Biodiversity and Nature-Based Solutions: Navigating key concepts, trends and interconnections

1. Introduction

This resource is designed to outline the core topics, interconnections, and narratives that support a better understanding of biodiversity, nature-based solutions (NbS), and the critical role of finance in enabling their implementation. Its primary aim is to guide a diverse range of stakeholders—including educators, practitioners, and students—in navigating these complex themes. Presented as a "glossary", this resource can also assist educators in designing their own context-specific content. Importantly, it is not intended to be a definitive or exhaustive catalogue of the subject matter. Rather, it offers a flexible and adaptable structure—one that educators are encouraged to tailor to their disciplinary focus, pedagogical style, and stakeholder needs.

2. Biodiversity and Nature-Based Solutions

2.1. Glossary

2.1.1. Key concepts and definitions

anthropocentrism	The ethical belief that humans alone possess intrinsic value. Anthropocentrism qualifies an action or a perception of a given situation that is interpreted by humans or consider humans as *the main focus*. Similarly, the value that something has for human beings and human purposes may be considered an anthropocentric value. The concept of nature's contributions to people (NCP), for example, is a fundamentally anthropocentric notion. **Source**: IPBES (2019), Global Assessment Report, Glossary; 2020 IPBES Global Report Glossary.
anthropocentrism, weak and strong	Within anthropocentric value views, there is a relevant distinction between strong and weak anthropocentrism. At the strong anthropocentrism end of the spectrum, nature is primarily seen as a provider of goods and services for human activity. This includes attributing a privilege to human beings over nature. At the other end of the spectrum, weak anthropocentrism values nature for the benefits it provides to humanity but is critical of the exploitation of nature and argues for the importance of caring for and maintaining the resource base of nature for sustainable human use **Source**: IPBES (2022) The Diverse Values and Valuation of Nature.
biodiversity	Biodiversity refers to the variety of life forms within a given ecosystem, biome, or the entire Earth. It encompasses the diversity of species, genetic variation within species, and the range of ecosystems that house these organisms. **Source**: IPBES (2019), Global Assessment Report, Glossary.
biodiversity hotspot	A generic term for an area with a high diversity of species, or a high number of endemic species (i.e., only occurring in that area). It is also being used as a precise term applied to geographic areas that meet specific criteria regarding endemic species diversity and habitat loss. **Source**: IPBES (2019), Global Assessment Report, Glossary; cf. Myers et al., 2000.
biodiversity loss, drivers	Direct drivers are those natural and anthropogenic factors that affect biodiversity directly. Anthropogenic direct drivers can be conceptualized as the set of activities performed by humans that result in biodiversity loss (e.g. land-system change, intensification, etc.). Indirect drivers are the forces that underlie and shape the extent, severity and combination of anthropogenic direct drivers that operate in any given place. **Source**: IPBES (2019), Global Assessment Report, Glossary.

biodiversity metrics	Indicators used to quantify biodiversity, such as current state and trends around species extinction, biodiversity footprints of industrial and financial sectors, and dependencies on biodiversity-related services. However, there is little consensus on which common metrics to use for assessing biodiversity impacts. While one biodiversity metric does stand out—the *Biodiversity Intactness Index* (BII), a percentage estimate of the original number of species that remain and their abundance in a given area—it only partially reflects human impact on Earth systems. **Source**: Goedkoop, et al. (2023) Bridging the Gap; UK Natural History Museum (2025) Biodiversity Intactness Index.
biosphere integrity	Biosphere Integrity refers to the capacity of ecosystems across the planet to support life and maintain the overall health and stability of the Earth system, [which] depends on the health, diversity, and interactions of the organisms that make up these ecosystems. Biosphere integrity includes the diversity, extent, and health of living organisms and ecosystems affecting the state of the planet which co-regulates the energy balance and chemical cycles on Earth. Disrupting biodiversity threatens this co-regulation and dynamic stability. **Source**: Stockholm Resilience Centre (2026), Stockholm University.
biome	Global-scale zones, generally defined by the type of plant life that they support in response to average rainfall and temperature patterns. For example, forest, desert, tundra, coral reefs, savannahs, grasslands, wetlands, croplands, etc. **Source**: IPBES (2019), Global Assessment Report, Glossary.
ecosystem	A dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit. **Source**: IPBES (2019), Global Assessment Report, Glossary; Cf. Convention on Biological Diversity, 1992.
ecosystem approach	A strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way. An ecosystem approach helps create a balance between conservation, sustainable use, and the fair and equitable sharing of benefits. It applies appropriate scientific methodologies focused on levels of biological organization, which encompass the essential structure, processes, functions and interactions among organisms and their environment. It recognizes that humans, with their cultural diversity, are an integral component of many ecosystems. **Source**: IPBES (2019), Global Assessment Report, Glossary; Convention on Biological Diversity, COP 5 Decision V/6, 2020.
ecosystem integrity	The ability of an ecosystem to support and maintain ecological processes and a diverse community of organisms. It is measured as the degree to which a diverse community of native organisms is maintained, and is used as a proxy for

	ecological resilience, intended as the capacity of an ecosystem to adapt in the face of stressors, while maintaining the functions of interest. **Source**: IPBES (2019), Global Assessment Report, Glossary; Ocean Health Index.
ecosystem services	The benefits people obtain from ecosystems. According to the original formulation of the *Millennium Ecosystem Assessment (*MEA, 2005), ecosystem services are divided into supporting, regulating, provisioning, and cultural. While supporting services are elementary from an ecological perspective, CICES, a more recent accounting framework recognises only the latter three categories to avoid double counting. **Source**: IPBES (2019), Global Assessment Report, Glossary; CICES, Version 5.1, 2018.
extinction	Extinction is the death of all members of a species of plants, animals, or other organisms. A species has gone extinct when all its individuals have died. A species may go extinct locally (population extinction) or globally (species extinction). Populations or species reduced to such low numbers that they are no longer of economic or functional importance may be said to have gone economically or functionally extinct, respectively. Species extinctions are typically not documented immediately; the authoritative *IUCN Red List* categories and criteria require there to be no reasonable doubt that all individuals have died before a species is formally listed as *Extinct*. **Source**: IPBES (2019), Global Assessment Report, Glossary; IUCN Red List, 2012b; Smithsonian, accessed 26/02/2026.
nature-based solutions	Nature-based solutions (NbS) are 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. Actions inspired and supported by nature, which are cost-effective, simultaneously provide environmental, social and economic benefits and help build resilience. Such solutions bring more, and more diverse, nature and natural features and processes into cities, landscapes and seascapes, through locally adapted, resource-efficient and systemic interventions. Nature-based solutions must therefore benefit biodiversity and support the delivery of a range of ecosystem services. (EU) Actions to protect, conserve, restore, sustainably use and manage natural or modified terrestrial, freshwater, coastal and marine ecosystems which address social, economic and environmental challenges effectively and adaptively, while simultaneously providing human well-being, ecosystem services, resilience and biodiversity benefits. (UNEA) **Source**: IPBES (2019), Global Assessment Report, Glossary (Cohen-Shacham, 2016); EU Nature-based Solutions: 2022; UNEA resolution 5/5.
natural capital	Resources (e.g., plants, animals, air, water, soils, minerals, etc.) that combine to yield a flow of benefits (i.e., ecosystem services) to people. Within the IPBES

	conceptual framework, it represents an economic-utilitarian perspective on nature, specifically those aspects of nature that people use (or anticipate using) as a source of nature's contributions to people (NCP). **Source**: IPBES (2019), Global Assessment Report, Glossary; UNDP, 2016b.
nature conservation	Nature conservation is the act of protecting species from extinction, maintaining and restoring habitats, enhancing ecosystem services, and protecting biological diversity. Specific goals include conserving habitats, preventing deforestation, maintaining soil organic matter, halting species extinction, reducing overfishing, and mitigating climate change. **Source**: Newman JA, Varner G, Linquist S. Defending Biodiversity. In: *Defending Biodiversity: Environmental Science and Ethics*. Cambridge University Press; 2017.
nature's contributions to people (NCP)	NCPs are the contributions (both positive and negative) of living nature to people's quality of life. As such, NCPs refer to "*all* contributions–beneficial and detrimental–that people, individually or collectively at various scales, derive or endure from nature. **Source**: IPBES, Secretariat, Note by Multidisciplinary Expert Panel, Díaz et al., 2018.
transformative change	Patterns of biodiversity degradation are entrenched in societal values and behaviours and can only be tackled via transformative change: i.e., fundamental, system-wide reorganisation across technological, economic and social factors, including paradigms, goals and values. **Source:** EU policies addressing indirect drivers of biodiversity loss.
value, intrinsic	Values of entities expressed independently of any reference to people as valuers including values associated with entities worth protecting as ends in and of themselves. This concept refers to inherent value, i.e., the value something has independent of any human experience or evaluation. Such value is viewed as an inherent property of the entity (e.g., animal, plant, habitat, etc.) and not ascribed or generated by external valuing agents, i.e., humans. As a value centred on something other than human beings, it may also be called a non-anthropocentric value. **Source**: IPBES (2019), Global Assessment Report, Glossary; Himes et al., (2024) Why nature matters: A systemic review of intrinsic, instrumental, and relational values.
value, instrumental	Values of nature entities and other-than-human beings important as means to achieve human ends or satisfy human preferences (in principle replaceable, albeit not always in practice), often associated with the notion of ecosystem services. **Source**: IPBES (2019), Global Assessment Report, Glossary; Himes et al., (2024) Why nature matters: A systemic review of intrinsic, instrumental, and relational values.

value, relational	Values of meaningful and often reciprocal human relationships—beyond means to an end—with nature (often specified as a particular landscape, place, species, forest, etc.) and among people through nature. The values that contribute to desirable relationships, such as those among people or societies, and between people and nature, as in Living in harmony with nature. **Source**: Himes et al., (2024) Why nature matters: A systemic review of intrinsic, instrumental, and relational values; IPBES (2019), Global Assessment Report, Glossary.
value, eco-centric / biocentric	A concept that nature and natural things have a value in and of themselves, independent of any benefits they may have for human beings. A philosophy which affirms the intrinsic value of the ecosystem, and of each one of its constituents. Biocentrism refers to a philosophy which claims the primordial value of life as a value in and of itself outside of benefits to humans. **Source**: IPBES (2019), Global Assessment Report, Glossary.

2.1.2. Current State and Trends

extinction rate	The rate is a calculation of the number of extinctions per million species per year (E/MSY). In Earth's geological and biological history, and excluding major extinction events like the dinosaurs, the normal extinction rate—what is called the "background extinction rate"—is estimated to be about one species per million per year. The planetary boundary for extinctions set by the Stockholm Resilience Centre <10 E/MSY. Many estimates of the current extinction rate vary between 10 and 100+ times greater than the pre-human background rate, while others (the IUCN Red List) affirm the rate is between 1000 and 10,000. **Source**: IPBES (2019), Global Assessment Report, Glossary.
Holocene	The Holocene is the current geological epoch that began about 11,700 years ago following the end of the Pleistocene. The Holocene began with abrupt climate warming that led to the retreat of the remaining ice sheets of North America, Europe, and elsewhere. The Holocene is characterized by a moderate and stable climate permitting the rise of agriculture and organized human civilization. **Source**: IPBES (2019), Global Assessment Report, Glossary.
sixth extinction	A popularized term for what is officially known as the Holocene extinction, an event beginning between 10,000 and 15,000 years ago and defined as the ongoing loss of animal and plant species during this epoch, with extinction rates on a planetary scale. The main causes were rapid human expansion across the globe, hunting, habitat destruction, and an increase in the frequency of wildfires due to natural warm-dry events.

	Source: Lartey, S. (2019) Exploring the Impact of the Holocene Extinction; Wiens, J., Saban, K., (2025) ScienceDirect, Questioning the sixth mass extinction.
planetary boundaries framework	The planetary boundaries framework highlights the rising risks from human pressure on nine critical global processes that regulate the stability and resilience of the Earth, one of which is *biosphere integrity*. Planetary boundaries are quantitative assessments of the safe limits for human pressure on these nine critical processes. According to the Stockholm Resilience Centre, seven of the nine breached planetary boundaries have been breached: are: Climate change, Biosphere integrity, Land system change, Freshwater use, Biogeochemical flows, Novel entities, and just since 2025, Ocean acidification. All seven boundaries show worsening trends. Only Ozone depletion and Aerosols loading remain within what is considered a safe zone. The planetary boundary for biodiversity is quantified via two dimensions—genetic diversity and planetary function—each measured via suitable proxies. The boundary for genetic biodiversity is aligned to the extinction rate of <10 E/MSY (extinctions per million species-years). With current extinction rates well above this threshold, the genetic component of biosphere integrity boundary is markedly exceeded. The boundary for functional biosphere integrity was redefined in 2023 as the amount of human appropriation of the biosphere's net primary production of energy and material flows (HANPP). The boundary has been provisionally set at 10% of pre-industrial Holocene mean NPP (with the zone of high risk at 20%). According to this calculation, the boundary for functional biosphere integrity was exceeded in the late 19th century. **Source**: Stockholm Resilience Centre; *Planetary Health Check*, 2025; Richardson et al, (2023) Earth beyond six of the nine planetary boundaries. *Science Advances*, vol, 9, Issue 37. DOI: 10.1126/sciadv.adh2458
high conservation values (HCV)	An HCV is a biological, ecological, social, or cultural value of outstanding significance or critical importance. There are six HCV categories. HCV 1. Species diversity: Concentrations of biological diversity including endemic species, and rare, threatened or endangered species, that are significant at global, regional or national levels. HCV 2. Landscape-level ecosystems, ecosystem mosaics, intact forest landscapes: These are significant at global, regional or national levels, and contain viable populations of the great majority of the naturally occurring species in natural patterns of distribution and abundance. HCV 3. Ecosystems and habitats: Rare, threatened, or endangered ecosystems, habitats or refugia.

	HCV 4. Ecosystem services: Basic ecosystem services in critical situations, including protection of water catchments and control of erosion of vulnerable soils and slopes. HCV 5. Community needs: Sites and resources fundamental for satisfying the basic necessities of local communities or indigenous peoples (for livelihoods, health, nutrition, water, etc...), identified through engagement with these communities or indigenous peoples. HCV 6. Cultural values: Sites, resources, habitats and landscapes of global or national cultural, archaeological or historical significance, and/or of critical cultural, ecological, economic or religious/sacred importance for the traditional cultures of local communities or indigenous peoples, identified through engagement with these local communities or indigenous peoples. HCV (2017) Common Guidance for Identification. (PDF download)
mitigation hierarchy	The mitigation hierarchy is a schematic model enabling development projects to work towards "No Net Loss" of biodiversity and preferably a "Net Gain." The steps in the mitigation hierarchy are, in order: avoid, mitigate, restore or rehabilitate, offset, and, failing all that, compensate. **Source**: Forest Trends Website (accessed 11/02/2026). The Mitigation Hierarchy.

2.1.3. Interconnections & Implications

anthropocentric value	The value that something has for human beings and human purposes. The opposite of a non-anthropocentric value, where value is centred on something other than human beings. These values can be non-instrumental or instrumental to non-human ends. **Source:** IPBES (2020) Global Report on Biodiversity and Ecosystem Services. Annex I, p.1054. Glossary; Pascual et al., 2017.
biodiversity economy	A biodiversity economy focuses upon conserving, restoring, and sustainably using biodiversity as a core component of economic development. Unlike traditional approaches that often view nature as an endless resource, the biodiversity economy acknowledges the critical role of Earth's diverse life forms in supporting human survival and economic prosperity. The approach aims to protect and restore ecosystems while creating economic opportunities that benefit both people and the planet. **Source**: UNEP (2025) Biodiversity economies.
regulating contributions of NCPs	Regulating contributions are functional and structural aspects of organisms and ecosystems that modify environmental conditions experienced by people, and/or regulate the generation of material and non-material contributions. There are many examples of NCP regulating contribution or services such as: air quality,

	climate, ocean acidification, freshwater coastal water quality and quantity, habitat creation and maintenance, pollination and seed dispersal, soil and sediment formation / protection / decontamination, mitigation of hazards and extreme weather, mitigation of detrimental organisms and biological processes. **Source:** IPBES (2020) Global Report on Biodiversity and Ecosystem Services. Annex I, p.1046. Glossary, (IPBES, n.d., *op.cit*.).
material contributions of NCPs	Material contributions are substances, objects, or other material elements from nature that directly sustain people's physical existence and material assets. Material NCPs include, for example, energy provision (e.g., firewood), food and feed, building materials (e.g., wood, stone), labour (e.g., draft animals), companionship (e.g. pets and farm animals). **Source:** IPBES (2020) Global Report on Biodiversity and Ecosystem Services. Annex I, p.1046. Glossary, (IPBES, n.d., op.cit.).
non-material contributions of NCPs	Non-material contributions are nature's effects on subjective or psychological aspects underpinning people's quality of life, both individually and collectively. Examples include forests and coral reefs providing opportunities for recreation and inspiration, or specific organisms (e.g., animals, plants, fungi) or habitats (e.g., mountains, lakes, etc.) being the basis of spiritual or social-cohesion experiences, such as learning and inspiration, physical and psychological experiences, and supporting identity formation. **Source:** IPBES (2020) Global Report on Biodiversity and Ecosystem Services. Annex I, p.1046. Glossary, (IPBES, n.d., op.cit.).
impact on economy of biodiversity loss	Over 50% of the world's GDP is dependent on nature and, as such, economic stability is closely tied to ecosystem health. Biodiversity loss has profound economic consequences, particularly in sectors like agriculture, fisheries and healthcare. It is estimated that the global economic impact of biodiversity loss amounts to US$ 10 trillion annually, including healthcare costs from increased disease transmission and agricultural losses from pollinator declines. For example, the decline in bee populations, which are responsible for pollinating crops worth over US$ 235 billion annually, threatens global food security and nutrition. Just as diversity within a portfolio of financial assets reduces risk and uncertainty, so diversity within a portfolio of natural assets increases Nature's resilience to shocks, reducing the risks to Nature's services. Reduce biodiversity, and Nature and humanity suffer. **Source**: EU Commission (2025) Biodiversity and trade 2021; Biodiversity and finance 2021; WHO (2025) Fact Sheet on Biodiversity; *The Economics of Biodiversity, The Dasgupta Review*, 2021.
impact on health of biodiversity loss	Human health relies on ecosystem resources, products and services such as fresh water, food and fuel sources; the regulation of crop pests and diseases; and the regulation of air, water and soil quality—all of which are needed for good health

	and productive livelihoods. Biodiversity loss has significant direct and indirect health impacts if ecosystem services no longer meet the societal needs of human well-being. **Source**: WHO (2025) Fact Sheet on Biodiversity; European Commission (2023) Biodiversity and health.
impact of biodiversity loss on climate	Functioning ecosystems on land and in the oceans absorb a large proportion of man-made CO_2 emissions. Forests, mangroves, and moors store a significant amount of carbon, for example, that is released when destroyed through deforestation, degradation, or fire. As such, the integrity and functionality of such ecosystems are crucial to stabilizing the climate. **Source**: EU Commission (2024) Biodiversity, climate change and energy 2024.
impact of climate change on biodiversity	Climate change degrades biodiversity. Rising temperatures, changing precipitation patterns, habitat loss, water scarcity, crop losses, desertification, ocean acidification or an increase in extreme weather events—all put pressure on local ecosystems, including the plants and animals that live there. Many species are forced to leave their habitats just to survive or are already on the brink of extinction. **Source**: EU Commission (2024) Biodiversity, climate change and energy; MyClimate.org (2026) FAQ.
direct drivers of biodiversity loss	The direct drivers of biodiversity loss are changes in land-use and sea-use, overexploitation, climate change, pollution and invasive alien species. Many activities, such as agriculture, fisheries, urban expansion and trade, contribute to multiple drivers. Pesticide pollution has short-term effects on directly exposed organisms as well as long-term effects on biodiversity from changes in habitat and food chains. Excessive fertilizer use affects biodiversity through eutrophication of water bodies and soil acidification due mainly to nutrient runoff of nitrogen and phosphorus. The fisheries industry contributes to changes in sea use via the overexploitation of species and pollution of marine habitats. **Source**: European Commission (2023) EU policies address direct drivers of biodiversity loss.
indirect drivers of biodiversity loss	Indirect drivers of biodiversity loss are those unsustainable patterns of production, consumption, resource use, and trade underlying the direct drivers of biodiversity loss. Such patterns are entrenched in societal values and behaviours and can only be tackled via transformative change: i.e., fundamental, system-wide reorganization across technological, economic and social factors, including paradigms, goals and values. **Source**: European Commission (2023) EU policies addressing indirect drivers of biodiversity loss.
EU Biodiversity Strategy for 2030	The *EU Biodiversity Strategy for 2030* aims to secure healthy, resilient, biodiversity-rich ecosystems that deliver the range of services essential to the prosperity and well-being of citizens. Nature-based solutions are central to

	achieving the objectives of this strategy and sustainably tackling wider societal, economic and environmental challenges. **Source**: EU Commission (2022) Knowledge Centre for Biodiversity.

2.2. Regulatory Initiatives

The landscape of regulatory and treaty-based initiatives designed to address tensions at the interface of biodiversity and market economics is complex and constantly evolving. Efforts to protect biodiversity began in the environmental movement of the 1960s, expanded in the wake of 1990s globalization, and grew in both ambition and urgency following the 2015 Paris Climate Accord. The 2022 Kunming-Montreal Global Biodiversity Framework constitutes the most significant effort to address global biodiversity loss. With a focus on global and European efforts, this chronological list of key regulatory initiatives provides the legal basis for the protection of nature and biodiversity.

- 1964 IUCN Red List of Threatened Species
- 1973 Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
- 1979 EU Birds and Habitat Directive
- 1992 UN Convention on Biological Diversity (CBD)
- 2012 International Panel on Biodiversity and Ecosystem Services (IPBES)
- 2019 European Green Deal
    - EU Sustainable Finance Taxonomy (SFT)
    - EU Corporate Sustainability Reporting Directive (CSRD)
    - EU Taskforce on Nature-related Disclosures (TNFD)
- 2020 EU Biodiversity Strategy 2030
- 2021 EU Strategy on Adaptation to Climate Change
- 2022 Kunming-Montreal Global Biodiversity Framework (GBF)
- 2024 EU Nature Restoration Regulation (NRR)
- 2024 IPBES Nexus Assessment

2.3. Key Sources

The following reports and publications offer reliable, evidence-based information on biodiversity and can support both personal learning and the development of educational materials.

- Planetary Boundaries Framework
- IPBES 2024 Report (IPBES-2024)
- IPBES Global Report-Annex I, Glossary
- IPCC
- EC Knowledge Centre for Biodiversity (EC-2025)
- Asking Better Questions on Nature (TNFD-PRI-Ceres-IIGCC-AIGCC-2025)
- IUCN Global Standard for Nature-based Solutions
- Evaluating the Impact of Nature-Based Solution: A Handbook for Practitioners (EC, 2021) (D2.1, p.8)

3. Financing Nature-Based Solutions

3.1. Glossary

3.1.1. Definitions & Key Concepts

biodiversity funding	Biodiversity financing can be defined as expenditures that contribute to biodiversity conservation, restoration or sustainable use, whether by directly targeting these objectives or by having positive effects on them ("nature-positive"). **Source**: European Commission (2023) EU Briefing.
blended finance	Blended finance or blended capital is an innovative approach to development financing that strategically combines or "blends" public, philanthropic, and private capital to fund sustainable development initiatives, particularly in low income and developing countries. Blended finance works by using public or philanthropic funds (concessional capital) to catalyze private sector investment in projects that contribute to sustainable development but may not otherwise attract commercial funding due to high perceived risks or low returns. As such, blended capital is used to subsidize and de-risk private capital, serving as a catalyst for private capital investments in projects that create societal value but would otherwise not be financed. Blended finance has helped fund a broad range of projects (particularly in developing countries) on renewable energy, infrastructure, climate technology, nature-based solutions, and financial services. It has been less prevalent in social sectors like education. **Source:** Flammer et al. (2026). UNESCO Fact Sheet.
conservation trust fund (CTF)	Conservation Trust Funds (CTFs), often called Environmental Funds in Latin America and Africa, are legally independent institutions that provide sustainable financing for biodiversity conservation. The core business of CTFs is to mobilize resources from diverse sources—including international donors, national governments, and the private sector—and to direct them, primarily through grants, to governmental bodies (such as national parks agencies), non-governmental organizations, and community based-organizations on the frontlines of the biodiversity crisis. **Source:** GEF Secretariat
debt-for-nature swap (DNS)	A debt-for-nature swap represents any environmental-conditional debt relief between creditors and debtor country in order to drive improvement of marine, biodiversity, and climate conditions in a debtor country. This definition already takes into account recent evolution in the literature and is wider than original scholarship on DNS, which traditionally focuses on a narrower and more specific interpretation of DNS, where a portion of a debtor nation's foreign debt is forgiven, suspended, converted into new financing at a lower interest rate or repurchased, in return for commitments to fund local nature conservation initiatives. **Source:** Nedopil et al. (2025)

double materiality	The 2022 EU *Corporate Sustainability Reporting Directive* incorporates the concept of 'double materiality.' This means that companies must report not only on how sustainability issues might create financial risks for the company (financial materiality), but also on the company's own impacts on people and the environment (impact materiality). Investors are increasingly interested in both sides of this equation. They of course want to understand the risks to their investments, and in this respect the sustainability reporting requirements reinforce investor protection. But many investors also want to know how their investments impact people and the environment. This is partly because of the growing market for sustainable investment products, and partly because investors themselves are required to report on these impacts, especially under the EU's *Sustainable Finance Disclosure Regulation*. **Source:** European Commission
environmental impact bond (EIB)	An EIB is an innovative and alternative financial tool designed to foster social innovation practices in the public sector. As such, EIBs are financial models designed with a focus on environmental interventions, whereby public agencies work together with private capital and nonprofit organizations to fund cost-effective solutions. The public entity pays a return to investors only if the intervention meets or exceeds previously agreed-upon performance targets or outcomes. EIBs differ from green bonds with respect to the fact that an EIB is a pay-for-performance (or pay-by-results) tool, in which the payment is based on realized measured benefits, whereas green bonds fund a project based only on planned actions. Therefore, EIBs are characterized by a direct linkage of environmental-to-financial benefits. An EIB (*Environmental Impact Bond*) is a variant of an SIB (*Social Impact Bond*) both of which are included in the broader category of IBs (*Impact Bonds*). **Source:** Trotta (2024), Brand et al. (2021)
green bond	Green bonds are debt instruments specifically designed for financing environmentally beneficial projects, thus aligning financial returns with eco-conscious objectives and attracting investors interested in profit and positive environmental impact. Green bonds may be issued by the government, financial institutions, enterprises and other issuers to bond buyers, promising to pay interest at a certain rate and repay the principal and interest in accordance with the agreed terms. **Source:** Trotta (2024), Encyclopedia of Monetary Policy, Financial Markets and Banking
harmful subsidies (perverse subsidies)	Harmful subsidies are financial incentives or public funds provided by governments that unintentionally reward unsustainable business models, distort markets, and accelerate climate change or ecosystem degradation. Harmful or perverse subsidies are those subsidies that, over the long run, exert adverse effects on the environment or economy. Perverse subsides are prominent in five leading sectors: agriculture, fossil fuels and nuclear energy, road transport, water and fisheries. Source: UNDP BIOFIN
impact investing (II)	Impact investing is defined as the practice of generating specific beneficial social or environmental effects in addition to financial gains, utilizing investment capital

	to achieve positive societal or environmental outcomes. Impact investing represents the most advanced frontier of sustainable finance and is geared toward activities that generate measurable social and/or environmental impact alongside a financial return. **Source:** Hockerts et al. (2022)
Kunming-Montreal Global Biodiversity Framework (GBF)	In December 2022, the 15th Conference of Parties to the *UN Convention on Biological Diversity* adopted the *Kunming-Montreal Global Biodiversity Framework* (GBF). The framework commits states to halt and reverse biodiversity loss by 2030. The framework sets out an ambitious plan to implement broad-based action to bring about a transformation in societies' relationship with biodiversity by 2030, in line with the 2030 Agenda for Sustainable Development and 17 Sustainable Development Goals, and ensure that, by 2050, the shared vision of living in harmony with nature is fulfilled. **Source:** Convention on Biodiversity website
Kunming-Montreal Global Biodiversity Framework (GBF) 30x30 target	The *Global Biodiversity Framework* (GBF), adopted by the Parties to the *Convention on Biological Diversity* in December 2022, includes Target 3, known as the "30x30" target calling for a worldwide initiative by states to designate 30% of Earth's land and ocean area as protected areas by 2030. The GBF text reads: *Ensure and enable that by 2030 at least 30% of terrestrial and inland water areas, and of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem functions and services, are effectively conserved and managed through ecologically representative, well-connected and equitably governed systems of protected areas and other effective area-based conservation measures, recognizing indigenous and traditional territories, where applicable, and integrated into wider landscapes, seascapes and the ocean, while ensuring that any sustainable use, where appropriate in such areas, is fully consistent with conservation outcomes, recognizing and respecting the rights of indigenous peoples and local communities, including over their traditional territories.* **Source:** Convention on Biodiversity website, IUCN website
nature-related financial risk	Generally analyzed using categories adapted from climate financial risk, nature-related financial risk encompasses physical risks, systemic risks, transition risks, and liability risks. All such risks may result in negative impacts on economies, individual financial institutions, and commercial businesses. These four form of risk are associated with: (i) the degradation of nature, including its biodiversity, and the loss of ecosystem services that flow from it (i.e., physical risks); (ii) the misalignment of economic actors with actions aimed at protecting, restoring, and/or reducing negative impacts on nature (i.e., transition risks); (iii) the impact of one institution's failure cascading through wider financial systems (i.e., systemic risks); and (iv) the cost of litigation, fines, and fees for having caused environmental harm (i.e., liability risks). **Source:** Network of Central Banks and Supervisors for Greening the Financial System (NGFS).
public funding sources	Public domestic expenditures, mainly from government budgets (including from the EU and its Member States), represent the majority of biodiversity financing. Since a large part of the world's biodiversity is located in developing or emerging countries, international financial flows such as official development assistance (ODA) also play a crucial role, including to help leverage domestic funding.

	Source: European Commission (2023) EU Briefing.
private funding sources	The private sector provides funding through philanthropy, contributions to non-governmental organisations, market-based instruments, green bonds and other channels, although biodiversity finance is still less developed than climate finance. **Source**: European Commission (2023) EU Briefing.
social impact bonds (SIB)	SIBs are an innovation in payment-by-results (PbRs) contracting based on collaborative partnerships between public, private, and/or third sectors. SIBs are designed to achieve better outcomes in several policy areas, in which private investors finance programs and are repaid on the measurable outcomes attributable to financing, providers deliver services, evaluators assess them, and the outcome payer (usually governmental) repays investors (based on achieved outcomes or impacts). **Source:** Trotta (2024)
sustainability-linked loan (SLL)	A sustainability-linked loan is a loan type wherein the loan cost is linked to the borrower's agreed-upon sustainability-performance targets (SPTs). The borrower's sustainability performance is measured against pre-determined key performance indicators (KPIs), and preferential interest rates (PIRs) are granted upon achieving the SPTs. Unlike green loans, which are allocated to environmentally or socially responsible projects, SLLs are general corporate-purpose loans defined by the borrower's performance against predefined SPTs, rather than the use of proceeds. **Source:** Xia et al. (2025)
Sustainable Finance Disclosure Regulation (SFDR)	A European Union law in force since March 2021, the SFDR specifies how financial market participants must disclose sustainability information. The SFDR framework is designed to help investors (especially those who want to put their money into companies and projects supporting sustainability objectives) make informed choices. The SFDR is also designed to allow investors to properly assess how sustainability risks are integrated in the investment decision process. In this way, the SFDR contributes to one of the EU's major political objectives: attracting private funding to help Europe make the shift to a net-zero economy. The SDFR was amended in November 2025 to address shortcomings in the framework. The changes aim to deliver simpler and more usable information for investors, while reducing disclosure requirements and compliance costs for financial actors. **Source:** European Commission. Sustainability-related disclosure in the financial services sector (2025) and EU Regulation 2019/2088.
Taskforce on Nature-related Financial Disclosures (TNFD)	TNFD states that it is a market-led and science-based initiative supported by national governments, businesses and financial institutions worldwide, consisting of forty individual members representing financial institutions, corporate and market service providers. TNFD has developed a set of disclosure recommendations and guidance that encourage and enable business and finance to assess, report and act on their nature-related dependencies, impacts, risks and opportunities. The recommendations and guidance is designed to enable businesses and finance to integrate nature into decision-making. The aim of TNFD is to support a shift in

	global financial flows away from nature-negative outcomes and toward nature-positive outcomes, aligned with the Global Biodiversity Framework. **Source:** TNFD website
tax incentivizing	Transformative change includes integrating the value of nature in production systems as well as decision-making. To shift the tax burden from labour to pollution, under-priced resources and other externalities, the EU promotes tax systems and pricing that reflect environmental costs, such as biodiversity loss, via 'user pays' and 'polluter pays' principles. Biodiversity considerations are integrated into decision-making via methods such as life-cycle analyses and natural capital accounting to measure the environmental footprint of products and organisations. **Source**: European Commission (2023) EU policies addressing indirect drivers of biodiversity loss.
"polluter pays" principle	The commonly accepted practice that those who produce pollution should bear the costs of managing it to prevent damage to human health or the environment. A polluter pays principle aims at preventing anybody from reaping the benefits at the expense of (or even considerable harm to) other members of the society. **Source**: IPBES (2019), Global Assessment Report, Glossary.
payment for ecosystem services (PES)	A voluntary transaction whereby a well-defined land-use service is 'bought' by an ecosystem service buyer from an ecosystem service provider if and only if the ecosystem service provider secures ecosystem service provision (i.e., based on conditionality). The PES concept builds on the "provider gets" principle which differs from the "polluter pays" one as it is focused on the idea that ecosystem service providers be paid for positive externalities they provide rather than on the idea that polluters pay to compensate for negative externalities they generate. **Source:** Centre for International Forestry Research – Occasional Paper #42 (2005) Payments for environmental services.

3.1.2. Current State & Trends

biodiversity finance gap	The *Biodiversity Finance Gap*—the difference between the financial resources needed to conserve and sustainably manage biodiversity, and the funds currently available—is one of the most pressing challenges in global conservation. Estimates suggest that closing this gap requires hundreds of billions of dollars annually. Although no less than US$143 billion is spent on biodiversity every year globally, this is far below the estimated US$824 billion needed to protect and restore nature. **Source**: BIOFIN-The Biodiversity Initiative / UNDP (2026) What is Biodiversity Finance?.

harmful funding	Reducing the global financing gap will also require, more broadly, to channel overall public and private capital flows away from activities estimated to have negative impacts on biodiversity. This implies in particular the reform of government support, including subsidies, that is harmful to biodiversity, currently amounting to at least USD 800 billion per year according to recent estimates **Source**: European Commission (2023) Publications on biodiversity financing; EU Briefing.
National Biodiversity Strategies and Actions Plans (NBSAP)	The 1992 UN *Convention on Biological Diversity* (CBD) requires that signatories integrate consideration of the conservation and sustainable use of biological resources into national decision-making, and mainstream issues across all sectors of the national economy and policy-making framework. The NBSAP is the practical application of this requirement. As such, as one aspect of their treaty obligations, member states are expected to map their harmful subsidies in their national plans. Globally, BIOFIN-UN has played a leading role in helping developing countries implement this aspect of their respective NBSAPs. **Source**: UN Convention on Biological Diversity (1992) National Biodiversity Strategies and Actions Plans.
EU funding: 2014-2020 budget	During the 2014-2020 period, the EU budget dedicated EUR 85 billion to combat biodiversity loss, or 8% of the EU long-term budget, the multi-annual financial framework (MFF). This reflects contributions from a range of EU programs across different policy areas, including notably a significant contribution from the common agricultural policy (CAP). **Source**: European Commission (2025) Financing from the EU budget.
EU funding: EU Biodiversity Strategy for 2030	The EU Biodiversity Strategy for 2030 sets the following objectives: • at least €20 billion a year should be unlocked for spending on nature. This will require mobilising private and public funding at national and EU level, including through a range of different programmes in the next long-term EU budget. • as nature restoration will make a major contribution to climate objectives, a significant proportion of the EU budget dedicated to climate action will be invested on biodiversity and nature-based solutions. • under InvestEU (the new EU investment programme for 2021-2027), a dedicated natural-capital and circular-economy initiative will be established to mobilise at least €10 billion over the next 10 years, based on public/private blended finance. **Source**: European Commission (2025) Financing from the EU budget.

3.2. Regulatory Initiatives

- EU Taxonomy
- Biodiversity and its Global Governance

3.3. Key sources

The following reports and publications offer reliable, evidence-based information on biodiversity and can support both personal learning and the development of educational materials.

- The Little Book of Investing in Nature (AFD-2021)
- Biodiversity Finance Reference Guide (IFC-World Bank Group-2023)
- Finance and investment for biodiversity (OECD website-2025)
- Comprehensive Overview of Global Biodiversity Finance (OECD-2020)
- Finance for Biodiversity Foundation (Annual Report-2024)

4. Education as a lever for biodiversity and nature-based solutions

Education is crucial for conserving biodiversity, enabling its sustainable and equitable use, and mainstreaming it in other policies. We depend on biodiversity in multiple ways, yet public awareness of its importance is scarce. The role of biodiversity in sustaining ecosystem services, such as in producing clean water and food; regulating and adapting to climate change; supporting nutrient cycles, maintaining health, and many other social and cultural benefits, are not well known. Instead, the natural world is too often perceived as a resource to be exploited via activities such as logging, mining or poaching of wild animals, spurred by the belief that ecosystem services are free and therefore without value. Whilst concern for protecting the environment is prevalent among citizens in many regions, including Europe, there is a considerable gap between concern and taking action, which can be attributed to low levels of understanding of environmental issues, as well as lack of attention for social, emotional or behavioural learning.

Rather than serving as a glossary, as in previous chapters, the table below provides a synthetic overview of key dimensions of education for sustainability, with a particular focus on biodiversity.

education for urban populations	Increased urbanisation has weakened our connection with the natural world and played an important role in reducing public awareness on biodiversity. About half the world's people live in urban areas with increasingly less opportunities for direct contact with nature. This ongoing alienation or 'extinction of experience' has two main interrelated consequences, both of which are profound causes for concern. Firstly, it diminishes the wide range of benefits provided by human-nature interactions for physical health, psychological wellbeing and cognitive performance. Children are particularly sensitive to this progressive disengagement from the natural world. Especially in developed countries, children increasingly suffer from nature-deficit disorder due to reduced time spent playing outdoors, with urgent consequences for health and cognitive development. Secondly, there is mounting evidence from research that less contact with nature during childhood can induce a cycle of disaffection towards the environment, reducing willingness to support conservation initiatives later in life. This creates a feedback loop towards progressive deterioration of the human-nature relationship, extending over generations and detrimental to both humans and the environment. **Source**: European Commission (2023) Biodiversity and Education.
value of knowledge diversity (e.g., Indigenous Knowledge)	In the past, biodiversity and its conservation often played a prominent role in indigenous, local and traditional knowledge and governance systems. The erosion of these systems and the associated decline in sustainable traditional land use further threatens biodiversity and ecosystems services, as well as communities' contributions to accomplishing SDG 4 (inclusive and quality education). As UNESCO points out, the future of biodiversity will depend on the global collective action of an educated society, including efforts to promote local and indigenous

	knowledge of biodiversity. This entails an inclusive approach that attracts and involves everyone.
education for transformative change	Nature education will be of paramount importance for effecting the transformative change needed to address the indirect drivers of biodiversity loss: fundamental, system-wide reorganisation across technological, economic and social factors, including paradigms, goals and values. The IPBES global assessment report on biodiversity and ecosystem services identified education and knowledge generation and sharing as a key leverage point for achieving transformative change, which includes behavioural changes. It is therefore vital to integrate biodiversity into contemporary education and learning programmes.
whole-institution approaches, curricular change, and affective experiential learning	Environmental sustainability, including biodiversity, cannot be sufficiently addressed as separate topics; they need to be integrated in the entire curriculum, educational practice and educator professional development, as part of the whole-institution and whole-school approaches. Moreover, education on sustainability and the environment goes beyond classroom or online learning. Direct immersion in nature, especially in childhood, contributes to care for nature across the life span. This includes activities in "wild" nature, such as hiking, camping and fishing, as well as in “domesticated” nature, such as gardening, with a stronger impact observed from wilderness activities.
biodiversity and Education for Sustainable Development (UNESCO)	The urgent need to effect a green transition necessitates participation by people of all ages and backgrounds, especially the youth, educators and local communities. UNESCO’s education sector proposes education for sustainable development (ESD) as a key response to this challenge: *ESD gives learners of all ages the knowledge, skills, values and agency to address interconnected global challenges including climate change, loss of biodiversity, unsustainable use of resources, and inequality. It empowers learners of all ages to make informed decisions and take individual and collective action to change society and care for the planet. ESD is a lifelong learning process and an integral part of quality education. It enhances the cognitive, socio-emotional and behavioural dimensions of learning and encompasses learning content and outcomes, pedagogy and the learning environment itself.* The SDGs, notably target 4.7 of SDG 4, call for all learners to acquire by 2030 the knowledge and skills needed to promote sustainable development. Priority action areas identified in the UNESCO roadmap include integrating ESD in global, regional, national and local policies, promoting a systemic approach, empowering educators with the knowhow for promoting the green transition, recognising the youth as key actors, and supporting local community action. Attaining SDG 4 is crucial also for the other SDGs, including SDGs 14 and 15 that directly address biodiversity, as well as closely related SDGs 12 and 13.

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