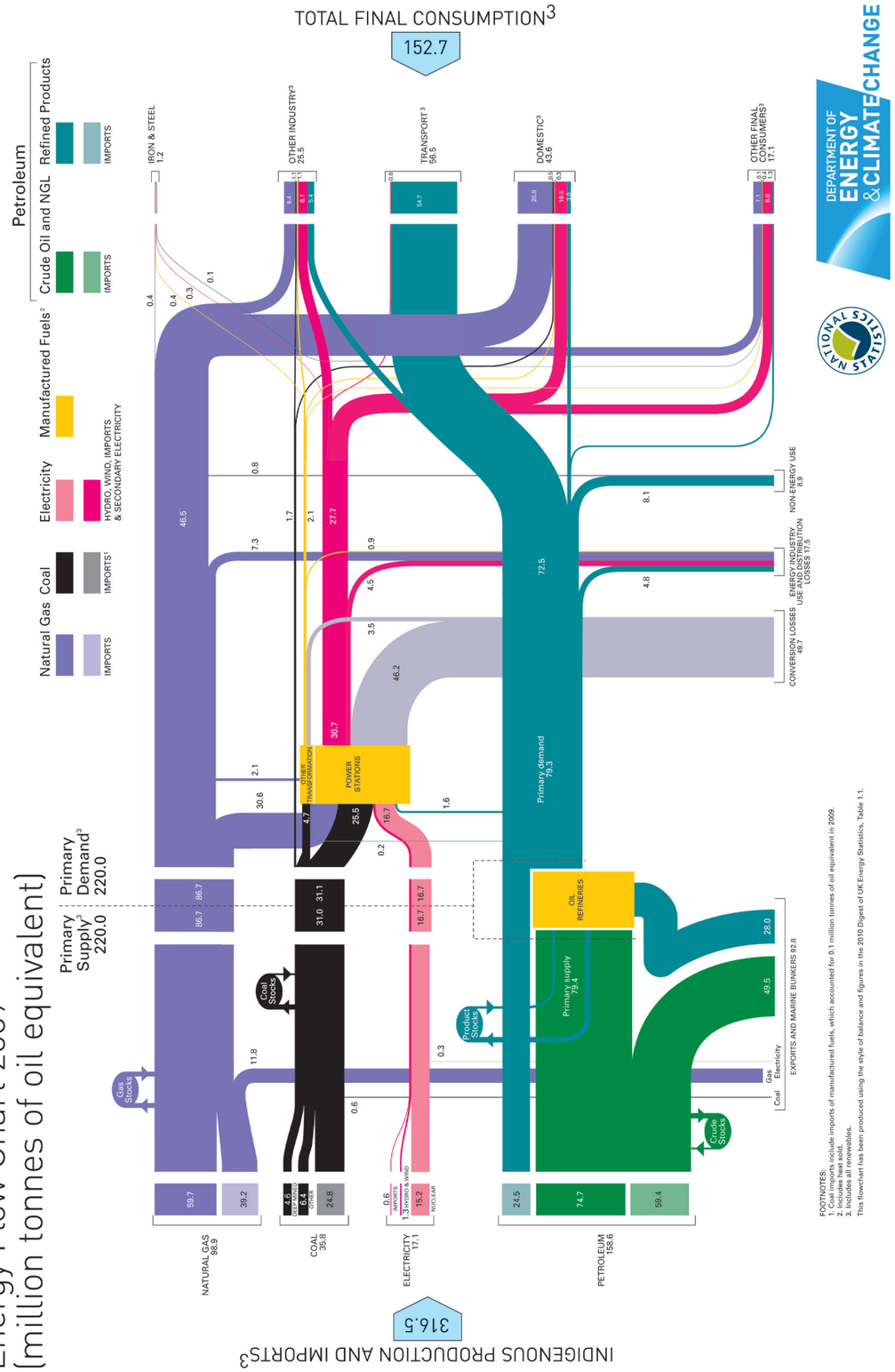
UK Energy Flow Chart 2009

(million tonnes of oil equivalent)



FOOTNOTES:
1. Coal imports include imports of manufactured fuels, which accounted for 0.1 million tonnes of oil equivalent in 2009.
2. Includes heat sold.
3. Includes all renewables.

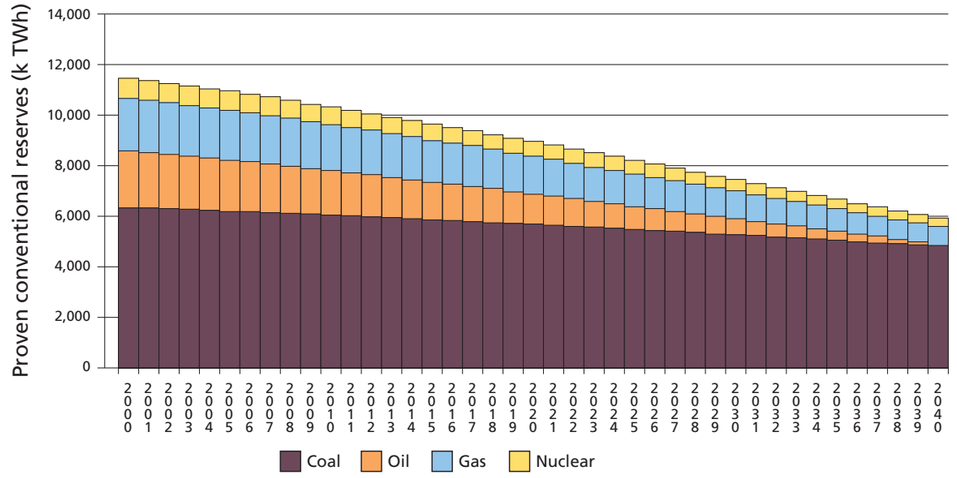
This flowchart has been produced using the style of balance and figures in the 2010 Digest of UK Energy Statistics, Table 1.1.

Facts & Figures

Forever Fuels

Global energy-resource depletion

at IEA-projected rates of consumption



How the world's proved reserves of coal, oil, gas and uranium will decline if we consume them at the rate of the International Energy Agency's (IEA) more conservative projections for demand, using current technology.

Consumption data for 2001-2006 base-years and projections for 2010, 2015, 2020 and 2030 (other years interpolated) from IEA "Key World Energy Statistics" handbooks 2003-8. Reserves data for coal, oil and gas in 2007 from BP's "Statistical Review of World Energy" 2008, with support from the US Energy Information Agency's comparison of estimates (http://www.eia.doe.gov/emeu/international/reserves.html). Data for uranium reserves in 2007 from the World Nuclear Association (http://www.world-nuclear.org/info/inf75.html). IEA's figures for nuclear power converted to nominal uranium consumption at current ratio of uranium consumption to nuclear primary energy supply.

Making the most of our gas and biomass

100 MWh Biomass = 90 MWh Heat

100 MWh Gas = 60 MWh Electricity

100 MWh Gas = 90 MWh Heat

100 MWh Biomass = 25 MWh Electricity

Modern gas and biomass boilers are typically around 90% efficient. Combined-Cycle Gas Turbines can convert gas into electricity at 60% efficiency. Modern commercial plant to convert biomass into electricity range in efficiency from 12% (for small applications) to 35% (if co-fired with coal). Mid-sized dedicated biomass powerplants would do well to achieve 25%.

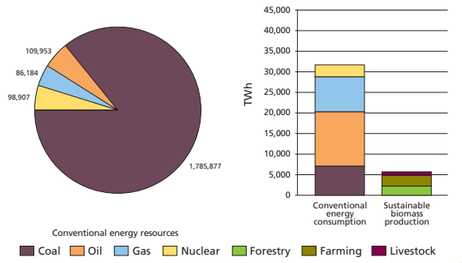
If we want to make the most of our gas and biomass, we should use gas to make electricity and biomass to produce heat.

Registered Address: 7 Summerleaze Road, Maidenhead, Berkshire, SL6 8SP
Registered in England No: 06239423

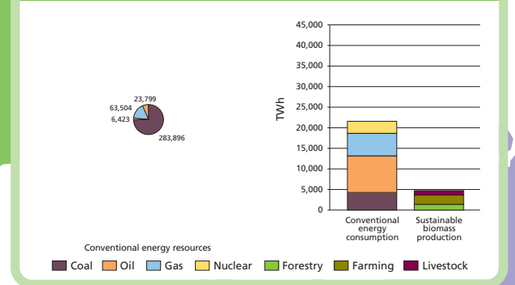
www.forever-fuels.com Tel: 01628 509690

The World's Resources – Distribution vs Consumption

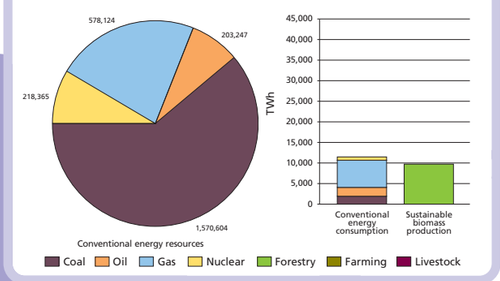
North America



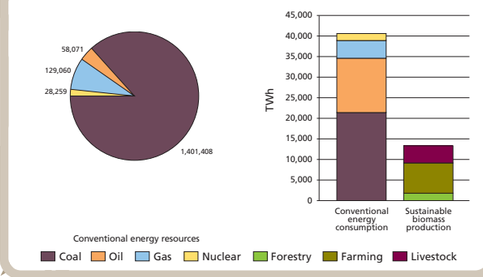
Europe



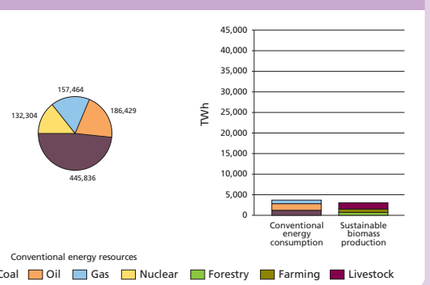
Former Soviet Union



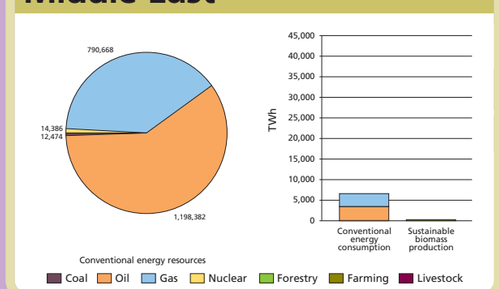
Asia



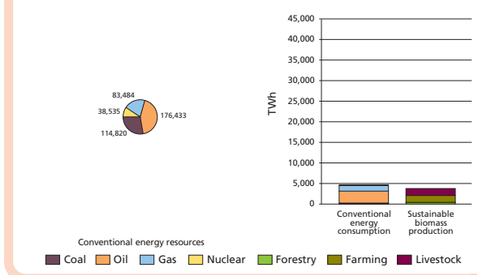
Africa



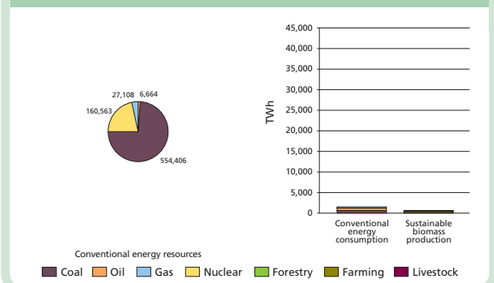
Middle East



South & Central America



Oceania



The world's energy resources are not evenly distributed, and neither is our energy consumption. While our energy systems are dominated by conventional energy (fossil-fuels and nuclear), Europe is particularly vulnerable. We consume 18% of the world's production, but only 3.5% of the resources of these fuels lie within our boundaries. If we had to rely on our own resources of these fuels, they would be gone within 18 years. So we are dependent on regions such as the former Soviet Union and the Middle East to provide most of our energy.

Resources of biomass (and other renewables) are more evenly distributed around the world. Not all types of biomass are shown here (human waste, for instance, is missing). And for the categories shown, we have listed only the resources that are available without impinging on agricultural production or virgin forests, and assumed a sustainable rate of production. But within these limitations, we could meet over 20% of Europe's primary energy demand from within our own borders if we made best use of these biomass resources.

We don't need to stop using conventional energy or trading with our neighbours. We just need to cut down, to reduce our emissions and our dependency, so that they want to sell more to us than we want to buy.

Biomass, along with other renewables and energy-efficiency, has a key role to play in righting the balance. Are you going to play your part?

Data for reserves and consumption of coal, oil and gas, and for nuclear output from BP's "Statistical Review of World Energy" 2008. Data for uranium reserves from the World Nuclear Association (http://www.world-nuclear.org/info/inf75.html). Data for biomass resources from presentation by Dr Kinya Sakanishi of the National Institute of Advanced Industrial Science & Technology, Japan (http://home.hiroshima-u.ac.jp/hicec/coe/kaigi/6thSympo/PPT_Dr.Sakanishi.pdf), plus conservative estimate for forestry arisings in the former Soviet Union, based on one-third of area of productive Russian forests. No data found for biomass in the Middle East nor agricultural arisings in the former Soviet Union. Average conversion factors assumed: CV of anthracite/bituminous coal: 9 MWh/tonne; CV of lignite/sub-bituminous coal: 5.5 MWh/tonne; electrical efficiency of nuclear power stations: 33% (from IEA figures).