WORLD COAL ASSOCIATION

BASIC COAL FACTS

Coal is a fossil fuel and is the altered remains of prehistoric vegetation that originally accumulated in swamps and peat bogs. The energy we get from coal today comes from the energy that plants absorbed from the sun millions of years ago.

HOW IS COAL FORMED?

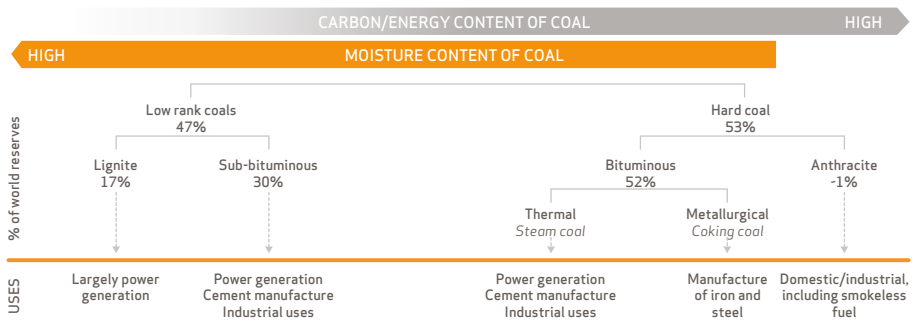
Coal formation begins

360 million to **290** million years ago.

Tectonic movements buried plant material from swamps and peat bogs, which were covered under silt and sediments, often to great depths. With burial, the plant material was subjected to high temperatures and pressures. This caused physical and chemical changes in the vegetation, transforming it into peat and then into coal.

Initially the peat was converted into lignite or 'brown coal' and over many more millions of years, the continuing effects of temperature and pressure produces further change in the lignite, transforming it into the range known as 'sub-bituminous' coals. Further chemical and physical changes occur until these coals became harder and blacker, forming the 'bituminous' or 'hard' coals. Under the right conditions, the progress can continue until anthracite is formed.

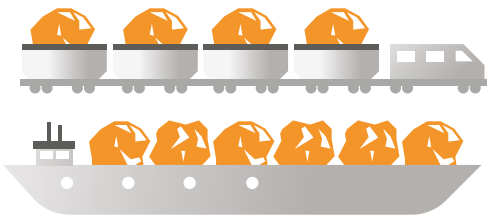
Types of coal



WHERE IS COAL FOUND?

Coal reserves are available in almost every country worldwide, with the biggest reserves being in the USA, Russia, China and India. Around 70 countries have recoverable coal reserves.

Coal is readily available from a wide variety of sources in a well-supplied global market. Over 50 countries mine coal commercially and over 70 countries use it.



Ship and rail can be used to transport coal to demand centres quickly, safely and easily.

HOW IS COAL MINED AND PRODUCED?

6.9 billion tonnes of hard coal are currently produced worldwide.

Coal is mined by two methods: surface or 'opencast' mining, and underground mining.

The choice of mining method largely depends on the geology of the coal deposit. Underground mining currently accounts for a bigger share of world coal production than opencast; although in several important coal-producing countries, surface mining is more common.

The largest coal-producing countries are not confined to one region; the top five hard coal producers are China, the USA, India, Australia and Indonesia.

Much of global coal production is used in the country in which it was produced.

x2

Total coal exports have more than doubled since 2000.

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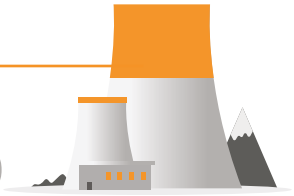
HOW IS COAL USED?

ELECTRICITY

Coal plays a vital role in electricity generation globally.

41%



of global electricity is currently fuelled by coal-fired power plants.

Electricity lights houses, buildings and streets, provides domestic and industrial heat, and powers most equipment used in homes, offices, hospitals and machinery in factories.

STEEL

Steel helps deliver the goods and services that our societies need – healthcare, telecommunications, agricultural practices, transport networks, clean water and access to reliable and affordable energy.

70%

of steel produced today uses coal.

Global steel production is dependent on coal – either for the energy used in electric arc furnaces that produce coal or as a primary source.

Steel is an alloy based primarily on iron. As iron occurs only as iron oxides in the earth's crust, the ores must be converted, or 'reduced', using carbon. The primary source of this carbon is coking coal. Metallurgical coal – or coking coal – is a vital ingredient in the steel-making process.

CEMENT

Large amounts of energy are required for the production of cement – a critical component for the construction industry. Much of this energy is supplied through coal.

200kg

of coal needed to produce 1 tonne of cement.

300–400kg

of cement is needed to produce 1 cubic metre of concrete.

TRANSPORT

Coal-derived fuels, as well as coal-based electricity, can play a significant role in responding to the growing energy needs of the transport sector.

Liquid fuels from coal provide a viable alternative to conventional oil products and can be used in the existing supply infrastructure. Coal-to-liquids currently provides 20% of South Africa's transport needs, including 7.5% of jet fuel.

Globally, the ownership of motor vehicles has increased from around 250 million in 1970 to over one billion today.

Coal is also an important raw material and source of primary energy for the manufacturing of materials used to build transport infrastructure, such as steel, cement and aluminium.

50%

of the energy used to produce aluminium comes from coal.