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Energy Flow Chart

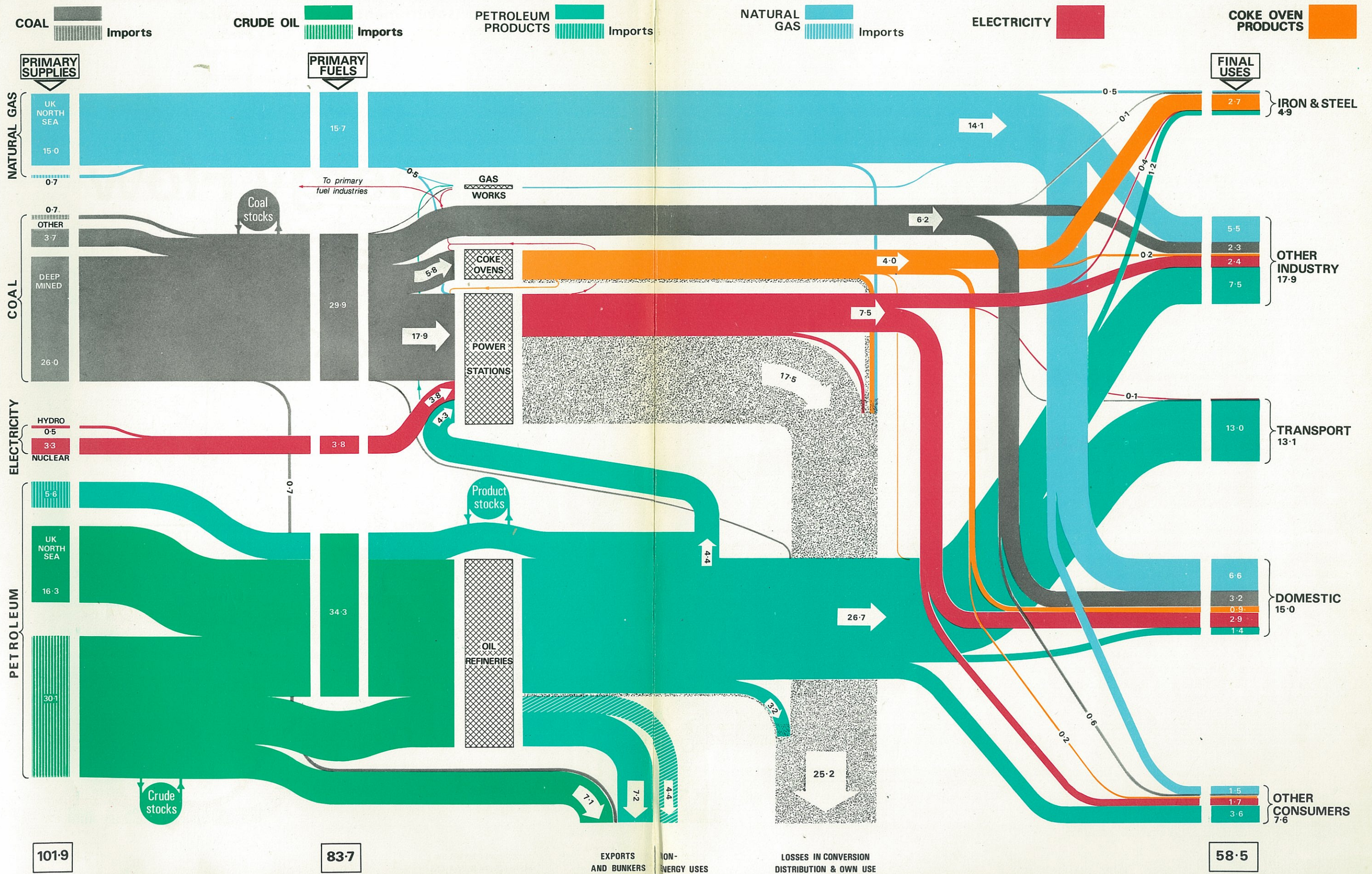
United Kingdom

DEPARTMENT OF INDUSTRY LIBRARY SERVICES Energy LIBRARY	
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Energy flow chart	
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DEPARTMENT OF ENERGY

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UK ENERGY FLOWS 1977 (THOUSAND MILLION THERMS)



Energy Flow Chart 1977

United Kingdom

The chart illustrates the flow of primary fuels from the point at which they become available from (on the left) home production or imports to their eventual final uses (on the right), either in their original state or after being converted into different kinds of energy by the secondary fuel industries.

All flows are measured in thousands of millions of therms and the widths of the bands on the chart are roughly proportional to the absolute sizes of the flows they represent. Stocks of coal and oil are represented by circles. (The circles are not related to the size of the stocks – and they do not show whether there has been a stock rise or stock fall).

Primary supplies and primary fuels

Although in most respects the chart is similar to the previous issue relating to 1974, there has been a change in the definition of petroleum for primary fuel input. Crude oil is now defined as a primary fuel, petroleum refineries are regarded as secondary fuel producers and petroleum products as secondary fuels. However, in practice, primary consumption of petroleum is measured as the sum of deliveries of petroleum products for use as fuels, plus refinery fuel and refinery losses. Petroleum products derived from crude oil which are used for non-fuel purposes (eg as a raw material for the manufacture of chemicals and plastics, as bitumen for road making etc) are not included as energy consumption.

As can be seen, most of our primary fuel supply is not finally consumed in the original state in which it is produced or imported. Crude oil is refined to produce petroleum products (eg fuel oil, petrol, jet fuel, gas/diesel oil etc). A large proportion of coal flows to power stations and coke ovens where it is transformed into electricity and coke respectively. Similarly, some natural gas is used to generate electricity and some is reformed at gas works to make town gas although the latter now forms only a very small proportion of total gas industry sales.

Nuclear and hydro electricity are often referred to as primary electricity to distinguish them from that generated at conventional power stations burning fossil fuels, ie coal, petroleum or natural gas. There are many ways in which the output of nuclear and hydro electricity can be measured. In the chart and in all related statistics the electricity generated by these means is expressed in terms of the notional amount of fossil fuels that would have been needed to generate the same amount of electricity at contemporary conventional steam power stations.

Secondary fuels

The principal secondary fuels are petroleum products, electricity and coke (which in the chart includes other manufactured solid fuels). Secondary fuels are in the main required for specific purposes

for which the use of primary fuels is inappropriate. For many uses there is no practical alternative to electricity as a fuel and coke is an essential material for the iron and steel industry.

Losses

This large flow (in dotted grey) shows those losses that occur between primary supplies and deliveries to final users. Each fuel industry consumes energy in the course of its operations and some is lost during its subsequent distribution. Electricity generation in particular involves large losses in converting primary fuels to electricity. The chart does not show the further losses of energy which occur after energy is supplied to final consumers which result principally from the inefficiencies in the multitude of energy using appliances, eg domestic fires and boilers, cars, lorries, aircraft, central heating plant etc. It is estimated that these latter losses could in total amount to almost half of the energy supplied to final consumers.

Final uses

This section of the chart illustrates how energy consumption is distributed between the main final consuming sectors and how the different kinds of primary and secondary fuels are shared between the sectors.

Statistics

The chart has been prepared by the Economics and Statistics Division of the Department of Energy and is based on statistics taken from the "Digest of United Kingdom Energy Statistics 1978" (Table 13) 'Energy balance for the United Kingdom'. The flow chart is a simplification of these figures and some of the terms used in the chart are not used in the Table. 'Primary supplies' for example, is a convenient label for supplies whether home produced or imported. Again on the right hand side of the chart the term 'Final uses' corresponds to 'Total final inland energy consumption' in the Table and the section of the chart labelled 'Primary Fuels' corresponds to 'Inland energy consumption of primary fuels and equivalents'. Table 2 of "Energy Trends" is an abbreviated version of the energy balance table.

The "Digest of United Kingdom Energy Statistics 1978" is prepared by the Economics and Statistics Division of the Department of Energy and published by Her Majesty's Stationery Office, price £7.50.

"Energy Trends", a Statistical Bulletin, is also prepared by the Economics and Statistics Division of the Department of Energy and is published monthly free of charge. Copies are available from Circulation Section (H), Central Office of Information (COI), Hercules Road, London SE1 7DU.