BANKTRACK

False Solutions Tracker

Glossary November 2024

Columns - Definitions according to the IEA Glossary

1. Real solutions

Technologies that deliver on a Just Transition towards Energy Democracy. BankTrack considers these technologies as real solutions only if and when they do deliver Energy Democracy.

1.1. Wind energy

The kinetic energy of the wind exploited for electricity generation in wind turbines. Includes onshore wind and offshore wind. Does not usually include wind energy harvested for mechanical force for water pumps, grinding or other applications.

1.2. Solar energy

Includes solar photovoltaic, concentrating solar power and solar heating and cooling. Energy statistics do not include passive solar energy.

1.3. Geothermal energy

Heat derived from the subsurface of the earth, usually using a working fluid such as water to bring the energy to the surface. Can be used for heating and cooling purposes or to generate renewable electricity if the temperature is adequate. Includes hydrothermal, geopressurised, hot dry rock, magma, direct dry steam, flash cycle, double flash cycle, binary cycle and enhanced geothermal systems and shallower ground-source heat pumps.

1.4. Ocean energy

Mechanical energy harvested from ocean currents, tidal movement or wave motion and exploited for electricity generation. Includes: tidal power, wave energy, ocean current power and ocean thermal power. Sometimes called marine energy.

1.5. Energy grids and storage

Although this category is different from energy sources listed in this section, it is a key enabler of the Just Transition towards Energy Democracy.

Smart grid: A term is used to indicate a desirable future configuration of an electricity network that uses digital and other advanced technologies to monitor and manage the transport of electricity from all generation sources to meet the varying electricity demands of end users. It would coordinate the needs and capabilities of all generators, grid operators, end users and electricity market stakeholders to operate all parts of the system as efficiently as possible, minimising costs and environmental impacts while maximising system reliability, resilience and stability.

Grid-scale storage: Refers to technologies connected to the power grid that can store energy and then supply it back to the grid at a more advantageous time – for example, at night, when no solar power is available, or during a weather event that disrupts electricity generation. The most widely-used technology is pumped-storage hydropower, where water is pumped into a reservoir and then released to generate electricity at a different time, but this can only be done in certain locations. Batteries are now playing a growing role as they can be installed anywhere in a wide range of capacities.

2. Solutions under strict conditions

Energy technologies that could be real solutions if they deliver on a Just Transition towards Energy Democracy but that could also be false solutions. This is the case of hydrogen and hydropower. On one hand, fossil-free and green hydrogen could be a real solution under certain conditions. However, fossil-based hydrogen and nuclear hydrogen are always false solutions. On the other hand, hydropower lifespan extension could also be a real solution under strict conditions while hydropower expansion is a false solution.

2.1. Hydropower

An energy source that converts the potential and kinetic energy of water into electricity. In energy statistics, the electricity output is taken as a primary energy source. Includes large hydropower, small hydropower and micro hydropower (including run-of-river), but excludes ocean energy. In energy statistics, hydropower does not include pumped-storage hydropower.

2.2. Hydrogen

The lightest chemical element, which has a variety of industrial and energy applications. As of 2023, most large-scale hydrogen production is for the production of ammonia-based fertilisers or for use in hydrocracking and hydrotreating of oil at refineries. While this hydrogen could be used in a variety of energy applications as a substitute for fossil fuels, which could reduce greenhouse gas emissions, its environmental impact is highly dependent on the manner in which it is produced. Hydrogen that has an environmental impact consistent with the goal of achieving net zero emissions is low-emissions hydrogen. In IEA analysis, total hydrogen demand includes gaseous hydrogen for all uses, including transformation into hydrogen-based fuels and biofuels, power generation, oil refining, and on-site production and consumption. Final consumption of hydrogen includes gaseous hydrogen in end-use sectors, excluding transformation into hydrogen-based fuels and biofuels, power generation, oil refining and on-site production and consumption.

Hydrogen-based fuels: Includes ammonia and synthetic hydrocarbons (gases and liquids) that derive their energy content from a pure (or nearly pure) hydrogen feedstock. If produced from low-emissions hydrogen, these fuels are low-emissions hydrogen-based fuels.

Low-emission hydrogen: Includes hydrogen which is produced through water electrolysis with electricity generated from a low emissions source (renewables, i.e solar, wind turbines or nuclear).

Hydrogen produced from biomass or from fossil fuels with carbon capture, utilisation and storage (CCUS) technology is also counted as low-emission hydrogen. **BankTrack only considers as a real solution fossil-free hydrogen, i.e. green hydrogen produced from water electrolysis with electricity generated from renewables (solar, wind turbines). BankTrack categorises fossil & nuclear hydrogen included in the IEA's definition of low-emission hydrogen as false solutions.**

3. False solutions

Energy technologies that are not aligned with a just transition towards Energy Democracy.

3.1. Solid Biomass

See solid bioenergy: includes charcoal, fuelwood, dung, agricultural residues, wood waste and other solid wastes.

Charcoal is the solid residue from the carbonisation of wood or other vegetal matter through slow pyrolysis.

Fuelwood is A type of bioenergy resource that usually refers to "roundwood" cut into logs and split before use. In energy statistics, more processed forms of fuelwood – such as wood chips, sawdust and pelletised wood are treated separately.

3.2. Biofuels

Liquid fuels derived from biomass or waste feedstock, including ethanol, biodiesel and biojet fuels. They can be classified as conventional and advanced biofuels according to the combination of feedstock and technologies used to produce them and their respective market maturity. Unless otherwise stated, biofuels are expressed in energy-equivalent volumes of gasoline, diesel and kerosene.

3.3. Carbon capture, utilisation and storage (CCUS)

An umbrella term for a set of related technologies that can help to avoid greenhouse gas emissions. Includes CO2 capture, CO2 utilisation and CO2 storage.

3.4. Nuclear Power

Energy released by nuclear fission or nuclear fusion. As of 2023, all nuclear power plants are based on nuclear fission. See also nuclear fusion. A means of harnessing the atomic energy in nuclear fuel, whereby the nucleus of an atom, having captured a neutron, splits into two or more nuclei. In doing so, it releases a significant amount of energy as well as more neutrons. These neutrons then go on to split more nuclei and a chain reaction takes place, creating sufficient heat to elevate the temperature of a working fluid and power an electric generator.

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