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Skaftkärr

- Skaftkärr project's aim is to build a new, energy efficient 400 hectare residential area for at least 6000 inhabitants.

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Background – Energy solutions

- Notable heat consumption reduction requires energy companies to develop their business models to adapt to the changed situation in heat production and distribution.
  - The aim is to profitably offer district heating to the area with low and passive energy buildings – in other words to research solutions supporting energy efficient construction
- Additionally it is researched how energy solutions can be executed in the most sustainable way
- The aim is to increase the share of renewable energy to 90 % by year 2015

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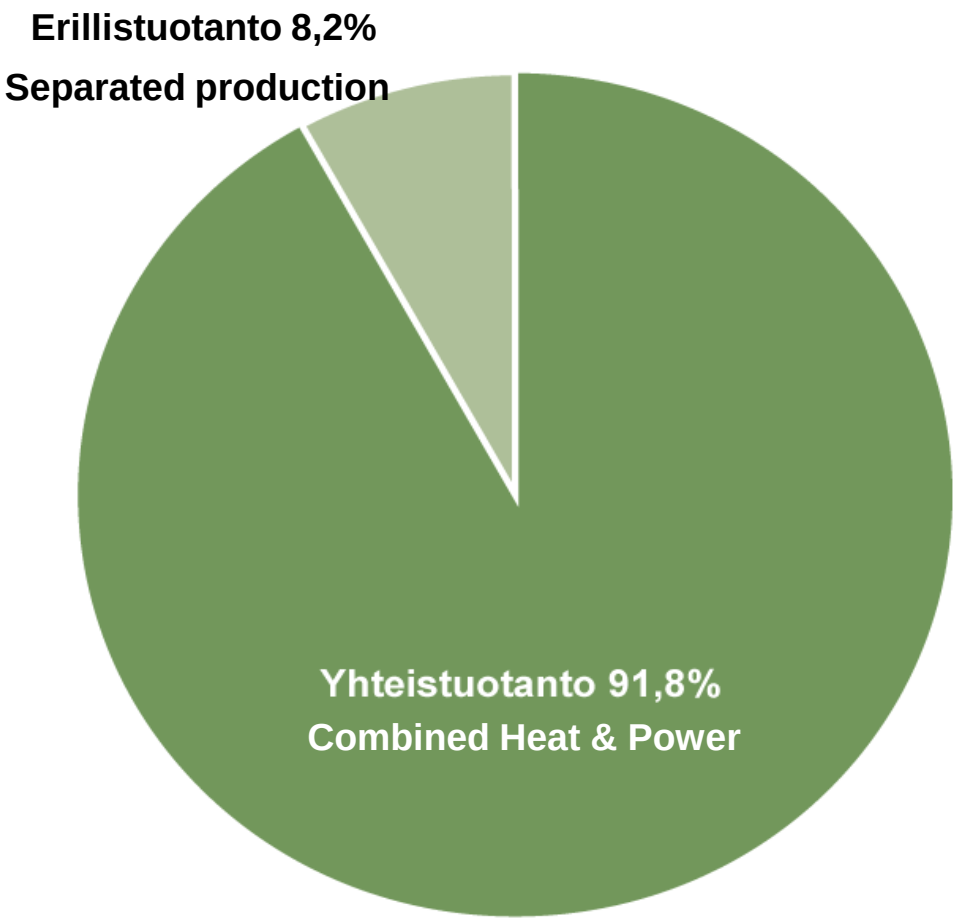
Heat production in Porvoo



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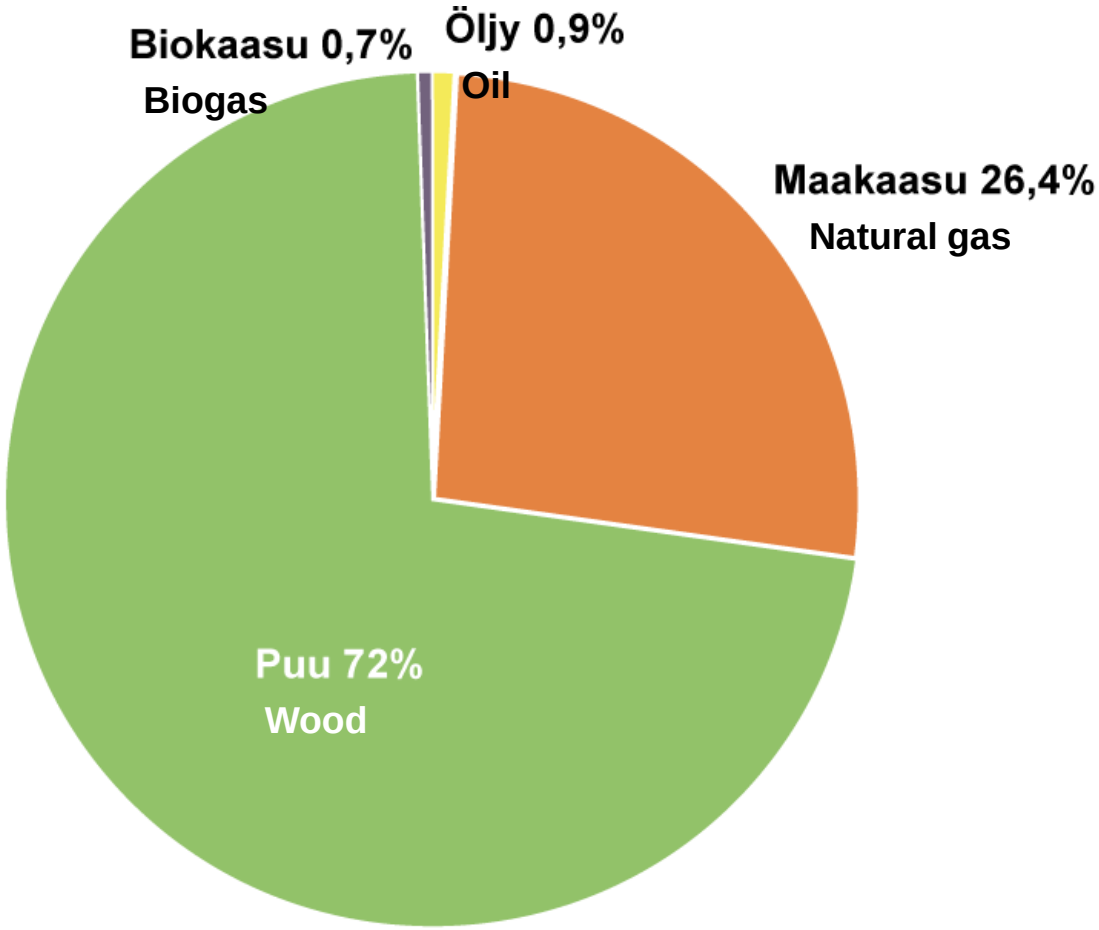
Fuel distribution, Porvoo



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Tolkkinen B

- The new bio energy production plant will be the basic load plant in our district heating network
  - Our current plant will stay as peak and reserve plant
  - The aim is to substitute winter time natural gas and oil consumption in increasing proportions
- Clean, wood based bio fuel will be used approximately 140 000 tons a year
- The yearly usage time is approximately 7 500 hours
- Fluidized boiler bed with fuel power of 49 MW
  - Heat will be produced to district heating network 250 GWh/a and electricity to national network 78 GWh

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Solar district heating

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Solar district heating

- The aim is create emissionless heating solution
- Heat will be produced during the six ”summer months”
  - Analysis will be made at three different yearly consumption levels: 6, 13 and 20 GWh
- The solar district heating project’s pre-planning includes:
  - Defining different plant concepts
    - Solar collector alternatives
    - District heating temperature levels’ impact in solar types (normal level, higher level, lower level combined with a heat pump)

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Solar district heating

- Heat production calculation and estimation
  - Heat energy produced by solar collectors (kWh/m2) is defined at the three previously mentioned temperature levels
- District heating network modeling and its usage optimization
- The total expenditures of different execution alternatives
  - Investment, construction, usage and maintenance expenditures
- Financial profitability calculations for different execution alternatives
- Defining and laying out the power plant’s surface area
- Defining heat storage procedure

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