SOUTHERN COUNCILS CLIMATE COLLABORATION

COUNCIL CARBON AND ENERGY FOOTPRINT INFORMATION SERIES

STCA CLIMATE CHANGE GLOSSARY

Biochar

Stable, carbon-rich material produced by heating biomass in an oxygen-limited environment. Biochar may be added to soils to improve soil functions and to reduce greenhouse gas emissions from biomass and soils, and for carbon sequestration.

Biofuel

A fuel, generally in liquid form, produced from biomass. Biofuels currently include bioethanol from sugarcane or maize, biodiesel from canola or soybeans, and black liquor from the paper-manufacturing process.

Carbon budget

This term refers to the estimated cumulative amount of global carbon dioxide (or greenhouse gas) emissions that will limit global surface temperature to a given level of rise.

Carbon capture and storage (CCS)

A process in which carbon dioxide (CO_2) from industrial and energy-related sources is separated (ie. captured) and placed in a storage location for long-term isolation from the atmosphere.

Carbon dioxide (CO_2)

A naturally occurring gas, which is also a by-product of burning fuels from fossil carbon deposits, such as oil, gas and coal, of burning biomass, of land use changes and of industrial processes (e.g. cement production). It is the main greenhouse gas that affects the Earth's temperature. It is the reference gas against which other GHGs are measured and by definition has a global warming potential (GWP) of 1.

Carbon dioxide equivalent (CO_2-e) emission

The amount of carbon dioxide (CO_2) emission that would cause the same temperature change, over a given time horizon, as an emitted amount of a greenhouse gas (GHG) or a mixture of GHGs. The CO_2-equivalent emission is calculated using the

emission quantity of a GHG and its global warming potential (GWP). For instance, 100 kg of methane (with a GWP of 28) has an equivalent emission of 2,800 kgs CO_2-eq.

Carbon intensity

The amount of emissions of carbon dioxide (CO_2) released per unit of another variable such as gross domestic product (GDP), output energy use or transport.

Carbon offsets and carbon credits

A carbon offset in an action or activity that reduces the net amount of GHG emissions either by reducing emissions or absorbing carbon in a sink such as planting trees. Carbon credits are the certified units created through recognised offsetting actions. Under the Australia's National Carbon Offset Standard an organisation can achieve carbon neutrality by purchasing and cancelling carbon credits created by others that match the organisation's residual emissions. An organisation that creates carbon credits can not claim the reduction in emissions associated with the offset as this would result in double counting of the reduction.

Carbon price

The price for avoided or released carbon dioxide (CO_2) or CO_2-equivalent emissions. This may refer to the rate of a carbon tax, or the price of emission permits.

Carbon sequestration or carbon removal

This is the process of removing carbon dioxide from the atmosphere and storing it in a carbon pool, such as planting trees or increasing soil carbon.

Carbon sink

A reservoir (natural or human, in soil, ocean, and plants) where a quantity of greenhouse gas or carbon is stored.

Climate

Climate is the average weather experienced at a site or region over a period of many years, ranging from months to many thousands of years. The relevant measured quantities are most often surface variables such as temperature, rainfall and wind.

Climate change

A change in the state of the climate that can be identified by analysing changes in the averages and/or variability of temperature, rainfall, wind and other climatic factors, and that persists for an extended period of time, typically decades or longer. The typical period used as a basis in analysing recent human induced climate change is 30 years.

Conference of the Parties (COP)

The overarching body of UN conventions, such as the United Nations Framework Convention on Climate Change (UNFCCC), comprising parties with a right to vote that have ratified or acceded to the convention. The UNFCCC convention COP27 was held in Cairo in 2022.

Decarbonization

The process by which countries, individuals or other entities aim to achieve zero fossil carbon emission existence. The term is often used in regard to electricity generation, transport or industrial processes.

Electric vehicle (EV)

A vehicle which is powered fully or mostly by electricity, categorised as either a battery electric vehicle (BEV) which is powered by electricity only with no internal combustion engine or a plug-in hybrid vehicle (PHEV) which has batteries recharged from an external source of electricity but also has an internal combustion engine to provide extra power and range. The term does not include hybrid vehicles which are not recharged externally.

Energy efficiency

The ratio of output or energy services from the input of energy. Energy efficiency measures are put in place to reduce energy demand through technological options such as insulating buildings, efficient lighting and efficient vehicles.

Fossil fuels

Carbon-based fuels from fossil hydrocarbon deposits, including coal, oil, and natural gas.

Global Warming Potential (GWP)

A factor describing the impact on climate change of one unit of a GHG compared to that of carbon dioxide over a period of 100 years.

Greenhouse gas (GHG)

Greenhouse gases are those gaseous constituents of the atmosphere, both natural and from human activity, that absorb and emit radiation at specific wavelengths which result in heat being trapped. Water vapour (H_2O), carbon dioxide (CO_2), nitrous oxide (N_2O), methane (CH_4) and ozone (O_3) are the primary greenhouse gases in the Earth's atmosphere. There are several entirely human-made GHGs in the atmosphere such as some gases used as refrigerants. Beside CO_2, N_2O and CH_4, the Kyoto Protocol includes GHGs sulphur hexafluoride (SF_6), hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs).

Green Power

A term for renewable energy such as solar, wind or hydropower, often used to describe purchased electricity matched with renewable energy certificates.

Heating, ventilation, and air conditioning (HVAC)

Heating, ventilation and air conditioning technology is used to control temperature and humidity in buildings. HVAC uses a significant proportion of the total amount of energy used in buildings.

Hydrogen

Hydrogen is not a greenhouse gas and is present in very low levels in the atmosphere. It can be produced relatively simply by using electricity to split water into hydrogen and oxygen and be generated from renewable sources. Currently it is largely manufactured from natural gas (called "grey hydrogen") due to cheaper costs. With carbon capture of associated emissions the resulting product is called "blue hydrogen" and for that produced from renewable energy "green hydrogen". It can be used in fuel cell motors (including in motor vehicles) and a lot of research is being undertaken into uses in industrial processes to replace carbon and, in the form of green hydrogen, as a zero emissions fuel for storing energy.

International Panel on Climate Change (IPCC)

The International Panel on Climate Change is an intergovernmental body established in 1988 by the United Nations and is responsible for advancing knowledge of human-induced climate change. It is largely comprised on an international body of climate scientists.

Kyoto Protocol

The Kyoto Protocol to the United Nations Framework Convention on Climate Change (UNFCCC) is an international treaty adopted in December 1997 in Kyoto, Japan, at the Third Session of the Conference of the Parties (COP3). It contains legally binding commitments, including reductions in greenhouse gas (GHG) emissions (carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulphur hexafluoride (SF_6) relative to 1990 levels. The Kyoto Protocol entered into force on 16 February 2005. Australia has ratified the Kyoto Protocol and met its 2020 commitment of 5% lower emissions than in the year 2000.

Land use

Land use refers to the human actions and activities on areas of land (such as grazing, timber extraction, conservation and city dwelling). In national greenhouse gas inventories, land use is classified according to the IPCC land use categories of forest land, cropland, grassland, wetland, settlements and other.

Land use, land-use change and forestry (LULUCF)

In the context of national greenhouse gas (GHG) inventories, LULUCF is a GHG inventory sector that covers emissions and removals of GHG from carbon pools resulting from human activities in managed lands, such as land clearing, deforestation or reafforestation.

Net zero carbon emissions (or Carbon neutrality)

The terms net zero emissions or net zero carbon emissions or carbon neutrality are used when GHG emissions generated by an organisation are balanced by removals or cancellation of carbon credits.

Paris Agreement

The Paris Agreement was adopted on December 2015 in Paris, France, at COP 21. The agreement entered into force on 4 November 2016. One of the goals of the Paris Agreement is 'Holding the increase in the global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels'.

Scope 1 Emissions

Greenhouse gas emissions generated by an entity's operations, including combustion of fossil fuels or emissions from waste treatment, such as composting or landfilling operations.

Scope 2 Emissions

Greenhouse gas emissions associated with energy purchased from others such as electricity or hydrogen.

Scope 3 Emissions

Greenhouse gas emissions associated with products or services provided to the organisation by others except for those covered by Scope 2 emissions.

Tipping point

A level of change in system properties beyond which a system undergoes a step change, often abruptly, and does not return to the initial state even if the drivers of the change are abated.

United Nations Framework Convention on Climate Change (UNFCCC)

The UNFCCC was adopted in May 1992 and as of May 2018 had 197 Parties (196 States and the European Union). The Convention's ultimate objective is the 'stabilisation of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system.' The provisions of the Convention are pursued and implemented by treaties including the Kyoto Protocol and the Paris Agreement.

The Council Carbon and Energy Footprint Information Series has been developed as part of the Southern Councils Climate Collaboration. The Collaboration is an initiative of the Southern Tasmanian Councils Authority climate program, the Regional Climate Change Initiative. It is supporting the 12 southern councils to build capacity and capability to develop climate responses, to reduce their carbon emissions, and respond to the challenges and opportunities of a changing climate.

The Collaboration uses a common and consistent approach to work with councils to find local solutions. The approaches and resources used in the Collaboration have been developed specifically to meet the role and functions of councils and enable actions to be scaled between councils or regionally resulting in greater efficiencies and avoid duplication and maladaptive responses. The Information Series outlines key concepts, and methods, used in the preparation of Council Carbon and Energy Footprints through the Collaboration.

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