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Biomass for Heat District Heating & Cogeneration

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My plan

- A little introduction
- Biomass today in Danish energy supply
- Future perspective for biomass in Denmark
- European perspective

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Danish District Heating Association

- 401 members representing 99% of national DH-sale
 - From 100 consumers in villages – 3 GWh/y
 - To 100.000 consumers in towns – 3.000 GWh/y
- Municipal and cooperative ownership
- Regulated sector
- Strong political backing
- Strong and comprehensive energy policy for 30+ years
- District heating covers 51 % of heat market
 - 62 % of households
- 80 % CHP in DH
- Average DH cost 2/3 of cost with individual oil or gas



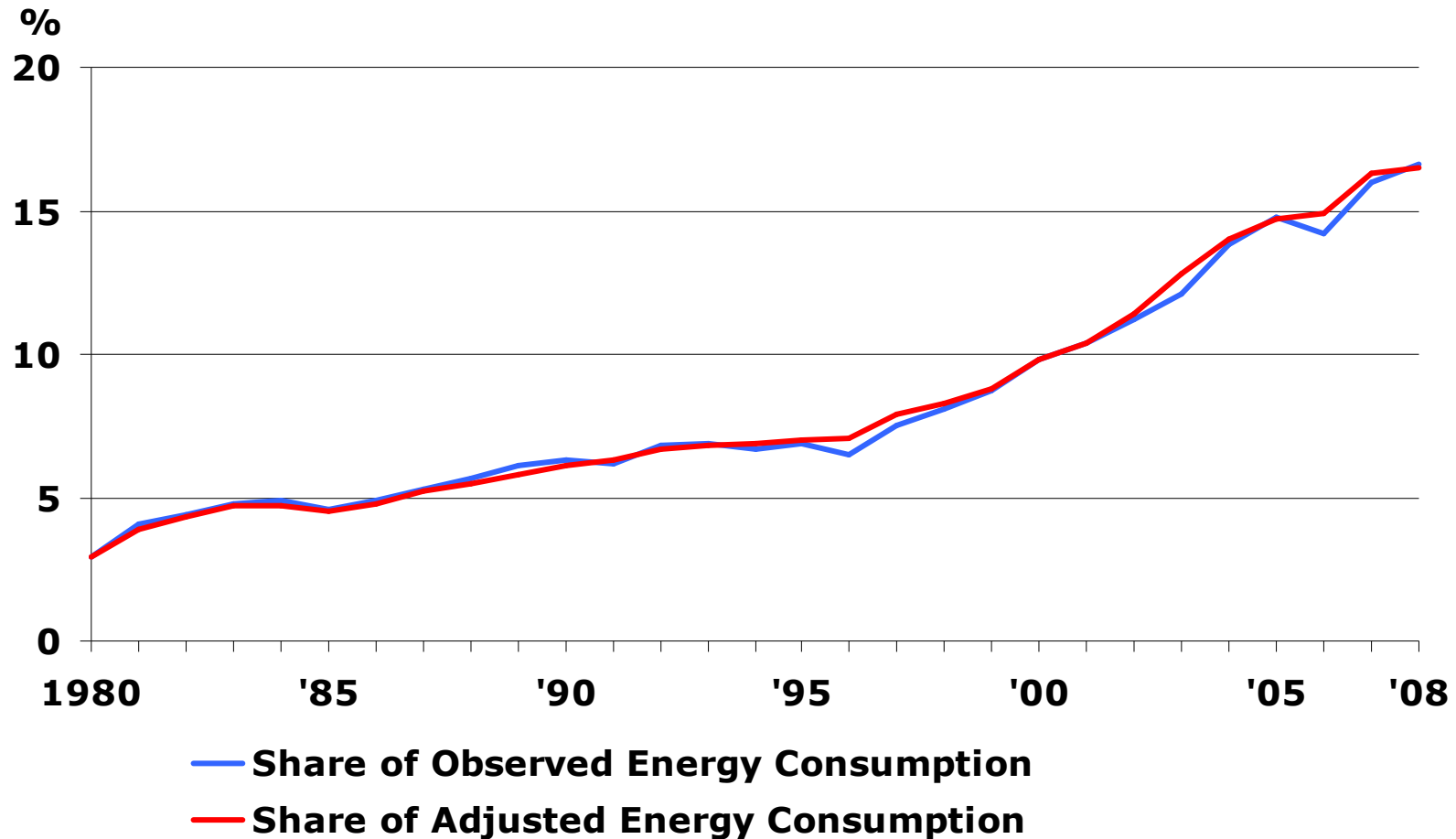
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Biomass today in Danish energy supply



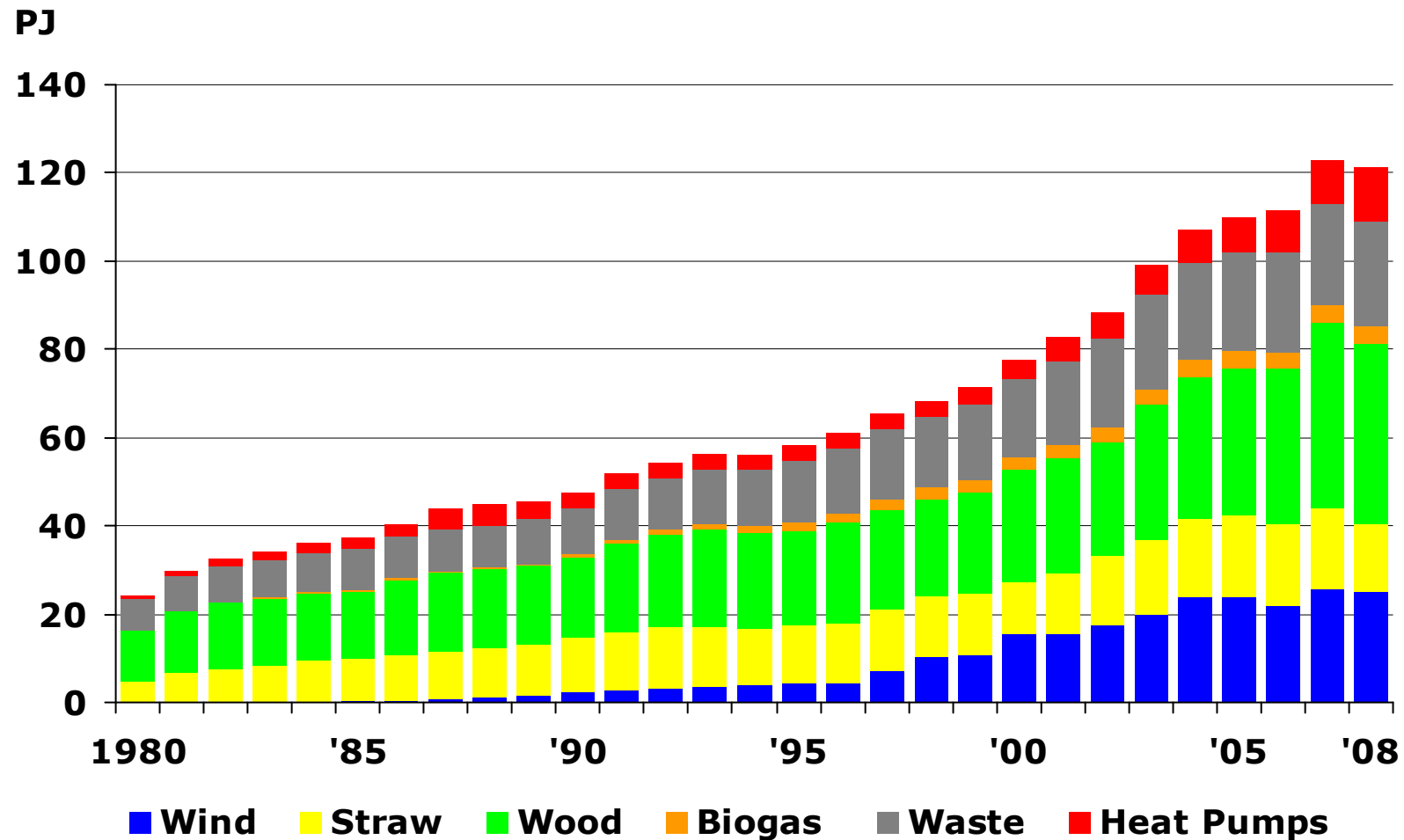
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Renewable energy Share of gross energy consumption



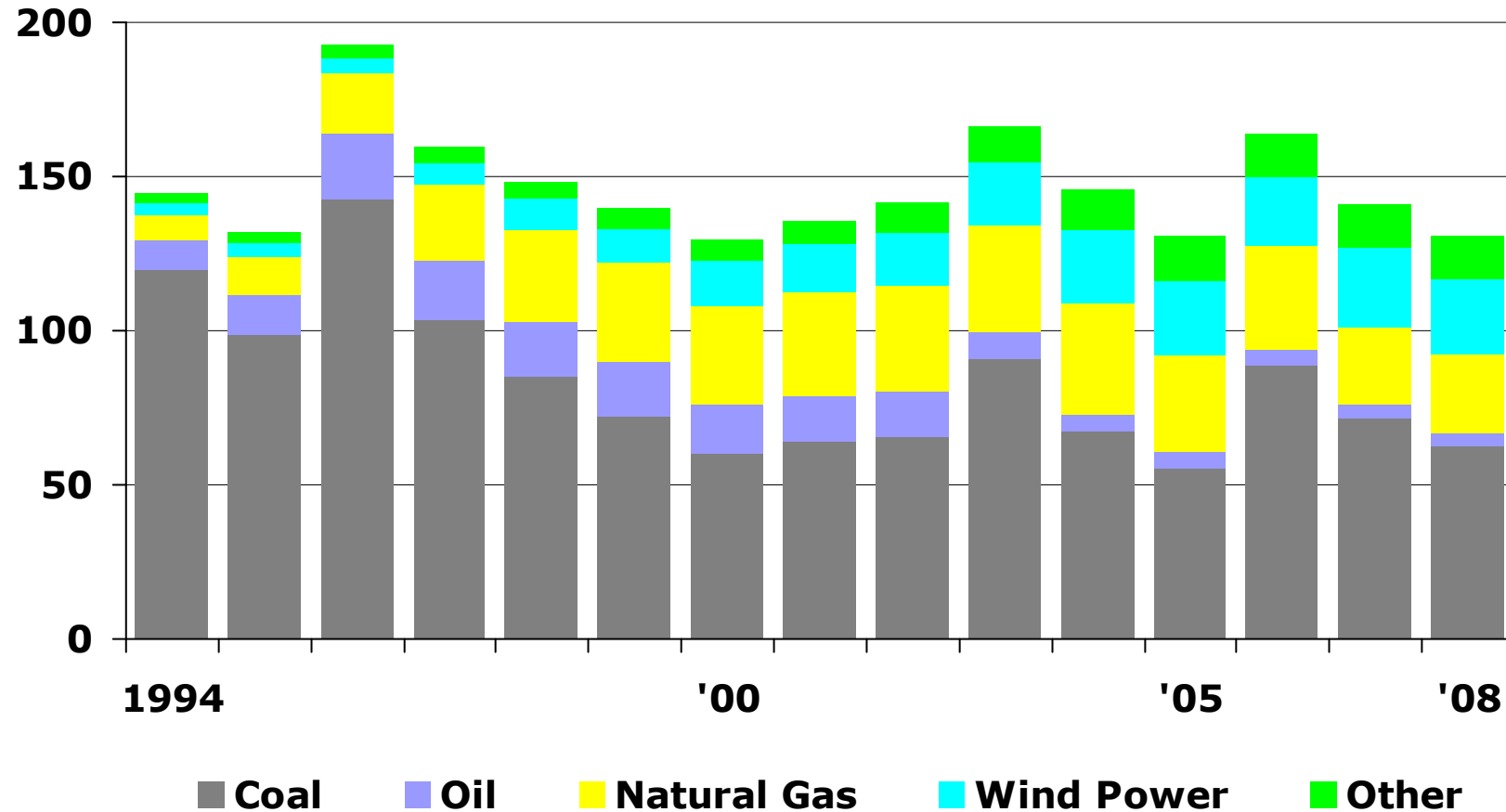
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Biomass in renewables Denmark



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Electricity in Denmark by fuel



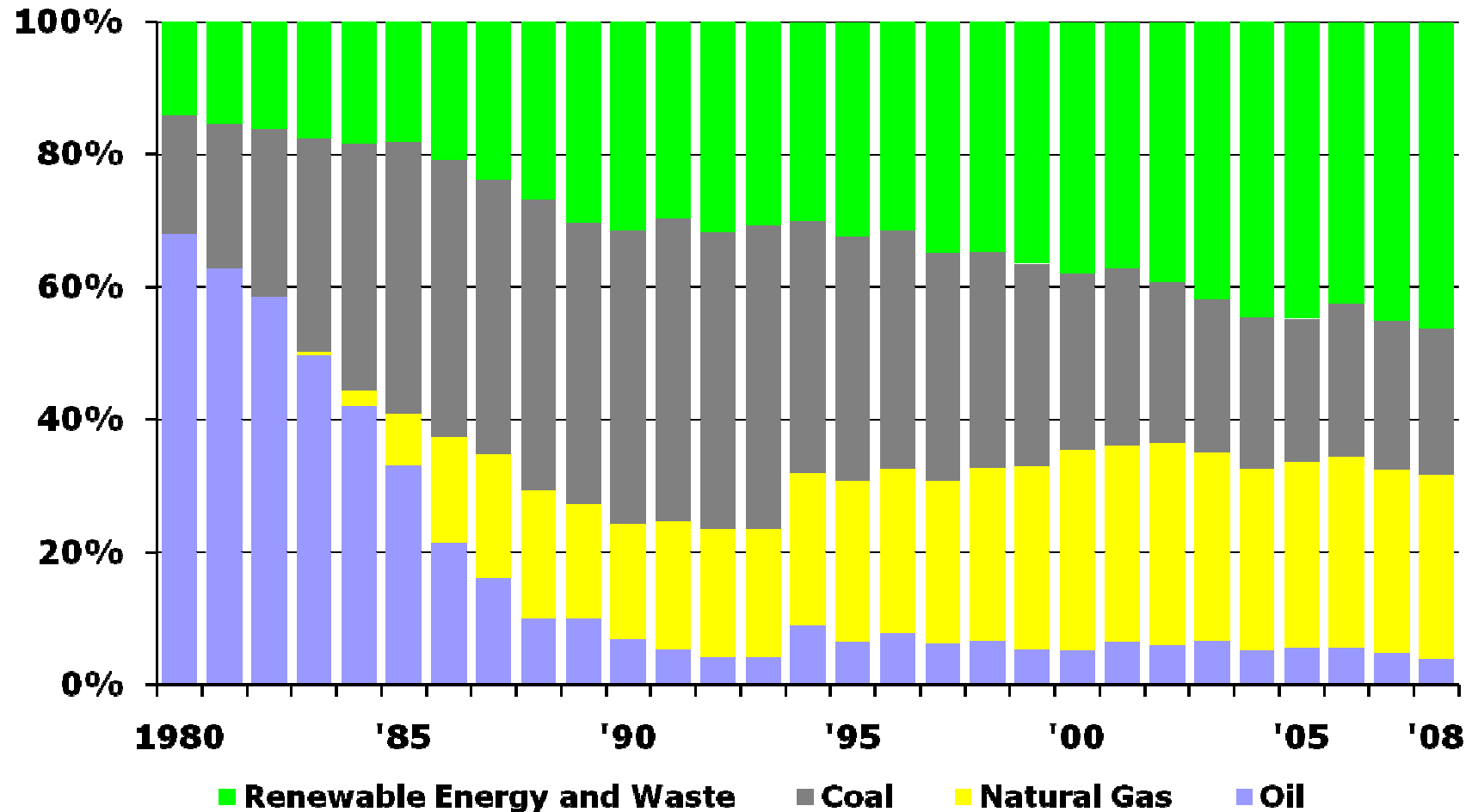
Biomass in Danish district heating

- App. 150 biomass district heating plants in DK
 - 60 Straw fired
 - 90 Wood chips and/or wood pellets
- Typical 1-10 MW
- Several large co-fired CHP-plants



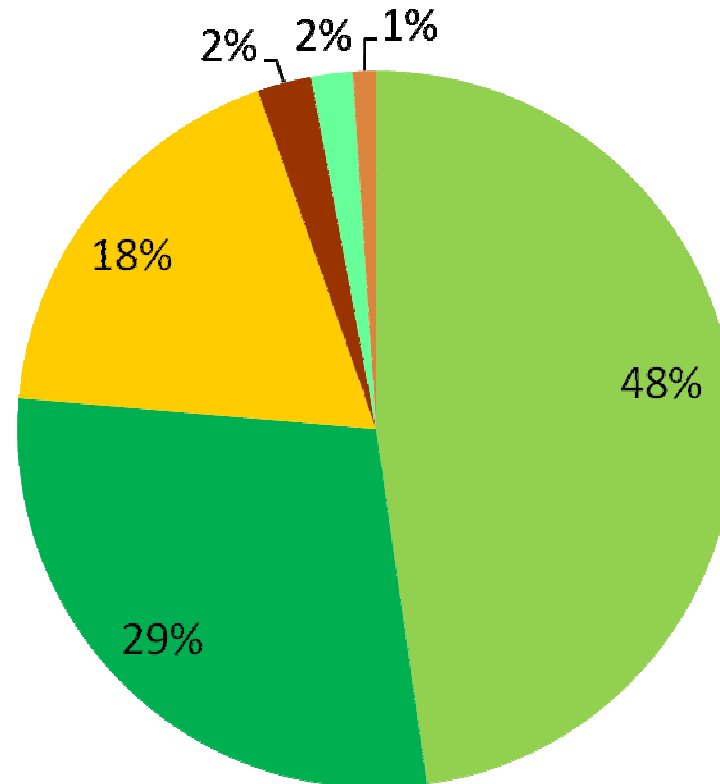
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District heating in Denmark by fuel



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Renewables in district heating



■ Waste biodegradable

■ Straw

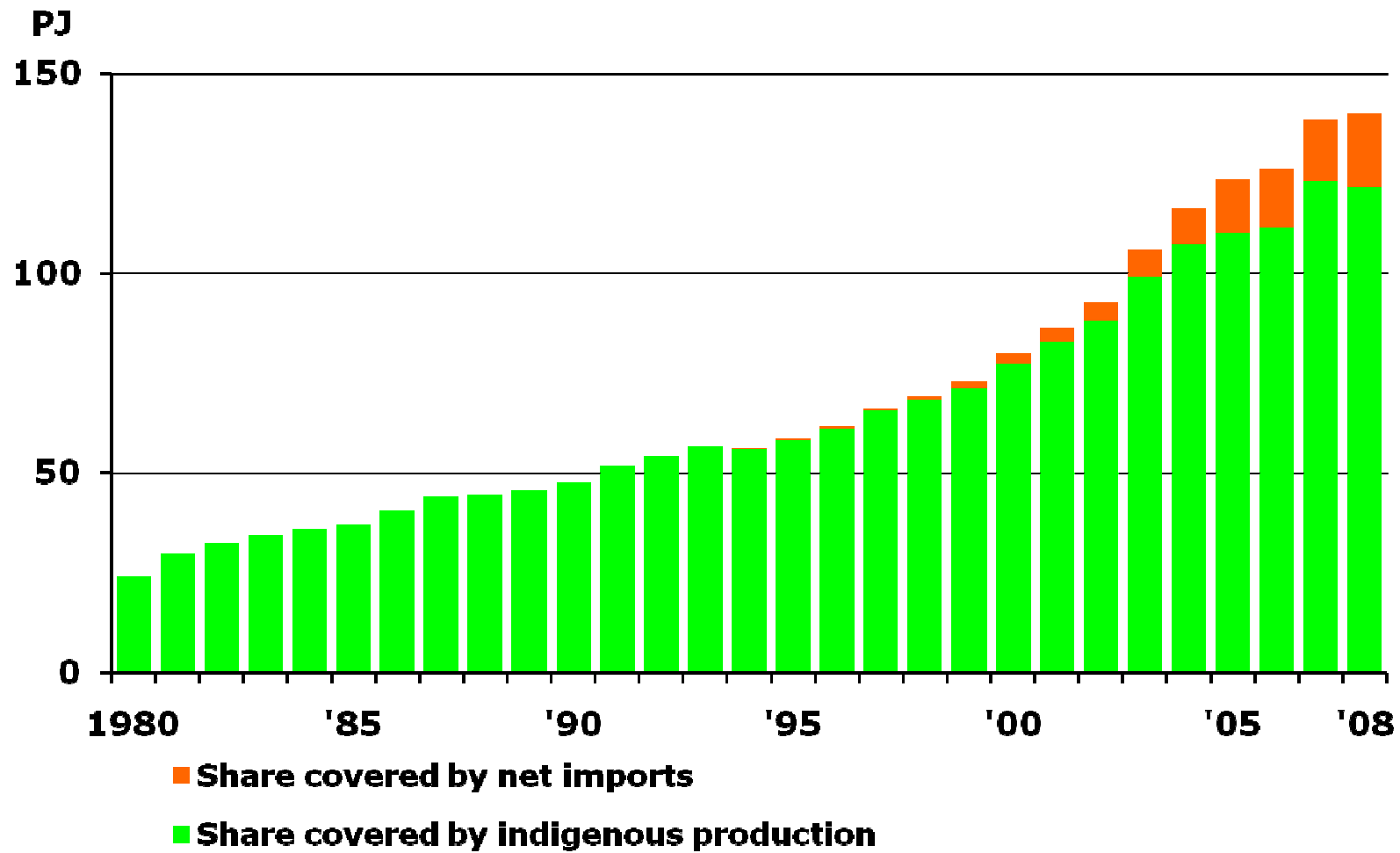
■ Other

■ Wood

■ Biogas

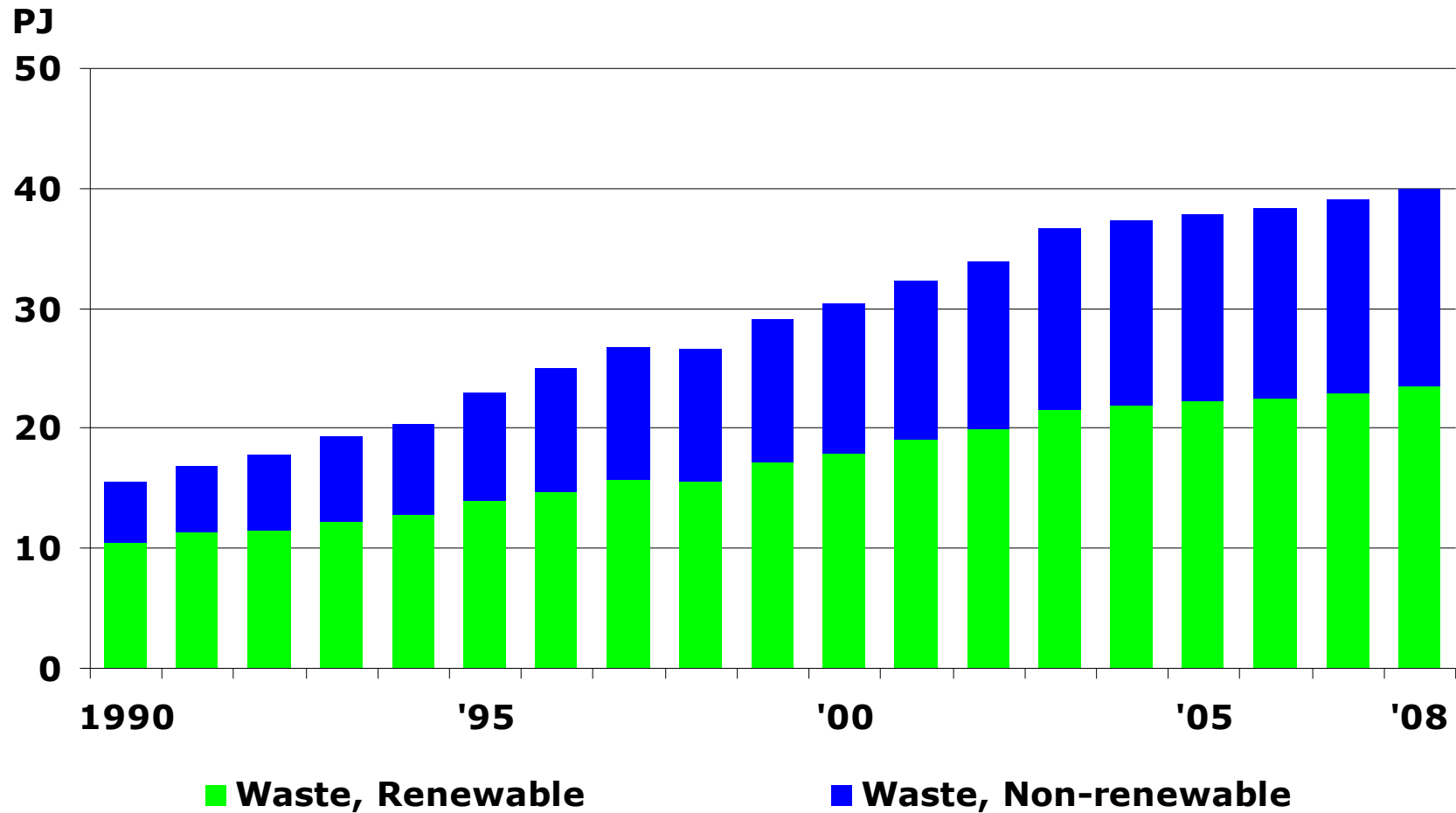
■ Sun, Geothermal heat, Heat pumps

Domestic renewables and imports



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Waste in energy



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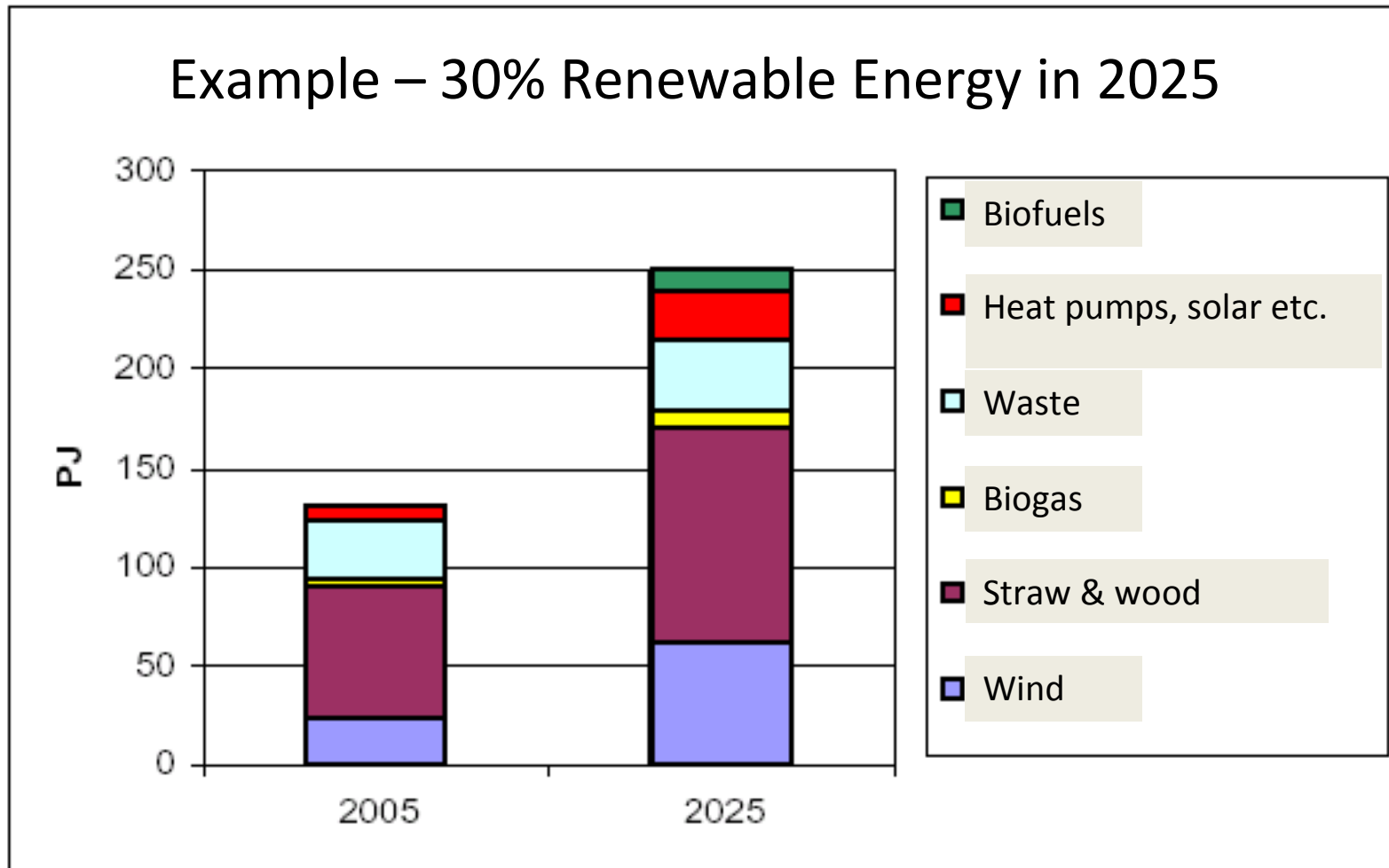
Future perspective for biomass in Denmark

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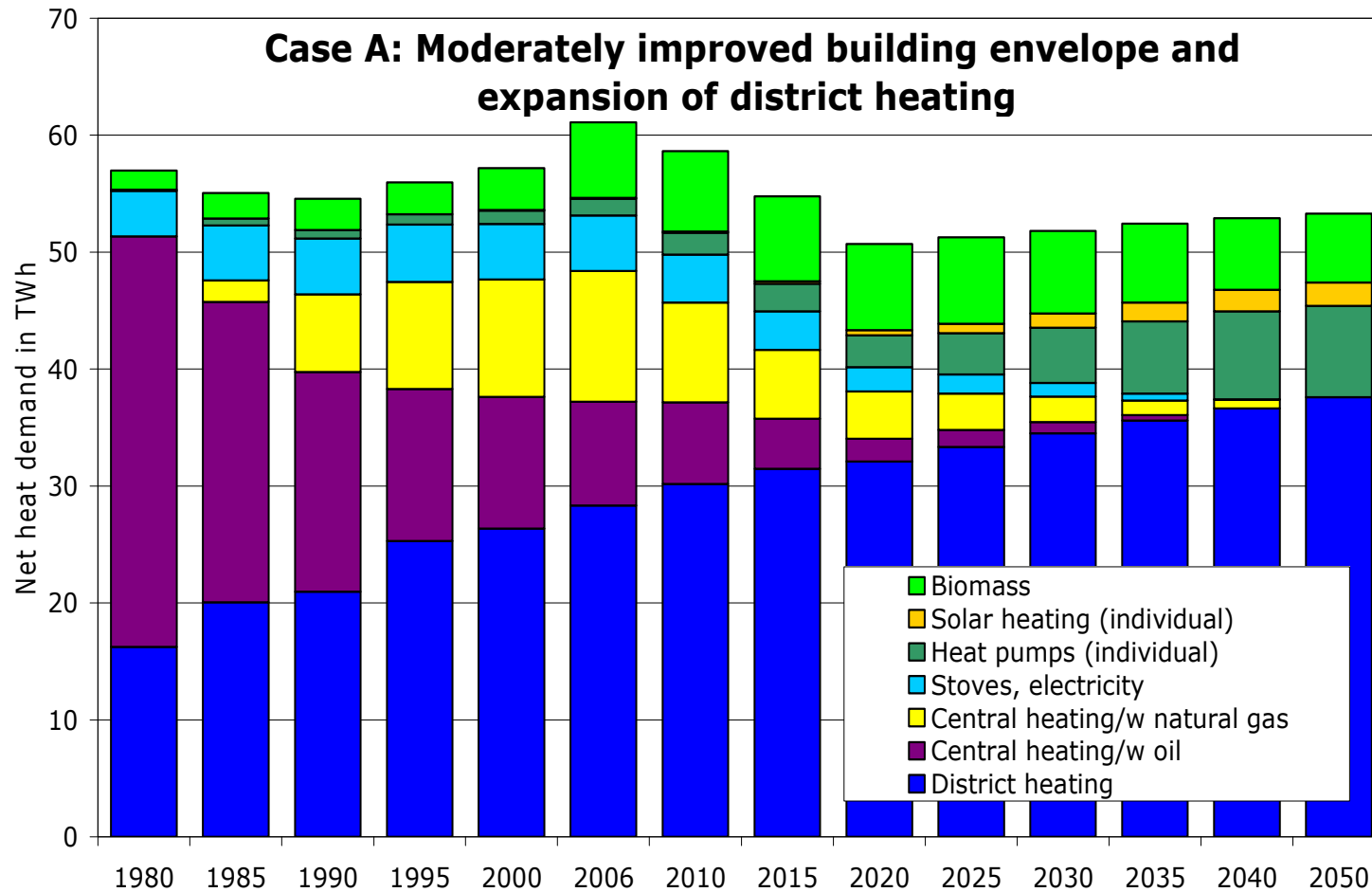
Local availability

Biomass available for energy purposes 2006 (Danish Energy Agency)			
PJ	Danish potential	Consumption of Danish resources	Imports
- Straw	55	18,6	0
- Wood	40	33,7	16,1
- Biomasse for biogas	40	3,9	0
- Biodegradable waste	30	31,0	0
Total	App.165	87,3	16,1

Expectations in national plan

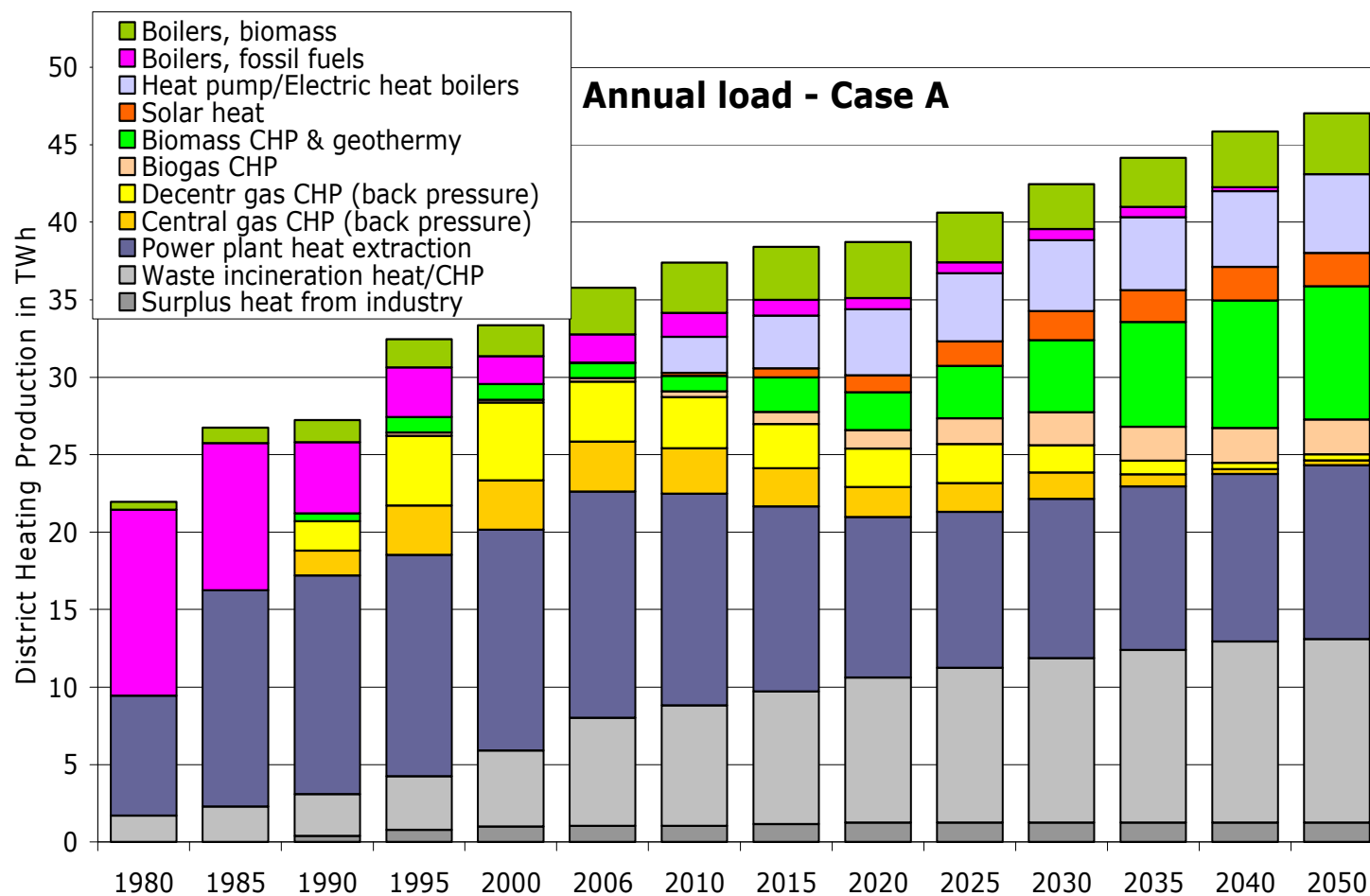


Heat demand and sources



Source: Heat Plan Denmark,
Danish District Heating Association, Aalborg University & Ramboll 2008

Future district heating sources



Source: Heat Plan Denmark,
Danish District Heating Association, Aalborg University & Ramboll 2008

Danish perspectives

- What to use biomass for
 - Heating
 - Base load or as supplement
 - Electricity
 - Base fuel or as supplement
 - Transport
- Availability
 - Sustainability, imports
- Price of biomass
 - Competition, taxation

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A European perspective

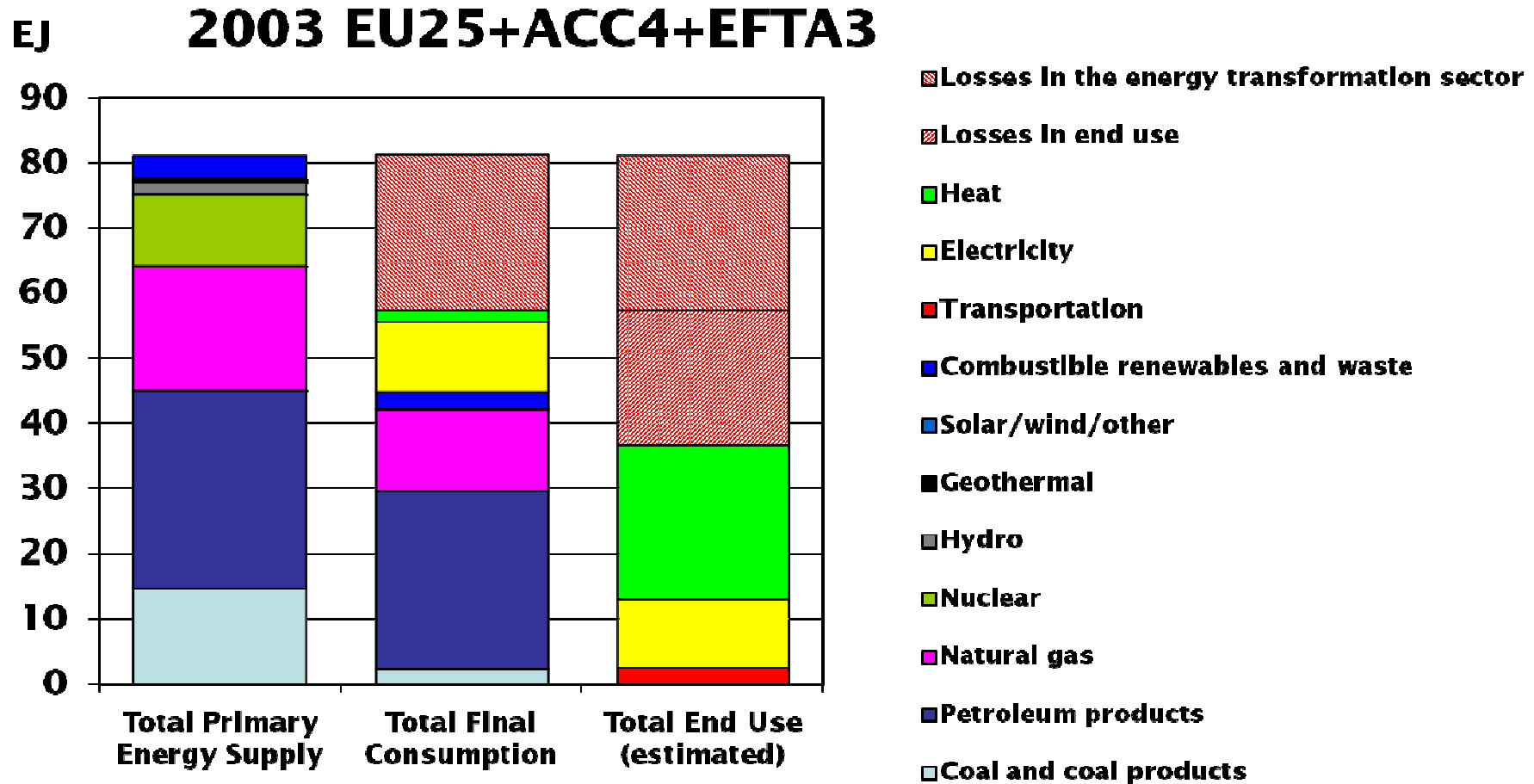


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Heating Association

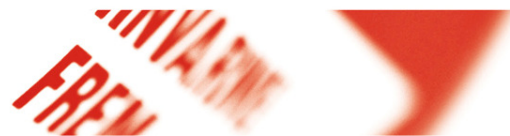
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Inkl. god energi og gode i værdier

Basically inefficient

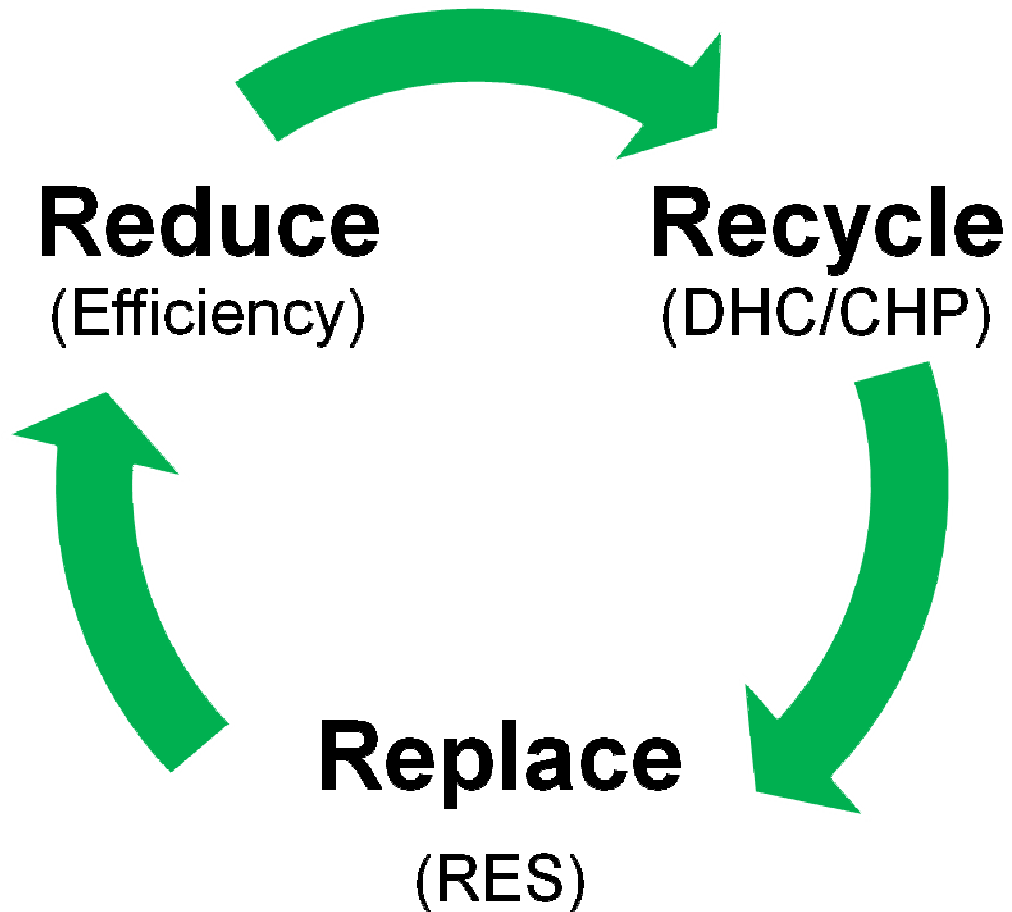


European perspective

- What to use biomass for?
 - Heating
 - Individually or collectively (DH)
 - Electricity
 - Loosing 2/3 or in CHP
 - Transport
 - Biofuels or electricity
- Availability
 - Sustainability, imports
- Price of biomass
 - Competition, (Taxation)



Three energy measures



Thank you for your attention!

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