

# Future-proofing Infrastructure to address the climate, biodiversity and pollution crises



**Glossary**

This glossary is compiled by the Global Assessments Unit of UNEP. Sources for all definitions can be found [here](#).

# Glossary

## **Adaptation**

Adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities, including anticipatory and reactive adaptation, and autonomous and planned adaptation. The process of change in structure and/or function that makes an organism or a population better suited to survive in a slow or rapidly changing environment. Adaptation may be achieved by phenotypic tuning to prevailing environmental conditions, or through evolutionary changes of genetic structure at the population level. The morphological, physiological, and behavioural characteristics and processes organisms have acquired and utilize to survive.

## **Adaptive capacity**

The ability of a system to adjust to climate change (including climate variability and extremes) to moderate potential damages, to take advantage of opportunities, or to cope with the consequences.

## **Agglomeration economies**

The benefits that come when firms and people locate near one another together in cities and industrial clusters. These benefits come from, for instance, transport costs savings, or energy savings, because firms can easier to connect with a neighbour.

## **Aquifer**

An aquifer is an underground layer of water-bearing rock. Water-bearing rocks are permeable, meaning they have openings that liquids and gases can pass through. Sedimentary rock such as sandstone, as well as sand and gravel, are examples of water-bearing rock. The top of the water level in an aquifer is called the water table.

## **Billion**

109 (1 000 000 000).

## **Biodiversity**

The variability among living organisms from all sources on Earth, including terrestrial, marine, and other aquatic ecosystems, as well as the ecological complexes of which they are part. Biodiversity includes diversity at the genetic level, among species and among ecosystems and habitats. Biodiversity includes diversity in abundance, distribution, and behavior, as well as interaction with social-ecological systems. Biodiversity also incorporates human cultural diversity, which can both be affected by the same drivers as biodiversity, and itself has impacts on the diversity of genes, other species, and ecosystems.

## **Biodiversity Net Gain**

Biodiversity Net Gain is an approach to development that leaves biodiversity in a better state than before. Where a development has an impact on biodiversity it encourages developers to provide an increase in appropriate natural habitat and ecological features over and above that being affected in such a way it is hoped that the current loss of biodiversity through development will be halted and ecological networks will be restored.

## **Biomass**

Organic material, above and below ground and in water, both living and dead, such as trees, crops, grasses, tree litter and roots.

## **Capital**

Capital is a resource that can be mobilised in the pursuit of an individual's goals. Capital includes natural capital (natural resources such as land and water), physical capital (technology and artefacts), social capital (social relationships, networks, and ties), financial capital (money in a bank, loans, and credit), and human capital (education and skills).

### **Circular economy**

A circular economy is a systems approach to industrial processes and economic activity that enables resources used to maintain their highest value for as long as possible. Key considerations in implementing a circular economy are reducing and rethinking resource use, and the pursuit of longevity, renewability, reusability, reparability, replaceability, upgradability for resources and products that are used.

### **Climate change**

The UN Framework Convention on Climate Change defines climate change as 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**

The positive effects that a policy or measure aimed at one objective might have on other objectives, without yet evaluating the net effect on overall social welfare. Co-benefits are often subject to uncertainty and depend on, among others, local circumstances, and implementation practices. Co-benefits are often referred to as ancillary benefits and relate to synergistic outcomes

### **Conservation**

The protection, care, management and maintenance of ecosystems, habitats, wildlife species and populations, within or outside of their natural environments, to safeguard the natural conditions for their long-term permanence.

### **COVID-19**

A novel coronavirus causing the 2019–2020 coronavirus 2019 (COVID-19) pandemic. On 11 February 2020, WHO named the new virus SARS-CoV-2 because the virus is genetically related to the coronavirus responsible for the SARS outbreak of 2003. While related, the two viruses are different. WHO announced 'COVID-19' as the name of this new disease on the same day, following guidelines previously developed with the World Organisation for Animal Health (OIE) and the Food and Agriculture Organisation of the United Nations (FAO).

### **Circularity**

The practice of circularity is focused on and grounded in the anthroposphere - a human construct designed to support the conversion of raw materials for human consumption beyond simple survival needs of food and water. The intentional design of a system is what separates circularity from sustainability.

### **Cyclone**

A system of winds rotating inward to an area of low atmospheric pressure, with a counterclockwise (northern hemisphere) or clockwise (southern hemisphere) circulation. Cyclones are associated with tropical storms.

### **Decarbonisation**

The process of removing carbon, carbonaceous deposits or carbon dioxide (CO<sub>2</sub>) outputs from a country's economy.

### **Deforestation**

Conversion of forested land to non-forest areas.

### **Driver**

The overarching socio-economic forces that exert pressures on the state of the environment.

### **Drylands**

Areas characterised by lack of water, which constrain two major, linked ecosystem services: primary production and nutrient cycling. Four dryland sub-types are widely recognised: dry sub-humid, semi-arid, arid, and hyper-arid, showing an increasing level of aridity or moisture deficit.

### **Early warning**

The provision of timely and effective information, through identified institutions, that allows individuals, households, and communities exposed to a hazard to take action to avoid or reduce their risk and prepare an effective response.

### **Ecosystem**

A dynamic complex of plant, animal and micro-organism communities and their non-living environment, interacting as a functional unit. Ecosystems may be small and simple, like an isolated pond, or large and complex, like a specific tropical rainforest or a coral reef.

### **Effluent**

In issues of water quality, effluent refers to liquid waste (treated or untreated) discharged to the environment (often rivers or the sea) from sources such as industrial process and sewage treatment plants.

### **Electrification**

The action or process of charging something with electricity.

### **Environment**

Environment means the natural world, as a whole or a particular geographic area, including water, air, soil, and their interrelationship with human and all living organisms.

### **Environmental assessment**

An environmental assessment is a tool to assess a policy, plan, programme or project prior to the decision to undertake a proposed action – as part of project approval and decision making. The process involves undertaking an objective evaluation, applying judgement of experts, quantifying where possible the level of confidence. It reduces complexity but adds value by summarizing, synthesizing, and building scenarios, and identifies consensus of what is not known or not agreed. Once the impacts of the proposed developments are known, proposed measures can be taken to prevent environmental harm and enhance benefits.

### **Environmental damage**

A result of oil retraction and production can also directly affect human life in the region. Damage can include pollution of water resources and contamination of the soil.

### **Environmental impact**

The change in the intact ecological functioning ecosystems, resulting from a process set in motion or accelerated by human actions. The change can be adverse or beneficial, wholly, or partially resulting from an individual or group's activities, products or services.

### **Environmental Impact Assessment**

An analytical process or procedure that systematically examines the possible environmental consequences of a given activity or project. The aim is to ensure that the environmental and social implications are considered before the decisions are made.

### **Environmental quality**

A state of environmental conditions in environmental media, expressed in terms of indicators or indices related to environmental quality standards.

### **Equity**

Equity is an aspiration across spheres of public policy, including conservation and environmental management. It is an instrument to correct power imbalances between those with 'advantage' and those 'without'. Components of equity consist of three elements: distribution of costs, responsibilities, rights and benefits; the procedure by which decisions are made and who has a voice; and recognition—acknowledgement of and respect for the equal status of distinct identities, histories, values, and interests. Some literature also considers context—the social, economic, environmental, and political history and circumstances—as a critical underlying factor or even a fourth dimension of equity.

### **Erosion**

Erosion is the geological process in which earthen materials are worn away and transported by natural forces such as wind or water.

**Exposure**

The nature and degree to which a system is exposed to significant variations in climate or other variables. The system can include people, livelihoods, species or ecosystems, ecological functions and services, and resources, infrastructure, or economic, social, or cultural assets.

**Feedback**

A process where non-linear change is driven by reactions that either dampen change (negative feedbacks) or reinforce change (positive feedbacks).

**Flood**

Usually classified into three types: fluvial or river flood, flash flood, coastal or storm surge, groundwater, and sewer flood. River floods result from intense and/or persistent rain over large areas. Flash floods are mostly local events resulting from intense rainfall over a small area in a short period of time. Storm surge floods occur when flood water from the ocean or large lakes is pushed on to land by winds or storms. Groundwater floods occurs when the water table rises and reaches ground level. Sewer floods result when water leaks from a sewer system.

**Food security**

Food security is the state of having sufficient quantity of affordable, nutritious foods. The three components of food security are availability (having sufficient quantities of appropriate food available), access (having adequate income or other resources to access food), and utilization/consumption (having adequate dietary intake and the ability to absorb and use nutrients in the body, in accordance to food preferences).

**Forest**

A forest is an assemblage of ecosystems dominated by trees and other woody vegetation. A forest is defined as land spanning more than 0.5 hectares with trees higher than 5 metres and a canopy cover of more than 10 per cent, or trees able to reach these thresholds in situ. A forest does not include land that is predominantly under agricultural or urban use.

**Fossil fuels**

Coal, natural gas, and petroleum products (such as oil) formed from the decayed bodies of living organisms that died millions of years ago.

**Fragility**

Fragility relates to the quality of being easily damaged. For the purpose of this brief, we refer to an ecosystem that is highly susceptible to degradation by anthropogenic activities.

**Future proofing**

Strengthening existing infrastructure so that it is more capable of resisting the impact of climate change and other environmental crises (e.g., raising roads above the predicted increase in flood levels).

**Gender discrimination**

Any unequal distinction, exclusion, restriction or disadvantageous treatment made on the basis of gender which impairs or nullifies the recognition of an individual or group - irrespective of their marital status, on the basis of equality of men and women, of human rights and fundamental freedoms in the political, economic, social, cultural, civil or any other field.

**Gender equity**

Fairness or justice in the distribution of benefits, rights, responsibilities, and opportunities women and men .

**Governance**

The act, process, or power of governing for the organisation of a society or societies. For example, there is governance through the state, the market, or through civil society groups and local organisations. Governance is exercised through institutions: laws, property-rights systems, and forms of social organisation.

**Green infrastructure**

A strategically planned multi-functional network of high quality natural and semi-natural areas with other environmental features, which is designed and managed to deliver a wide range of ecosystem services, protect biodiversity in both rural and urban settings and quality of life benefits for local communities.

### **Green investment**

Green investments are traditional investment vehicles (such as stocks, exchange-traded funds, and mutual funds) in which the underlying business(es) are involved in operations aimed at improving environmental sustainability. This can range from companies that are developing alternative energy technology to companies that implement best practices for urban green infrastructure.

### **Green job**

A green job, also called a green-collar job is, according to the United Nations Environment Programme, is work in agricultural, manufacturing, research and development, administrative, and service activities that contributes to preserving or restoring environmental quality. Specifically, but not exclusively, this includes jobs that help to protect ecosystems and biodiversity; reduce energy, materials, and water consumption through high efficiency strategies; decarbonize the economy; and minimize or altogether avoid generation of all forms of waste and pollution.

### **Green roof**

Green roofs represent opportunities for significant social, economic, and environmental benefits, and space efficiencies, particularly in urban and peri-urban settings. A green roof is an extension of an existing roof which involves a water proofing and root repellent system, a drainage system, filter cloth, and a lightweight growing medium and plants. Green roofs reduce storm water runoff, energy consumption, and greenhouse gas emissions.

### **Groundwater**

Water that flows or seeps downward and saturates soil or rock, supplying springs and wells. The upper surface of the saturated zone is called the water table.

### **Habitat fragmentation**

A general term describing the set of processes by which habitat loss results in the division of continuous habitats into a greater number of smaller patches of lesser total and isolated from each other by a matrix of dissimilar habitats. Habitat fragmentation may occur through natural processes (e.g., forest and grassland fires, flooding) and through human activities (forestry, agriculture, urbanisation). Habitat loss and fragmentation have long been considered the primary cause for biodiversity loss and ecosystem degradation worldwide. Although some habitats are naturally patchy in terms of abiotic and biotic conditions, anthropogenic actions have profoundly altered the quality and connectivity of habitats.

### **Hazard**

The potential occurrence of a natural or human-induced physical event or trend or physical impact 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. In this brief, the term hazard usually refers to climate-related hazards.

### **Hybrid blue-green and grey infrastructure**

Blue-green refers to infrastructure that aims at restoring the naturally oriented water cycle while contributing to amenity by bringing water management and green infrastructure together while grey infrastructure refers to human-engineered traditional approaches to water management such as pipes and hard surfaces.

### **Hydrological cycle**

Succession of stages undergone by water in its passage from the atmosphere to the Earth's surface and its return to the atmosphere. The stages include evaporation from land, sea or inland water, condensation to form clouds, precipitation, accumulation in the soil or in water bodies, and re-evaporation.

### **Infrastructure**

The definition infrastructure systems used here includes physical assets (also referred to as "hard" infrastructure) plus the knowledge, institutions, and policy frameworks ("soft" infrastructure) in which they exist and that enable them to function.

### **Informal settlements**

UN-Habitat defines a slum household in operational terms, as lacking one or more of the following indicators: a durable housing structure; access to clean water; access to improved sanitation; sufficient living space; and secure tenure. The first four rely on conventional definitions; the last is the most difficult to assess and is not currently used in slum measurement.

**Institutions**

Regularised patterns of interaction by which society organizes itself: the rules, practices and conventions that structure human interaction. The term is wide and encompassing, and could be taken to include law, social relationships, property rights and tenurial systems, norms, beliefs, customs, and codes of conduct as much as multilateral environmental agreements, international conventions, and financing mechanisms. Institutions could be formal (explicit, written, often having the sanction of the state) or informal (unwritten, implied, tacit, mutually agreed and accepted).

**Land use**

The functional dimension of land for different human purposes or economic activities. Examples of land use categories include agriculture, industrial use, transport, and protected areas.

**Limestone**

Any rock consisting chiefly of calcium carbonate.

**Livelihood**

The means by which an individual secures the necessities of life, including six types: natural assets, physical assets, financial assets, human assets, social assets, and cultural assets.

**Lockdown**

A state of isolation or restricted access instituted as a security measure.

**Lock-in**

For the purpose of this brief, infrastructure or carbon lock-in refers to a self-perpetuating inertia to alter current fossil fuel-based energy infrastructure systems to respond to global climate change.

**Mainstreaming**

The process of making something to become normal and being considered as an integral part of the issue in question.

**Megacities**

Urban areas with more than 10 million inhabitants.

**Natural capital**

Natural capital is the world's stock of of natural assets including land, minerals, solar energy, water, soils, air, all living organisms, and the services provided by the interactions of all these elements in ecological systems. Natural capital provides natural resource inputs and environmental services for economic production.

**Natural infrastructure**

A strategically planned and managed network of natural lands, such as forests and wetlands, working landscapes, other open spaces or nature-based solutions that promote, use, restore, or emulate natural ecological processes, values and functions and provides associated benefits to human populations.

**Natural resources**

Natural resources are materials or substances such as minerals, forests, water, and fertile land that occur in nature and can be exploited for economic gain.

**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.

**Nutrients**

The approximately 20 chemical elements known to be essential for the growth of living organisms, including nitrogen, sulphur, phosphorus, and carbon.

**Pandemic**

The worldwide spread of a new disease. An influenza pandemic occurs when a new influenza virus emerges and spreads around the world and most people do not have immunity.

### **Paris Agreement**

The Paris Agreement is a legally binding international treaty on climate change. It was adopted by 196 Parties at COP 21 in Paris, on the 12th of December 2015 and entered into force on the 4th of November 2016. The goal is to limit global warming to well below 2°C, preferably to 1.5°C, compared to pre-industrial levels. To achieve this goal, countries aim to achieve a climate neutral world by the middle of the 21st century. The Paris Agreement is a landmark mechanism in the multilateral climate change process because, for the first time, a binding agreement brings all nations into a common cause to undertake ambitious efforts to combat and adapt to climate change.

### **Perennial**

Lasting or existing for a long or apparently infinite time; enduring or continually recurring.

### **Photovoltaic**

The conversion of light, visible or other radiation into electricity.

### **Policy**

Policy is any form of intervention, tool or societal response to exercise governance. This includes not only statements of intent, but also other forms of intervention, such as economic instruments, market creation, subsidies, institutional reform, legal reform, decentralisation, and institutional development. When such an intervention is enforced by the state, it is called public policy.

### **Pollutant**

Any substance that causes harm to the environment when it mixes with soil, water, or air.

### **Pollution**

The presence of minerals, chemicals or physical properties at levels that exceed the values deemed to define a boundary between acceptable and unacceptable quality, which is a function of the specific pollutant.

### **Porosity**

An indication of the total volume of voids discernible with a ×10 hand-lens measured by area and recorded as the percentage of the surface occupied by pores.

### **Poverty**

The state of one who lacks a defined amount of material possessions or money. Absolute poverty refers to a state of lacking basic human needs, which commonly include clean and fresh water, nutrition, health care, education, clothing, and shelter.

### **Private sector**

The private sector is part of a country's economy which consists of industries and commercial companies that are not owned or controlled by the government.

### **Protected area**

A clearly defined geographical space, recognised, dedicated, and managed, through legal or other effective means, to achieve the specific objectives related to the long-term conservation of nature with associated ecosystem services and cultural values. How protected areas are defined varies by country and can range from, for instance, wilderness areas, community conserved areas, nature reserves, stewardship schemes, cultural heritage sites, amongst other forms of protection.

### **Public sector**

The portion of society that comprises the general government sector, and all corporations, agencies, organisations, and enterprises which are publicly-funded or deliver public programmes, goods, or services.

### **Public-Private Partnership**

A contractual agreement between a public agency and a private sector entity. Through such an agreement, the skills, and assets of each sector (public and private) are shared in delivering a service or facility.

### **Recharge**

Water seeping into an aquifer intermittently during and immediately following periods of rain and snow-melt.



**Reservoir**

The habitat in which the agent normally lives, grows, and multiplies. Reservoirs include humans, animals, and the environment. The reservoir may or may not be the source from which an agent is transferred to a host.

**Riparian**

Related to or located on the bank of a natural watercourse, usually a river, but sometimes a lake, tidewater, or enclosed sea.

**Scale**

The spatial, temporal (quantitative or analytical) dimension used to measure and study any phenomena. Specific points on a scale can thus be considered levels (such as local, regional, national, and international).

**Sediment**

Solid material that originates mostly from disintegrated rocks and is transported by, suspended in or deposited from water, wind, ice and other organic agents.

**Sewage**

Liquid waste matter, usually containing human excrement.

**Sewer**

An artificial channel or conduit, usually underground, for carrying off and discharging wastewater and the refuse from houses and towns.

**Soil**

The upper layer of the Earth's crust transformed by weathering and physical, chemical and biological processes. Soil is composed of mineral particles, organic matter, water, air and living organisms organised in genetic soil horizons.

**Spatial planning**

Spatial planning is the coordination of practices and policies affecting spatial organisation. Spatial planning is a process that considers the social, economic, environmental and governance objectives of sustainable development and social equity, aimed at integrated management of land, water and living resources for the development and expansion.

**Stakeholder analysis**

A process that defines aspects of a social and natural phenomenon affected by a decision or action; identifies individuals, groups and organisations who are affected by or can affect those parts of the phenomenon (this may include nonhuman and non-living entities and future generations); and prioritises these individuals and groups for involvement in the decision-making process.

**Stewardship**

The job of supervising or taking care of something, such as an organisation or property.

**Surface water**

All water naturally open to the atmosphere, including rivers, lakes, reservoirs, streams, impoundments, seas, and estuaries. The term also covers springs, wells or other collectors of water that are directly influenced by surface waters.

**Sustainability**

A characteristic or state whereby the needs of the present population can be met without compromising the ability of future generations or populations in other locations to meet their needs.

**Sustainable development**

Development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs.

**Sustainable Development Goals**

The Sustainable Development Goals, also known as the Global Goals, is the university blueprint and call to action to achieve a better and more sustainable future for all. They address the global challenges we face, including poverty, inequality, climate change, environmental degradation, peace, and justice.

### **Synergies**

These arise when two or more processes, organisations, substances or other agents interact in such a way that the outcome is greater than the sum of their separate effects.

### **System**

A system is a collection of component parts that interact with one another within a defined boundary.

### **Technology**

Technology is the physical application of scientific or traditional knowledge to change or manipulate the environment. Any technology has a set of practices, rules and regulations surrounding its use, access, distribution, and management; and are related to institutions

### **Transformation**

In the context of GEO-6, transformation refers to a series of actions that explores opportunities to stop doing the things that pull the Earth System in a nonprogressive direction and at the same time provide resources, capacity, and an enabling environment for all that is consistent with a vision of a sustainable world.

### **Trillion**

10<sup>12</sup> (1 000 000 000 000).

### **Uncertainty**

A cognitive state of incomplete knowledge that can result from a lack of information or from disagreement about what is known or even knowable. Uncertainty can arise from several reasons, such as imprecision in the data, ambiguously defined concepts or terminology, or uncertain projections of human behaviour. Uncertainty can therefore be represented by quantitative measures (e.g., probability density function) or by qualitative statements (e.g., reflecting expert judgements).

### **Urban heat island effect**

The effect of when an area within an urban area characterised by ambient temperatures higher than those of the surrounding area due to the absorption of solar energy by materials like asphalt.

### **Urban sprawl**

Urban sprawl, also called sprawl or suburban sprawl, the rapid expansion of the geographic extent of cities and towns, often characterized by low-density residential housing, single-use zoning, and increased reliance on the private automobile for transportation. Urban sprawl is caused in part by the need to accommodate a rising urban population; however, in many metropolitan areas it results from a desire for increased living space and other residential amenities. Urban sprawl has been correlated with increased energy use, pollution, and traffic congestion and a decline in community distinctiveness and cohesiveness.

### **Urbanisation**

An increase in the proportion of the population permanently living in urban areas.

### **Wastewater treatment**

Any of the mechanical, biological, or chemical processes used to modify the quality of wastewater to reduce pollution levels.

### **Water stewardship**

Actions of companies who seek to improve the efficiency and cleanliness of their internal operations and in their supply chain, while facilitating the sustainable management of shared freshwater resources through collaboration with other businesses, governments, NGOs, and communities. Stewardship recognises that business risk is ultimately created when water is poorly managed or overexploited - with impacts on society, business, government, and the environment.

### **Water stress**

Water stress occurs when the demand for water exceeds the available amount during a certain period or when poor quality restricts its use. Water stress causes deterioration of fresh water resources in terms of quantity (aquifer over-exploitation, dry rivers, etc.) and quality (eutrophication, organic matter pollution, saline intrusion, etc.).

**Wetland**

Area of marsh, fen, peatland, bog, or water, whether natural or artificial, permanent, or temporary, with water that is static or flowing, fresh, brackish, or salt, including areas of marine water to a depth, at low tide, that does not exceed 6 metres.

**Wildlife**

The native fauna (and sometimes flora) of a region.

**Women's economic empowerment**

Women's capacity to participate in, contribute to and benefit from development processes in ways that recognise the value of their contributions, respect their dignity, and make it possible to negotiate a fairer distributi

