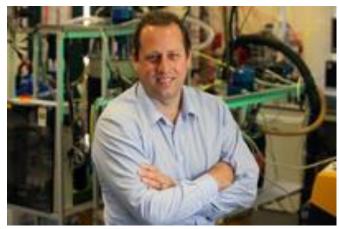






Bioenergy Vectors

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 - For us...





UK Targets (under RED)

EU 20:20:20

UK: 15% of all energy and 10% of transport fuels from renewables by 2020

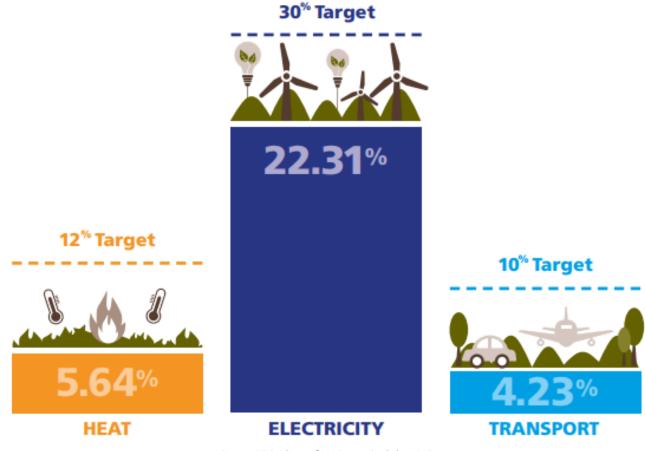
Proposed plan:

- 30% renewable electricity
- 12% renewable heat
- 10% renewable transport





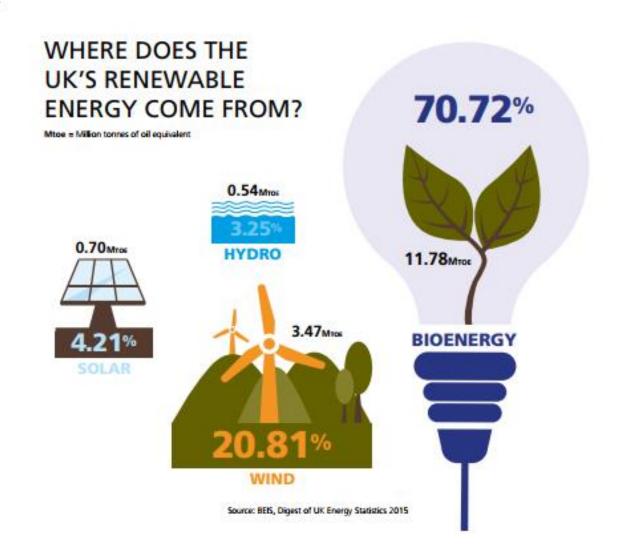
How close is the UK to its 2020 RENEWABLE ENERGY TARGETS?



Source: BEIS, Digest of UK Energy Statistics 2015











Algae



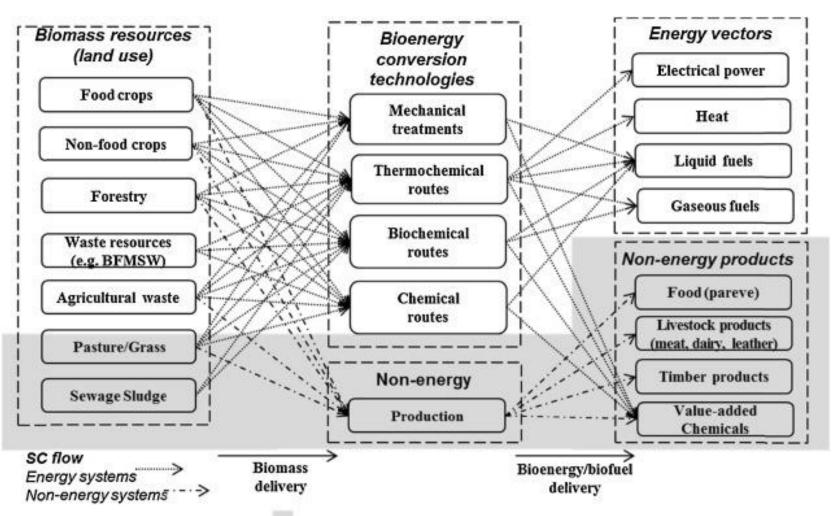
Resources	Conversion Technology	Fuel	Use
Anable/Annual Crops	/ Pressing/Esterification /		
Oil Seed Rape	Enzymatic Transesterification		
Wheat	/ Hydrolysis/ /	Bio-Diesel	
Maize	Fermentation	Ethanol (1 st and 2 nd Generation)	Vehicle Fuel
Sugarbeet			
Potatoes	/ Pyrotysis /	Bio-OII	
Herbaceous Perennials		FT- Diesel	
Miscanthus	Gasification	P 1- Dissai	Heat
Switchgrass		OME (dimethyl ether)	
Reed canary grass	Digestion	Methanol	
Woody Perennials		seemanos	
Short Rotation Coppice		Hydrogen	
Pine/Spruce	Co-firing	10000	Electricity
Residues & Wastes		Bio-Methane	
Forest Residues	Small scale burning		
Staw			
Organic Municipal Waste	Large scale burning		
Waste falls and oils			





Elements added to ETI-BVCM





Source: Guo et al, 2016

https://doi.org/10.1016/j.compchemeng.2016.02.011





Hub Extension Project





Biomass grown on contaminated land: challenging vectors













Phytoremediation vs Biomass utility?



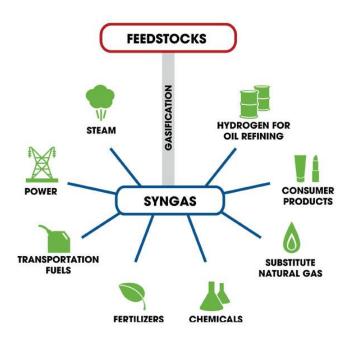






Biomethane production









Vectors – big questions....









