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Renewable resource facts for kids

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Global vegetation



Oceans often act as renewable resources



Sawmill near Fügen, Zillertal, Austria

A **renewable resource** is a resource which can be used repeatedly because it is replaced naturally. Examples are: [oxygen](#), [fresh water](#), [solar energy](#), [timber](#), and [biomass](#). Renewable resources may include goods or [commodities](#) such as wood, paper and leather, because their sources are renewable. [Gasoline](#), [coal](#), [natural gas](#), [diesel](#), [plastics](#) and other things that come from [fossil fuels](#) are not renewable. They take millions of years to be made, and cannot be renewed in our lifetime or even a nation's lifetime (they are called fossil fuels because they are as old as fossils). Ways have been developed to make [biodegradable](#) plastic and [biodiesel](#) and other fuels from renewable resources such as [corn](#), [sugar cane](#), [soybeans](#) and [canola](#).



This is an example of a renewable resource

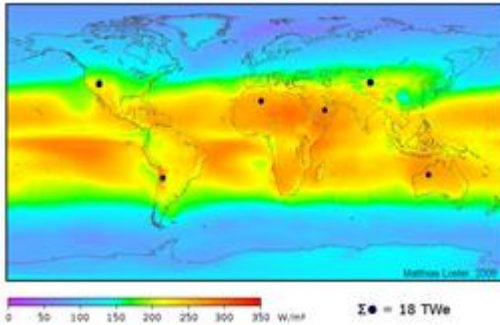
A problem with fossil fuels is the [pollution](#) and [global warming gases](#) they produce. Renewable resources are usually much cleaner. But they can also cost more. New technology for renewable resources is helping to make them cheaper. And now even fossil fuels are becoming harder to find and more expensive. This combination means that renewable resources are making more sense than ever, and this is a growing field. From 2008 to 2012, the U.S. doubled renewable generation from wind, solar, and geothermal sources, and America is now home to some of the largest wind and solar farms in the world.

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Types of renewable resources

Solar energy



Map of global solar energy resources

[Solar power](#) is the technology of obtaining usable energy from the light of the sun. Solar energy has come into use where other power supplies are absent, such as in places off from the national [electrical grid](#) and in [space](#). Solar energy is currently used in a number of applications:

- Heat (hot water, building heat, [solar cooking](#))
- Electricity generation ([photovoltaics](#) and solar thermal, [Stirling](#) and other [heat engines](#))
- [Desalination](#) of [seawater](#) (taking the salt out so it can be used for drinking or growing crops).
- Lighting

Wind energy

[Wind power](#) is using the energy of wind to do something useful. Wind has been used since ancient times to move ships, and for hundreds of years to pump water or grind corn and grain into flour, now it is usually changed into [electricity](#) using [wind turbines](#).

In 2008, worldwide [wind farm](#) capacity was 100,000 [megawatts](#) (MW), and wind power produced 1.3% of all the world's electricity. Wind makes about 19% of electricity use in [Denmark](#), 9% in [Spain](#) and [Portugal](#), and 6% in [Germany](#) and the Republic of Ireland. The [United States](#) is an important market for makers of wind mills, and it is rapidly growing. In 2007, the U.S. had enough windmills to produce 16,800 MW, enough for 4.5 million average households. In 2012 alone, the U.S. added 13,000 MWs, and in total could produce 60,000 MWs (60 gigawatts) a year.

Most modern wind power is generated in the form of electricity by converting the rotation of turbine blades into electrical current by means of an electrical generator. In [windmills](#) (a much older technology) wind energy is used to turn mechanical machinery to do physical work, like crushing grain or pumping water.

Wind power is used in large scale wind farms for national [electrical grids](#) as well as in small turbines for providing electricity to a farm house or *off-grid* locations. Wind energy is common, renewable, usable in many places, clean, and works against the [greenhouse effect](#) if used to replace fossil-fuels.

But they have some problems. Some people do not like the tall towers that can be seen from far away, and close to houses they can make a flickering shadow and have a small amount of noise. Some of the early wind farms were built where birds migrated every year, and they had small, fast-spinning blades that often killed birds. Some people still think all wind farms do that, but newer wind turbines are much bigger, with slower-moving blades and do not have that problem.

Wind mills do not make power when the wind is stopped or just a light breeze, so back-up power is still needed, or electricity needs to be moved from a distant place where the wind is blowing. Another idea is to put the turbines on kites, and fly them very high where the wind is always blowing.

Hydropower

[Hydropower](#) is changing the energy of moving water into more useful forms. Even in [ancient history](#) hydropower was used for [irrigating](#) crops and [milling](#) of [grain](#) into flour, and later for [textile](#) manufacture (making cloth) and running [sawmills](#) to cut wood.



A [watermill](#) in [Belgium](#).

It was used in [Ancient Rome](#) for [water powered mills](#), and in China and the rest of the Far East for "[pot wheel](#)" [pumps](#) that raised water into irrigation canals. In the 1830s, at the peak of building [canals](#), hydropower was used to move [barge](#) traffic up and down steep hills using inclined plane [railroads](#). Direct [mechanical power transmission](#) meant that industries that used water power had to be near the water, particularly a [waterfall](#). For example, during the late 1800's, many [gristmills](#) were built at Saint Anthony Falls, using the 50 foot (15 metre) drop in the [Mississippi River](#). The mills helped [Minneapolis](#) grow.

Today the largest use of hydropower is for a [dam](#) that can use the falling water to make electricity. This electricity can be moved hundreds of miles through wires, so industry no longer needs to be very close to the water for power.

Geothermal

[Geothermal energy](#) uses the heat from deep underground to make electricity. It can be used to produce steam which goes up a pipe, which then pushes a turbine. It is best used in places where the Earth's [crust](#) is not real thick. In the United States, most of the western states have areas where this works. California makes the most geothermal energy. [Iceland](#) uses the most geothermal energy (per person) of any country in the world.

Once it is built, it is clean energy, but it requires deep wells. These areas often have volcanoes or earthquakes in the area, and sometimes adding or removing water deep underground might be enough to cause an earthquake. Some small earthquakes may have been caused this way.

Biomass

[Biomass](#) includes sawdust and other leftover parts of trees or lumber. It can also be grease and food waste, [straw](#), and plants grown for energy. Some of this is burned to make electricity, some is made into [biogas](#), [biofuel](#), like [ethanol](#) as a replacement for gasoline. Ethanol might be a big renewable resource in the future. It is already widely used in the United States and Brazil. In the U.S. it is made from [corn](#), which uses about as much energy as it makes. But there could be ways to improve it.

Images for kids



Alaska wild "berries" from the Innoko National Wildlife Refuge - Renewable Resources



Illegal slash and burn practice in [Madagascar](#), 2010



■ Douglas fir forest created in 1850, Meymac (Corrèze), France



■ An adult and sub-adult [Minke whale](#) are dragged aboard the Nisshin Maru, a Japanese whaling vessel



■ Hemp insulation, a renewable resource used as building material



■ A packaging blister made from cellulose acetate, a bioplastic



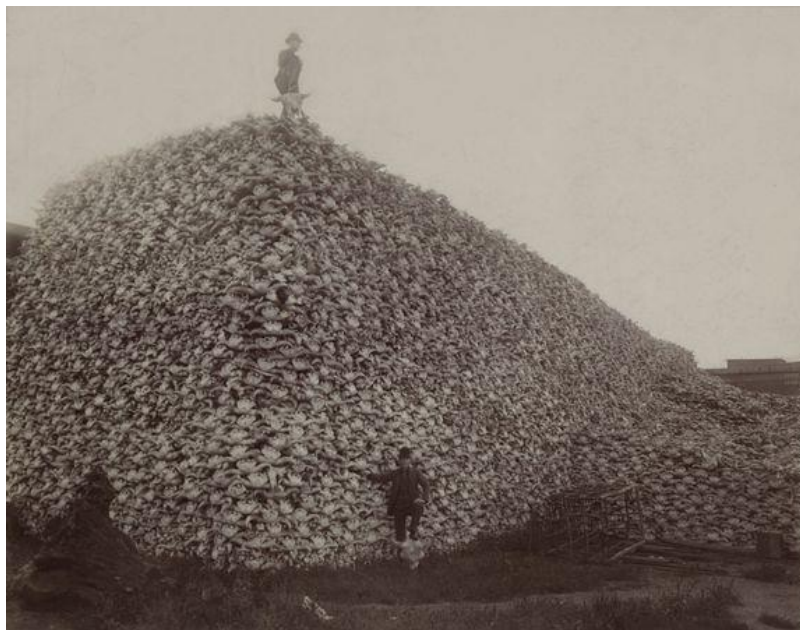
A [sugarcane](#) plantation in [Brazil](#) (State of São Paulo). Cane is used for [biomass](#) energy.



Brazil has [bioethanol](#) made from sugarcane available throughout the country. Shown a typical Petrobras gas station at [São Paulo](#) with dual fuel service, marked A for [alcohol \(ethanol\)](#) and G for gasoline.



Deforestation in Brazil 1996



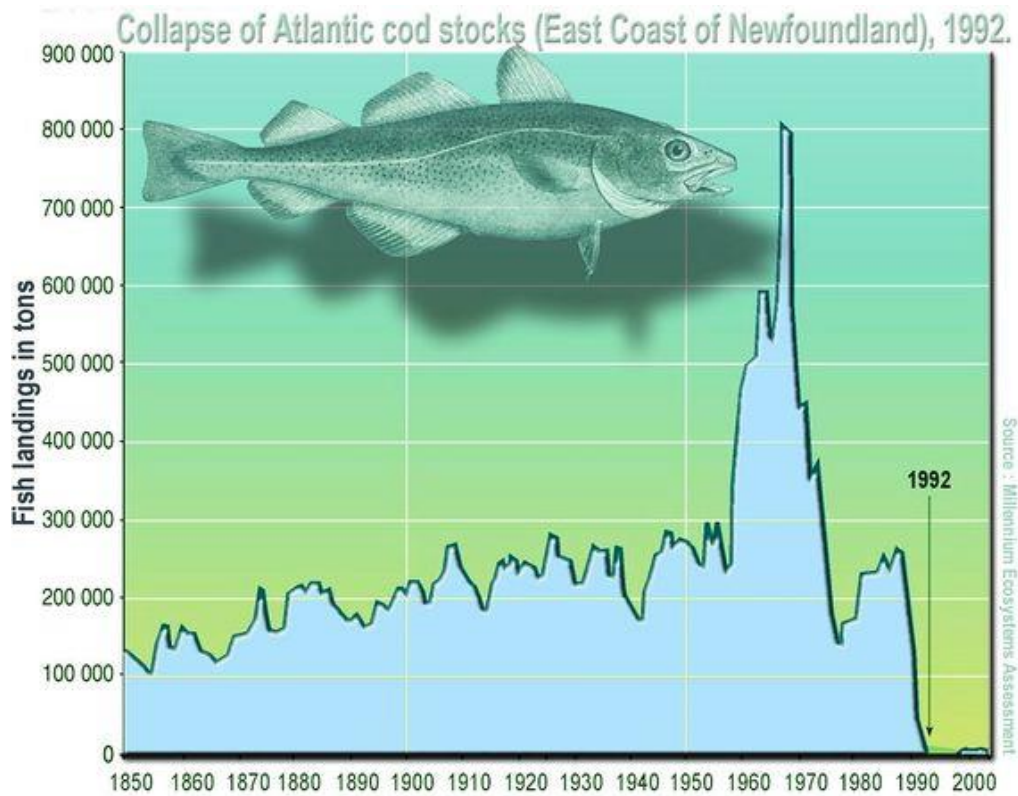
Over-hunting of [American Bison](#).



Polyculture practices in [Andhra Pradesh](#)



In vitro-culture of Vitis (grapevine), Geisenheim Grape Breeding Institute



Atlantic cod stocks severely overfished leading to abrupt collapse

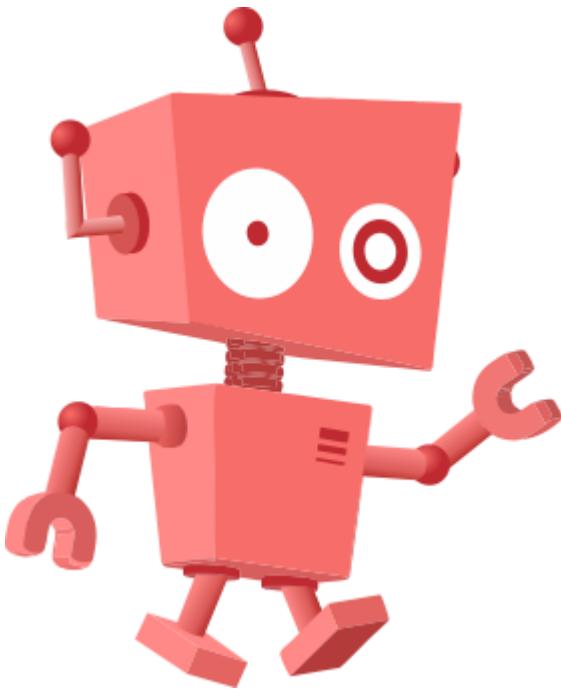


Panoramic of a natural wetland (Sinclair Wetlands, New Zealand)

Kiddle

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