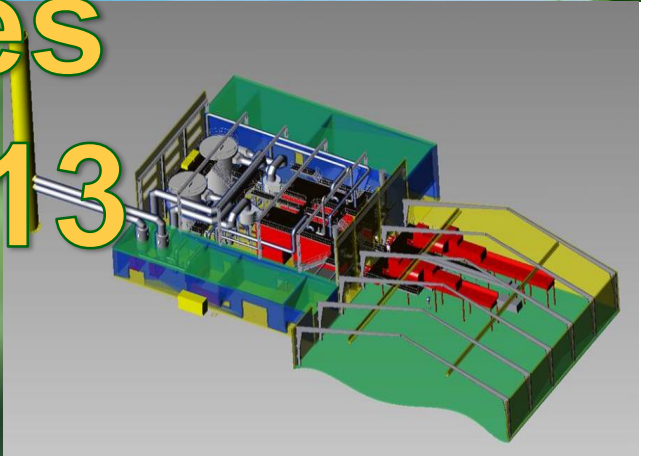


Temadag  
VE til Proces  
27. nov. 2013



# Arla i korte træk



Ejere: 12.256



Mælkeindvejning: 10.410 mio. kg.\*



Produktion i 12 lande

Produkter sælges i mere end 100 lande



Omsætning: 63 mia. DKK



Medarbejdere: 18.112

\*Heraf 2.881 mio. kg. der ikke er ejermælk

# Arlas andelshavere og indvejet mælk



2012	Andelshavere	Indvejet mælk (mio. kg)
Danmark	3.354	4.419
Sverige	3.661	2.059
Tyskland	2.911	685
Storbritannien	1.584	286
Belgien	501	53
Luxembourg	245	27
<b>I alt</b>	<b>12.256</b>	<b>10.410*</b>



**Vi vil sikre den højeste værdi for vores landmænds mælk og skabe muligheder for deres vækst**

# De tre fokusområder i Strategi 2017



Udvikle kerneforretningen og de tre globale varemærker



Vækst på markeder uden for EU



Mere effektiv i hele værdikæden

# Politisk situation

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- Mange gode energipolitiske tiltag.
- Energiafgifter.
- Værdi af energibesparelser.
- Tilskud til biogas
- VE til proces.
- Passer perfekt ind i Arla Foods miljømålsætning.



Bæredygtigt landbrug



Udledning af drivhusgasser



Vand og energi

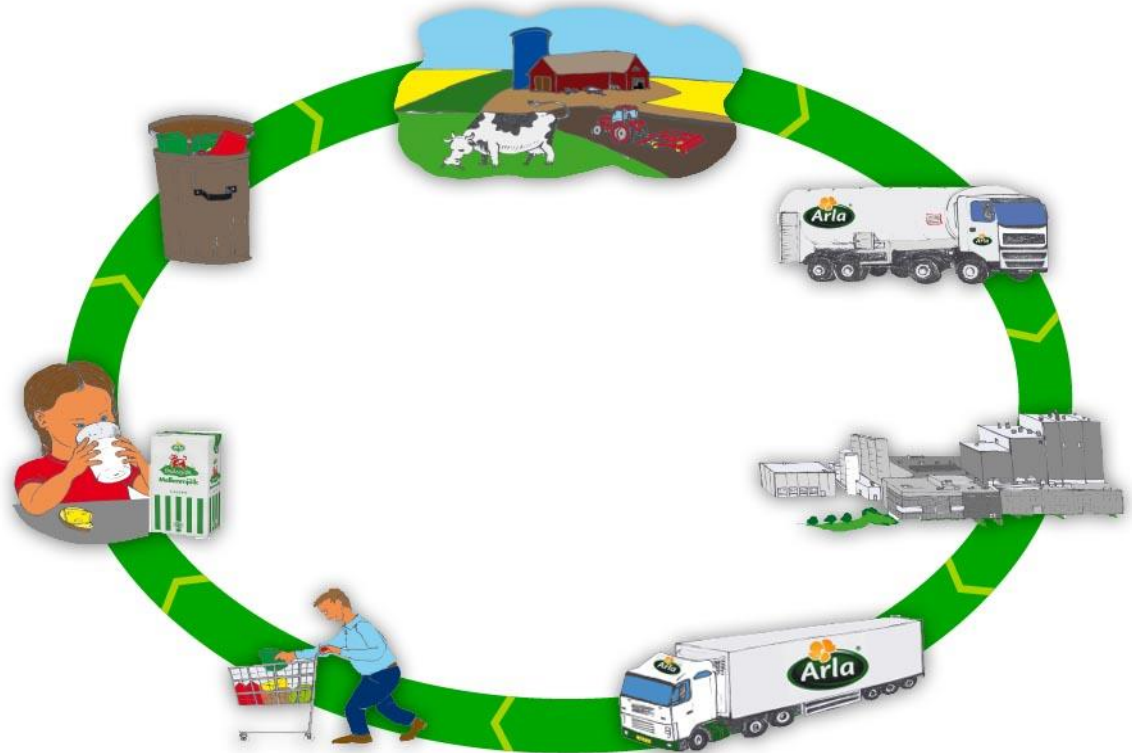


Madspild og nul affald

# Sådan når vi vores mål

## Tættere på Naturen™

- Fokus på livscyklus
- Fokus på gårdene
- Øget effektivitet
- Transparens
- Involvering af interessenterne

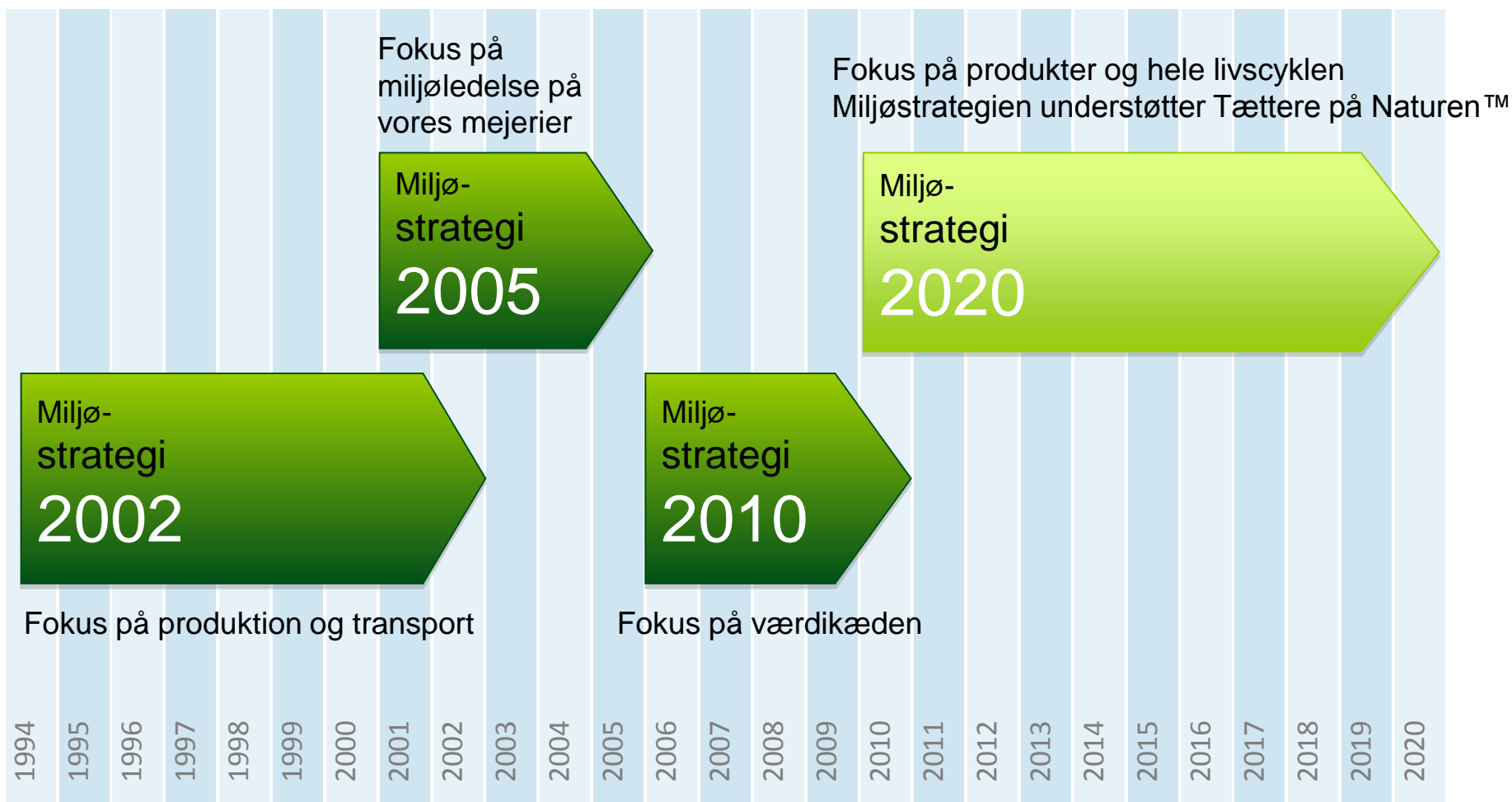




Baggrund: Fokus er ændret



# Fra produktion til produkt



# Klimamålsætning



Vi ønsker at reducere CO<sub>2</sub>-udledning med 25 % inden 2020

**25%** Produktion- Transport – Emballage **CO<sub>2</sub>**

## Vand- og energiresourcer

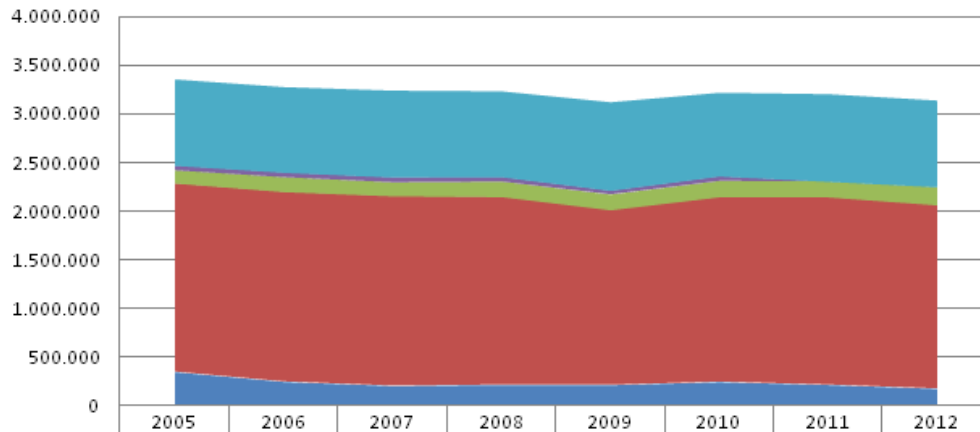
I 2020 skal 50 % af energi til produktion komme fra vedvarende kilder

Energi- og vandforbrug til produktion skal reduceres med 3% om året

Reducere brændstofforbruget til transport med 1 % om året.

# Energy Sources 2012

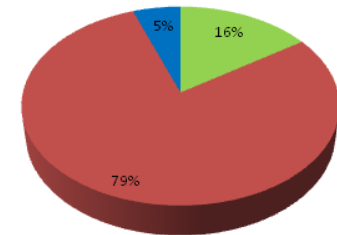
Energy sources for production (MWh)



Electricity	886.506	878.848	891.644	881.742	909.378	860.402	899.207	889.141
District heating	51.828	50.786	53.101	48.801	39.014	49.081	69	66
Renewable Energy sources	135.782	151.567	142.234	157.080	159.259	165.706	162.122	186.981
Gas	1.933.473	1.948.277	1.949.069	1.930.859	1.801.059	1.899.153	1.928.263	1.887.956
Heating oil	349.485	249.372	206.362	217.174	214.343	246.784	216.644	176.943

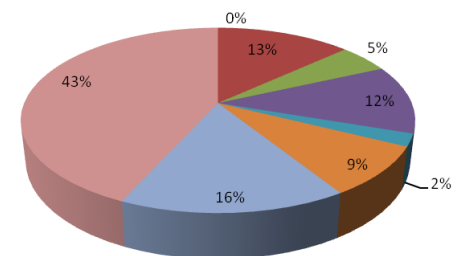
Energy sources for production

Renewable Fossil Nuclear



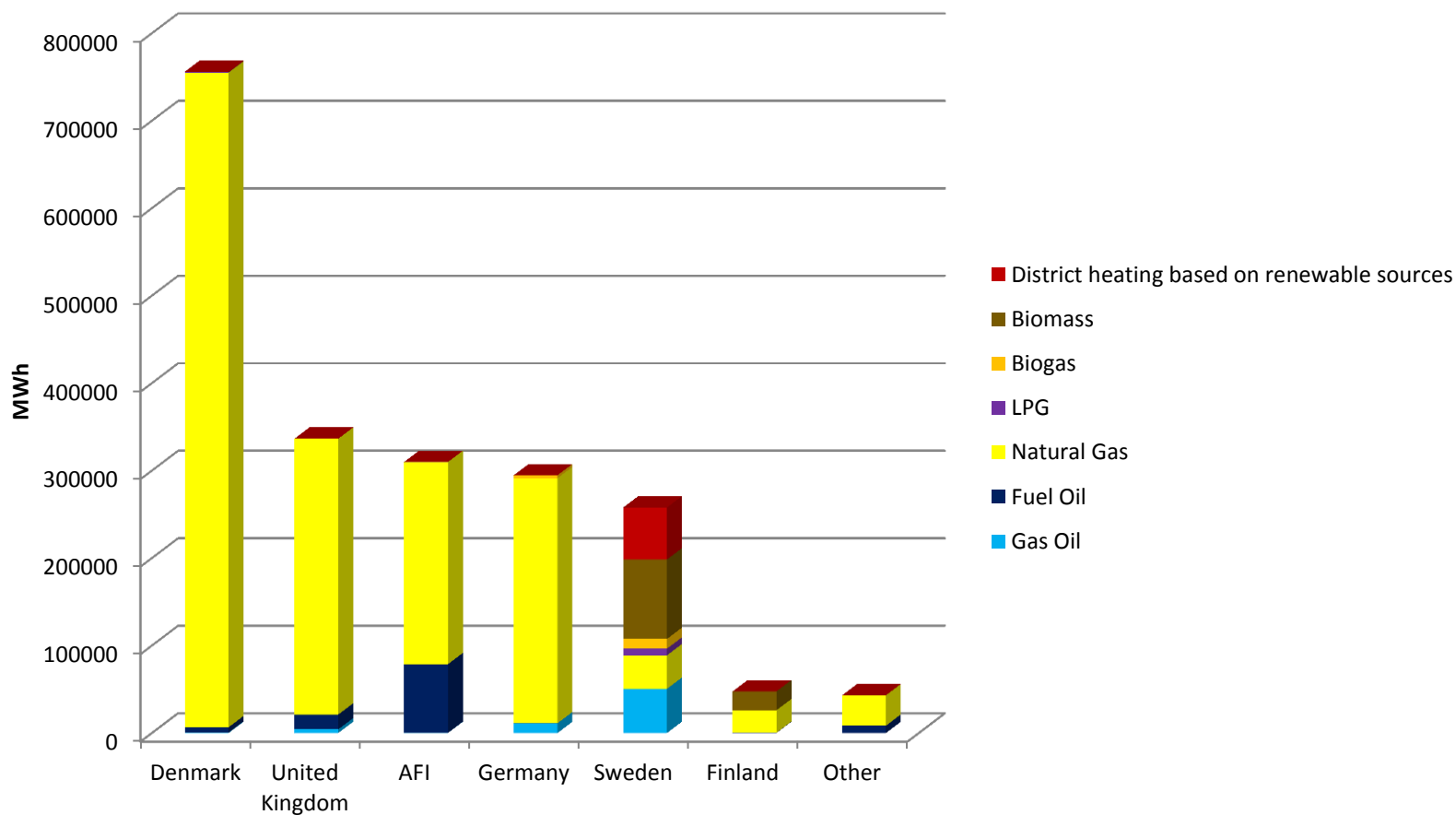
Energy consumption (% of total MWh)

AFI CDK CGE/NL CIN CSE CUK GCO



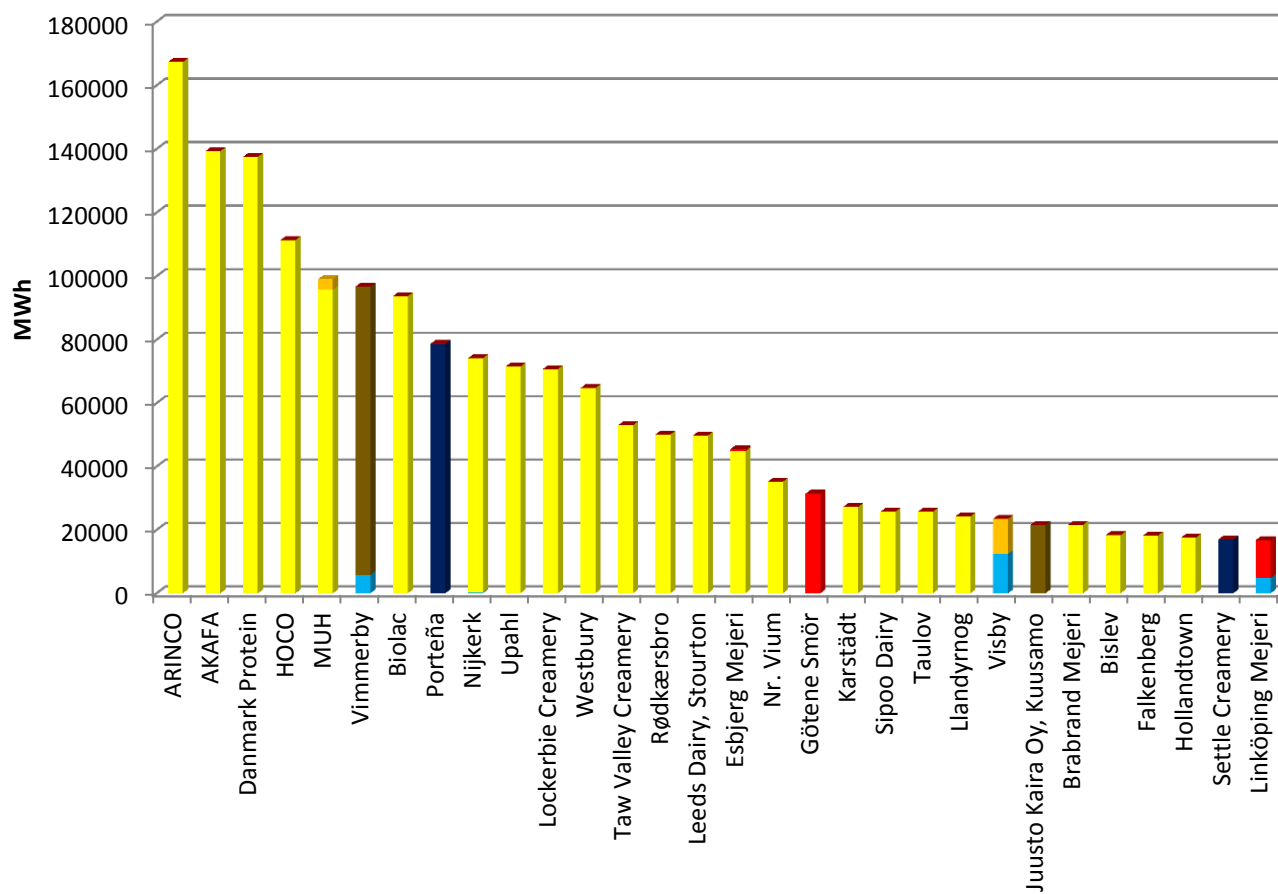


# Fuel consumption details





# Fuel consumption details top 30



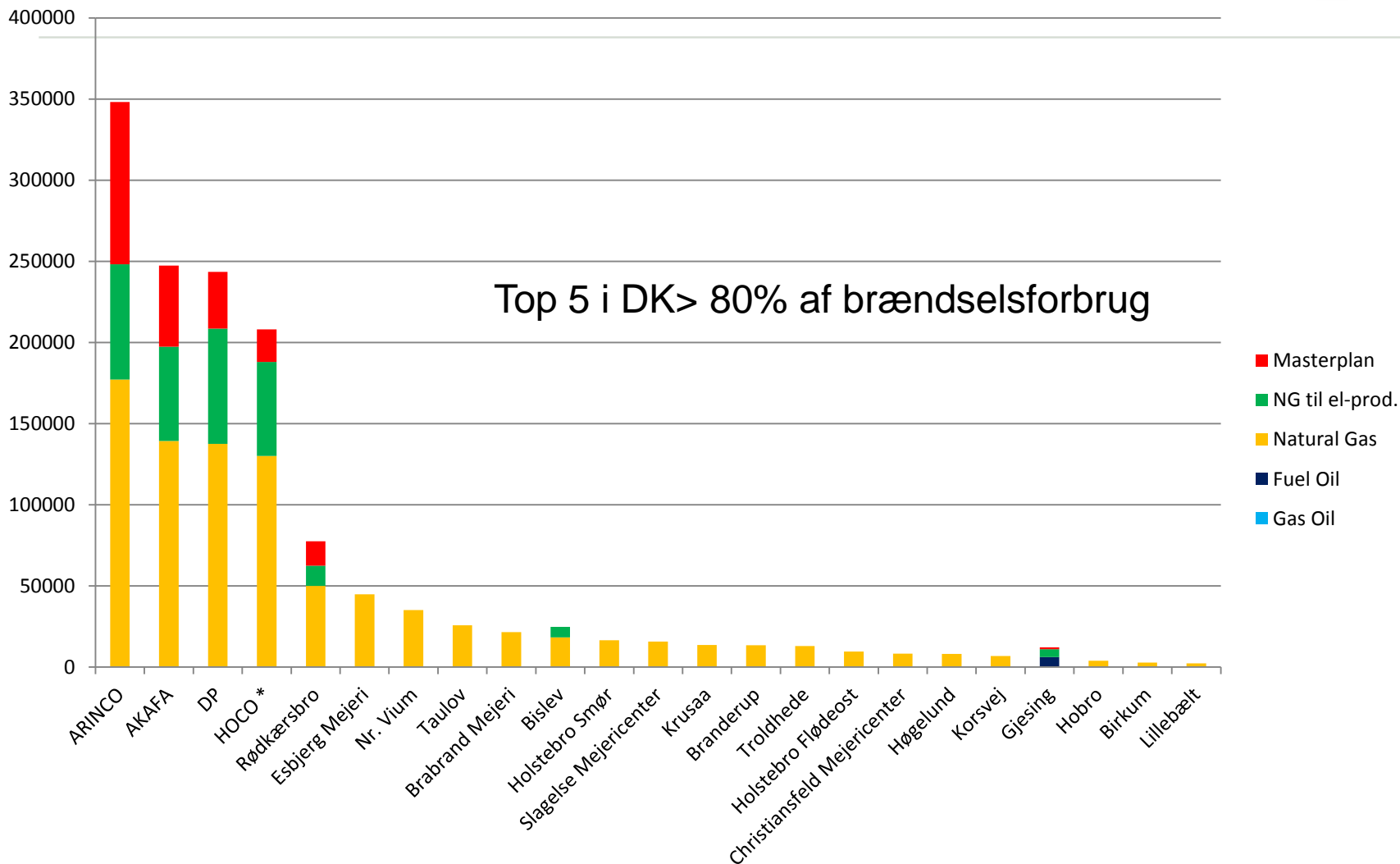
Share of total fuel consumption



Top 30

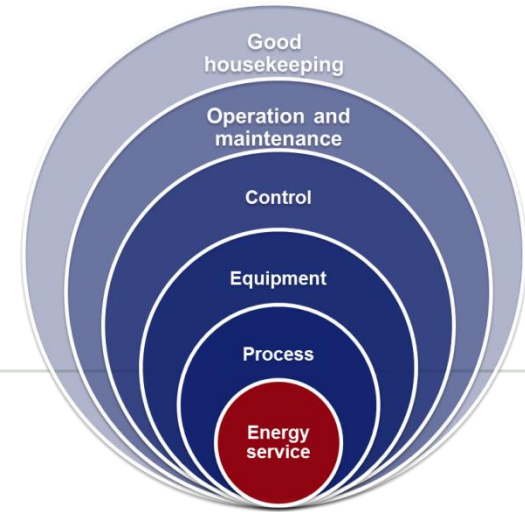
- District heating based on renewable sources
- Biomass
- Biogas
- LPG
- Natural Gas
- Fuel Oil
- Gas Oil

# Estimeret forbrug af brændsel i DK efter 2020



# Energy

- Phase 1: Energy mapping
- Phase 2: Energy savings and investments



Sept. 2012

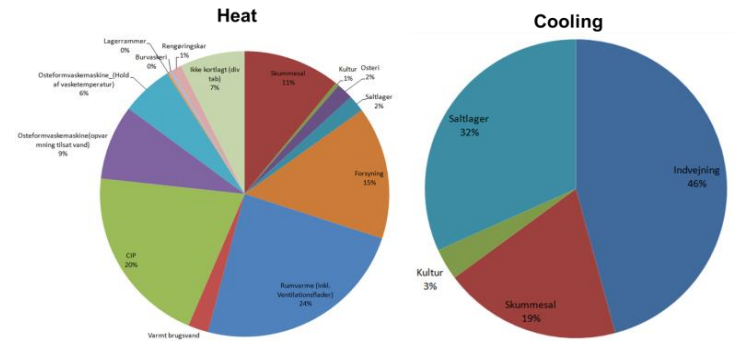


# Energy mapping – results

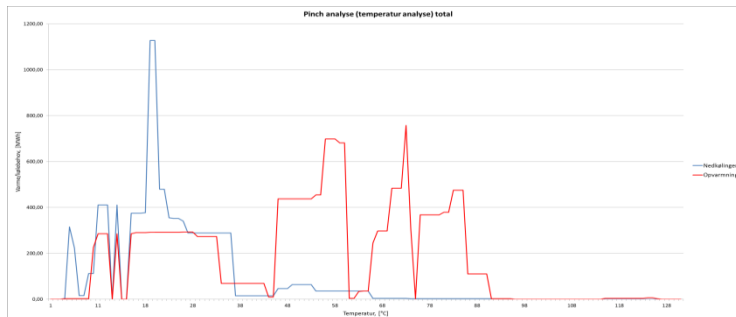
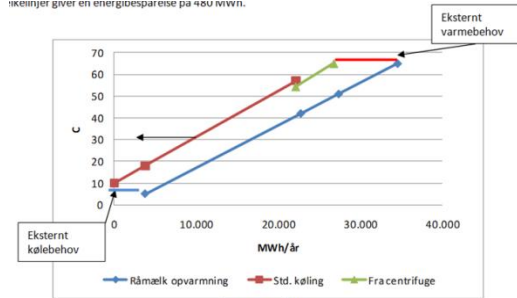


## Project results

- Total overview of energy consumption – what goes where and why
- Pie chart
- Pinch analysis
- Screeninglist – Savings idea, quantity and priority



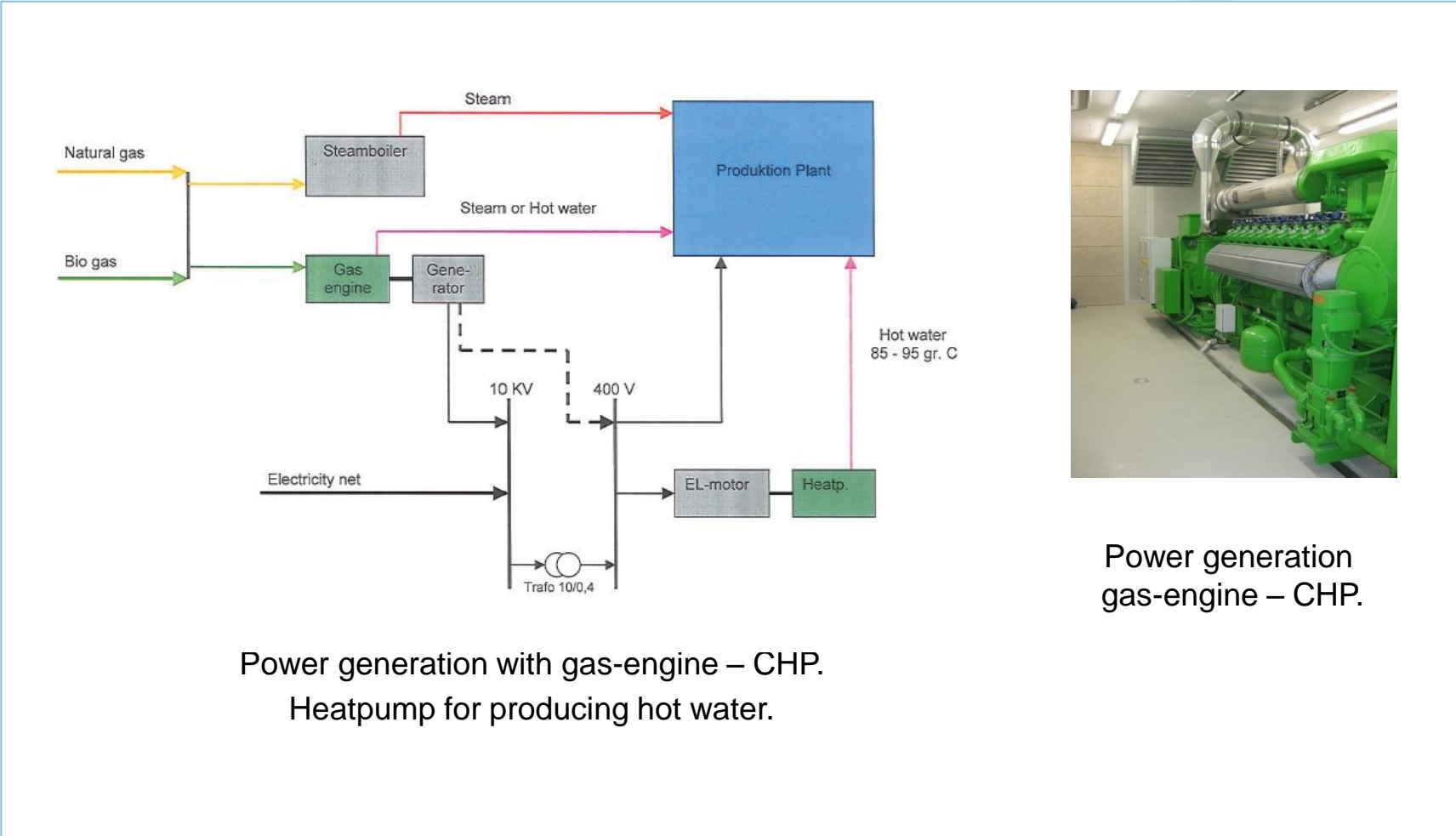
ikkejer giver en energibesparelse på 400 mwh.





# Princip of CHP and Heatpump

ENERGY  
Masterplan

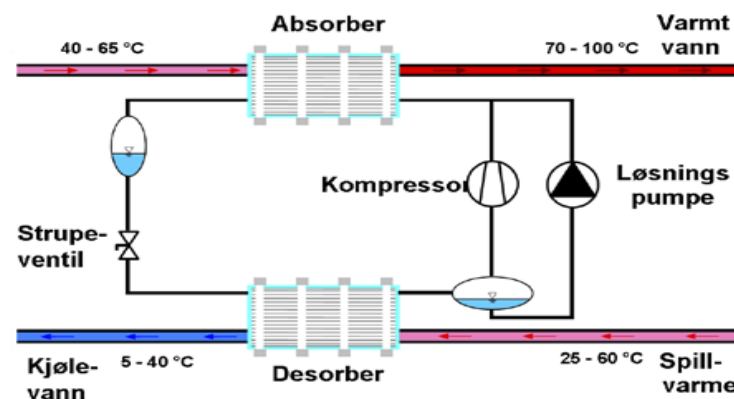
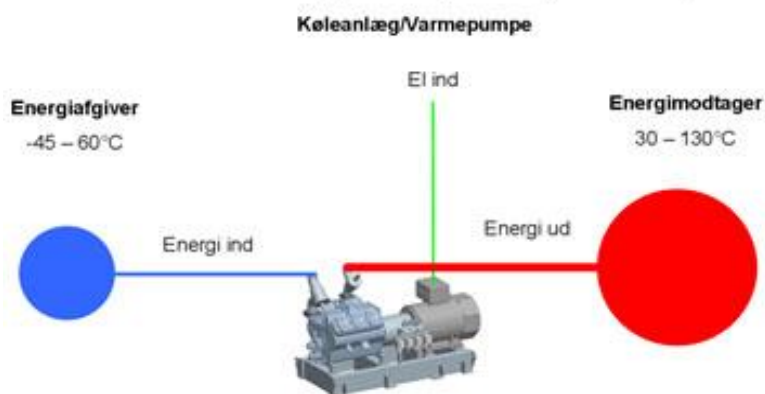


Power generation gas-engine – CHP.

Power generation with gas-engine – CHP.  
Heatpump for producing hot water.

# Princip heatpump

## Varmepumpe - princip



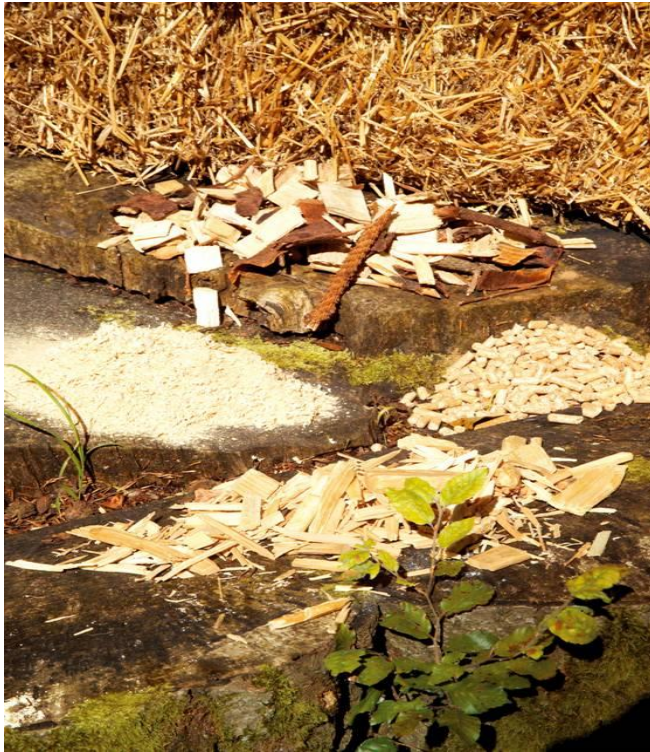
Heat pumps are usually operated by an electric motor, and the energy is converted to an equivalent amount of energy + engine power at a higher temperature.

Amount of energy can typically be 4 times the electric motor energy consumption. (COP 4)

COP = Coefficient of Performance



# Definition of biomass



- Biomass is defined as minimum 97 percent must be biological decomposable
- Biomass is not CO<sub>2</sub> free, but CO<sub>2</sub> neutral and defined as a Renewable fuel
- This means that the amount of CO<sub>2</sub> emissions from a Biomass fired boiler equals the amount of CO<sub>2</sub> captured doing the growth period of the plants.
- Sustainability means that there must be planted as much new biomass as removed.
- If the plant (wood) is left in the forest for rotting the amount of CO<sub>2</sub> released to the atmosphere equals the amount released from the wood chip fired boiler.

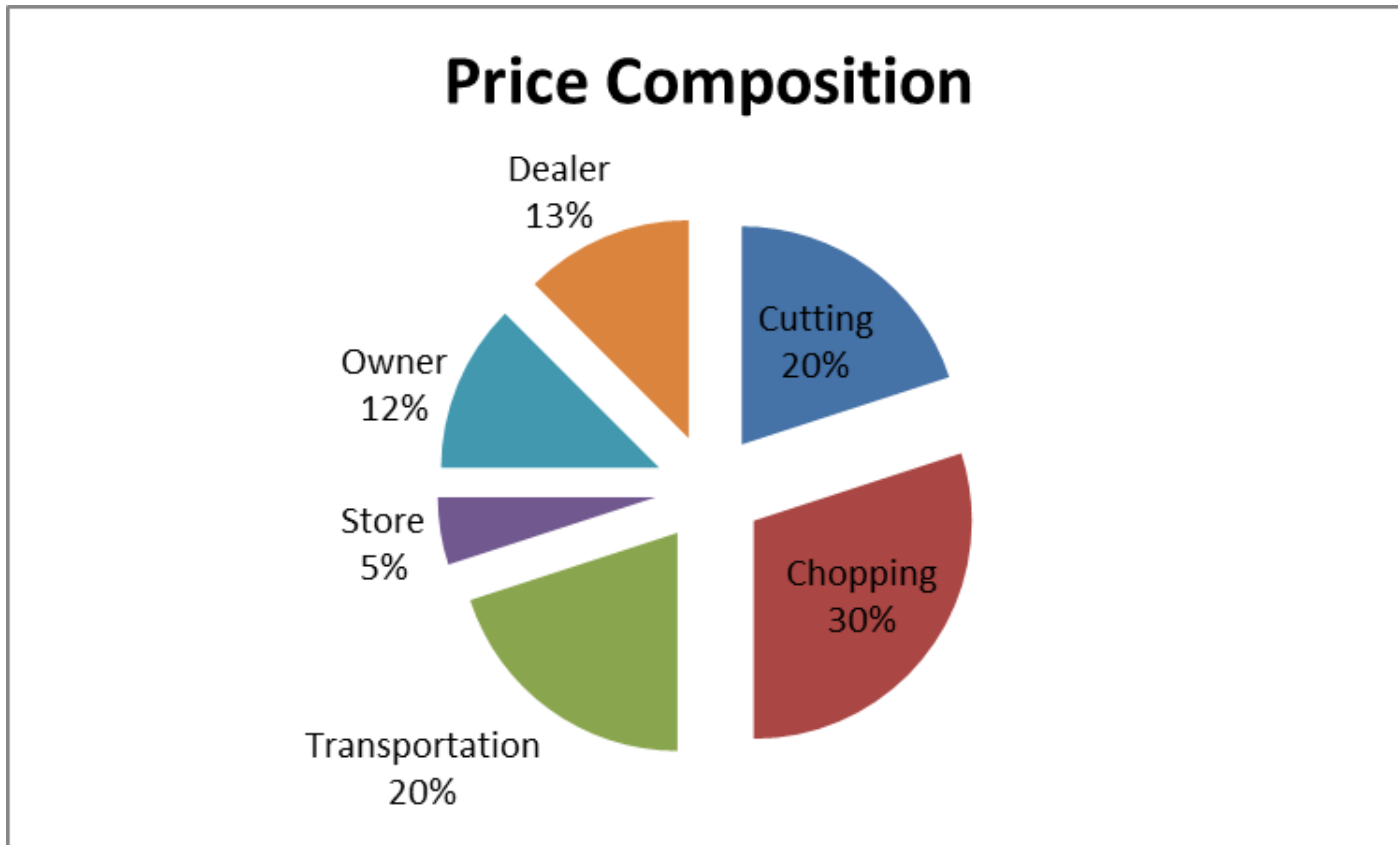
## Type of biomass and it's conversion

Waste from house holds  
Straw  
Wood chip  
Waste from forest  
Wood pellets  
Manure  
Agricultural waste  
Energy crop



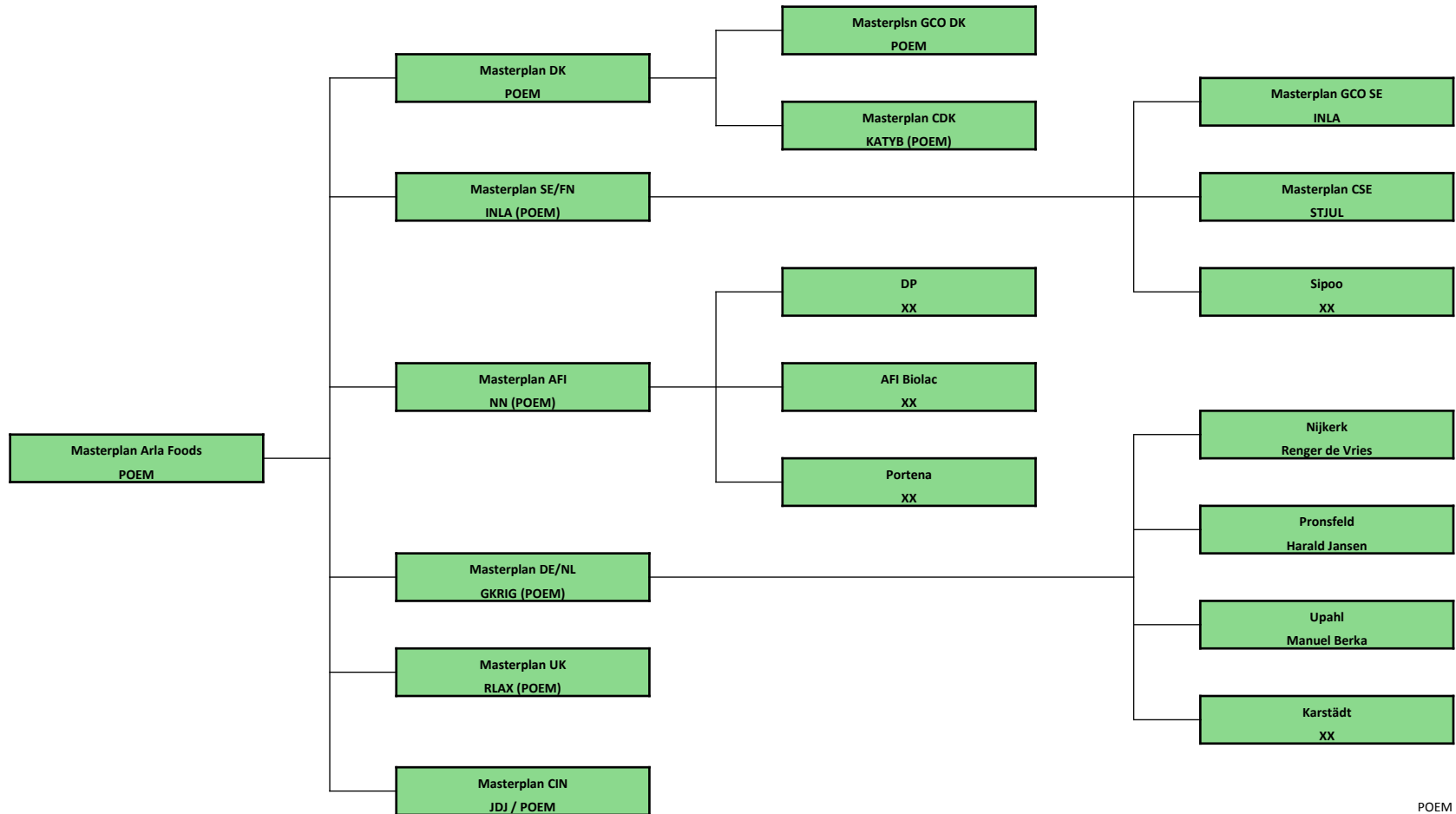
Ethanol  
Bio-diesel  
Bio-oil  
Thermal – Steam  
Bio-gas  
Gasification (gas from wood)

# Price structure in Denmark On wood chip



# Organisationsplan

## Energy Mapping and Masterplan



# Arla Foods

## Energy Mapping and Masterplan



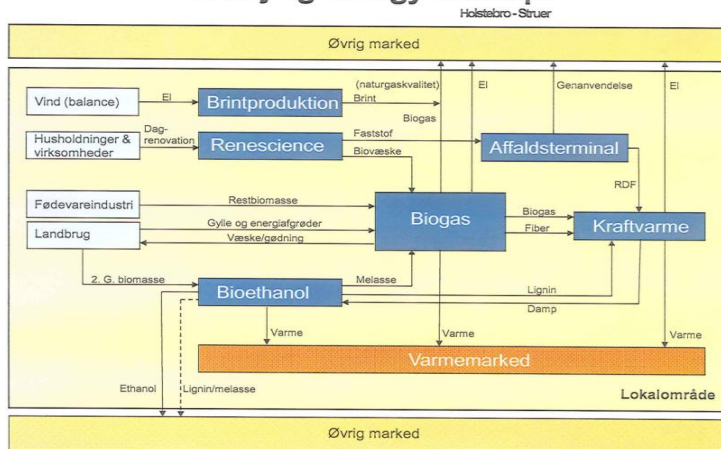
	Energy Mapping Start-up	Energy Mapping OK	Masterplan OK
GCO DK	Q1 2012	Q4 2013	Q4 2013
CDK	Q2 2013	Q4 2013	Q1 2014
GCO SE	Q3 2013	Q4 2013	Q1 2014
CSE	Q3 2013	Q1 2014	Q2 2014
CUK	Q3 2013	Q2 2014	Q3 2014
CGN	Q4 2013	Q2 2014	Q3 2014
AFI	Q1 2014	Q3 2014	Q4 2014
CIN	Q3 2014	Q1 2015	Q2 2015



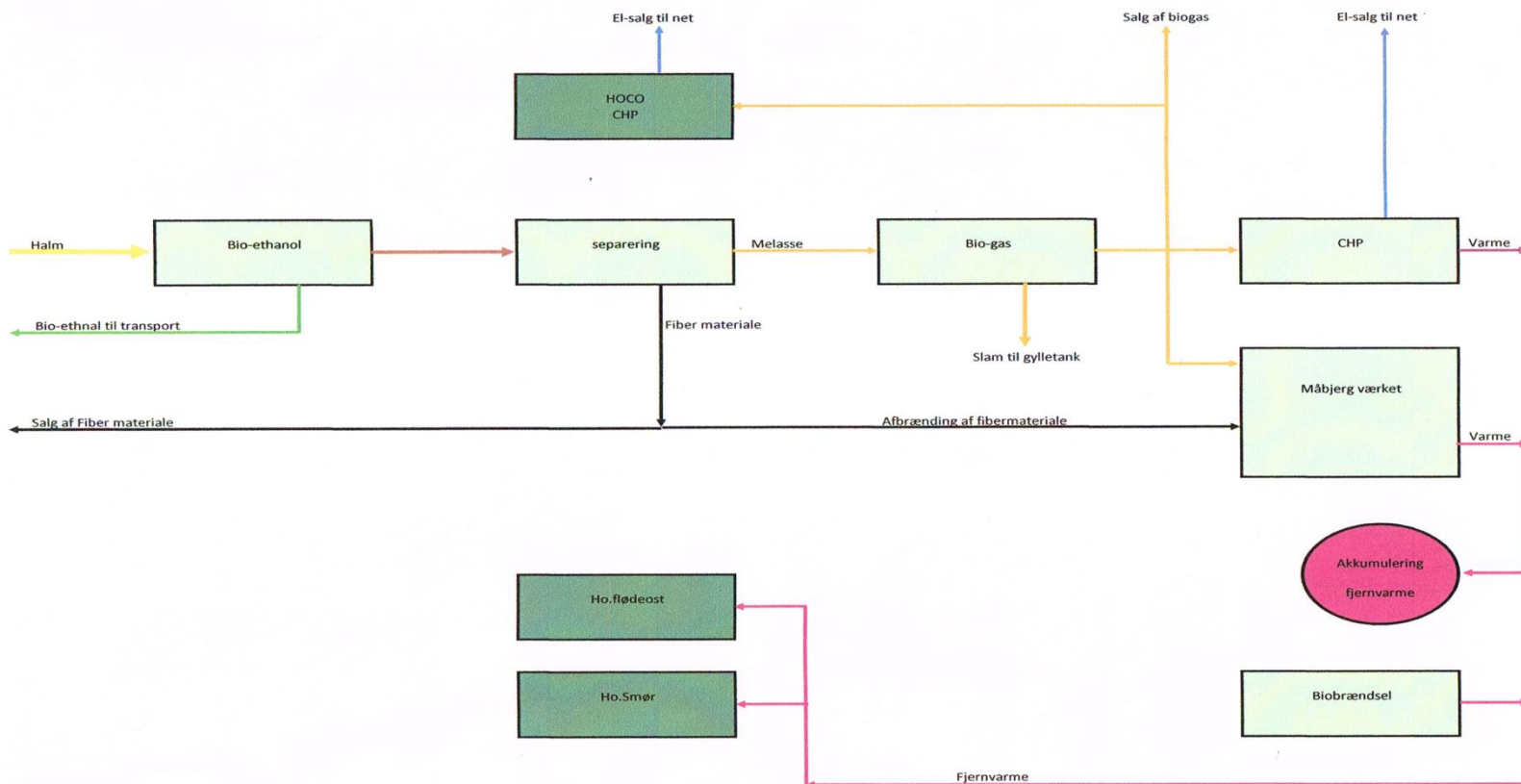
# Måbjerg Bio Energy

- Perlac 14 to Måbjerg Bio-Energy.
- Biogas for CHP at HOCO.
- District heating for HO. Butter and HO. Cream cheese.
- Molasses inc. fiber to the burning of Arinco.
- Fractionation of fibers to the burning of Arinco.

Maabjerg Energy Concept



# Måbjerg Bio-concept



# CAPEX Plan

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# 2014





## CAPEX 2014

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- Investments 2014 will reduce the consumption of energy with 80.000 MWh a year. ( DK 57.000 MWh)
- Reduce the outlet of CO2 with 25.000 Ton a year. ( DK 15.000 Ton)
- All investments with pay-back better than 40 month.