

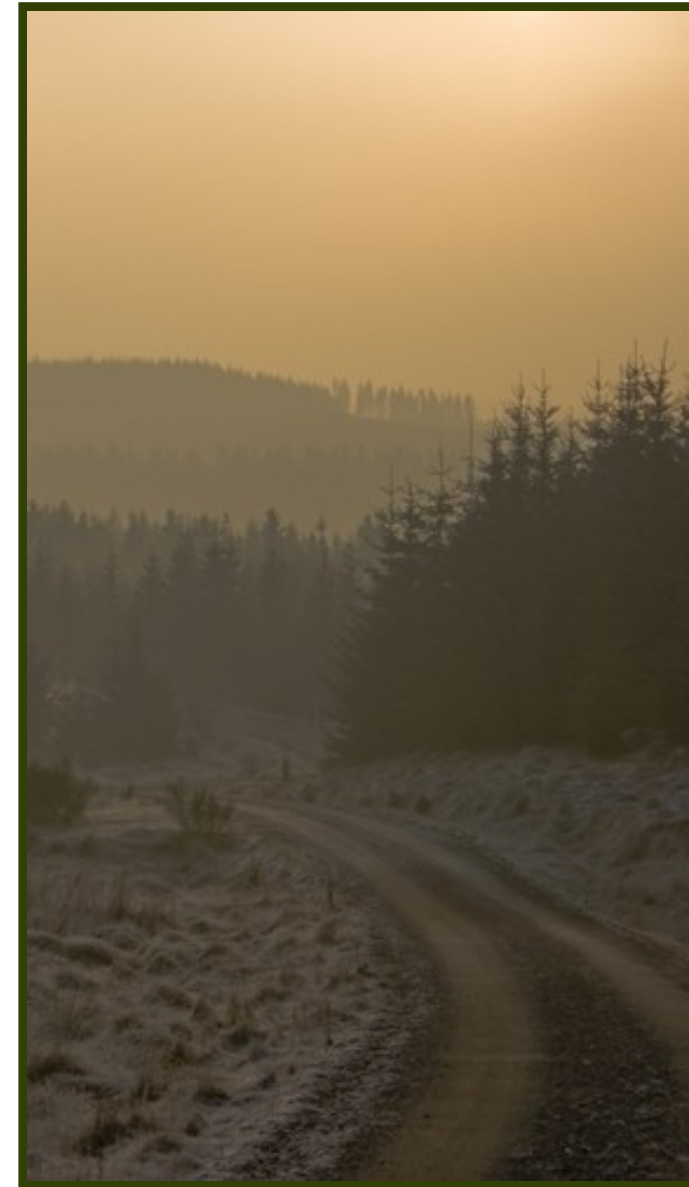
Woody biomass in the UK Energy Policy and Practice

Presentation available at
www.northwoods.org.uk/presentations

Presented at the FERN meeting, EWNI 27th April 2009

Northwoods

- Runs a number of biomass projects and conducts research into economics
- **Training** (forestry and woodfuel)
- **NEWFuels** (producer group)
- **NEWHeat** (biomass support)
- **BEn** (IEE project)
- **NULOGS** (proposed)



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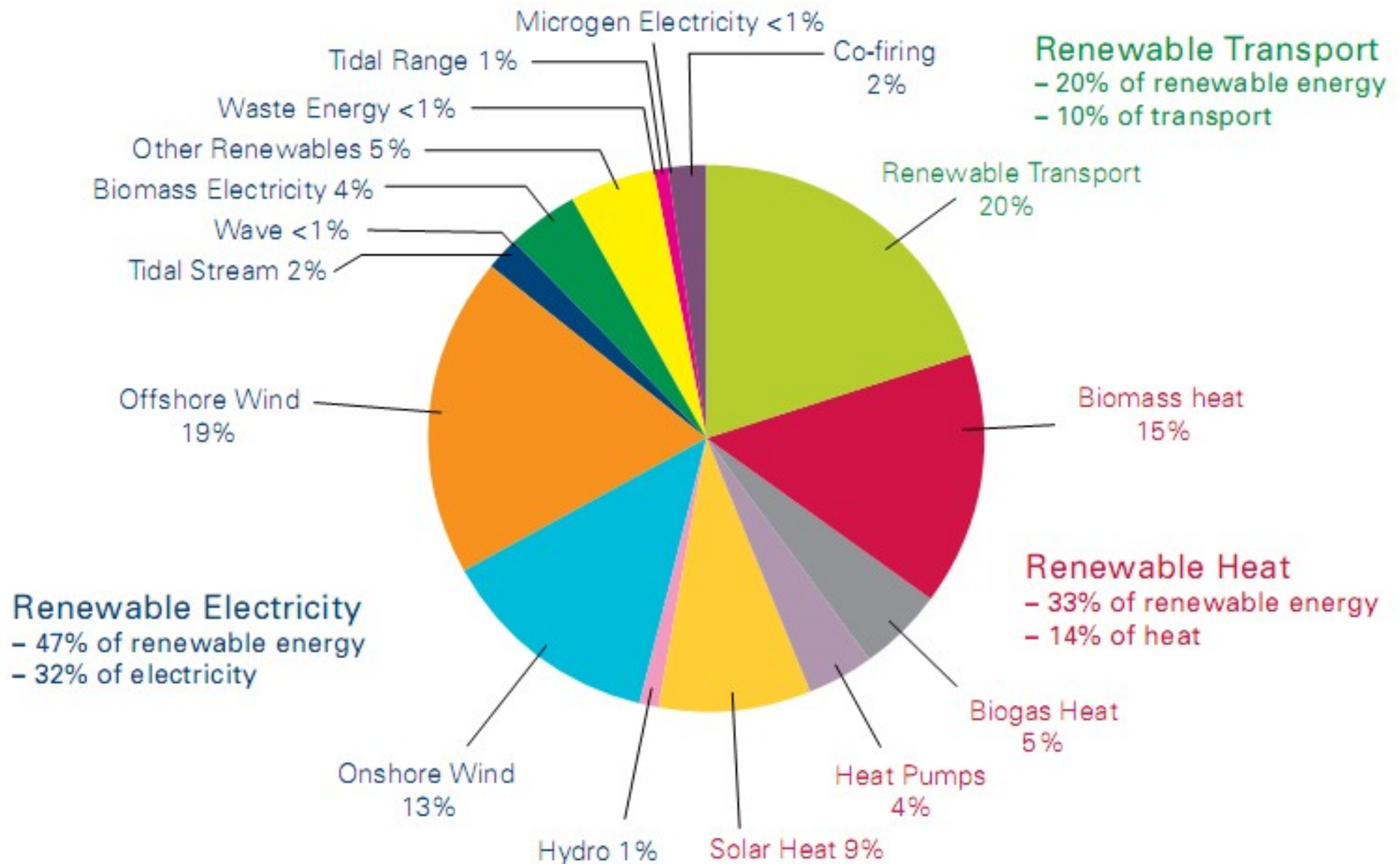
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Energy policy (demand side)

Policy	Target (UK – biomass focus where possible)
Kyoto protocol	CO ₂ emissions 12.5% below 1990 figures
EC Spring Council 2007	15% primary energy (35% electricity) from renewables
Climate change bill	34% reduction in CO ₂ emissions by 2020
UK renewable energy strategy	Biomass to provide 5% of total energy (heat) and 1% of total energy (electricity)
Carbon reduction commitment	Cap-and-trade for large energy users
Renewable heat incentive	Payments for biomass heat (3-5p/kWh industry recommendation)

Figure 2: Illustrative renewable technology breakdown to reach 2020 target



Energy policy – conclusions

- The main policy implement for the biomass sector will probably be the Renewable Energy Strategy
- Other policies will provide additional drivers to reach these targets



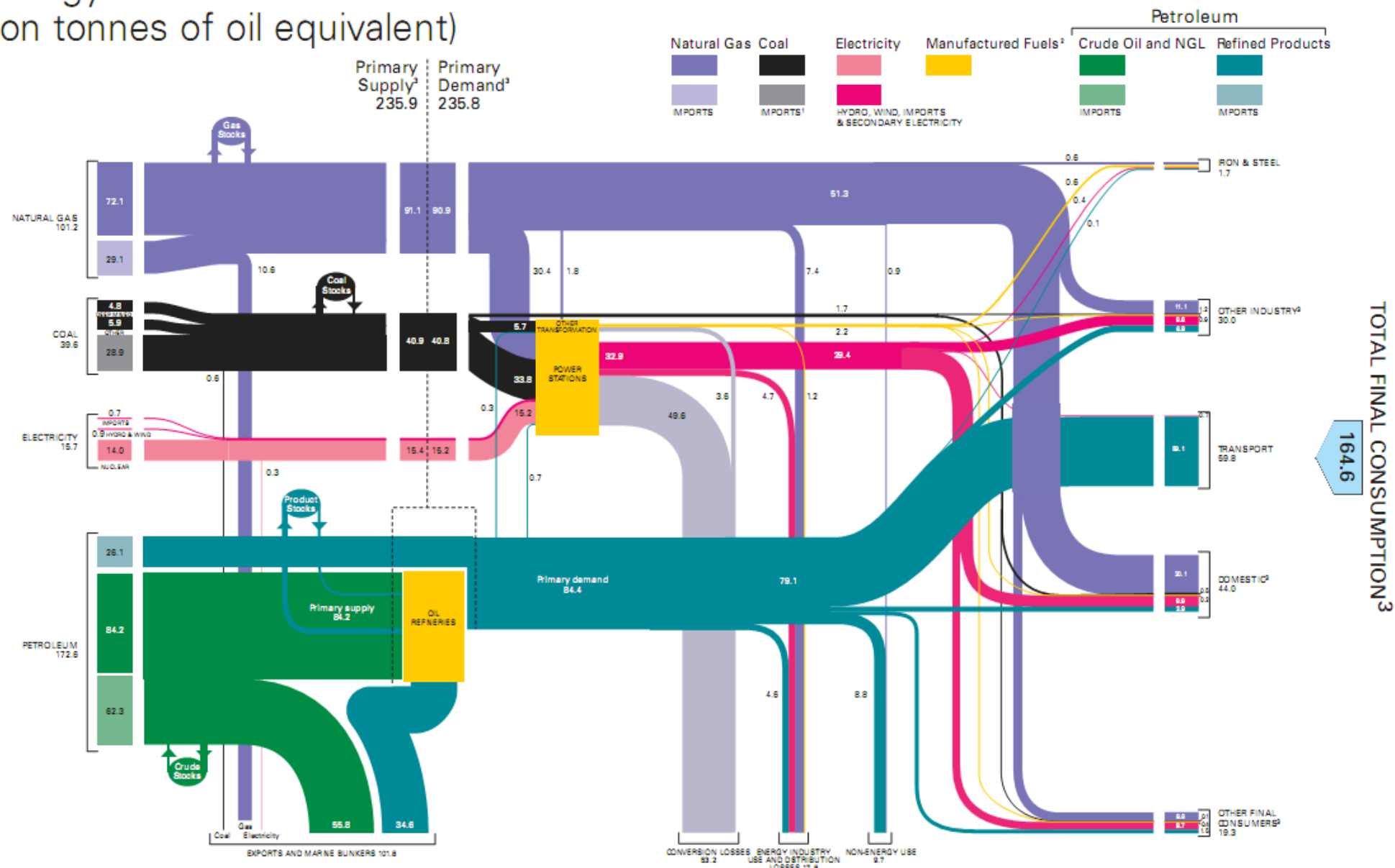
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UK Energy Flow Chart 2007 (million tonnes of oil equivalent)

INDIGENOUS PRODUCTION AND IMPORTS³



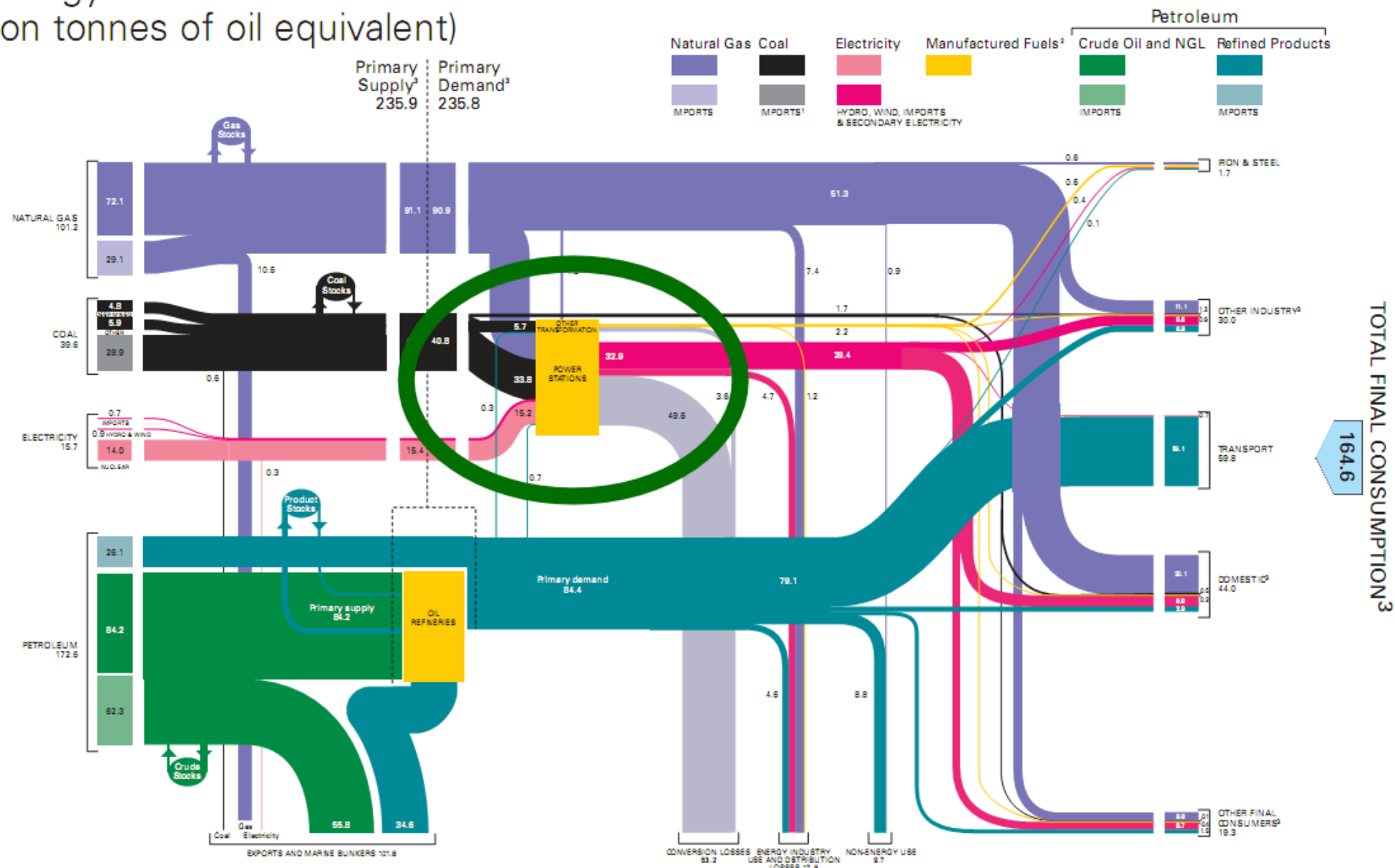
FOOTNOTES:
 1. Coal imports include imports of manufactured fuels, which accounted for 0.7 million tonnes of oil equivalent in 2007.
 2. Includes heatloss.
 3. Includes all renewables.
 This flowchart has been produced using the style of balance and figures in the 2008 Digest of UK Energy Statistics, Table 1.1.



UK Energy Flow Chart 2007 (million tonnes of oil equivalent)

INDIGENOUS PRODUCTION AND IMPORTS³

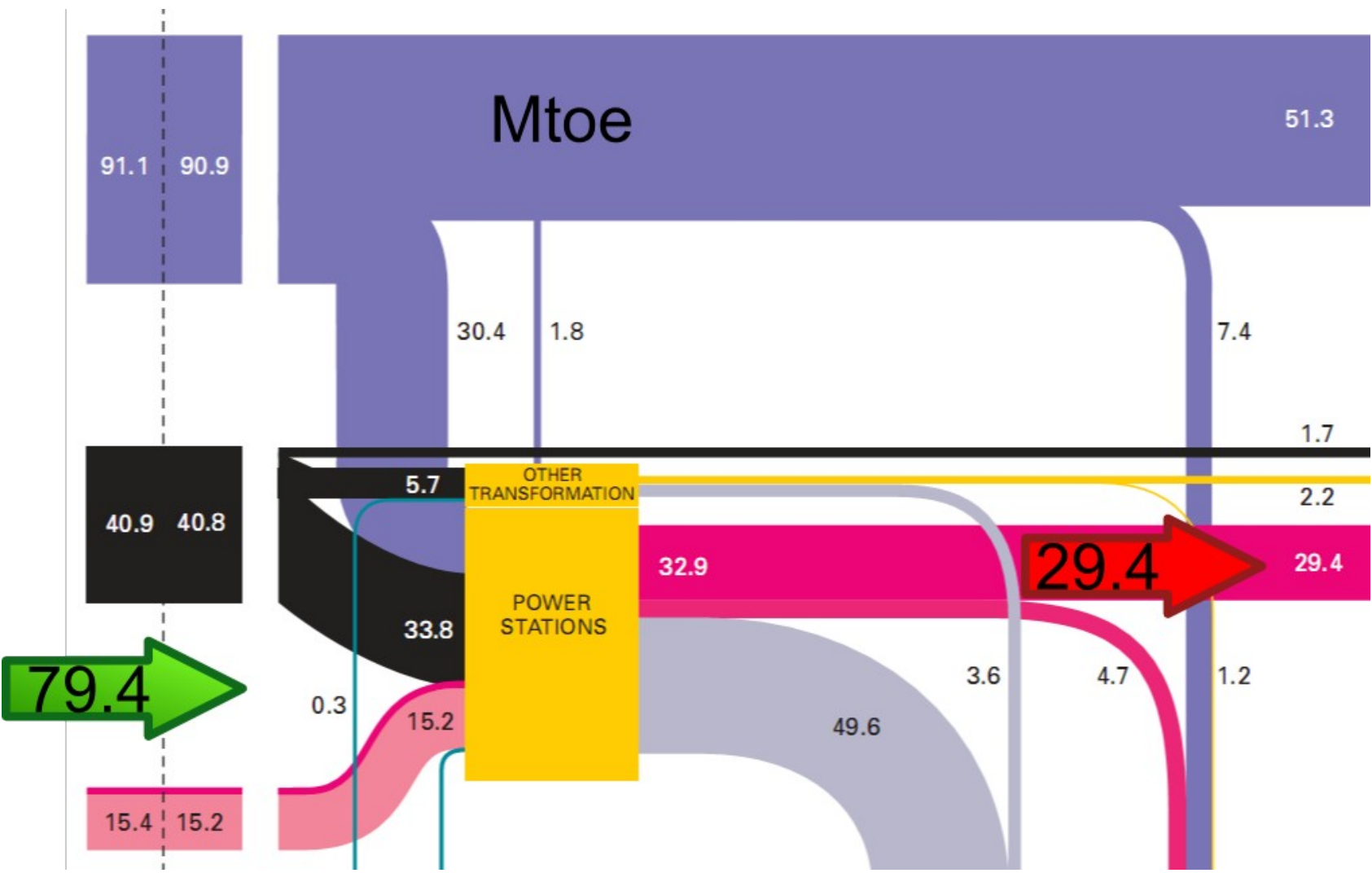
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Energy practice – electricity



Conclusion: Centralised thermal generation is inefficient at best (37%)

DUKES 2008; http://stats.berr.gov.uk/energystats/dukes5_6.xls; Energy flow chart 2007

Energy practice – current production

Energy type	TWh	Mtoe
Co-firing	7.44	0.641
Plant biomass	1.55	0.134
Heating	6.23	0.537
Total	15.22	1.312

- Total primary energy = 222.8Mtoe = 2591.2TWh
- Policy says that biomass should produce 6% of total energy
- Biomass currently producing 0.59% total energy
- 20% increase annually from 2007
- Amount required is 155.5TWh (38.2m odt)

Energy practice – conclusions

- Do not generate electricity from large thermal stations
- Do not use biomass in large thermal stations
- We should focus on off-gas grid biomass heating, or biomass district heating



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Forestry policy (supply side)

Policy	Target	Generation potential (TWh)
UK biomass strategy	An additional 2m green tonnes/yr from English woodland	4.07
A woodfuel strategy for England	An additional 2m green tonnes/yr from English woodland	Not additional to above
Bioenergy Action Plan for Wales	5 (electricity), 2.5TWh (thermal)	

2m green tonnes equivalent to 1m odt

Energy = 4.79MWh/odt ('The economics of short-rotation coppice in the UK, Valentine et. Al, 2007)

Boiler efficiency assumed to be 85%

What could be supplied from the UK?



Sector	Comments	Amount (m odt)	Potential (TWh)	% of 2020 target
Waste wood	Much is already accounted for	10.59	43.1	27.7
Forestry (all output)	Would put existing industries out of business	4.76	19.4	12.5
Forestry (new output)		1.00	4.1	2.6
Total		16.35	66.6	42.8

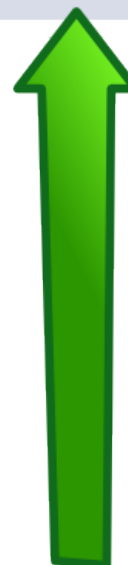
Renewable Energy Strategy assumptions



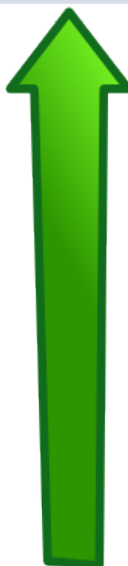
Table 7.1: Estimated long-term technical potential of bioenergy sources for heat and electricity available in the UK (TWh of primary energy) per year¹⁹⁹

Forest woodfuel	Straw	Wood waste	Waste	Agricultural waste	Energy crops ²⁰⁰	Total
13	14.5	30.4 ²⁰¹	15.5	10	17.2	100.6



equivalent to 2/3 of current total forestry output


3m t/yr - possible (current surplus 5.5m t)


much of this already accounted for


non-woody


non-woody


assumes 350,000ha planted. Currently 15,000ha planted

Conclusions

- The UK does not produce enough woody biomass to meet the targets for renewable energy
- Other biomass forms are almost certainly unable to meet the remainder
- With a very limited resource the UK should not be generating electricity from biomass (unless as chp)
- To meet targets at least 21.9m odt would need to be imported, at a cost of around £3.5bn if as roundwood
- The UK's energy requirements will have impacts on forestry and timber markets on a European scale

David Clubb

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www.northwoods.org.uk
www.ruraldevelopment.org.uk

Presentation available on Northwoods website