

oil sands: Fossil fuel deposits that can be mined from the ground, consisting of moist sand and clay containing 1-20% bitumen. Oil sands represent crude oil deposits that have been degraded and chemically altered by water erosion and bacterial decomposition. (**tar sands**)

fossil fuels: A nonrenewable natural resource, such as crude oil, natural gas, or coal, produced by the decomposition and compression of organic matter from ancient life. They have provided most of society's energy since the industrial revolution.

electricity: A secondary form of energy that can be transferred over long distances and applied for a variety of uses.

net energy: The quantitative difference between energy returned from a process and energy invested in the process. Positive net energy values mean that a process produces more energy than is invested.

EROI (energy returned on investment): The ratio determined by dividing the quantity of energy returned from a process by the quantity of energy invested in the process. Higher ratios mean that more energy is produced from each unit of energy invested.

coal: A solid blackish fossil fuel formed from organic matter (generally woody plant material) that was compressed under very high pressure and with little decomposition, creating dense, solid carbon structures.

oil: A fossil fuel produced by the slow underground conversion of organic compounds by heat and pressure. It is a mixture of hundreds of different types of hydrocarbon molecules characterized by carbon chains of different lengths. (**petroleum**)

crude oil: Oil in its natural state, as it occurs once extracted from the ground but before processing and refining.

natural gas: A fossil fuel consisting primarily of methane (CH_4) and including varying amounts of other volatile hydrocarbons.

petroleum: A fossil fuel produced by the slow underground conversion of organic compounds by heat and pressure. It is a mixture of hundreds of different types of hydrocarbon molecules characterized by carbon chains of different lengths. It is also used to refer to both oil and natural gas together.

oil shale: Sedimentary rock filled with kerogen that can be processed to produce liquid petroleum. It is formed by the same processes that form crude oil but occurs where kerogen was not buried deeply enough or subjected to enough heat and pressure to form oil.

shale oil: A liquid form of petroleum extracted from deposits of oil shale.

methane hydrate: An ice-like solid consisting of molecules of methane embedded in a crystal lattice of water molecules. Most is found in sediments on the continental shelves and in the Arctic. It is an unconventional fossil fuel.

proven recoverable reserve: The amount of a given fossil fuel in a deposit that is technologically and economically feasible to remove under current conditions.

refining: The process of separating molecules of the various hydrocarbons in crude oil into different-sized classes and transforming them into various fuels and to other petrochemical products.

reserves-to-production ratio: The total remaining reserves of a fossil fuel divided by the annual rate of production (extraction and processing).

peak oil: Term used to describe the point of maximum production of petroleum in the world (or for a given nation), after which oil production declines. This is expected to be roughly the midway point of extraction of the world's oil supplies.

mountaintop removal mining: A large-scale form of coal mining in which entire mountaintops are blasted away in order to extract the resource. While economically efficient, large volumes of rock and soil generally slide downhill, causing extensive impacts on surrounding ecosystems and human residents.

directional drilling: A drilling technique (e.g., for oil or natural gas) in which a drill bores down vertically and then bends horizontally to follow layered deposits from long distances from the drilling site. This enables extracting more fossil fuel with less environmental impact on the surface.

hydraulic fracturing (fracking): A process to extract shale gas, in which a drill is sent deep underground and angled horizontally into a shale formation; water, sand, and chemicals are pumped in under great pressure, fracturing the rock; and gas migrates up through the drilling pipe as sand holds the fracture open.

clean coal technologies: An array of techniques, equipment, and approaches to remove chemical contaminants (such as sulfur) during the process of generating electricity from coal.

carbon capture and storage: Technologies or approaches to remove carbon dioxide from emissions of power plants or other facilities, and sequester, or store, it (generally in liquid form) underground under pressure in locations where it will not seep out, in an effort to mitigate global climate change.

eminent domain: A policy in which a government pays landowners for their land at market rates and landowners have no recourse to refuse. In eminent domain, courts set aside private property right to make way for projects judged to be for the public good.

Organization of Petroleum Exporting Countries (OPEC): A cartel of predominantly Middle Eastern nations that collaborate to determine rates and policies for the extraction and sale of their oil and natural gas to the world market.

energy efficiency: The ability to obtain a given result or amount of output while using less energy input. This is one route to energy conservation.

energy conservation: The practice of reducing energy use as a way of extending the lifetime of our fossil fuel supplies, of being less wasteful, and of reducing our impact on the environment. It can result from behavioral decisions or from technologies that demonstrate energy efficiency.

energy intensity: A measure of energy use per dollar of Gross Domestic Product (GDP). Lower values indicate greater efficiency.

cogeneration: A practice in which the extra heat generated in the production of electricity is captured and put to use heating workplaces and homes, as well as producing other kinds of power.

rebound effect: The phenomenon by which gains in efficiency from better technology are partly offset when people engage in more energy-consuming behavior as a result. This common psychological effect can sometimes reduce conservation and efficiency efforts substantially.

