



# Småskalig bioenergi

Närvärme

Hans Gulliksson



# Energikontor Sydost

**Works with energy efficiency and RES in**

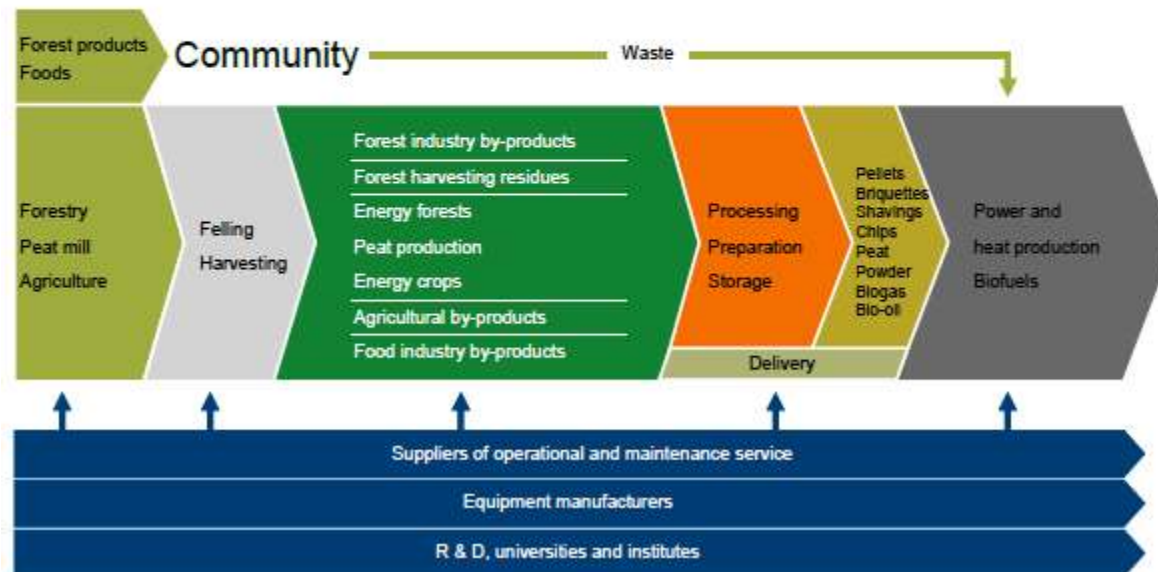
- **Heating**
- **Electricity**
- **Transport**

**Objectives are an efficient and sustainable use of energy for industry, real estate, public and private sector.**

**Take part in regional development and security of supply.**



## Bioenergy fields and actors

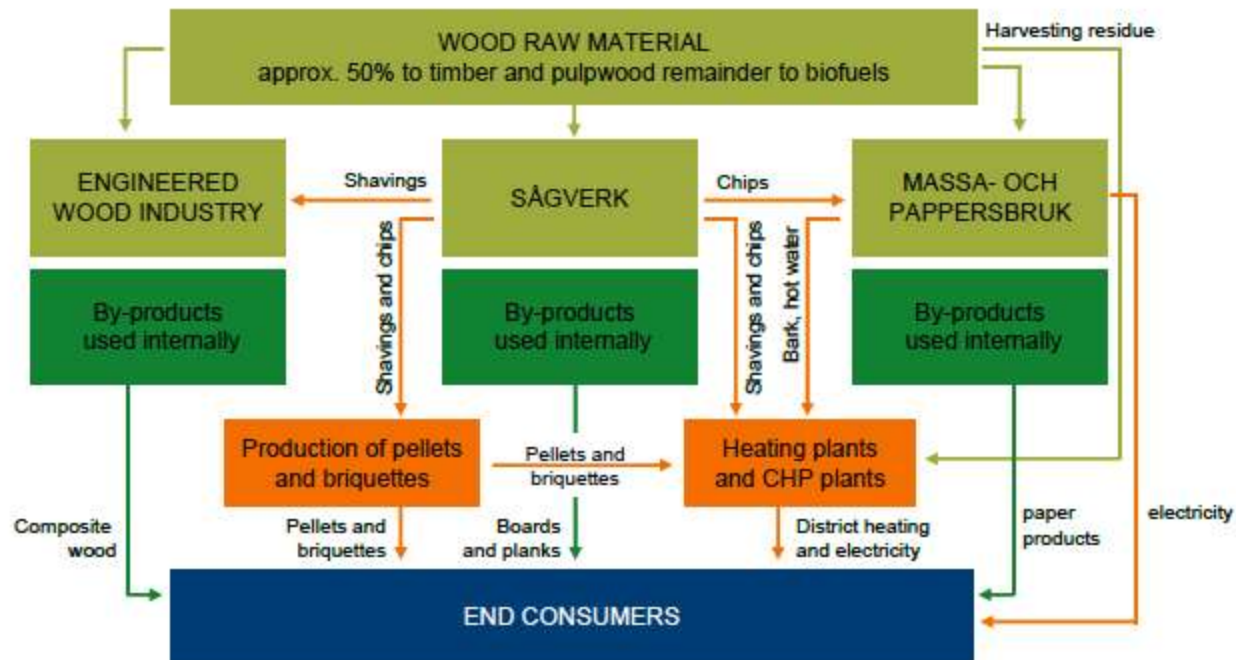


Source: Swentec



# FOREST INDUSTRY FLOW-CHART

*Products, by-products and energy*





## Use of forest bioenergy, *(Forestry Research Institute of Sweden)*

### Current use:

Industrial by-products	95 TWh
Forest residue	11 TWh
Fuelwood, cleaning, thinning	1 TWh

Forest residue bundles



Collected forest residue



Source: Swentec



## Potential use of forest bioenergy, *(the Forestry Research Institute of Sweden)*

### Mid-term range

**The industry can be made more effective in order to increase volume.**

Forest residue is approx.	20 -25 TWh/year	(of available 40)
Stubs	10 -12 TWh/year	(of available 40)
Fuelwood	10 -15 TWh/year	(of available 40)
Increased felling	60 TWh/year	(refers only to the annual growth that is not currently being felled )

### Long-term range

A smaller portion of acreage is fertilized	30 TWh/year
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Source: Swentec



## Forest biofuel management

Haulage/collection of forest residue.



Covered pile of forest residue is chipped for the heating season.



Chipping of forest residue.



Thinning near populated areas.



Stubs collected for crushing.



Bundling of forest residue.



Storage of composite residue logs.



Chips vehicle.



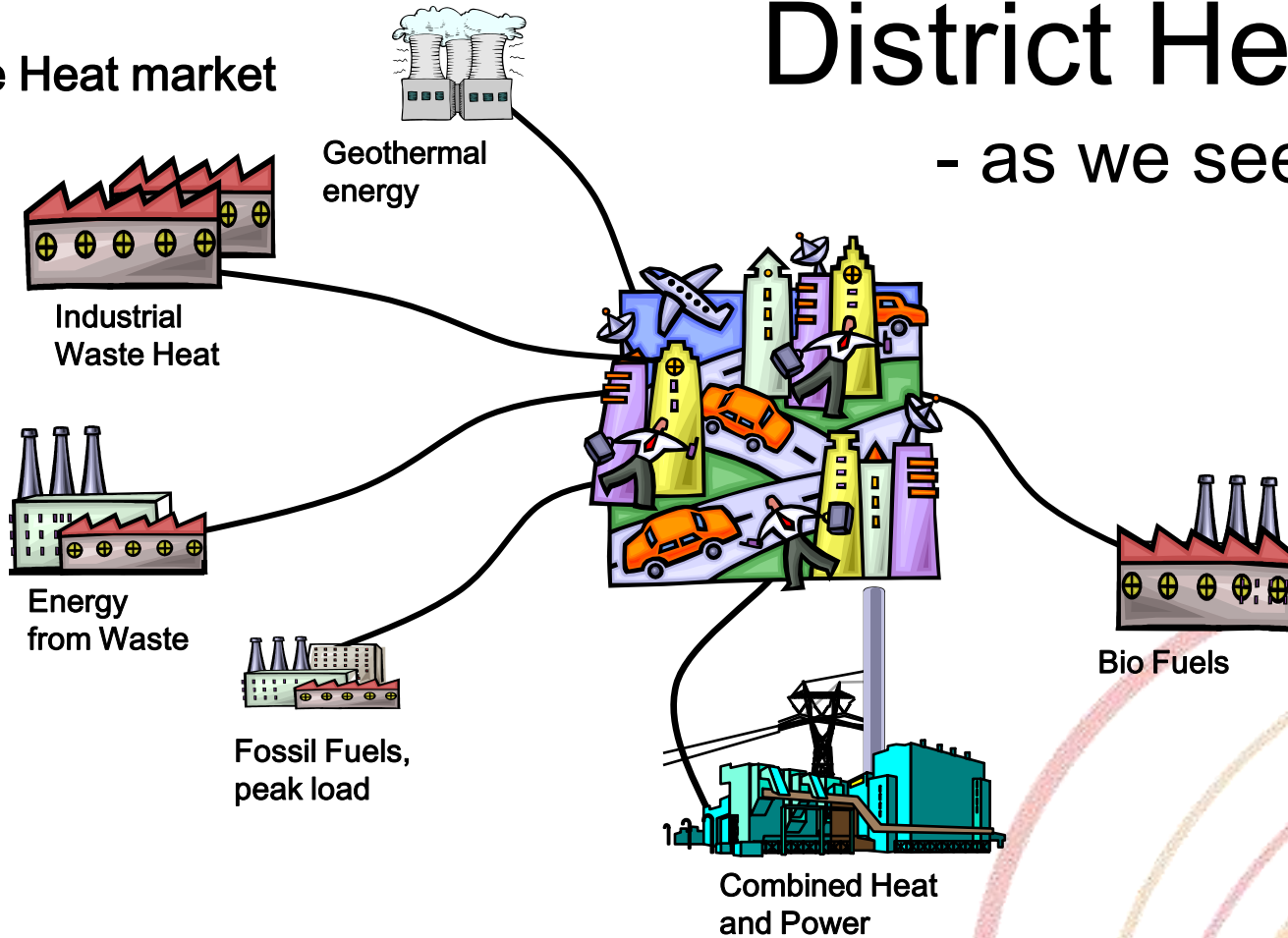
Spreading of ashes.



Forest residue (branches and tops), is collected at our timber felling areas and can be chipped directly, but is usually stored in piles near passable roads for transport to district heating plants during the heating season. It is beneficial to bring the ashes back to the forest.



## The Heat market



# District Heating

- as we see it



# Contacts



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