MINERALS IN THE ECONOMY

Why are minerals important?

Minerals are important national resources and adequate supplies are essential for the development of a modern economy. They play a fundamental role in underpinning the growth of many important sectors of the UK economy and in contributing to the UK's high standard of living.

Minerals are basic and essential raw materials for:

- **construction** — to develop, maintain and enhance our built environment and transport infrastructure
- **manufacturing** — for the production of a wide range of industrial and consumer goods
- **fuel and power** — for use in the home, industry and commerce
- **agriculture** — to improve the productivity of the soil

The UK is largely self-sufficient in construction and energy minerals. However, it is almost entirely reliant on imports of metals, and largely dependent on imports of certain industrial (non-metallic) minerals, such as talc, sulphur and graphite. Other industrial minerals, such as china clay, ball clay and potash, are also important exports.

Natural minerals, or mineral-derived products such as refined metals, are processed to produce goods and services that are essential to our overall national economic well-being. The use of renewable energy sources, recycled materials and industrial by-products is meeting part of our requirement, but new minerals will continue to be required.

©Freefoto.com

BGS©NERC

©Johnson Matthey

BGS©NERC

©Freefoto.com

© BGS©NERC

©Freefoto.com

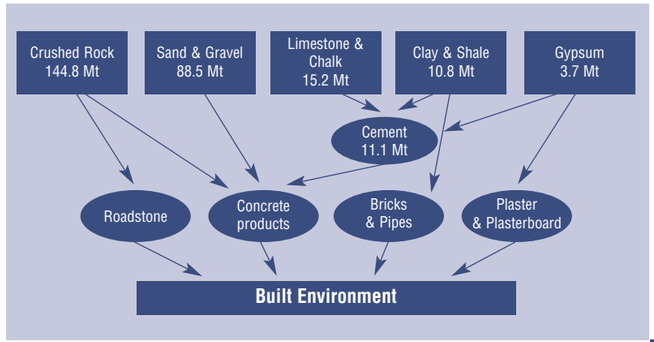
Mineral consumption and production in the UK

The UK consumption of minerals during 2001 was about 615 million tonnes, or more than 10 tonnes per person. Of this, construction minerals consumption alone was about 261 million tonnes. Total energy mineral consumption was 245 million tonnes and the remaining 110 million tonnes was consumption of industrial minerals and metallic minerals.

Some 326 million tonnes of minerals were extracted from the UK landmass in 2001.

- 264 million tonnes of construction minerals
- 26 million tonnes of industrial minerals
- 32 million tonnes of coal
- 4 million tonnes of oil and gas

A further 242 million tonnes, consisting mainly of oil and gas, and marine-dredged sand and gravel, were extracted from the UK Continental Shelf. The total value of UK mineral production was £26.6 billion in 2001, dominated by the energy minerals, notably, oil and gas.



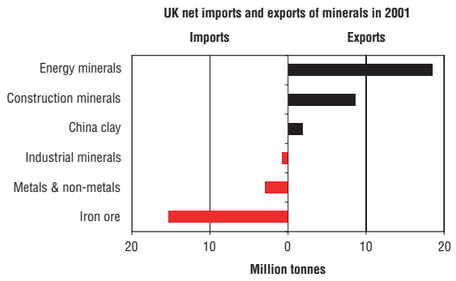
Mineral production in the UK underpins construction

BGS©NERC

The direct value of minerals to the economy

The value of the minerals industry may be measured in terms of its contribution to national Gross Value Added (GVA), an important economic indicator. Value Added is the difference between the value of an output (e.g. sales revenue) and the cost of the bought-in inputs used to produce it (e.g. fuel and other raw materials). The GVA of an industry is simply the sum of all the value added by individual companies in that industry.

In 2001 mining and quarrying of minerals contributed £25 665 million (2.9%) to the UK's £885 000 million Gross Value Added (GVA) figure for all economic sectors. Whilst the contribution of mineral extraction itself appears to be modest, manufacturing and construction, which are heavily dependent on minerals and metals, together contributed a further £100 000 million (11%) to GVA in 2001.



The GVA per employee in the non-energy mineral extractive industry in 2001 was £54 483 which is not only higher than in other primary industry, but is also significantly higher than the average for UK manufacturing as a whole, which was £36 587.

The indirect value of minerals to the economy

No individual part of an economy operates in isolation. Demand for one service or product inevitably generates demand for many different raw materials and energy. These interdependencies of demand can be very complex — for example, in the case of steel manufacture.

Downstream industries, such as power generation, construction and manufacturing, that depend on minerals, are of fundamental importance to the UK economy.

Steel in the economy — an example of multiple demands for minerals

Steel and its alloys are essential in construction, machinery, appliances, tools, vehicles, infrastructure and a host of other essential applications. During 2001 the UK consumed 13.5 million tonnes of steel (228 kg per person).

Steel is produced by smelting iron ore and by recycling steel scrap. The UK is entirely dependent on imports of iron ore (15.4 million tonnes in 2001). Steel production also generates large demands for coal (for smelting and indirectly for electricity), limestone, alloying metals such as chromium, nickel and manganese, zinc for galvanising and tin for tinplating.

In the steel sector limestone, alone, is still supplied from domestic resources. All other materials, including coking coal, are now imported.

© Freefoto.com

It is however difficult to measure the reliance of the various sectors of the economy on minerals. Almost every commercial enterprise in the UK operates from a building that has consumed minerals in its construction. The majority of electricity used in the UK comes from processing fossil fuels. Machinery, tools, paper, computers and fertilisers are just a few examples of products made from minerals that have been extracted from the Earth, processed into a useable form and finally consumed.

Mineral extraction operations also bring benefits in terms of improved local infrastructure and indirect employment to support the mine employees (services, retail outlets, etc).

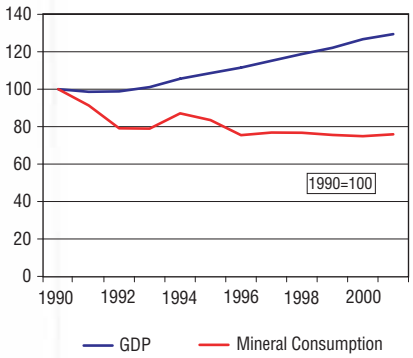
BGS©NERC

BGS©NERC

☐ Minerals and economic growth — getting more from less

As the economy of a country grows (the UK's has grown by 2.5% per annum over the past ten years), mineral consumption also grows. In the early stages of economic development, the demand for minerals grows in line with the economy as manufacturing, infrastructure, buildings and communications are established. However, as an economy matures and more emphasis is placed on the services sector (education, health, retail, etc.), which is not so dependent on minerals, economic growth becomes decoupled from overall mineral consumption. However, significant quantities of energy and construction minerals are still required for the maintenance and development of the infrastructure. This appears to be the case in the UK.

UK mineral consumption and GDP since 1990



BGS©NERC

☐ The intrinsic value of mineral resources

Indigenous mineral resources are valuable national assets. They can only be worked once, and then at locations where they are of the right quality and where they occur in sufficient quantity. A mineral resource can be regarded as 'money in the bank' but once extraction is completed that particular resource is lost forever. Some of the demands for minerals can be met by recycling, but new minerals are still required. It is essential therefore that when these non-renewable resources are exploited it should be done with full regard to optimum utilisation, efficient extraction and processing methods and minimising waste.

For further information on 'Mineral Matters' contact:

The Manager
ODPM-DTI Joint Minerals Programme
British Geological Survey
Keyworth, Nottingham, NG12 5GG
Tel: 0115 936 3494
Fax: 0115 936 3520
Email: minerals@bgs.ac.uk
Web: www.mineralsuk.com

British Geological Survey
NATURAL ENVIRONMENT RESEARCH COUNCIL

Minerals and Waste Planning Division
Office of the Deputy Prime Minister
Zone 4/A2 Eland House
Bressenden Place
London SW1E 4DU
Tel: 020 7944 3852
Fax: 020 7944 3859
Email: mineralswaste@odpm.gsi.gov.uk
Web: www.odpm.gov.uk

OFFICE OF THE DEPUTY PRIME MINISTER

Printed on elemental chlorine-free paper manufactured from woodpulp sourced from sustainable forests. Suitable for archival storage.