

GLOSSARY

afforestation

the process of establishing trees on land that has lacked forest cover for a very long period of time or has never been forested

anthropogenic

human-induced

apparent consumption

the amount or quantity expressed by the following formula: production + imports – exports +/- changes in stocks

biomass

the mass of living organic matter (plant and animal) in an ecosystem; biomass also refers to organic matter (living and dead) available on a renewable basis for use as a fuel; biomass includes trees and plants (both terrestrial and aquatic), agricultural crops and wastes, wood and wood wastes, forest and mill residues, animal wastes, livestock operation residues, and some municipal and industrial wastes

carbon sequestration

the process of increasing the carbon content of a carbon reservoir other than the atmosphere; often used narrowly to refer to increasing the carbon content of carbon pools in the biosphere and distinguished from physical or chemical collection of carbon followed by injection into geologic reservoirs, which is generally referred to as “carbon capture and storage”

carbon cycle

the term used to describe the flow of carbon (in various forms such as carbon dioxide [CO₂], organic matter, and carbonates) through the atmosphere, ocean, terrestrial biosphere, and lithosphere

carbon equivalent

the amount of carbon in the form of CO₂ that would produce the same effect on the radiative balance of the Earth’s climate system; applicable in this report to greenhouse gases such as methane (CH₄)

carbon intensity

the relative amount of carbon emitted per unit of energy or fuels consumed

climate change projection

This term is commonly used rather than “climate pre-

diction” for longer-range predictions that are based on various scenarios of human or natural changes in the agents that drive climate

climate prediction

the prediction of various aspects of the climate of a region during some future period of time. Climate predictions are generally in the form of probabilities of anomalies of climate variables (*e.g.*, temperature, precipitation), with lead times up to several seasons

coastal waters

the region within 100 km from shore in which processes unique to coastal marine environments influence the partial pressure of CO₂ in surface sea waters

CO₂ equivalent

the amount of CO₂ that would produce the same effect on the radiative balance of the Earth’s climate system as another greenhouse gas, such as CH₄

CO₂ fertilization

the phenomenon in which plant growth increases (and agricultural crop yields increase) due to the increased rates of photosynthesis of plant species in response to elevated concentrations of CO₂ in the atmosphere

decarbonization

reduction in the use of carbon-based energy sources as a proportion of total energy supplies or increased use of carbon-based fuels with lower values of carbon content per unit of energy content

deforestation

the process of removing or clearing trees from forested land

dry climates

climates where the ratio of mean annual precipitation to potential evapotranspiration is less than 1.0

ecosystem

a community (*i.e.*, an assemblage of populations of plants, animals, fungi, and microorganisms that live in an environment and interact with one another, forming, together, a distinctive living system with its own composition, structure, environmental relations, development, and function)

and its environment treated together as a functional system of complementary relationships and transfer and circulation of energy and matter

energy intensity

the relative amount or ratio of the consumption of energy to the resulting amount of output, service, or activity (*i.e.*, expressed as energy per unit of output)

feebates

systems of progressive vehicle taxes on purchases of less efficient new vehicles and subsidies for more efficient new vehicles

fossil fuels

fuels such as coal, petroleum, and natural gas derived from the chemical and physical transformation (fossilization) of the remains of plants and animals that lived during the Carboniferous Period 360–286 million years ago

global warming potential (GWP)

a factor describing the radiative forcing impact (*e.g.*, warming of the atmosphere) of one unit mass of a given greenhouse gas relative to the warming caused by a similar mass of CO₂; CH₄, for example, has a GWP of 23

greenhouse gases

gases including water vapor, CO₂, CH₄, nitrous oxide, and halocarbons that trap infrared heat, warming the air near the surface and in the lower levels of the atmosphere

leakage

The part of emissions reductions in Annex B countries that may be offset by an increase of the emission in the non-constrained countries above their baseline levels. This can occur through (1) relocation of energy-intensive production in non-constrained regions; (2) increased consumption of fossil fuels in these regions through decline in the international price of oil and gas triggered by lower demand for these energies; and (3) changes in incomes (and thus in energy demand) because of better terms of trade. “Leakage” also refers to the situation in which a carbon sequestration activity (*e.g.*, tree planting) on one piece of land inadvertently, directly or indirectly, triggers an activity, which in whole or part counteracts the carbon effects of the initial activity

mitigation

a human intervention to reduce the sources of, or to enhance the sinks of, greenhouse gases

net ecosystem exchange

the net flux of carbon between the land and the atmosphere, typically measured using eddy covariance techniques; note: NEE and NEP are equivalent terms but are not always iden-

tical because of measurement and scaling issues, and the sign conventions are reversed; positive values of NEE (net ecosystem exchange with the atmosphere) usually refer to carbon released to the atmosphere (*i.e.*, a source), and negative values refer to carbon uptake (*i.e.*, a sink)

net ecosystem production

the net carbon accumulation within the ecosystem after all gains and losses are accounted for, typically measured using ground-based techniques; by convention, positive values of NEP represent accumulations of carbon by the ecosystem, and negative values represent carbon loss

net primary production

the net uptake of carbon by plants in excess of respiratory loss

North America

the combined land area of Canada, the United States of America, and Mexico and their coastal waters

North American Carbon Program

a multidisciplinary research program, supported by a number of different U.S. federal agencies through a variety of intramural and extramural funding mechanisms and award instruments, to obtain scientific understanding of North America’s carbon sources and sinks and of changes in carbon stocks needed to meet societal concerns and to provide tools for decision makers

ocean acidification

the phenomenon in which the pH of the oceans becomes more acidic due to increased levels of CO₂ in the atmosphere which, in turn, increase the amount of dissolved CO₂ in sea water

option

a choice among a set of possible measures or alternatives

peatlands

areas characterized as having an organic layer thickness of at least 30 cm (note, the current United States’ and Canadian soil taxonomies specify a minimum thickness of 40 cm)

permafrost

soils or rocks that remain below 0°C for at least two consecutive years

pool/reservoir

any natural region or zone, or any artificial holding area, containing an accumulation of carbon or carbon-bearing compounds or having the potential to accumulate such substances

reforestation

the process of establishing a new forest by planting or seeding trees in an area where trees have previously been removed

sink

in general, any process, activity, or mechanism which removes a greenhouse gas or a precursor of a greenhouse gas or aerosol from the atmosphere; in this report, a sink is any regime or pool in which the amount of carbon is increasing (*i.e.*, is being accumulated or stored)

source

in general, any process, activity, or mechanism which releases a greenhouse gas or a precursor of a greenhouse gas or aerosol into the atmosphere; in this report, a source is any regime or pool in which the amount of carbon is decreasing (*i.e.*, is being released or emitted)

stocks

the amount or quantity contained in the inventory of a pool or reservoir

temperate zones

regions of the earth's surface located above 30° latitude and below 66.5° latitude

trend

a systematic change over time

tropical zones

regions located between the earth's equator and 30° latitude (this area includes subtropical regions)

uncertainty

a term used to describe the range of possible values around a best estimate, sometimes expressed in terms of probability or likelihood (see Preface, this report)

wet climates

climates where the ratio of mean annual precipitation to potential evapotranspiration is greater than 1.0

wetlands

areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support—and that, under normal circumstances, do support—a prevalence of vegetation typically adapted for life in saturated soil conditions, including swamps, marshes, bogs, and similar areas

ACRONYMS AND ABBREVIATIONS

µatm	microatmosphere (a measure of pressure)
ACEEE	American Council for an Energy-Efficient Economy
CAFE	Corporate Average Fuel Economy
CAIT	Climate Analysis Indicators Tool
CAST	Council for Agricultural Science and Technology
CBO	U.S. Congressional Budget Office
CCSP	U.S. Climate Change Science Program
CCTP	Climate Change Technology Program
CDIAC	Carbon Dioxide Information Analysis Center
CEC	California Energy Commission
CH₄	methane
CIEEDAC	Canadian Industrial Energy End-Use Data and Analysis Centre
CO	carbon monoxide
CO₂	carbon dioxide
CO₃	carbonate
COP	Conference of Parties
DOC	dissolved organic carbon
DOE	U.S. Department of Energy
DOT	U.S. Department of Transportation
EIA	Energy Information Administration
EPA	U.S. Environmental Protection Agency
ESCOs	energy services companies
FAO	Food and Agriculture Organization
FWMS	freshwater mineral-soil
g	gram
GAO	U.S. Government Accountability Office
GDP	gross domestic product
GHG	greenhouse gas
Gt C	gigatons of carbon (billions of metric tons; <i>i.e.</i> , petagrams)
GWP	global warming potential
ha	hectare
HCO₃	bicarbonate
ICLEI	International Council for Local Environmental Initiatives (now known as International Governments for Local Sustainability)
IOOS	Integrated Ocean Observing System
IPCC	Intergovernmental Panel on Climate Change

IWG	Interlaboratory Working Group	UNFCCC	United Nations Framework Convention on Climate Change
kg	kilogram	USDA	U.S. Department of Agriculture
km	kilometer	VOCs	volatile organic compounds
L	liter	WBCSD	World Business Council for Sustainable Development
LEED	Leadership in Energy and Environment Design		
m	meter		
MAP	mean annual precipitation		
Mt C	megatons of carbon (millions of metric tons; <i>i.e.</i> , teragrams)		
N₂O	nitrous oxide (also, dinitrogen oxide)		
NACP	North American Carbon Program		
NAO	North Atlantic oscillation		
NAS	U.S. National Academy of Sciences		
NASA	National Aeronautics and Space Administration		
NATS	North American Transportation Statistics		
NCAR	National Center for Atmospheric Research		
NCEP	National Centers for Environmental Prediction; National Commission on Energy Policy		
NEE	net ecosystem exchange		
NEP	net ecosystem productivity		
NGO	non-governmental organization		
NO₂	nitrogen dioxide		
NOAA	National Oceanic and Atmospheric Administration		
NO_x	oxides of nitrogen		
NPP	net primary productivity		
NRC	National Research Council		
NRCS	Natural Resources Conservation Service		
NSF	National Science Foundation		
NWI	National Wetland Inventory		
OC₂	Ocean Carbon and Climate Change		
pCO₂	partial pressure of carbon dioxide in units of microatmospheres or ppm		
PDO	Pacific decadal oscillation		
PET	potential evapotranspiration		
PJ	petajoules		
ppm	parts per million by volume		
PPP	purchasing power parity		
RGGI	Regional Greenhouse Gas Initiative		
SAP	Synthesis and Assessment Product		
SBSTA	Subsidiary Body for Scientific and Technological Advice		
SOCCR	State of the Carbon Cycle Report		
μatm	microatmospheres or 10 ⁻⁶ atmospheres		