EARTH'S RESOURCES

Earth contains many useful and essential natural resources, which have been used heavily by humans in recent centuries. These resources include water and food, fuel and building materials, and the means to make more complex things like metals and plastics. Many resources have a limited supply, and using them has an impact on the environment.

ROCKS AND MINERALS

Over the more than four billion years of Earth's development, thousands of different minerals have formed and combined into hundreds of rock types. Humans have found many uses for these rocks and minerals, from building materials to the manufacture of metals. However, some of the most useful and valuable minerals are rare. Mining and quarrying them is often dangerous and dirty.

Rocks

Humans have used naturally occurring rocks for thousands of years, originally as tools and then for many other purposes, such as the building of houses, factories, and roads.

Rocky landscape
Much of the world around us is made up of rocks. To extract rock, heavy machinery is used, cutting deep into the ground.

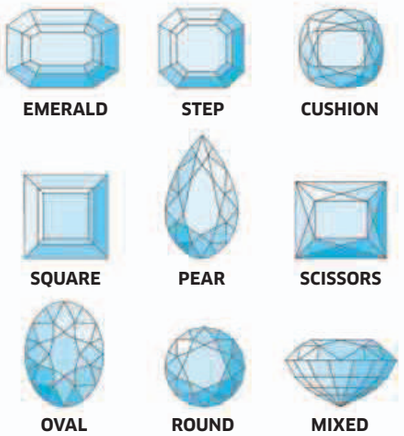
Minerals

Earth has thousands of naturally occurring minerals. Many of these, such as metal ores, sulfur, and mica, are used in industry. Other examples include gold, silver, and quartz.

Mineral building blocks
Rocks are made up of natural, nonliving substances called minerals. Most rocks contains several types of minerals.

Gemstones

When minerals are cut and polished, they are known as gems. One useful gem is diamond, famous for its hardness and ability to cut through most other materials. Some other gems have practical uses, but most are valued for their beauty and rarity. Gems can be cut into many different shapes and are typically used in jewelry or other decorative objects.



Cut gems
Gems can be cut into many different shapes. When cut correctly, gemstones reflect light in many directions, making them glitter.

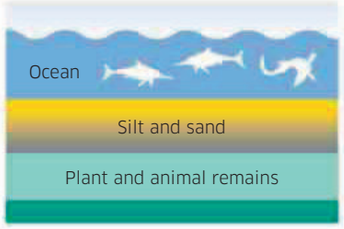
ENERGY

Human life requires energy in the form of light, heat, and food. Earth's energy comes from a variety of sources but mostly from the heat of the Sun and the Earth's hot interior. This is a lot of heat, but capturing, storing, and transporting enough of this energy to meet all our needs is difficult and requires complicated and expensive technology.

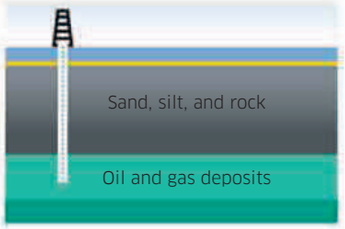
Fossil fuels

Fuels such as coal, oil, gas and peat have long been used to heat homes and power machinery. Earth's fossil fuels took hundreds of millions of years to form, but a significant portion of them have been burned up in just a hundred years. Fossil fuels are formed as time, pressure, and heat transform organic plant and animal remains into hydrocarbons—oil and gas.

1 500–250 MILLION YEARS AGO
When ocean animals and microbes died, their remains drifted down to the ocean floor, and were covered with sand and sediment.



2 250–0.6 MILLION YEARS AGO
The plant and animal remains became buried, deep under the ocean. Over time, heat and pressure turned the remains into oil and gas.



3 TODAY
Oil and gas deposits are buried deep beneath a layer of sand, silt, and rock. Oil rigs drill through this layer in order to pump out the oil beneath.

Nuclear energy

This energy is produced by the strong force that holds protons and neutrons together inside atomic nuclei. Nuclear energy can be harnessed, and produces low carbon emissions compared to fossil fuels. However, disadvantages include the risk of releasing radiation.

Renewable energy

There are alternative energy sources to fossil fuels, which are more sustainable and better for the environment.

Solar
Light energy created from the Sun can be captured and turned into electricity using solar panels.

Wind
Wind turbines allow us to harness the power of wind. Turbines work best on high ground.

Tidal
The movement of water created by the rise and fall of tides can be harnessed to generate electricity.

Geothermal
Earth's internal heat comes close to the surface in volcanic regions and can be used to heat water.

Hydroelectric
The movement of water through turbines in dams can be used to create power.

Biofuels
Fuels produced from organic matter such as plants, fats, and waste are called biofuels.

Wood
Burning wood for heat and cooking is the most ancient form of energy supply.

AGRICULTURE

Growing food plants and looking after animals that will be eaten is called agriculture. Today, the global population of around seven billion people largely relies on a few cereal crops to provide its essential foods. These crops include corn, wheat, rice, potatoes, cassava, soybeans, and sweet potatoes. Protein from livestock such as fish, cattle, pigs, and poultry makes up less than 20 percent of total global food.

Forestry

Forests provide habitats and food for most of Earth's land-based wildlife, and help control global warming by removing carbon dioxide from the atmosphere. However, forests are also in danger—they are being cut down to supply fuel and lumber for building.

Well-managed forest
Forests can be managed in a way that lets people harvest their produce, such as lumber, without destroying them.

Farming

Farming began 10,000 years ago, in the Middle East. The first farmers grew cereal crops, like wheat, and reared animals for their meat and milk. Modern agriculture has moved on a lot since then. New machine-based techniques let farmers produce much bigger yields from their land. Other innovations include irrigation, pesticides, new plants, new animal breeds, and global transport—farmers can now send their produce all over the world.

Key

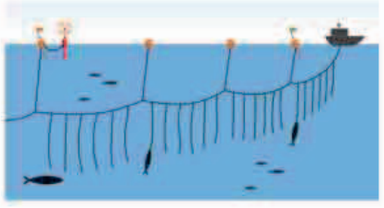
- Cattle
- Coffee
- Pigs
- Corn
- Oats
- Potatoes
- Rice
- Sheep
- Soybeans
- Tea
- Wheat
- Milk

Feeding the world
Food is produced all over the world, both for local consumption and for export. This map shows the top producers of each crop or type of livestock.

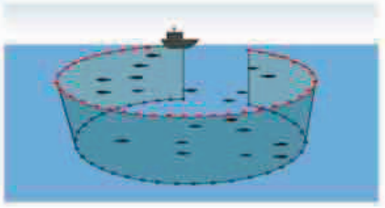
MORE THAN HALF THE **WORLD'S POPULATION RELIES ON THREE** GRAINS FOR **THEIR BASIC** FOOD NEEDS **—WHEAT,** CORN, AND RICE.

Fishing

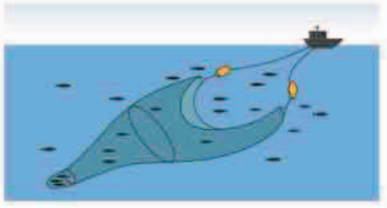
Fish are one of the most nutritious supplies of protein and have been eaten for thousands of years. Modern fishing techniques allow large quantities of wild fish to be harvested from the world's seas and oceans. Although international limits have been introduced, many popular fish species are now endangered. One solution to overfishing is to rear fish for human consumption in fish farms.



LINE FISHING
Using baited hooks attached to long lines is a very cheap way of fishing. However, animals such as turtles and seabirds can be accidentally killed by this method.



NET FISHING
Net fishing is an ancient method, but its modern form is on an industrial scale, using large synthetic nets that can catch huge volumes of fish at one time.



TRAWLING
Trawling is a form of net fishing where the net is dragged through the water or along the seabed. It can cause damage to the seabed and catches fish of all size and types.

SUSTAINABILITY

Earth's natural resources are limited. If demand for essential resources keeps increasing, they will become rare and expensive. To sustain life as we know it, we must make sure that our resources do not run out.

Human impact

Population growth means that we are using up more and more of the Earth's resources, changing the landscape, and damaging the environment around us. One way to reduce the negative impact people have on the environment is to make sure that as much garbage as possible is recycled, instead of being dumped in a landfill.

LANDFILL SITE

RECYCLING CENTER

Pollution

All over the world, factories, power plants, farms, businesses, and homes produce huge amounts of pollution by releasing chemicals and other substances that pollute, or dirty, the natural environment. As people's use of energy and other resources grows, Earth is becoming more polluted.

The effect of industry
Different countries produce different amounts of pollution. These are the world's top five polluters.