



Glossary

Ablation – losses from the glacial system such as melting.

Access to health services – usually measured in the number of people per doctor, health worker or hospital.

Access to safe water – access to water that is affordable, in sufficient quantity and available without excessive effort and time.

Active layer – the highly mobile, often saturated surface layer of permafrost that melts in summer and freezes in winter. Its depth can vary from a few centimetres to 5 metres.

Adaptation – Ways in which human activities/actions are altered to take into account the increasing risk of hazards.

Advancing and retreating coastlines – Coastlines that are growing/getting larger either due to deposition or a fall in sea level are called advancing coasts. Retreating coasts are those that are getting smaller/disappearing either due to erosion or to a rise in sea level.

Affirmative action – an economic policy of favouring members of a disadvantaged group. It is sometimes described as positive discrimination.

Age-specific birth rate (ASBR) – the number of births per 1,000 women of any specified year groups.

Albedo – the reflectivity of a surface. Snow-covered landscapes are highly reflective and have a high albedo, whereas dark surfaces (tarmac) reflect less and retain heat.

Analysis of risk –

$$R = H \cdot \text{Pop} \cdot \text{Vul}$$

Where:

R = Risk, that is, the number of expected human impacts (killed)

H = Annual hazard occurrence probability

Pop = Population living in a given exposed area

Vul = Vulnerability: depends on sociopolitico-economic context.

Annual growth rate – found by subtracting the crude death rate (‰ – per 1,000) from the crude birth rate (‰) and then expressed as a percentage (%).

Anthropogenic – human-related processes and/or impacts.

Aquifers – porous rocks such as sandstone or limestone that contain significant quantities of water.

Arid – having less than 250 millimetres of precipitation per year.

Asian tigers – four economies (Hong Kong, Singapore, South Korea and Taiwan) that were the first NICs, and were associated with very high growth rates and industrialization between the 1960s and 1990s.

Asylum seekers – people who seek refugee status in another country.

Attrition – the wearing away of the load carried by a river. It creates smaller, rounder particles.

Autarky – self-sufficiency.

Biocapacity – the land and water to provide resources for humanity.

Brownfield site – abandoned, derelict, or underused industrial buildings and land, which may be contaminated but have potential for redevelopment.

Carrying capacity – the maximum number of individuals that a given environment can support with the resources available and without detrimental effects.

Carrying capacity – the maximum number of visitors or participants that a site or event can satisfy at one time.

Cartel – an organization of people who supply the same good and join together to control the overall supply of the product. The members of a cartel can force up the price of their good either by restricting its supply on the world market or by agreeing on a particular supply price and refusing to sell the good for any less.

Chamber – the reservoir of magma deep inside a volcano.

Child mortality rate – the number of deaths in children under the age of 5 per 1000 children.

chronic/acute – occurring over a long/short period of time.

CIS – Commonwealth of Independent States, made up of the former Soviet republics.



Civic society – any organization or movement that works in the area between the household, the private sector and the state to negotiate matters of public concern. Civic societies include non-government organizations (NGOs), community groups, trade unions, academic institutions and faith-based organizations.

Civil society – the arena of collective action by independent organizations or groups, based on shared interests, purposes and values.

Coastal margins – All areas from the deep oceans to inland areas that are affected by coastal processes (for example land–sea breezes) and that affect the coastline (for example sources of sediment).

Consumerism – the behaviours, attitudes, and values associated with the consumption of material goods.

Coral – the limestone skeleton secreted by certain marine polyps, often deposited in extensive masses to form a reef.

Coral reef – a ridge in a relatively shallow, tropical sea, consisting of colonies of coral and other organic matter.

Core and periphery – the concept of a developed core surrounded by an undeveloped periphery. The concept can be applied at various scales.

Counter-urbanization – a process involving the movement of population away from inner urban areas to a new town, new estate, commuter town or village on the edge or just beyond the city limits or rural–urban fringe.

Crater – the depression at the top of a volcano following a volcanic eruption. It may contain a lake.

Crowdsourcing – the process of sourcing ideas, services, funding or content from the public in order to maximize the benefit of a large group's collective assets.

Crude birth rate (CBR) – the number of births per 1,000 people in a population.

Crude death rate (CDR) – the number of deaths per 1,000 people in a population.

Cultural diffusion – the spread of cultural ideas from their place of origin to other regions, groups or nations.

Cultural imperialism – the practice of promoting the culture, values or language of one nation in another, less powerful one.

Culture – a system of shared meanings used by people who belong to the same community, group or nation to help them interpret and make sense of the world. These systems of meanings include language, religion, custom and tradition, and ideas about “place”.

Cybercrime – criminal activity using the internet/computers/computing.

Cyber security – the protection of information systems, hardware and software from theft or damage.

DALYs (disability-adjusted life years) – the sum of years of potential life lost due to premature mortality and the years of productive life lost due to disability.

Degradation – depletion of vegetation, loss of biodiversity, soil and water.

Desertification – the spread of desert or desert-like conditions.

Development gap – the difference in wealth between the developed world (North) and the developing world (South).

Diaspora – the forced or voluntary dispersal of any population sharing common racial, ethnic or cultural identity, after leaving their settled territory and migrating to new areas.

Disaster – a major hazard event that causes widespread disruption to a community or region, with significant demographic, economic and/or environmental losses, and which the affected community is unable to deal with adequately without outside help.

Discharge – the volume of water passing a given point over a set time.

Drainage basin – the area drained by a river and its tributaries.

Drainage divide – also known as a watershed, it is the line defining the boundary of a river or stream drainage basin separating it from adjacent basin(s).

Drift – glacial and fluvioglacial deposits left after the ice has melted.

Drone – unmanned aerial vehicle (UAV).

Drumln – a small egg-shaped hill on the floor of a glacial trough.

Ecological carrying capacity – the level of use that an environment can sustain before environmental damage occurs.



Ecological footprint – the theoretical measurement of the amount of land and water a population requires to produce the resources it consumes and to absorb its waste, under prevailing technology.

Economic migrant – a person seeking job opportunities.

Economic water scarcity – lack of water where water is available locally, but not accessible for human, institutional or financial capital reasons.

Ecotourism – a “green” or “alternative” form of tourism that aims to preserve the environment by managing it sustainably.

Endemic – (of a disease) prevalent in an area.

Energy insecurity – a lack of security over energy sources.

Energy security – a country’s ability to secure all its energy needs.

Energy subsidies – sources of energy not directly received from the sun, e.g. fossil fuels.

ENSO – El Niño Southern Oscillation – a reversal of the normal atmospheric circulation in the southern Pacific Ocean, bringing warm water and low pressure to the eastern Pacific, and cool water and high pressure to the western Pacific. It occurs once every 2–10 years.

e-passport – passports containing a computer chip with details about the owner.

Epidemic – a fast-spreading outbreak of a disease.

Epidemiology – the study of diseases.

Erratic – a large boulder foreign to the local geology.

Eustatic and isostatic sea-level changes – eustatic changes are worldwide changes in sea level caused by the growth and decay of ice caps, thereby locking up and later releasing water from ice. Isostatic changes are localized changes in the relative level of the land and sea, caused by the depression of the Earth’s crust, such as due to the weight of an ice sheet. Following deglaciation, the crust beneath the weight begins to rise again, and relative sea level therefore falls.

Eutrophication – the nutrient enrichment of streams, ponds and groundwater.

Evapotranspiration (EVT) – the loss of water from vegetation and water surfaces to the atmosphere.

Exponential growth – an increasing or accelerating rate of growth.

Export processing zones (EPZs) – labour-intensive manufacturing centres that involve the import of raw materials and the export of factory products.

Fair, or ethical, trade – trade that attempts to be socially, economically and environmentally responsible. It is trade in which companies take responsibility for the wider impact of their business. Ethical trading is an attempt to address failings of the global trading system.

Family planning – attempts to limit family size.

Famine – an extreme shortage of food, resulting in mortality. Famine can occur where food is available, but people lack the means to buy it.

Flood – A discharge great enough to cause a body of water to overflow its channel and submerge surrounding land.

Flotation – leaves and twigs carried on the surface of the river.

Food miles – A measure of the distance food travels from its source to the consumer. This can be given either in units of actual distance or of energy consumed during transport.

Food security – food security for a population exists when all its people, at all times, have access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life.

Food security for a household means access by all its members at all times to enough food for an active, healthy life. (UN Food and Agriculture Organization)

Food security includes, at a minimum: (i) the ready availability of nutritionally adequate and safe foods; and (ii) an assured ability to acquire acceptable foods in socially acceptable ways (that is, without resorting to emergency food supplies, scavenging, stealing, or other coping strategies). (US Department of Agriculture)

Foreign direct investment – investment by a company into the structures, equipment or organizations of a foreign country. It does not include investment in shares of companies of other countries.



Free trade zones – zones in which manufacturing does not have to take place in order to gain trading privileges; such zones have become more characterized by retailing.

Freeze–thaw action – the action of water as it freezes and thaws in cracks in rock, causing the rock to shatter.

Freshwater – freshwater includes rivers, lakes, wetlands, groundwater, glaciers and ice caps.

General fertility rate (GFR) – the number of births per 1,000 women aged 15–49 years.

Gentrification – improvement of residential areas by immigrants and the residents themselves, with an economic dimension such as the development of retailing and other services.

Geopolitics – political relations among nations, particularly relating to claims and disputes pertaining to borders, territories and resources.

Glacial – characterized by the presence of ice masses, either at high altitudes or at the poles.

Glacier – a large body of ice and compacted snow moving slowly down a valley.

Global climate change – the changes in the global patterns of rainfall and temperature, sea level, habitats and the incidence of drought, floods and storms, resulting from changes in the earth's atmosphere, believed to be mainly caused by the enhanced greenhouse effect.

Global commons – Resources that are outside the reach of any one nation, for example oceans, the atmosphere and Antarctica. Global commons may be exploited or degraded and so need to be managed carefully.

Global warming – the increase in temperatures around the world that have been noticed over the last 50 years or so, and in particular since the 1980s.

Globalization – “the growing interdependence of countries worldwide through the increasing volume and variety of cross-border transactions in goods and services and of international capital flows, and through the more rapid and widespread diffusion of technology” (IMF)

Globalization index – the Kearney index is one of several measures of globalization. It tracks changes in the four key components of global integration: trade and investment flows;

movement of people across borders; volumes of international telephone traffic and Internet usage; participation in international organizations (A. T. Kearney. Foreign Policy)

Global village – the idea that the world (globe) has been transformed into a “village” by the almost instantaneous transmission of information, facilitated by improvements in ICT.

Glocalization – a term invented in order to emphasize that the globalization of a product is more likely to succeed when the product or service is adapted to the specific locality or culture in which it is marketed.

Gross domestic product (GDP) – the value of all final goods and services produced within a nation in a given year. The measure is relatively easy to compute and use compared with the GNI.

Gross national income (GNI) – the total value of goods and services produced within a country, together with the balance of income and payments from or to other countries (now used in preference to gross national product (GNP)).

Gross national income (GNI) – the value of goods and services produced within a country, together with the balance of income and payments from or to other countries; now used in preference to gross national product (GNP).

Groundwater – subsurface water.

Groundwater – water held underground in soil or porous rock, often feeding springs and wells.

HALE – health-adjusted life expectancy – the length of time that an individual can expect to live based on adjustments made for years of ill health.

Hazard – a threat (whether natural or human) that has the potential to cause loss of life, injury, property damage, socio-economic disruption or environmental degradation.

Hazard event – the occurrence (realization) of a hazard, the effects of which change demographic, economic and/or environmental conditions.

Hazard perception – The degree to which a hazard is considered to be a threat by different people.

Hydraulic action – the force of air and water on the sides of rivers and in cracks.



Hydrological cycle – a conceptual model that describes the storage and movement of water between the biosphere, atmosphere, lithosphere and the hydrosphere.

Illegal immigrants – people who enter another country without permission and plan to remain there.

Indigenous people – People native to an area and who have been there for many generations.

Infant mortality rate (IMR) –

$$\frac{\text{total no. of deaths of children < 1 year old}}{\text{total no. of live births}} \times 1,000 \text{ per year}$$

Infant mortality rate (IMR) – the number of children in a country who die before their first birthday per 1,000 live births.

Infant mortality rate (IMR) – the number of deaths of children less than one year old per 1,000 live births.

Infertility – A lack of nutrients or bases in soils, caused by low weathering rates, a lack of biomass; insufficient nutrients to support arable farming.

Informal/formal activities – informal activities are untaxed, unregulated jobs whereas the formal economy refers to taxed, regulated activities such as people working in offices and factories.

Interception – the capture of raindrops by plant cover, which prevents direct contact with the soil.

Internally displaced persons (IDPs) – those who have fled their homes but continue to live in their own countries.

Irrigation – the artificial addition of water to soil in areas where there is insufficient for adequate crop growth.

La Niña – An intensification of normal atmospheric processes, for example increased flooding in normally humid areas and increased drought in areas that are relatively dry.

Land reform – the redistributor of land to individual farmers giving them the inculters to invest and make the land more productive.

Landfill – the burying of waste in big pits.

Lava – the magma ejected at the earth's surface through a volcano or crack at the surface.

Leakage – economic loss of tourist money, by tourists using companies not owned by the host country, and spending money outside the host country (e.g. on a cruise ship).

LEDGs – less economically developed countries

Leisure – any freely chosen activity or experience that takes place in non-work time.

Life expectancy (E_0) – average number of years that a person can be expected to live, usually from birth, if demographic factors remain unchanged.

Magma – molten material inside the earth's interior.

Malnutrition – a state of poor nutrition, resulting from a deficiency or imbalance of proteins, energy and minerals. Mineral deficiency may lead to diseases such as kwashiorkor, and calorie/energy deficiency to marasmus. Calorie/energy excess may result in **obesity**.

Mangrove – tropical evergreen tree or shrub with intertwined roots and stems, which grows in dense groves in swamps or along tidal coasts.

Maximum sustainable yield (MSY) – the maximum level of extraction of water that can be maintained indefinitely for a region.

MEDCs – more economically developed countries

Migration – the movement of people, involving a change of residence. It can be internal or external (international) and voluntary or forced. It is usually for an extended period (more than a year) and does not include temporary circulations such as commuting or tourism.

Mitigation – attempts to reduce the causes of climate change.

MNC Multinational corporation – an enterprise that has its headquarters in one country but operates in several other countries known as the host countries.

Moraine – a line of loose rocks, weathered from the valley sides and carried by the ice of the glacier.

Multiplier effect – when an initial amount of spending (usually by the government) leads to increased spending by tourists and so results in an increase in national income greater than the initial amount of spending.

Nation – a community of people whose members are bound together by a sense of solidarity rooted in an historic attachment to a homeland and a common culture, and by a consciousness of being different from other nations.



Nationalism – a political movement or belief that holds that a nation has the right to an independent political development based on a shared history and common destiny.

Nexus – the interrelationship, interdependence and interactions between water, food and energy.

NIC – newly industrializing country.

Niche tourism – special interest tourism catering for small numbers of people who are crowd intolerant. It is usually more concerned with sustainability than mass tourism.

North-South divide – the increasing inequality in levels of development between the North and the South or between HICs and LICs.

Obesity – an unhealthy condition where excess body fat has accumulated and the body mass index (BMI) exceeds 30 (calculated by weight in kilograms divided by height in metres squared). BMI has limitations, however, because of racial variation in human physique. Obesity may be linked to diseases of offence such as cardiovascular disease and cancer.

Oceanic conveyor belt – a global thermohaline circulation, driven by the formation and sinking of deep water and responsible for the large flow of upper ocean water.

OECD – Organization of Economic Co-operation and Development, largely composed of developed countries.

Offshoring – relocating some part of a firm's activity to another country.

Older dependency ratio (ODR) – the number of people aged 65 and over for every 100 people aged 20 to 64.

OPEC – the Organization of Petroleum Exporting Countries, representing the interests of oil exporters. Its position is undermined by some oil-producing countries such as the UK, which does not agree with OPEC-controlled oil prices.

Outsourcing – the process of subcontracting part of a firm's business to another company, in order to save money.

Pandemic – a global epidemic.

Participation rate – the proportion of a population that takes part in a specific sporting activity.

Peak oil production – the year in which the world

or an individual oil-producing country reaches its highest level of production, with production declining thereafter.

Perceptual carrying capacity – the level of crowding that a tourist will tolerate before deciding that a location is too full.

Periglacial – snow and ice cover on the fringe of glaciated areas (“peri” = on the edge of), usually associated with permafrost or ground that remains frozen for at least two years. These regions include high mountain and tundra areas of northern Europe and North America.

Periglacial – relating to or found in a region that borders on a glacier.

Periodic hunger – Temporary hunger that is caused by a short-term decline in food intake.

Permafrost – impermeable, permanently frozen ground.

pH scale – a measure of a substance’s acidity or alkalinity. A pH of 7 is neutral, less than 7 is acidic and more than 7 is alkaline. The pH scale is **logarithmic**, so a decrease of one pH unit represents a 10-fold increase in acidity. Thus pH 4 is 10 times more acidic than pH 5.

Physical carrying capacity – the measure of absolute space, for example the number of spaces within a car park.

Physical water scarcity – lack of available water where water resource development is approaching or has exceeded unsustainable levels; it relates availability to demand and implies that arid areas are not necessarily water scarce.

Population structure or population composition – any measurable characteristic of the population. This includes the age, sex, ethnicity, language, religion and occupation of the population.

Potential evapotranspiration (pEVT) – the rate of water loss from an area if there were no shortage of water.

Precipitation – the transfer of moisture (as dew, hail, rain, sleet or snow) to the earth’s surface from the atmosphere.

Profit repatriation – to return foreign-earned profits or financial assets back to the company’s home country.



Protectionism – any economic policy that limits trade between countries so as to protect trade in the home country.

Purchasing power parity (PPP) – the measure of average earnings in relation to local prices, i.e. how much you can buy for your money.

Re-urbanization – the development of activities to increase residential population densities within the existing built-up area of a city. This may include the redevelopment of vacant land and the refurbishment of housing and the development of new business enterprises.

Recreation – a leisure-time activity undertaken voluntarily and for enjoyment. It includes individual pursuits, organized outings and events, and non-paid (non-professional) sports.

Recycling – the processing of waste so that materials can be reused.

Reduction – using less of a resource.

Refugee – a person fleeing their home country in order to escape danger.

Remittances – the transfer of money and/or goods by foreign workers to their home country.

Remittances – transfer of money or goods by foreign workers to their home countries.

Reserves – resources that are accessible and usable.

Reshoring – the relocation to the home country of a business's or company's operations that were overseas.

Residential segregation – the physical separation of population by culture, income or other criteria.

Resilience – The ability to protect lives, livelihoods and infrastructure from destruction, and to the ability to recover after a hazard has occurred.

Resources – anything useful to humans such as soil, oil, water and minerals.

Resource nationalism – the use of a country's resources to benefit that country rather than allowing a TNC or another country to benefit from the resources.

Reuse – the multiple use of a product.

Risk – the probability of a hazard event causing harmful consequences (expected losses in terms

of death, injuries, property damage, economy and environment).

Risk – the probability of a hazard event causing harmful consequences (expected losses in terms of death, injuries, property damage, economy and environment).

Runoff – precipitation that does not soak into the ground but flows over it into surface waters.

Salinization – the build-up of salt in the soil, sometimes caused by poor irrigation techniques.

Saltation – heavier particles bounced or bumped along the bed of the river.

Secondary hazards – Indirect effects or secondary effects of a natural hazard occurring after the initial primary hazards.

Semi-arid – having 250–500 millimetres of precipitation per year.

Soil degradation – a severe reduction in the quality of soils, often through soil erosion, salinization or soil exhaustion (loss of soil fertility).

Solution – the chemical load carried dissolved in the water.

Solution (or **corrosion**) – the removal of chemical ions, especially calcium, which causes rocks to dissolve.

Sport – a physical activity involving events and competitions at the national and international scale with professional participants.

Standardized birth rate (SBR) – a birth rate for a region on the basis that its age composition is the same as for the whole country.

Starvation – a state of extreme hunger, resulting from lack of food over a prolonged period of time.

State – an independent political unit with territorial boundaries that are recognized by other states.

Storm hydrograph – A graph showing how a river changes over a short period, such as a day or a couple of days.

Substitution – using one resource rather than another.

Suburb – a residential area within or just outside the boundaries of a city.



Suburbanization – the outward growth of towns and cities to engulf surrounding villages and rural areas. This may result from the out-migration of population from the inner urban areas to the suburbs, or from inward rural–urban movement.

Superpower – a nation or group of nations with a leading position in international politics.

Sustainability – social, economic and environmental use of resources in a way that allows future generations to maintain their standard of living.

Sustainable – within the limits of our resources so that human needs can be met indefinitely.

Sustainable tourism – Tourism that conserves primary tourist resources and supports the livelihoods and culture of local people.

Sustainable urban management strategy – an approach to urban management that seeks to maintain and improve the quality of life for current and future urban dwellers. Aspects of management may be social (housing quality, crime), economic (jobs, income) and environmental (air, water, land and resources).

Temporary hunger – a short-term physiological need for food, resulting from deprivation.

Tenure – the way in which the rights, restrictions and responsibilities that people have with respect to land (and property) are held.

The digital divide – inequality in the ICT network infrastructure and distribution of the IT knowledge, skills and resources necessary to access online services and information among different sections of a modern society.

The enhanced greenhouse effect – the increasing amount of greenhouse gases in the atmosphere as a result of human activities, and their impact on atmospheric systems, including global warming.

The greenhouse effect – the process by which certain gases (water vapour, carbon dioxide, methane and chlorofluorocarbons (CFCs)) allow short-wave radiation from the sun to pass through the atmosphere and heat up the earth, but trap an increasing proportion of long-wave radiation from the earth. This radiation leads to a warming of the atmosphere.

The G7/G8 – a group of the world's wealthiest and most powerful countries.

The G10 or Paris Club – a group representing the wealthiest members of the International Monetary Fund.

The Human Development Index (HDI) – a composite measure of development. It includes three basic components of human development:

- 1 longevity (life expectancy)
- 2 adult literacy and average number of years' schooling
- 3 standard of living – income adjusted to local cost of living, i.e. purchasing power.

The International Monetary Fund (IMF) – the organization that oversees the global financial system by following the economic policies of its member countries, in particular those with an impact on the exchange rate and the balance of payments.

The main types of erosion Abrasion (or corrosion) – the wearing away of the bed and bank by the load carried by a river.

The main types of transportation Suspension – small particles held up by turbulent flow in the river.

The World Bank – a source of financial and technical assistance to developing countries around the world. Its mission is to fight poverty by providing resources, sharing knowledge and building capacity.

Till – angular and unsorted glacial deposits that include erratics, drumlins and moraines.

Time–space convergence – the reduction in the time taken to travel between two places due to improvements in transportation or communication technology.

Total fertility rate (TFR) – the average number of births per 1,000 women of childbearing age.

Tourism – travel away from home for at least one night for the purpose of leisure. This definition excludes day trips, some of which may be international trips.

Traction – the heaviest material dragged or rolled along the bed of the river.

Transnational corporation (TNC) – a firm that owns or controls productive operations in more than one country through foreign direct investment.



Urban hierarchy – a national arrangement of urban areas, for example from one large city to many small villages.

Urban area – a built up area that forms part of a city or town.

Urban circular system – a sustainable city in which there are recycling, reuse and reduction of resources, renewable forms of energy, and measures taken to reduce the ecological footprint.

Urban ecological footprint – the amount of land required to sustain a population with the resources they need, and to assimilate their waste.

Urban sprawl – the unplanned and uncontrolled physical expansion of an urban area into the surrounding countryside. It is closely linked to the process of suburbanization.

Urbanization – the process by which an increasing percentage of a country's population comes to live in towns and cities. It may involve both rural–urban migration and natural increase.

Value chain – a chain of activities used to create a product whereby each step in the chain gives the product an increased value.

Vent – the channel through which magma within a volcano reaches the surface during a volcanic eruption.

Virtual (or embedded) water – the way in which water is transferred from one country to another through its exports.

Vulnerability – the conditions that increase the susceptibility of a community to a hazard or to the impacts of a hazard event.

Water balance – the relationship between the inputs and outputs of a drainage basin.

Water security – continuing access to safe drinking water and sanitation.

Watershed – Also known as the drainage divide, this is the imaginary line defining the boundary of a river or stream drainage basin separating it from the adjacent basin(s).

Weathering and erosion – Weathering is the breakdown (denudation) of the Earth's surface in situ (on the spot, that is, without a moving force) whereas erosion is the breakdown of the Earth's surface by a moving force, for example glaciers, rivers, wind.

Wetland – land with soils that are permanently flooded.

YLDs – years lived with disability.

3D printing (or additive manufacturing) – the creation of a physical object from a digital model by laying down a sequence of layers.