Oil and Gas Formation

[MUSIC PLAYING]

PRESENTER: What drives our cars, buses and planes? Powers our electricity and allows us to cook our food and heat our water? Most of today's energy needs are met by fossil fuels like coal, oil, and gas.

These unique high-energy fuels are non-renewable resources that took millions of years to form. About two billion years ago, marine organisms like algae and microscopic animals and plants died and settled on the ocean floor.

Beneath other sediments in the ocean, and in the absence of oxygen, these fossils changed into a substance called kerogen. Under heat and pressure, kerogen gradually changes into oil, or gas. The whole process usually takes at least a million years.

At the molecular level, oil and gas are hydrocarbons made up of hydrogen and carbon atoms. The constant pressure and movement of the Earth's crust squeezes oil and gas through the pores or spaces within rocks. Some oil and gas reaches the Earth's surface and seeps out naturally into land or water. Often it is trapped beneath the surface by impermeable layers or rock structures like faults and folds.

Within the crust, oil or gas deposits build up and form reservoirs. Reservoirs are like vast sponges filled with oil and gas. They can be as large as a city.

To find oil and gas deposits, geologists use a number of different survey techniques, including seismic surveys, gravitational surveys, and geological mapping. Seismic surveys use reflected sound waves to produce a 3-D view of the Earth's interior.

New technologies such as four-dimensional projections and sophisticated graphic renderings of rock structures are improving the way we find conventional oil and gas deposits. Energy resources that are currently difficult or expensive to extract are called unconventional oil and gas.

In a world with limited energy resources, people are looking at more efficient ways of tapping into unconventional oil and gas or an alternative and renewable sources of energy from biofuels or the sun. What do you think will be the energy sources of the future?