

Annex I: Glossary

Notes

Most definitions in this glossary are sourced from the glossaries of the 6th IPCC Assessment Report (IPCC, 2021; IPCC, 2022a, IPCC, 2022b). The remaining definitions have been provided by the authors of this report. Please note that this list of terms is not exhaustive. For terms not included here, please refer to the glossaries IPCC and IPBES.

2030 Agenda for Sustainable Development: A UN resolution in September 2015 adopting a plan of action for people, planet and prosperity in a new global development framework anchored in 17 Sustainable Development Goals

Adaptation: In human systems, the process of adjustment to actual or expected climate and its effects, in order to moderate harm or exploit beneficial opportunities. In natural systems, the process of adjustment to actual climate and its effects; human intervention may facilitate adjustment to expected climate and its effects.

Afforestation: Conversion to forest of land that historically has not contained forests.

Agrioltaics: A food-energy producing system that involves the simultaneous use of land areas for both solar photovoltaic (PV) power generation and agriculture.

Agro-inputs: Biological or chemical or inorganic compounds used in the production of agricultural and allied products.

Agrobiodiversity: The result of natural selection processes and the careful selection and inventive developments of farmers, herders and fishers over millennia.

Agrochemical: A chemical used in agriculture, such as a pesticide or a fertiliser.

Agroecology: The science and practice of applying ecological concepts, principles and knowledge (i.e. the interactions of, and explanations for, the diversity, abundance and activities of organisms) to the study, design and management of sustainable food systems, through forms of collective action, which explicitly considers economic, social, environmental and ecological aspects, based on traditional peasants' knowledge to promote endogenous development, but open to innovations that help sustainability. Agroecology examines the roles and interactions among all relevant biophysical, technical and socio-economic components of farming systems and their surrounding landscapes.

Agroforestry: Collective name for land-use systems and technologies where woody perennials (trees, shrubs, palms, bamboos, etc.) are deliberately used on the same land-management units as

agricultural crops and/or animals, in some form of spatial arrangement or temporal sequence. In agroforestry systems, there are both ecological and economical interactions between the different components.

Air pollution: Degradation of air quality with negative effects on human health or the natural or built environment due to the introduction, by natural processes or human activity, into the atmosphere of substances (gases, aerosols) which have a direct (primary pollutants) or indirect (secondary pollutants) harmful effect.

Anoxia: An absence or deficiency of oxygen.

Anthropogenic: Resulting from or produced by human activities.

Anthropogenic emissions: Emissions of greenhouse gases (GHGs), precursors of GHGs and aerosols caused by human activities. These activities include the burning of fossil fuels, deforestation, land use and land-use changes (LULUC), livestock production, fertilisation, waste management, and industrial processes.

Aquatic biota: All living organisms found in water environments, including freshwater (lakes, rivers, ponds) and marine (oceans, seas) ecosystems. This term encompasses a wide variety of life forms, from microscopic organisms like bacteria and plankton to larger species such as fish, amphibians, aquatic plants, and invertebrates like mollusks and crustaceans.

Arid zone: Areas where vegetation growth is severely constrained due to limited water availability. For the most part, the native vegetation of arid zones is sparse. There is high rainfall variability, with annual averages below 300 mm. Crop farming in arid zones requires irrigation.

Barcelona Convention: The Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean, originally the Convention for Protection of the Mediterranean Sea against Pollution, and often simply referred to as the Barcelona Convention, is a regional convention adopted in 1976 to prevent and abate pollution from ships, aircraft and land based sources in the Mediterranean Sea. The Barcelona Convention and its protocols form the

legal framework of the Mediterranean Action Plan (approved in 1975), developed under the United Nations Environment Programme (UNEP) Regional Seas Programme.

Behavioural change: In this report, behavioural change refers to alteration of human decisions and actions in ways that mitigate climate change and/or reduce negative consequences of climate change impacts.

Biodiversity (biological diversity): The variability among living organisms from all sources including, among other things, terrestrial, marine and other aquatic ecosystems, and the ecological complexes of which they are part; this includes diversity within species, between species, and of ecosystems.

Biodiversity hotspots: Biodiversity hotspots are geographic areas exceptionally rich in species, ecologically distinct, and often contain geographically rare endemic species. They are thus priorities for nature conservation action.

Bioenergy: Energy derived from any form of biomass or its metabolic by-products.

Biofuel: A fuel, generally in liquid form, produced from biomass. Biofuels include bioethanol from sugarcane, sugar beet or maize, and biodiesel from canola or soybeans.

Biomass: Organic material excluding the material that is fossilised or embedded in geological formations. Biomass may refer to the mass of organic matter in a specific area.

Business as usual (BAU): The term business as usual scenario has been used to describe a scenario that assumes no additional policies beyond those currently in place and that patterns of socio-economic development are consistent with recent trends. The term is now used less frequently than in the past.

Carbon cycle: The flow of carbon (in various forms, e.g. as carbon dioxide (CO₂), carbon in biomass, and carbon dissolved in the ocean as carbonate and bicarbonate) through the atmosphere, hydrosphere, terrestrial and marine biosphere and lithosphere.

Carbon dioxide (CO₂): A naturally occurring gas, CO₂ is also a by-product of burning fossil fuels (such as oil, gas and coal), of burning biomass, of land-use changes (LUCs) and of industrial processes (e.g. cement production). It is the principal anthropogenic greenhouse gas (GHG) that affects the Earth's radiative balance.

Carbon footprint: Measure of the exclusive total amount of emissions of carbon dioxide (CO₂) that is directly and indirectly caused by an activity or is accumulated over the lifecycle stages of a product.

Carbon sequestration: The process of storing carbon in a carbon pool.

Cascading impacts: In this report, cascading impacts in the WEFEnexus occur when a driver of change (e.g. climate change) generates a sequence of secondary events in the WEFEnexus components mediated by the interactions, synergies and trade-offs among them. They are linked to particular responses developed to achieve water, food, energy security or ecosystems health, whereby the resulting impact is significantly larger than the initial impact. Cascading impacts are complex and multi-dimensional, and they can be positive when synergies are promoted (nexus approach) or negative when trade-offs are predominant (silo approach).

Circular economy: A system with minimal input and operational losses of materials and energy through extensive reduce, reuse, recycling, and recovery activities. Ten strategies for circularity include: Refuse, Rethink, Reduce, Reuse, Repair, Refurbish, Remanufacture, Repurpose, Recycle, Recover.

Climate change: A change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods.

Co-benefits: A positive side-effect that a policy targeting one objective has on another objective. Co-benefits increase the total benefit to society or the environment.

Confidence: The robustness of a finding based on the type, amount, quality and consistency of evidence (e.g. mechanistic understanding, theory, data, models, expert judgement) and on the degree of agreement across multiple lines of evidence. In this report, confidence is expressed qualitatively.

Decarbonisation: Human actions to reduce carbon dioxide emissions from human activities.

Deforestation: Conversion of forest to non-forest.

Desalination (of water): Process of removing mineral components, salts and impurities from seawater or brackish water to produce freshwater suitable for human consumption, agriculture, or industrial use. This method is especially important in arid regions or areas with limited access to freshwater resources. Along with recycled wastewater, it is one of the few water resources independent of rainfall.

Desertification: Land degradation in arid, semi-arid, and dry sub-humid areas resulting from many factors, including climatic variations and human activities.

Diet: The kinds of food that follow a particular pattern that a person or community eats.

Drip irrigation: Irrigation method where water is delivered directly to the roots of plants in a slow,

controlled manner. It involves a network of tubes or pipes with small emitters or drippers that release water at low pressure, ensuring minimal evaporation and runoff. This technique allows for precise water delivery, optimising water use.

Direct driver: Factors or processes that directly affect environmental conditions and ecosystems. These drivers can lead to changes in land use, biodiversity, water quality, and other ecological indicators. They often manifest as immediate and tangible impacts on the environment. Direct drivers can be of natural or anthropogenic origins.

Drivers of change: Factors that affect nature, anthropogenic assets, nature's contributions to people, and a good quality of life.

Drought: A period of abnormally dry weather long enough to cause a serious hydrological imbalance.

Hydrological drought: A period with large runoff and water deficits in rivers, lakes and reservoirs.

Agricultural and ecological drought: Agricultural and ecological drought (depending on the affected biome): a period with abnormal soil moisture deficit, which results from combined shortage of precipitation and excess evapotranspiration, and during the growing season impinges on crop production or ecosystem function in general.

Meteorological drought: A period with an abnormal precipitation deficit.

Ecological footprint: The impact of a person or community on the environment, expressed as the amount of land required to sustain their use of natural resources.

Ecosystem: A functional unit consisting of living organisms, their non-living environment and the interactions within and between them. Ecosystems are nested within other ecosystems, and their scale can range from very small to the entire biosphere. In the current era, most ecosystems either contain people as key organisms or are influenced by the effects of human activities in their environment.

Ecosystem-based adaptation (EBA): The use of ecosystem management activities to increase the resilience and reduce the vulnerability of people and ecosystems to climate change.

Ecosystem health: The state or condition of an ecosystem in which its dynamic attributes are expressed within the normal ranges of activity relative to its ecological state of development.

Ecosystem services: Goods and services provided by ecosystems, as an intrinsic property of its functionality, to humans.

Endocrine disruptors: Chemicals that can interfere with endocrine (or hormonal) systems and sometimes also referred to as hormonally active agents, endocrine disrupting chemicals, or endocrine disrupting compounds.

Energy mix: Various primary energy sources used in a given geographic region.

Energy security: The uninterrupted availability of energy sources at an affordable price.

Emission scenario: A plausible representation of the future development of emissions of substances that are radiatively active (e.g. greenhouse gases (GHGs) or aerosols) based on a coherent and internally consistent set of assumptions about driving forces (such as demographic and socio-economic development, technological change, energy and land use) and their key relationships. Concentration scenarios, derived from emission scenarios, are often used as input to a climate model to compute climate projections.

Endemic species: Plants and animals that are only found in one geographic region.

Energy system: The energy system comprises all components related to the production, conversion, delivery and use of energy.

Equity: The principle of being fair and impartial, and a basis for understanding how the impacts and responses to climate change, including costs and benefits, are distributed in and by society in more or less equal ways. Often aligned with ideas of equality, fairness and justice, and applied with respect to equity in the responsibility for, and distribution of, climate impacts and policies across society, generations and gender, and in the sense of who participates and controls the processes of decision-making.

Extensive agriculture: System of crop cultivation using small amounts of labour and capital in relation to the area of land being farmed.

Evaporation: The physical process by which a liquid (e.g. water) becomes a gas (e.g. water vapour).

Evapotranspiration: The combined processes through which water is transferred to the atmosphere from open water and ice surfaces, bare soil, and vegetation that make up the Earth's surface.

Extreme weather event: An event that is rare at a particular place and time of year. Definitions of 'rare' vary, but an extreme weather event would normally be as rare as or rarer than the 10th or 90th percentile of a probability density function estimated from observations. By definition, the characteristics of what is called extreme weather may vary from place to place in an absolute sense.

Exposure: The presence of people; livelihoods; species or ecosystems; environmental functions, services, and resources; infrastructure; or economic, social, or cultural assets in places and settings that could be adversely affected.

Fertiliser: Any material of natural or synthetic origin that is applied to soil or to plant tissues to supply plant nutrients. Many sources of fertiliser

exist, both natural and industrially produced. For most modern agricultural practices, fertilisation focuses on three main macronutrients: nitrogen (N), phosphorus (P), and potassium (K) with occasional addition of supplements like rock flour for micronutrients.

Flood: The overflowing of the normal confines of a stream or other water body, or the accumulation of water over areas that are not normally submerged. Floods can be caused by unusually heavy rain, for example during storms and cyclones.

Food security: The state of having reliable access to a sufficient quantity of safe, affordable and nutritious food that meets people's dietary needs and food preferences for an active and healthy life. Six pillars determine food security: food availability, food access, food use, food stability, agency and sustainability.

Food system: All the elements (environment, people, inputs, processes, infrastructures, institutions, etc.) and activities that relate to the production, processing, distribution, preparation and consumption of food, and the output of these activities, including socio-economic and environmental outcomes.

Food web: Complex network of interconnecting and overlapping food chains showing feeding relationships within a community.

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

Global Horizontal Irradiance (GHI): The amount of terrestrial irradiance falling on a surface horizontal to the surface of the earth.

Global change: A generic term to describe global-scale changes in systems, including the climate system, ecosystems and social-ecological systems.

Global warming: The estimated increase in global mean surface temperature (GMST) averaged over a 30-year period, or the 30-year period centred on a particular year or decade, expressed relative to pre-industrial levels unless otherwise specified.

Governance: The structures, processes, and actions through which private and public actors interact to address societal goals. This includes formal and informal institutions and the associated norms, rules, laws and procedures for deciding, managing, implementing and monitoring policies and measures at any geographic or political scale, from global to local.

Greenhouse gas (GHG): Greenhouse gases are those gaseous constituents of the atmosphere, both natural and anthropogenic, that absorb and emit radiation at specific wavelengths within the spectrum of terrestrial radiation emitted by the Earth's surface, the atmosphere itself and

by clouds. This property causes the greenhouse effect.

Gross domestic product (GDP): The standard measure of the value added created through the production of goods and services in a country during a certain period.

Hazard: The potential occurrence of a natural or human-induced physical event or trend that may cause loss of life, injury, or other health impacts, as well as damage and loss to property, infrastructure, livelihoods, service provision, ecosystems and environmental resources.

Heat stress: A range of conditions in, for example, terrestrial or aquatic organisms when the body absorbs excess heat during overexposure to high air or water temperatures or thermal radiation.

Heat wave: Prolonged period of excessively high temperatures, often accompanied by high humidity, that poses significant health risks and impacts the environment. The exact criteria for a heat wave can vary based on regional climate conditions, but it generally involves temperatures significantly above the average for a specific area and duration.

Heavy metals: Group of metals and metalloids that have relatively high density and are toxic even at ppb (parts per billion) levels.

Hydroelectricity (or hydroelectric power): Electricity generated from hydropower (water power).

Hydropower: Power harnessed from the flow of water.

Impacts: The consequences of realised risks on natural and human systems, where risks result from the interactions of climate-related hazards (including extreme weather/climate events), exposure, and vulnerability. Impacts generally refer to effects on lives, livelihoods, health and well-being, ecosystems and species, economic, social and cultural assets, services (including ecosystem services), and infrastructure. Impacts may be referred to as consequences or outcomes and can be adverse or beneficial.

Incremental adaptation: Adaptation that maintains the essence and integrity of a system or process at a given scale. Incremental adaptations to change in climate are understood as extensions of actions and behaviours that already reduce the losses or enhance the benefits of natural variations in extreme weather/climate events.

Indirect driver: Factor that alter and influence direct drivers, as well as other indirect drivers.

Industrial agriculture: Intensive farming of live animals and crops for the mass production of food and food byproducts treated as commodities.

Inequality: Uneven opportunities and social positions, and processes of discrimination within a group or society, based on gender, class, ethnicity,

age and (dis)ability, often produced by uneven development. Income inequality refers to gaps between the highest and lowest income earners within a country and between countries.

Intergovernmental Panel on Climate Change (IPCC):

The United Nations body for assessing the science related to climate change.

Internet of Things (IoT): The network of computing devices embedded in everyday objects such as cars, phones and computers, connected via the internet, enabling them to send and receive data.

International Atomic Energy Agency (IAEA):

Intergovernmental for cooperation in the nuclear field and seeks to promote the safe, secure and peaceful use of nuclear technologies.

Jessour (singular jesr): Water-harvesting system in Tunisia composed of earth and dry stone structures. A kind of small dam placed in ravines and wadis, they limit the rapid flow of rainwater and direct it towards retention areas.

Land Cover (LC): The surface components of land that are physically present and visible, being either vegetation, naked areas or anthropogenic constructions.

Land cover change: Change from one land cover class to another, due to change in land use or change in natural conditions

Land degradation: A negative trend in land condition, caused by direct or indirect human-induced processes including anthropogenic climate change, expressed as a long-term reduction or loss of at least one of the following: biological productivity, ecological integrity or value to humans.

Land management: The sum of land-use practices (e.g. sowing, fertilising, weeding, harvesting, thinning and clear-cutting) that take place within broader land-use categories.

Land Use (LU): It corresponds to the socio-economic description (functional dimension) of areas.

Land Use Change (LUC): The change from one land use category to another.

Lifecycle assessment (LCA): Compilation and evaluation of the inputs, outputs and the potential environmental impacts of a product or service throughout its lifecycle.

Lifestyle changes: Deliberate modification of personal habits and behaviours with the goal of improving one's physical, mental, or social well-being. These changes can involve adjustments in various aspects of life, such as diet, exercise, sleep patterns, stress management, or environmental sustainability practices. The intent is often long-term, aiming to improve health outcomes, enhance quality of life, or align with certain values, such as reducing one's carbon footprint.

Livelihood: The resources used and the activities

undertaken in order for people to live. Livelihoods are usually determined by the entitlements and assets to which people have access. Such assets can be categorised as human, social, natural, physical or financial.

Maladaptation (Maladaptive actions): Actions that may lead to increased risk of adverse climate-related outcomes, including via increased greenhouse gas (GHG) emissions, increased or shifted vulnerability to climate change, more inequitable outcomes, or diminished welfare, now or in the future. Most often, maladaptation is an unintended consequence.

Malnutrition: Deficiencies, excesses, or imbalances in a person's intake of energy and/or nutrients. The term malnutrition addresses three broad groups of conditions: undernutrition, which includes wasting (low weight-for-height), stunting (low height-for-age), and underweight (low weight-for-age); micronutrient-related malnutrition, which includes micronutrient deficiencies (a lack of important vitamins and minerals) or micronutrient excess; and overweight, obesity and diet-related non-communicable diseases (such as heart disease, stroke, diabetes and some cancers). Micronutrient deficiencies are sometimes termed 'hidden hunger' to emphasise that people can suffer from malnutrition due to a lack of essential nutrients, even when their caloric intake is sufficient. Hidden hunger can apply even where people are obese.

Manure: Organic matter, primarily composed of animal faeces and urine, that is used as a natural fertiliser in agriculture to enrich the soil with essential nutrients. It can also include plant matter such as straw, which is used to absorb animal waste. Manure provides nitrogen, phosphorus, potassium, and other nutrients that help improve soil structure, water retention, and the overall fertility of the land, promoting plant growth.

Mediterranean Basin: In this report, a simple regular latitude-longitude box structures of Mediterranean landscapes are (29°N to 47.5°N and 10°W to 39°E), which includes some regions with non-Mediterranean climates, such as the Alps, the Eastern Balkans or part of the Sahara. This definition of the Mediterranean region is similar to the MED zone adopted in IPCC-AR6 (IPCC, 2021) and MAR1 (MedECC, 2020).

Mediterranean diet: Dietary pattern inspired by the traditional eating habits of people living in countries bordering the Mediterranean Sea. It is widely recognized for its health benefits and has been linked to improved cardiovascular health, longevity, and a lower risk of chronic diseases. It is characterised by high consumption of plant-based foods, healthy fats (e.g. olive oil), moderate

intake of fish and poultry, low consumption of red meat, sweets and dairy products and wine in moderation.

Meskat: A traditional water-harvesting system adapted especially to the Tunisian Sahel. It is presented in the form of an impluvium that intercepts runoff water and channels it towards a series of well-defined basins.

Mgoud: floodwater harvesting and spreading or spate irrigation using diversion dykes.

Middle East and North Africa (MENA): Region that covers the enormous area extending from the Atlantic coast of Africa to the borders of Pakistan and Afghanistan in Central Asia and from the Mediterranean littoral to the southern boundaries of the Sahara Desert.

Migration (of humans): Movement of a person or a group of persons, either across an international border, or within a State. It is a population movement, encompassing any kind of movement of people, whatever its length, composition and causes; it includes migration of refugees, displaced persons, economic migrants, and persons moving for other purposes, including family reunification.

Mitigation (of climate change): A human intervention to reduce emissions or enhance the sinks of greenhouse gases.

Mitigation measures: In climate policy, mitigation measures are technologies, processes or practices that contribute to mitigation, for example, renewable energy technologies, waste minimisation processes, and public transport commuting practices.

Models: Structured imitations of a system's attributes and mechanisms to mimic the appearance or functioning of systems, for example, the climate, the economy of a country, or a crop. Mathematical models assemble (many) variables and relations (often in a computer code) to simulate system functioning and performance for variations in parameters and inputs.

Modified consumption patterns: Significant changes or adjustments in the way individuals or groups consume goods and services. These changes can occur in various aspects of consumption, such as food, energy, clothing, or other resources, often driven by health, environmental, economic, or ethical concerns. Modifying consumption patterns typically involves adopting more sustainable, efficient, or mindful approaches to using resources, with the aim of reducing waste, minimising environmental impact, or improving personal well-being.

Monogastric: An animal with a single-compartmented stomach, in livestock farming, mainly pigs and poultry.

Nature-based solutions: Actions to protect, sustainably manage and restore natural or modified ecosystems that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits. Examples of NbS are reforestation and afforestation to help sequester carbon and improve biodiversity, wetland restoration to enhance flood control, improve water quality, and provide habitat for wildlife or green infrastructure to manage stormwater and reduce urban heat.

North Atlantic Oscillation: Climate phenomenon in the North Atlantic Ocean characterised by fluctuations in the atmospheric pressure difference between the Icelandic Low (a low-pressure area near Iceland) and the Azores High (a high-pressure area near the Azores Islands). These fluctuations influence the strength and direction of westerly winds and storm tracks across the North Atlantic region, affecting the weather in Europe, North America, and parts of North Africa.

Ocean acidification: A reduction in the pH of the ocean, accompanied by other chemical changes (primarily in the levels of carbonate and bicarbonate ions), over an extended period, typically decades or longer, which is caused primarily by uptake of carbon dioxide (CO₂) from the atmosphere, but can also be caused by other chemical additions or subtractions from the ocean. Anthropogenic ocean acidification refers to the component of pH reduction that is caused by human activity.

Organic farming: An agricultural production system that aims to utilise natural processes and cycles to limit off-farm and notably synthetic inputs, while also aiming to enhance agroecosystems and society. Official national or regional labels certify it.

Pandemic: A worldwide outbreak of a disease in humans in numbers clearly in excess of normal.

Pathways: The temporal evolution of natural and/or human systems towards a future state. Pathway concepts range from sets of quantitative and qualitative scenarios or narratives of potential futures to solution-oriented decision-making processes to achieve desirable societal goals. Pathway approaches typically focus on biophysical, techno-economic, and/or socio-behavioural trajectories and involve various dynamics, goals, and actors across different scales.

Persistent organic pollutants (POPs): Toxic chemicals that adversely affect human health and the environment around the world.

Pesticide: A substance used to kill, repel, or control pests. Pesticides may be synthetic chemicals,

natural chemicals, or biological agents (such as a virus, bacterium, or fungus). Most pesticides are used as plant protection products (also known as crop protection products), which in general protect plants from weeds, fungi, or insects that are considered to be pests. Along with these benefits, pesticides also have drawbacks, such as potential toxicity to humans and other species.

Photovoltaics (PV): The conversion of light into electricity using semiconducting materials that exhibit the photovoltaic effect. The photovoltaic effect is commercially used for electricity generation and as photosensors. A photovoltaic system employs solar modules, each comprising a number of solar cells, which generate electrical power. Photovoltaic technology helps to mitigate climate change because it emits much less carbon dioxide than fossil fuels.

Phytotoxicity: Any adverse effects on plant growth, physiology, or metabolism caused by a chemical substance.

Policies (for climate change mitigation and adaptation): Strategies that enable actions to be undertaken to accelerate adaptation and mitigation. Policies include those developed by national and subnational public agencies, and with the private sector. Policies for adaptation and mitigation often take the form of economic incentives, regulatory instruments, and decision-making and engagement processes.

Poverty: A complex concept with several definitions stemming from different schools of thought. It can refer to material circumstances (such as need, pattern of deprivation or limited resources), economic conditions (such as standard of living, inequality or economic position) and/or social relationships (such as social class, dependency, exclusion, lack of basic security or lack of entitlement).

Qanat system: A system for transporting water from an aquifer or well to the surface through an underground aqueduct. The system originated approximately 3000 years ago in Iran. The function is essentially the same across the Middle East and North Africa, but the system operates under a variety of regional names: *qanat* in Iran and Malta, *foggara* in Algeria, *falaj* in Oman and the United Arab Emirates.

Pre-industrial (period): The multi-century period prior to the onset of large-scale industrial activity around 1750. The reference period 1850–1900 is used to approximate pre-industrial global mean surface temperature (GMST).

Projection: A potential future evolution of a quantity or set of quantities, often computed with the aid of a model. Unlike predictions, projections are conditional on assumptions concerning, for

example, future socio-economic and technological developments that may or may not be realised.

Reforestation: Reconversion to forest of land that has been forest before being converted to some other use.

Region: Land and/or ocean area characterised by specific geographical and/or climatological features. The climate of a region emerges from a multi-scale combination of its own features, remote influences from other regions, and global climate conditions.

Renewable energy (RE): Any form of energy that is replenished by natural processes at a rate that equals or exceeds its rate of use.

Representative Concentration Pathways (RCPs): Scenarios that include time series of emissions and concentrations of the full suite of greenhouse gases (GHGs) and aerosols and chemically active gases, as well as land use/land cover. The word representative signifies that each RCP provides only one of many possible scenarios that would lead to the specific radiative forcing characteristics. The term pathway emphasises that not only the long-term concentration levels are of interest, but also the trajectory taken over time to reach that outcome. RCPs usually refer to the portion of the concentration pathway extending up to 2100, for which integrated assessment models produced corresponding emission scenarios. Extended concentration pathways describe extensions of the RCPs from 2100 to 2300 that were calculated using simple rules generated by stakeholder consultations, and do not represent fully consistent scenarios. Four RCPs, produced from integrated assessment models, span a range from approximately below 2°C warming to high (>4°C) warming best-estimates by the end of the 21st century: RCP2.6, RCP4.5 and RCP6.0 and RCP8.5.

RCP2.6: One pathway where radiative forcing peaks at approximately 3 W m⁻² and then declines to be limited at 2.6 W m⁻² in 2100 (the corresponding Extended Concentration Pathway, or ECP, has constant emissions after 2100).

RCP4.5 and RCP6.0: Two intermediate stabilisation pathways in which radiative forcing is limited at approximately 4.5 W m⁻² and 6.0 W m⁻² in 2100 (the corresponding ECPs have constant concentrations after 2150).

RCP8.5: One high pathway which leads to >8.5 W m⁻² in 2100 (the corresponding ECP has constant emissions after 2100 until 2150 and constant concentrations after 2250).

Resilience: The capacity of interconnected social, economic and ecological systems to cope with a hazardous event, trend or disturbance, responding or reorganising in ways that maintain

their essential function, identity and structure. Resilience is a positive attribute when it maintains capacity for adaptation, learning and/or transformation.

Restoration: In environmental context, restoration involves human interventions to assist the recovery of an ecosystem that has been previously degraded, damaged or destroyed.

Risk: The potential for adverse consequences. In the context of climate change, risks can arise from potential impacts of extreme weather events or unfavourable climate trends. Relevant adverse consequences include those on lives, livelihoods, health and well-being, economic, social and cultural assets and investments, infrastructure, services (including ecosystem services), ecosystems and species.

Runoff: The flow of water over the surface or through the subsurface, which typically originates from the part of liquid precipitation and/or snow/ice melt that does not evaporate or refreeze, and is not transpired.

Saltwater intrusion: process by which saltwater from the ocean infiltrates freshwater aquifers, rivers, or coastal ecosystems. This phenomenon typically occurs in coastal areas where freshwater and saltwater are in close proximity, and it is often driven by human activities or environmental factors that disturb the natural balance between these two water sources..

Scenario: A plausible description of how the future may develop based on a coherent and internally consistent set of assumptions about key driving forces (e.g. rate of technological change, prices) and relationships. Note that scenarios are neither predictions nor forecasts, but are used to provide a view of the implications of developments and actions.

Semi-arid zone: Areas where vegetation growth is constrained by limited water availability, often with short growing seasons and high interannual variation in primary production. Annual precipitation ranges from 300 to 800 mm, depending on the occurrence of summer and winter rains.

Soil erosion: The displacement of the soil by the action of water or wind. Soil erosion is a major process of land degradation.

Soil moisture: Water stored in the soil in liquid or frozen form. Root-zone soil moisture is of most relevance for plant activity.

Soil organic matter: The organic component of soil, comprising plant and animal residue at various stages of decomposition, and soil organisms.

Solar energy: Energy from the Sun. Often the phrase is used to mean energy that is captured from solar radiation either as heat, as light that

is converted into chemical energy by natural or artificial photosynthesis, or by photovoltaic panels and converted directly into electricity.

SRES: Emissions scenarios and storylines of the 'Special Report on Emissions Scenarios' of the IPCC (Nakićenović et al., 2000)

A1: a future world of very rapid economic growth, global population that peaks in mid-century and declines thereafter, and rapid introduction of new and more efficient technologies

A2: a very heterogeneous world with continuously increasing global population and regionally oriented economic growth that is more fragmented and slower than in other storylines

B1: a convergent world with the same global population as in the A1 storyline but with rapid changes in economic structures toward a service and information economy, with reductions in material intensity, and the introduction of clean and resource-efficient technologies

B2: a world in which the emphasis is on local solutions to economic, social, and environmental sustainability, with continuously increasing population (lower than A2) and intermediate economic development.

Streamflow: Water flow within a river channel, for example, expressed in $\text{m}^3 \text{s}^{-1}$. A synonym for river discharge.

Sustainability: A dynamic process that guarantees the persistence of natural and human systems in an equitable manner.

Sustainable Development Goals (SDGs): The 17 global goals for development for all countries established by the United Nations through a participatory process and approved in 2015. They are elaborated in the 2030 Agenda for Sustainable Development, including ending poverty (SDG 1) and hunger (SDG 2); ensuring health and well-being (SDG 3), education (SDG 4), gender equality (SDG 5), clean water (SDG 6) and energy (SDG 7), and decent work (SDG 8); building and ensuring resilient and sustainable infrastructure (SDG 9), cities (SDG 10) and consumption (SDG 11); reducing inequalities (SDG 12); protecting land (SDG 15) and water (SDG 14) ecosystems; promoting peace, justice, strong institutions (SDG 16) and partnership (SDG 17); and taking urgent action on climate change (SDG 13).

Synthetic fertiliser: Synthetically derived fertilisers manufactured from minerals, gases from the air and inorganic waste materials.

Trade-off: A competition between different alternatives. In policy context, a trade-off exists when one of the objectives of the intervention (e.g. reducing greenhouse gas emissions) reduces the likelihood of achieving another objective (e.g. biodiversity conservation, energy security).

Transformation: A change in the fundamental attributes of natural and human systems.

Transformational adaptation: Adaptation that changes the fundamental attributes of a social-ecological system in anticipation of climate change and its impacts.

Transition: The process of changing from one state or condition to another in a given period of time. Transition can occur in individuals, firms, cities, regions and nations, and can be based on incremental or transformative change.

Urbanisation: A multi-dimensional process that involves at least three simultaneous changes: (1) land-use change: transformation of formerly rural settlements or natural land into urban settlements; (2) demographic change: a shift in the spatial distribution of a population from rural to urban areas; and (3) infrastructure change: an increase in provision of infrastructure services including electricity, sanitation, etc. Urbanisation often includes changes in lifestyle, culture, and behaviour, and thus alters the demographic, economic, and social structure of both urban and rural areas.

Vulnerability: The propensity or predisposition to be adversely affected. Vulnerability encompasses a variety of concepts and elements including sensitivity or susceptibility to harm and lack of capacity to cope and adapt.

Water footprint: Measure of the total amount

of freshwater used directly and indirectly to produce goods and services consumed by an individual, community, or business. It includes all aspects of water consumption, from the water used in growing food to the water involved in manufacturing products. The concept helps assess the environmental impact of water use and guides efforts toward sustainable management of water resources. There are three types of Water Footprints. The blue water footprint refers to the use of surface and groundwater (rivers, lakes, and aquifers) for irrigation, industrial processes, or domestic consumption. The green water footprint accounts for the rainwater consumed by crops and plants, especially in agriculture and the grey water footprint represents the amount of freshwater needed to dilute pollutants to maintain water quality standards, reflecting the environmental impact of water pollution..

Water security: The state of having reliable access to a sufficient quantity of clean water.

Well-being: A state of existence that fulfils various human needs, including material living conditions and quality of life, as well as the ability to pursue one's goals, to thrive and to feel satisfied with one's life. Ecosystem well-being refers to the ability of ecosystems to maintain their diversity and quality.

Wetland: Land that is covered or saturated by water for all or part of the year (e.g. peatland).

References

- IPCC. (2021). Annex VII: Glossary (Matthews, J.B.R., V. Möller, R. van Diemen, J.S. Fuglestvedt, V. Masson-Delmotte, C. Méndez, S. Semenov, A. Reisinger, Eds.). In *Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* (Masson-Delmotte, V., P. Zhai, A. Pirani, S.L. Connors, C. Péan, S. Berger, N. Caud, Y. Chen, L. Goldfarb, M.I. Gomis, M. Huang, K. Leitzell, E. Lonnoy, J.B.R. Matthews, T.K. Maycock, T. Waterfield, O. Yelekçi, R. Yu, and B. Zhou, Eds.). Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, pp. 2215–2256, doi: [10.1017/9781009157896.022](https://doi.org/10.1017/9781009157896.022)
- IPCC. (2022a). Annex II: Glossary (Möller, V., R. van Diemen, J.B.R. Matthews, C. Méndez, S. Semenov, J.S. Fuglestvedt, A. Reisinger, Eds.). In: *Climate Change 2022: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* (H.-O. Pörtner, D.C. Roberts, M. Tignor, E.S. Poloczanska, K. Mintenbeck, A. Alegría, M. Craig, S. Langsdorf, S. Löschke, V. Möller, A. Okem, B. Rama, Eds.). Cambridge University Press, Cambridge, UK and New York, NY, USA, pp. 2897–2930, doi: [10.1017/9781009325844.029](https://doi.org/10.1017/9781009325844.029)
- IPCC. (2022b) Annex I: Glossary (van Diemen, R., J.B.R. Matthews, V. Möller, J.S. Fuglestvedt, V. Masson-Delmotte, C. Méndez, A. Reisinger, S. Semenov, Eds.). In IPCC, 2022: *Climate Change 2022: Mitigation of Climate Change. Contribution of Working Group III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* (P.R. Shukla, J. Skea, R. Slade, A. Al Khourdajie, R. van Diemen, D. McCollum, M. Pathak, S. Some, P. Vyas, R. Fradera, M. Belkacemi, A. Hasija, G. Lisboa, S. Luz, J. Malley, Eds.). Cambridge University Press, Cambridge, UK and New York, NY, USA. doi: [10.1017/9781009157926.020](https://doi.org/10.1017/9781009157926.020)
- MedECC. (2020). Climate and Environmental Change in the Mediterranean Basin – Current Situation and Risks for the Future. First Mediterranean Assessment Report (W. Cramer, J. Guiot, & K. Marini, Eds.). *Union for the Mediterranean*, Plan Bleu, UNEP/MAP, Marseille, France. doi: [10.5281/zenodo.4768833](https://doi.org/10.5281/zenodo.4768833)
- Nakicenovic, N., Alcamo, J., Davis, G., Vries, B. D., Fenhann, J., Gaffin, S., ... & Zhou, D. (2000) *Special report on emissions scenarios: A special report of Working Group III of the Intergovernmental Panel on Climate Change*. Cambridge, United Kingdom and New York, NY, USA: Cambridge University Press.