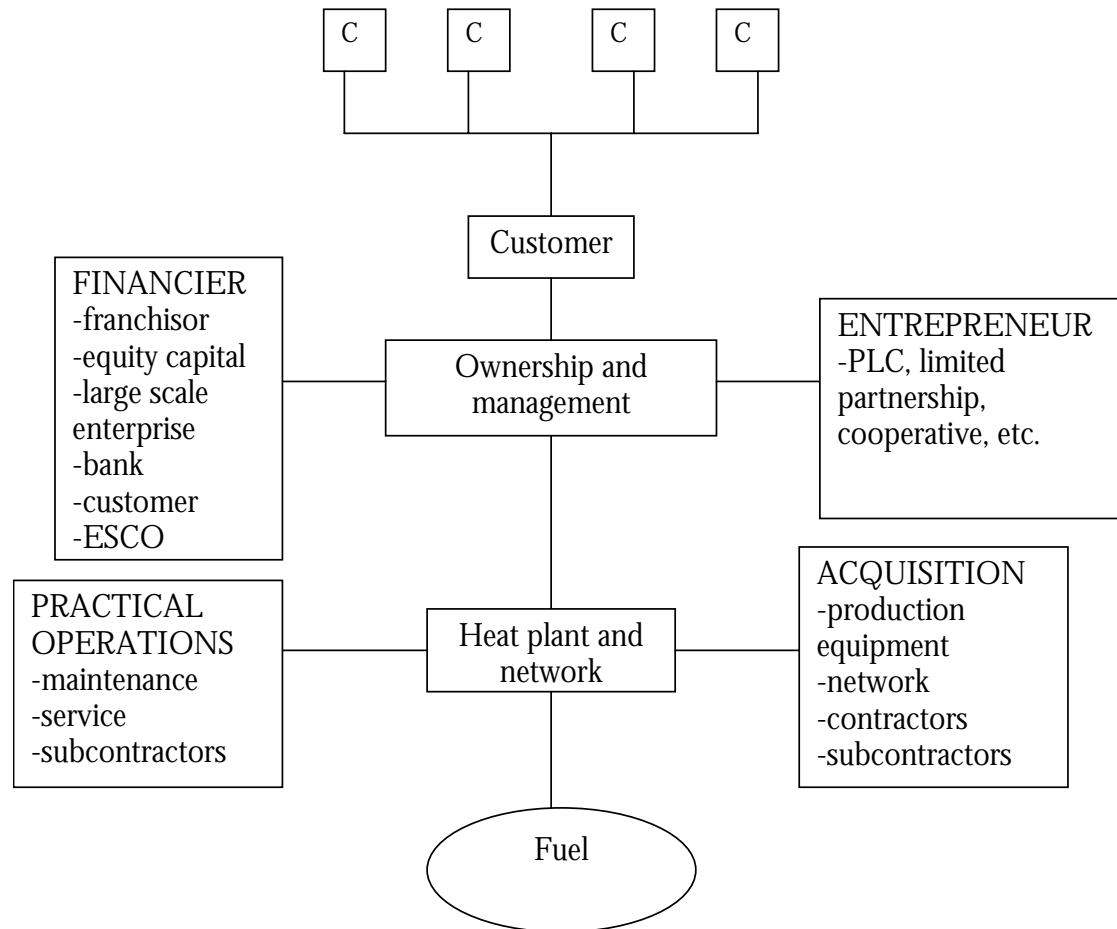
PRODUCTION CHAIN

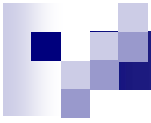
- Operational framework
- Heat production
 - Customers
 - Ownership and responsibilities
- Fuel supply
 - Energy wood from forests
 - By-product flow



HEAT PRODUCTION

1. Heat production

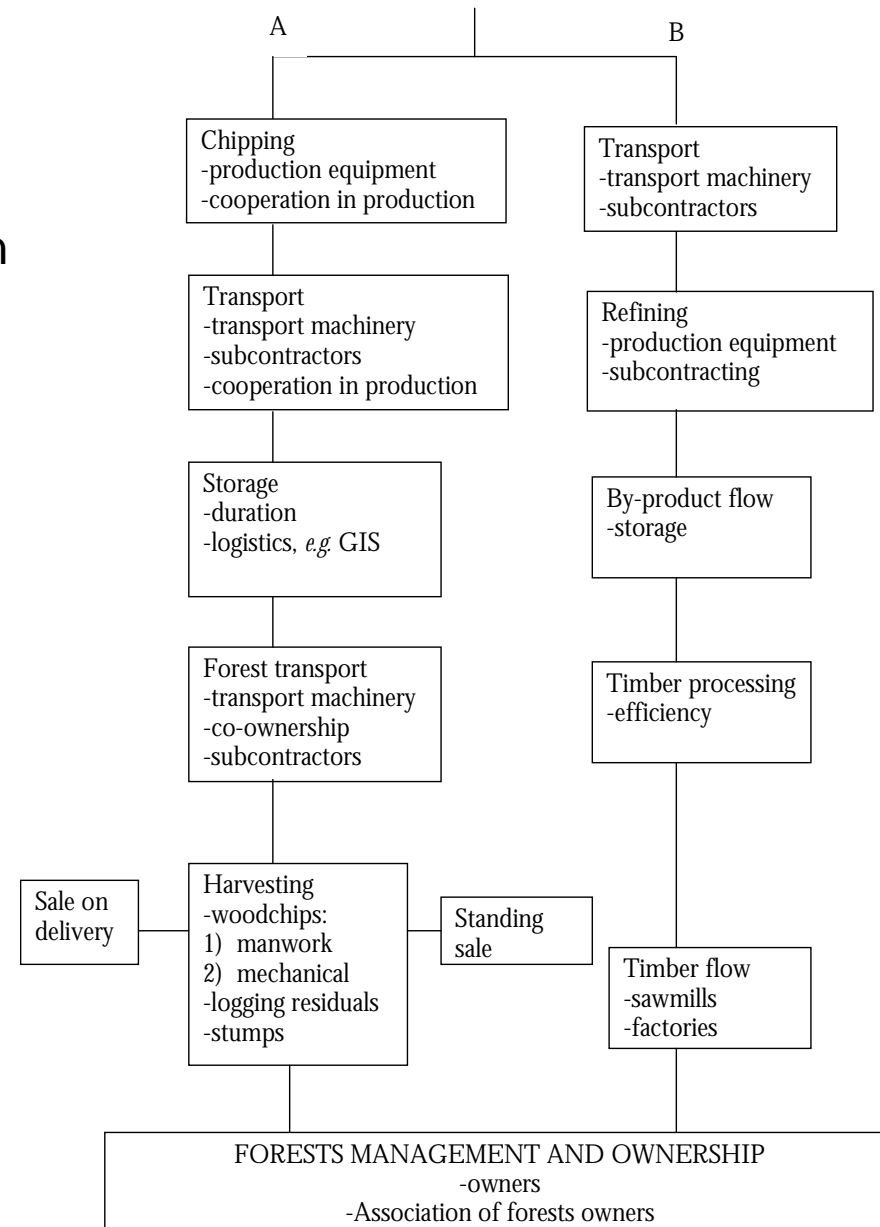




2. Fuel supply

FUEL SUPPLY

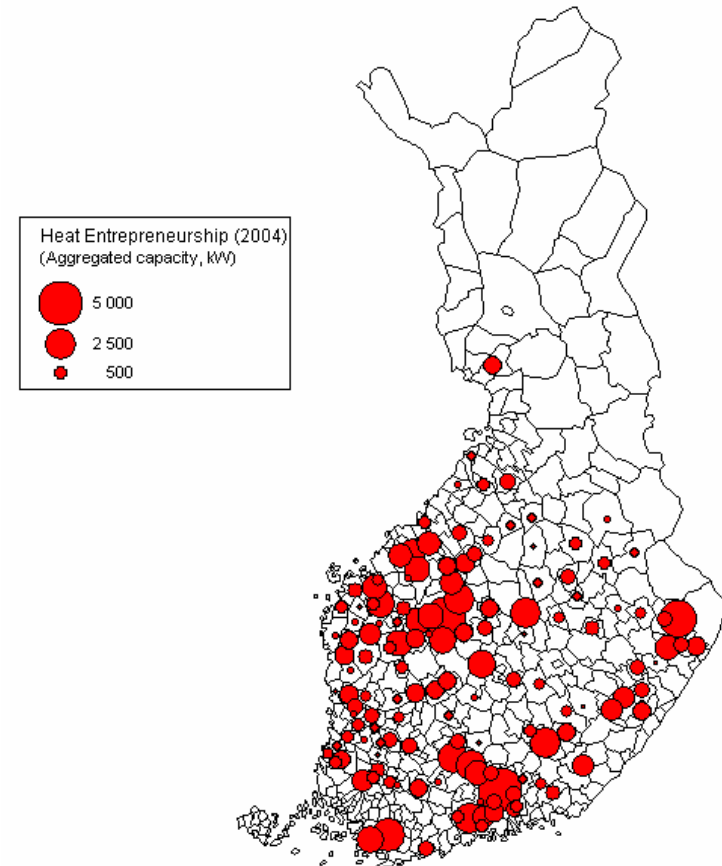
- Regional factors have an effect on organising the fuel supply
- Objective is to establish cost-efficient fuel supply-chain
- Subcontractors can have a substantial role in organising the fuel supply



BUSINESS MODELS OF HEAT ENTREPRENEURSHIP

Business models

- Investment by customer
- Investment by entrepreneur
- Large company/network model
- ESCO (Energy Service Company)
- Franchising model
- Supply of heat containers (ready-to-use)



Heating units based on heat entrepreneurship in 2004



INVESTMENT BY CUSTOMER

Municipality or other customer (e.g. industrial enterprise) invests in the heating plant and energy entrepreneurs take care of the fuel supply and technical maintenance work

- Municipality, as an investor of the plant, has the main economic risk
- In small heating plants, entrepreneurs are typically part-time
- Entrepreneur's risk is limited to the own business activity and complying with the contract rules
- Entrepreneur can organise fuel supply in a most efficient way (e.g. subcontracting or sawmills)
- Often also mixed responsibilities, or limits to entrepreneurs decision-making, which may also cause some confusions



INVESTMENT BY ENTREPRENEUR

An entrepreneur or a group of entrepreneurs invests in and owns a heating plant and also takes care of the management, fuel supply and maintenance work

- Entrepreneur sells heat energy for the customer as a comprehensive service and the price for the heat is set in relation to the energy unit (€/MWh)
- Heat price consists of connection, basic and user charges
- Entrepreneur has the risks of operation, such as economic and technical risks (e.g. rise of interest rate)
- Entrepreneur is then also independent in business related decision-making as long as heat is provided according to contract
- For the customer, that is usually the municipality, privatization is an option to reduce governmental overload and focus on key tasks (in industries those are the main productions/services)



INVESTMENT BY ENTREPRENEUR

- For the entrepreneur, the risk is bigger and investment ties up capital, but also better profits are available
- Responsibilities are well-defined between customer and entrepreneur
- In larger scale, it is also possible for entrepreneur to use subcontractors
- However, the general rule of thumb is:

The more the entrepreneur can take care of fuel-supply and heating work, the better are the profits



LARGE-SCALE ENTERPRISE: A NETWORK MODEL

Large company can organise heat production in two different ways:

1. Company invests in and owns the heating plant and takes care of heat production
 2. Customer invest in and owns the heating plant but the company takes care of heat production
- In both options, it is typical that large company will deliver its tasks to subcontractors; tasks like chipping and boiler maintenance.
 - Large company takes the risks of investments but shares the production risks with subcontractors and pays them for their services
 - Usually unit sizes are large in these kind of operations



LARGE-SCALE ENTERPRISE: A NETWORK MODEL

- Strengths: large unit sizes and experience in heat production, better risk taking capacity when compared to smaller actors
- Also from customer's point of view, the security of heat supply is a strength
- For smaller enterprises being part of the larger network is a benefit
- On the other hand, any extra participant between the service provider and customer, will reduce the business profit
- Large company may also get fuel outside the region, which reduces local/regional development benefits



ESCO (Energy Service Company)

Background in energy saving operations

- In the original ESCO concept, company (from outside) provides services and investments for a customer to reduce the energy consumption.
- The company improves energy efficiency, and operations are paid back with the savings of reduced energy costs.

In heat production:

- The company invests in heat production equipment and customer pays the same price as before the investment. The heat produced with a new (wood fuel based) system is cheaper than in older (fossil fuel) system.
- after the company/entrepreneur has got the investment back, customer gets the ownership of the equipment and also lower heating costs



ESCO (Energy Service Company)

- This model is suitable for customers who are willing to keep the ownership of heat production equipment, but who do not have resources for the large investments
- For the entrepreneur, who has experience on profitability calculations, and also resources to make investments, the ESCO concept may be a good option
- However, this concept requires very good basis both on heat production techniques, and also on investment calculations. This model is quite difficult to apply in a small-scale.
- From the customer's point of view:
 - Positive: small investment risk, steady heat price for agreed period and ownership of the equipment
 - Negative: long paying back periods



FRANCHISING

- Franchising is a business model, where two independent partners (franchisor and franchisee) have a contract
- Franchiser has developed business model and concedes the rights to franchisee to use this model according to the franchise agreement
- Franchisee operates according to the operational instructions, which are planned and looked after by franchisor
- Franchisee pays to the franchisor for the rights to use developed business model / trademark



FRANCHISING

In heat production, franchising could be organised in a following way:

- Franchisor gives the trademark, business concept and operational principles, and the entrepreneur (franchisee) would work for both himself and for the franchisor
- In practice, franchisor would support franchisee in planning, investments, financing, contracts, maintenance, fuel supply and other practical issues
- As a compensation, franchisee would pay for this support
- For the entrepreneur franchising would provide professional support, economic reliability. In practice franchising would require full-time entrepreneurship
- Customer does not need to invest in heating plant, i.e. entrepreneur takes the risk of investments
- At the moment this model is starting in Finland, and previously experiences are gained in organising the wood fuel supply in Austria



SUPPLY OF HEAT CONTAINERS

- Company provides ready-to-use heating unit for the customer
- Company owns the unit and customer pays for the company on the basis of produced heat
- Company takes care of the management and uses subcontracting in organising practical operations (e.g. fuel supply chains)
- Subcontractors have an opportunity to purchase company's shares
- Problem may be that the heating unit does not fit in all cases



APPLYING THE BUSINESS MODELS

- Regional differences and conditions may set constraints for applying the business models
- Legislation and other operational environment have differences (e.g. types of enterprises, available support)
- On the other hand, supply-chains have the same ideology:
 - Objective is to organise the sustainable supply of renewable fuel as efficiently as possible
- Business models are meant to raise new ideas and give new viewpoints to local, case-specific ways of action



APPLYING THE BUSINESS MODELS:

Things for entrepreneur to consider

What is the entrepreneur's objective?

- Full-time or part-time entrepreneurship?
- The level of risks entrepreneur is ready to accept?
- How much and for what time period entrepreneur is ready to tie-up capital in investments?

- Objective creates the basis for entrepreneurship and business model that will be applied



APPLYING THE BUSINESS MODELS:

Things for entrepreneur to consider

Entrepreneur's economic resources

- Own capital
- Financiers
- Other business associates

- Based on available finances, entrepreneur can look for business associates available in different business models (e.g. franchising or networks of large-scale enterprise)



APPLYING THE BUSINESS MODELS:

Things for entrepreneur to consider

Human capital

- Knowledge on cost-calculations, acquisitions and tendering, planning, contracts, available support, organising the fuel-supply, technology, equipment etc.
- Skills in using equipment and machinery, organising the fuel supply in practice
- Possibilities to improve knowledge and skills by training (by associates, franchisee or external trainers)

APPLYING THE BUSINESS MODELS:

Things for entrepreneur to consider

Physical / geographical restrictions

- Available raw-material
 - Ownership of the resource
 - Quality of the raw-material
 - Conditions of harvesting
 - How to ensure cost-efficiency
 - Other available material flows, by-products
- Available technology
 - Available technologies and their suitability in local conditions, e.g. harvesting, chipping and heat production equipment





APPLYING THE BUSINESS MODELS:

Things for entrepreneur to consider

Regional infrastructure

- Transportation distances and infrastructure (roads, railroads, waters)
- Ownerships and possible payments
- Storage areas

Available associates, subcontractors and networks

- Potential actors, their credibility, reliability and perseverance

- After the whole production chain is considered, the entrepreneur can start establishing the business according to own objectives



FUTURE OF BUSINESS MODELS

- In Finland, the trend is towards two different lines of development:
 - Large-scale units and companies
 - Small-scale entrepreneurships
- The number of heat entrepreneurs has been constantly rising and new innovative, often case-specific, business solutions are created