

Thematic assessment of the underlying causes of biodiversity loss, determinants of transformative change and options for achieving the 2050 vision for biodiversity (transformative change assessment)

SECOND DRAFT OF THE CHAPTERS FIRST DRAFT OF THE SUMMARY FOR POLICYMAKERS SECOND EXTERNAL REVIEW PROCESS

IPBES members, observers, qualified experts and other interested stakeholders are invited to review the second draft of the chapters and the first draft of the summary for policymakers of the transformative change assessment during the second external review period; the review period is open from **8 December 2023 to 30 January 2024 (8 weeks)**.

The second external review, which focuses on the second draft of the chapters and the first draft of the summary for policymakers of the assessment, is one of the most important phases in the IPBES assessment process. The second external review is addressed to Governments and interested and qualified experts, including scientists, decision makers, practitioners and other knowledge holders. To ensure the highest scientific quality and policy relevance of the assessment, the Multidisciplinary Expert Panel is seeking peer review from the widest possible participation of experts from all relevant disciplines and backgrounds. To ensure consistency with and continuity from the first external review, those who participated in the first review are particularly invited to send comments.

Please note:

- The following drafts are available for review: chapters 1, 2, 3, 4, 5, summary for policymakers and glossary.

GUIDANCE ON COMMENTS

- Please focus on providing substantive comments that address content rather than providing comments on editing or formatting.
- General comments are welcome, but specific line-by-line comments are particularly helpful.
- Literature suggestions are welcome.

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If you have questions about the assessment and/or the second draft of the chapters, please contact the transformative change assessment technical support unit (ipbes-tsu-transformative-change@umontpellier.fr).

Thank you in advance for your interest in reviewing the second draft of the transformative change assessment and your support to IPBES.

IPBES TRANSFORMATIVE CHANGE ASSESSMENT GLOSSARY

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The glossary should be cited as: To be determined.

Preface

Language influences how we perceive the world and how we think about and communicate transformative change. It also influences the actions that we take, as well as those that we overlook or fail to take. However, there is no one-language-fits-all approach to understanding and activating transformative change. Many important qualities and characteristics of biodiversity and human-environment relationships are not captured in the English language (Harrison, 2008). For example, many Indigenous languages refer to the natural world through expressions, metaphors, and concepts that capture the complex flow and interdependence of life (Salmón, 2000). Of the more than 7,000 languages spoken around the world today, an estimated 2,900 (or 40%) are endangered¹. The period between 2022-2032 has been declared the International Decade of Indigenous Languages, which among other objectives aims for constitutional and legal recognition, preservation, and revitalization of Indigenous languages (*International Decade of Indigenous Languages 2022 – 2032 | United Nations For Indigenous Peoples*, n.d.). Recognizing the strong relationship between language diversity and biodiversity (Gorenflo et al., 2012), as well as the importance of a pluralistic understanding of transformative change (see Chapter 1, Box 3), this Glossary includes words and concepts from diverse languages that are referred to in the assessment.

Term/phrase	Definition
Actionable policy option	In this assessment, it refers to a specific and concrete course of action that can be realistically implemented to address a particular issue or achieve a specific policy objective. The term "actionable" implies that the proposed option is not just a theoretical idea or a general concept but is practical, feasible, and can be put into effect. Actionable policy options provide clear and detailed steps or measures that decision-makers can take to make progress toward their desired outcomes (see Chapter 5). Key characteristics of an actionable policy option include: 1. Feasibility: The option should be realistic and achievable given the available resources, political context, and administrative capacity. 2. Specificity: It should clearly outline the steps or measures that need to be taken, leaving little room for ambiguity. The more specific the option, the easier it is to implement. 3. Measurability: Actionable policy options often include indicators or metrics that can be used to assess progress and success. This allows for monitoring and evaluation of the policy's impact over time. 4. Relevance: The option should directly address the identified issue or problem and contribute to the achievement of the overall policy goals. 5. Consideration of Stakeholders: Actionable policy options take into account the perspectives and interests of relevant

¹<https://languageconservancy.org/language-loss/#:~:text=Since%201950%2C%20the%20number%20of,in%20the%20next%20100%20years>

	stakeholders, considering potential challenges and building support for implementation.
Adaptation	Adjustment in natural or human systems in response to actual or expected stimuli or their effects, which moderates harm or exploits beneficial opportunities (IPBES, 2021b).
Adaptive Capacity	The general ability of institutions, systems, and individuals to adjust to potential damage, to take advantage of opportunities, or to cope with the consequences (IPBES, 2021b).
Agency	The capacity of individual and collective actors to change the course of events or the outcome of processes (Otto, Wiedermann, et al., 2020). Agency can also apply to non-human entities ('Indigenous place-thought and agency amongst humans and non humans (First woman and sky woman go on a European world tour!) - UiT - Norges arktiske universitet', 2013). In this assessment, agency is recognised as something that can be created, shaped and constrained by political-economic processes, cultural and social norms, dominant system paradigms and education and knowledge systems.
Anthropocentrism	The ethical belief that humans alone possess intrinsic value (Goralnik & Nelson, 2012).
Anticipation	An action that takes into account or forestalls a later action, as well as the general act of looking forward into the (near) future (Adams et al., 2009).
Anticipation approaches	The use of anticipation methods and tools to address the complexity and uncertainty of social-ecological systems (Boyd et al., 2015).
Austerity (in economic policy)	Policy relating to considerable reduction of government deficits and stabilization of government debt through expenditure cuts or tax increments, or both (Alesina et al., 2019).
Axiology	The study of the nature of value and valuation, or of the kinds of things that are valuable. From the Greek: <i>axios</i> or worth, and <i>logos</i> or reason/theory (Hart, 1971).
Biodiversity	The variability among living organisms from all sources including terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are a part. This includes variation in genetic, phenotypic, phylogenetic, and functional attributes, as well as changes in abundance and distribution over time and space within and among species, biological communities and ecosystems (IPBES, 2021b).
Biodiversity offsets	Measurable conservation outcomes designed to compensate for detrimental and unavoidable effects of projects in addition to prevention and mitigation measures that have already been implemented (IUCN, 2021).
Blue acceleration	The unprecedented race among diverse and often competing interests for claiming the ocean for food, material, and space that is currently prevalent (Jouffray et al., 2020).
Buen Vivir (<i>Sumak Kawsay</i> in Quechua, <i>Suma Qamaña</i> in Aymara)	An alternative to economic development-centered approaches, generally defined as forming part of the Andean indigenous cosmology, based on the belief that true wellbeing is only possible as part of a community in a broad sense, including people, nature and the Earth, linked by mutual responsibilities and obligations, and that the

	wellbeing of the community is above that of the individual (IPBES, 2021b).
Challenge	In this assessment, it refers to a situation or an issue that hinders, impedes or prevents transformative change and can be manifested in a multitude of ways across contexts and may involve local and/or collective agency (see Chapter 4).
Circular economy	A system with minimal input and operational losses of materials and energy through extensive reduce, reuse, recycling, and recovery activities. Ten strategies for circularity include: Refuse, Rethink, Reduce, Reuse, Repair, Refurbish, Remanufacture, Repurpose, Recycle, Recover (Shukla et al., 2022).
Clean technology	Means of providing a human benefit that uses less resources and causes less environmental damage than other economically competitive processes (Clift, 1999).
Climate change	As defined in Article 1 of the United Nations Framework Convention on Climate Change, a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods (IPBES, 2021b). A change in the state of the climate that can be identified (e.g., by using statistical tests) by changes in the mean and/or the variability of its properties and that persists for an extended period, typically decades or longer. Climate change may be due to natural internal processes or external forcings such as modulations of the solar cycles, volcanic eruptions and persistent anthropogenic changes in the composition of the atmosphere or in land use. Note that the United Nations Framework Convention on Climate Change (UNFCCC), in its Article 1, 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'. The UNFCCC thus makes a distinction between climate change attributable to human activities altering the atmospheric composition and climate variability attributable to natural causes (<i>IPCC Glossary</i>, n.d.). Mixtec people from Oaxaca use the term 'Hama kia', which means 'times have changed' (IPBES, 2019c). The Yukaghir in Russia say "nature doesn't trust us anymore". For them, climate change means unpredictability (IPBES, 2019c).
Colonial modernity	Forms of modernity experienced while under colonialism (Menon, 2002). Applied in more contemporary contexts, refers to a worldwide experience of subjugation under a continuing globalising project of modernity/coloniality (Mignolo, 2007; Ndlovu-Gatsheni, 2011; Shilliam, 2010). Colonial modernity tends to view nature as a commodity, with nature existing to serve humans.
Coloniality	Enduring ways of thinking and pervasive structures and patterns of power, inequality and domination established under European

	colonialism that continue to shape modern societies in cultural, political and knowledge aspects beyond the end of formal colonial rule, becoming a pervasive force (Quijano, 2007).
Consumerism	The purchase and consumption of goods and services in quantities that exceed basic requirements (<i>APA Dictionary of Psychology</i> , n.d.).
Co-production	In the context of the IPBES conceptual framework, this is the joint contribution by nature and anthropogenic assets in generating nature's contributions to people (IPBES, 2021b). In terms of transformative change, it recognises the importance of indigenous knowledge systems, or 'Walking on Two Legs', which means including traditional ways of knowing in educational systems, but also allowing innovation and new ways of knowing. Traditional ways of knowing can be included including value-based practices like ceremonies, festivals, rituals, stories, songs, and production practices like hunting, cultivation, gathering (IPBES, 2019a).
Corruption	The abuse of entrusted power for private gain. Although this is the most common definition, other definitions exist. The World Bank, for example, defines corruption more narrowly as "abuse of public office for private gain". All expert/specialist variations nevertheless include three common elements: abuse (misuse, violation) of entrusted power (duty, office, etc.) and private benefit. In everyday language, the term is used more broadly to denote a wide variety of objectionable or immoral acts, and not only those associated with formal duty (<i>CMI Glossary</i> , n.d.).
Culture	A commonly accepted definition of culture refers to the system of shared beliefs, values, customs, behaviours, and artifacts that the members of society use to cope with their world and with one another, and that are transmitted from generation to generation through learning (IPBES, 2021b).
Degrowth	Started as an activist movement around 2008 and turned into an academic discipline, it starts from the premise that economic growth cannot be sustained ad infinitum on a resource constraint planet. It demands a deep societal change, denying the need for economic growth. It is unclear whether degrowth should be considered as a collectively consented choice or an environmentally-imposed inevitability (IPBES, 2021b).
Discourse	A form of language use, public speeches or spoken language and ways of speaking. Can also refer to the ideas or philosophies propagated by different groups, including who uses language, how, why, and when. Also refers to a web of meanings, ideas, interactions, practices expressed or represented in texts (spoken and written, gesture, and visual imagery) within institutional everyday settings (Bischoping & Gazso, 2015; Dijk, 1997).
Drivers (direct)	Drivers, both non human-induced and anthropogenic, that affect nature directly. Direct anthropogenic drivers are those that flow from human institutions and governance systems and other indirect drivers. They include positive and negative effects, such as habitat conversion, human-caused climate change, or species introductions. Direct non human-induced drivers can directly affect anthropogenic assets and

	quality of life (e.g. a volcanic eruption can destroy roads and cause human deaths), but these impacts are not the main focus of IPBES. See Chapter 1 and Chapter 2 (Drivers) in for a detailed typology of drivers. (IPBES, 2019a)
Drivers (indirect)	Human actions and decisions that affect nature diffusely by altering and influencing direct drivers as well as other indirect drivers. They do not physically impact nature or its contributions to people. Indirect drivers include economic, demographic, governance, technological and cultural ones, among others. See Chapter 1 and Chapter 2 (drivers) for a detailed typology of drivers. (IPBES, 2019a)
Ecological anxiety	A general sense that the ecological foundations of existence are in the process of collapse (Albrecht, 2012).
Ecological civilization	An eco-innovation, rooted in the traditional wisdom of Unity of Nature and Humanity, to harmonize the apparent contradiction between economic development and environmental protection, including biodiversity conservation (Ma & Wei, 2021).
Ecological crisis	Potential destruction of conditions that sustain human life on earth owing to exacerbated levels of human interventions; comprises interwoven environmental issues such as global climate change, soil degradation, pollution, toxicity of synthetic chemicals etc. (Takács-Sánta, 2022; Vasan, 2018)
Ecological debt	The total monetized ecological damage accumulated over a period in the geographically defined surroundings of a certain extraction or production unit, where the cause-effect relationship between the unit and the damage is sufficiently unique and confirmed (Sébastien, 2012; Warlenius et al., 2015).
Eco-social contracts	See natural social contracts.
Ecosystem services	The benefits people obtain from ecosystems, which include supporting, regulating, provisioning and cultural services (IPBES, 2019a).
Empowerment	The process by which people gain control over the factors and decisions that shape their lives. It is the process by which they increase their assets and attributes and build capacities to gain access, partners, networks and/or a voice, in order to gain control (IPBES, 2021b).
Epistemology	The study or theory of the nature and grounds of knowledge, with reference to its limits and validity. From the Greek words <i>episteme</i> or knowledge, understanding, and <i>logos</i> or account, argument, reason (Steup & Neta, 2005).
Equality	A concept that and principle is difficult to define, and most easily understood through inequality, particularly extreme inequality. The perceptions of equality and inequality and the evaluation of these perceptions are important elements of the dynamic processes of human society, which create pressures for action especially when there is a perception of divergence between an actual situation and a supposedly attainable ideal (Boulding, 1973)
Equity	A concept and principle associated with freedom from bias or favouritism, or something that is fair to all concerned (e.g., equal rights, opportunities, and obligations). There are distributive, procedural, and recognition dimensions to equity.

	Equity comprises three interlinked dimensions: Distributive equity highlights the need to consider not just the allocation of benefits, but also of costs and risks. Decisions about distribution can be justified on the basis of equality, social welfare, merit or need. Procedural equity encompasses fairness in political processes and participation in decision-making. Contextual equity recognises the fact that the playing field is never level, but that people's capabilities and their access to resources and power determine the extent to which they are able to utilise procedural equity to determine the best distributive outcome for themselves (IPBES, 2021b). A concept and principle associated with freedom from bias or favouritism, or something that is fair to all concerned (e.g., equal rights, opportunities, and obligations). There are distributive, procedural, and recognition dimensions to equity. Fairness of rights, distribution, and access. Depending on context, this can refer to resources, services or power. In difference to equality, equity also recognizes different backgrounds and starting points of individuals and/or groups of people (MPH@GW, 2020).
Ethics	Ethics involves questions of justice and value. Justice is concerned with right and wrong, equity and fairness, and, in general, with the rights to which people and living beings are entitled. Value is a matter of worth, benefit, or good. See also Equality, Equity and Fairness (<i>IPCC Glossary</i>, n.d.). In this assessment, it also refers to a system of accepted beliefs that control behaviour, especially such a system based on morals (see Chapter 2).
External attribution	The feeling that protecting nature is the responsibility of other agencies such as the government (Bosone et al., 2022).
Fairness	Something that is fair is impartial and just. Fairness is a value that is considered integral to the establishment and maintenance of social relations at every level, from the local to the global and from the micro to the macro (Rayner & Malone, 2001).
Feasibility	The degree to which climate goals and response options are considered possible and/or desirable. It depends on geophysical, ecological, technological, economic, social and institutional conditions for change. Conditions underpinning feasibility are dynamic, spatially variable, and may vary between different groups (IPCC, 2018). In this assessment, it refers to the possibility that something can be made, done, or achieved, or is reasonable (see Chapter 2).
Fiction	The process and result of telling stories involving creativity and imagination. Includes science fiction, speculative fiction, futures fictional narratives, and other genres representing creative approaches to narrating the potential for transformative change (Caïra & Schaeffer, 2011).
Fortress conservation	The formation of inviolate protected areas , typically to conserve charismatic species, underlain by the notion that local people's use of

	landscapes and resources should be restricted to protect biodiversity, and that ‘inviolable’ areas should be protected by force if necessary (Byron & Arnold, 1999; Rai et al., 2021).
Good quality of life	Within the context of the IPBES Conceptual Framework - the achievement of a fulfilled human life, a notion which may vary strongly across different societies and groups within societies. It is a context-dependent state of individuals and human groups, comprising aspects such as access to food, water, energy and livelihood security, and also health, good social relationships and equity, security, cultural identity, and freedom of choice and action. “Human wellbeing”, “inclusive wealth”, “living in harmony with nature”, “living-well in balance and harmony with Mother Earth” are examples of different perspectives on a “Good quality of life” (IPBES, 2019a, 2021b).
Global North	Countries mostly located in the northern hemisphere, characterized by high income levels, technological and infrastructural advancements, and macroeconomic and political stability (Kowalski, 2021).
Global South	Countries located mostly in the southern hemisphere, with low to middle income levels and facing different structural problems (Kowalski, 2021).
Governance	The way the rules, norms and actions in a given organization are structured, sustained, and regulated (IPBES, 2019a). Nexus definition of Transformative governance: “The formal and informal (public and private) rules, rule-making systems and actor-networks at all levels of human society (from local to global) that enable transformative change, in our case, towards biodiversity conservation and sustainable development more broadly (Visseren-Hamakers et al., 2021; Visseren-Hamakers & Kok, 2022). Transformative governance includes five governance approaches: integrative, inclusive, adaptive, transdisciplinary, and anticipatory (Visseren-Hamakers & Kok, 2022).
Growth paradigm	The term “growth paradigm” was first introduced by ecological economist Herman Daly (Daly, 1972) to characterize the preanalytic vision of mainstream economists that justified their belief in unlimited growth (Vanasupa & Schlemer, 2016).
Health	Health (human): A state of complete physical, social and mental well-being, and not merely the absence of disease or infirmity (World Health Organization, 2021). Health (Nexus): Health includes human physical and mental health and well-being, and the role of ecological, environmental, socio-economic, cultural and health system factors. This report recognises the link between human health, animal health and ecosystem health and the need of achieving equity of health outcomes, addressing all elements of the Nexus. (See definition considered by IPBES nexus assessment, Chapter 1).
Heuristic	Heuristics are often characterized as rules of thumb that can be used to speed up the process of decision-making (Hjeij & Vilks, 2023).
Hope	A positive account that exists in the not-yet, which consequently requires people to throw themselves actively into what is becoming, to which they themselves belong (Bloch et al., 1986).

Human Well-being	A state of existence that fulfils various human needs, including material living conditions and quality of life, as well as the ability to pursue one's goals, to thrive, and feel satisfied with one's life (<i>IPCC Glossary</i> , n.d.). The IPBES definition is consistent with this definition but notes that well-being also includes non-material living conditions and cultural identity. The phrase 'Good quality of Life' as used in this report (see glossary entry) is intended to be inclusive of both the human well-being definitions given above (IPBES, 2021b).
Incentives	In this assessment, it refers to something that motivates individuals, communities, organizations and governments to take actions that are aligned with transformative change.
Incremental shift	Involve making adjustments to maintain business as usual. Incremental shifts do change entire systems or economic structures (Heikkinen et al., 2019).
Indigenous and local knowledge (ILK)	The knowledge, practices and innovations embedded in the relationships of Indigenous Peoples and local communities to nature (IPBES, 2019a).
Indigenous Peoples and local communities	As used in the IPBES Global Assessment, Indigenous Peoples and local communities is a term used internationally by representatives, organizations, and conventions to refer to individuals and communities who are, on the one hand, self-identified as indigenous and, on the other hand, are members of local communities that maintain inter-generational connection to place and nature through livelihood, cultural identity and worldviews, institutions and ecological knowledge. The term is not intended to ignore differences and diversity within and among Indigenous Peoples and between them and local communities; Indigenous Peoples have recognized and distinct rights, which are not extendable to the broader and encompassing concept of local communities (IPBES, 2019a).
Individualism	The moral stance, political philosophy, ideology and social outlook that emphasizes the intrinsic worth of the individual (Wood, 1972).
Inequality	Uneven opportunities and social positions, and processes of discrimination within a group or society, based on gender, class, ethnicity, age and (dis)ability, often produced by uneven development (IPCC, 2022). Social inequality refers to a state whereby resources in a given society are distributed unevenly, typically through norms of allocation, that engender specific patterns along lines of socially defined categories of persons (IPBES, 2021b).
Innovation	An idea, practice, or object perceived as new by an individual or other unit of adoption (Rogers, 2003).
Innovation system	A concept involving agents, networks and institutions working towards the overall function of developing, disseminating and using new products and processes (Hayashi, 2020).
Institutions	Institutions are the humanly devised constraints that structure political, economic, and social interaction, consisting of both informal constraints (sanctions, taboos, customs, traditions, and codes of conduct), and formal rules (constitutions, laws, property rights) (North, 1991).

Institutional misfits	Several types of situations (social, spatial, temporal, and functional) that reflect incompatibility between the properties of institutional arrangements with those of the socio-ecological systems they are embedded in (Young, 2008).
Innovation systems	A concept involving agents, networks and institutions working towards the overall function of developing, disseminating and using new products and processes (Hayashi, 2020).
Interconnectedness	The state of being in relation as part of a larger whole. The Tuawhenua people recognise the collectiveness in their world everything is connected in their culture (e.g. bats, lizards, birds, insects, trees, plants, mountains, rivers and lakes). This connectedness is commonly known by Maori as <i>tātai whakapapa</i> (connectedness of genealogy) (Lyver et al., 2015).
Just	Just describes what is considered moral or ethical, and it is often conflated with equity and fairness. All notions and interpretations of just and justice are normative constructs, and have merits and drawbacks relative to each other (Ikeme, 2003).
Justice	Justice traditionally refers to the fair treatment of people, or ‘what we owe to each other’, but its scope may also be extended to include duties to other units of nature such as animals, rivers or Pachamama (IPBES, 2021b). A variegated set of conditions – primary concerned with distribution of resources, political processes, and social recognition – that allows for full human flourishing.” “If conditions within a given society systematically support one but hinder other individuals or groups with regard to basic flourishing (i.e., fundamentally thriving within reasonable limits) according to achievable outcomes that they value in order to live a healthy and fulfilled life, then that society is to some degree unjust (Langemeyer & Connolly, 2020). See also Equality and Equity (See definition of justice being considered by the IPBES nexus assessment). In this assessment, the concept of justice is relevant to procedural justice, distributional justice, recognition justice, restorative justice, and multispecies justice (Agyeman et al., 2016; Celermajor et al., 2020).
Knowledge system	A body of propositions that are adhered to, whether formally or informally, and are routinely used to claim truth. They are organized structures and dynamic processes (a) generating and representing content, components, classes, or types of knowledge, that are (b) domain-specific or characterized by domain-relevant features as defined by the user or consumer, (c) reinforced by a set of logical relationships that connect the content of knowledge to its value (utility), (d) enhanced by a set of iterative processes that enable the evolution, revision, adaptation, and advances, and (e) subject to criteria of relevance, reliability, and quality (IPBES, 2021b).
Leverage points	Places in a system where relatively minor interventions can lead to 418 relatively major changes in certain outcomes (Fischer & Riechers, 2019; Meadows, 1999).
Liberalization	A significant reduction in controls such as taxes, licences, or quotas on foreign trade (Lee, 2005; Weiss, 1992).

Living in Harmony with Nature	Within the context of the IPBES Conceptual Framework - a perspective on good quality of life based on the interdependence that exists among human beings, other living species and elements of nature. It implies that we should live peacefully alongside all other organisms even though we may need to exploit other organisms to some degree (IPBES, 2021b).
Lock-in traps	A set of closely allied traps that reflect an unwillingness to change (Cumming, 2018). A situation in which the future development of a system, including infrastructure, technologies, investments, institutions and behavioural norms, is determined or constrained ('locked in') by historical developments (IPCC Glossary, n.d.)
Market fundamentalism	A strong faith in the ability of laissez-faire or free market policies to solve most economic and social issues (<i>Market Fundamentalism</i> , 2015).
Materialism	The belief that consumer goods and services provide the greatest source of satisfaction and value (Belk, 1985).
Mental Models	A concentrated, personally constructed, internal conception of external phenomena (historical, existing or projected), or experience that affects how a person acts (Rook, 2013).
Metabolic rift	The process of disruption of natural cycles and separation between human societies and nature (Foster, 1999).
Mindset	The basic assumptions, beliefs, core values, goals and expectations shared by a group of people and what they use as rules to guide their attitudes and practices (Fang et al., 2004).
Modernity	Notions shaped by coloniality that idealize and promote control-oriented, mechanistic and reductionist ways of reasoning, generating knowledge, organizing structures, and political representation and underpin industrial production (Stirling, 2019).
Monitoring, evaluation, and learning (MEL)	See Chapter 5. Monitoring is the repeated observation of a system in order to detect signs of change (IPBES, 2021b).
Mother Earth	An expression used in a number of countries and regions to refer to the planet Earth and the entity that sustains all living things found in nature with which humans have an indivisible, interdependent physical and spiritual relationship (IPBES, 2021b).
Narrative	Qualitative descriptions of plausible future world evolutions, describing the characteristics, general logic and developments underlying a particular quantitative set of scenarios. Narratives are also referred to in the literature as "storylines" (<i>IPCC Glossary</i>, n.d.). A specific vision or interpretation underlying a scenario (see definition considered by the IPBES nexus assessment).
Natural Resources	Refers to metals, minerals, fossil fuels, biomass, water and land. These resources can be tracked as flows through the economy: from extraction, through processing and consumption, to point of reuse or discarding at end-of-life (UNEP, 2017).

Natural social contracts	Natural Social Contracts or Eco-Social Contracts are the collective power of societies, people and nature for dealing with the polycrisis of the 21st century (including inequalities, injustices, distrust, climate and ecological crises) through implicit or explicit collective agreements (at multiple governance levels) among members of a society to cooperate with one another and abide by certain rules or norms targeted at sustainability, equity and justice, while departing from a different worldview (eco-centric or Earth-centric instead of anthropocentric), a different view of humanity (homo ecologicus/florens instead of homo economicus), and different economies and cultures (regenerative instead of linear)” (Huntjens et al., 2023).
Nature	In the context of IPBES, nature refers to the natural world with an emphasis on its living components. Within the context of western science, it includes categories such as biodiversity, ecosystems (both structure and functioning), evolution, the biosphere; humankind’s shared evolutionary heritage, and biocultural diversity. Within the context of other knowledge systems, it includes categories such as Mother Earth and systems of life, and it is often viewed as inextricably linked to humans, not as a separate entity (see "Mother Earth") (IPBES, 2022a, 2021b).
Nature deficit disorder	Idea that an urbanized lifestyle, including fewer natural spaces, a car-focused culture, more screen time, changes in the perception of risk, less leisure time, and increased time pressures from work or school, combine to decrease or even eliminate contact with nature for both adults and children (Warber et al., 2015).
Nature’s contributions to people	Nature’s contributions to people are all the contributions, both positive and negative, of living nature (i.e., all organisms, ecosystems, and their associated ecological and evolutionary processes) to people’s quality of life (IPBES, 2019a).
Nature-based Solutions	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 (UNEP, 2022).
Neoliberalism	A set of governmental policies and practices that took hold in the 1980s wherein states re-regulated to facilitate increased flows of capital throughout the globe (Bloom, 2017).
Normative principles	Sentences or statements that makes claims regarding what ought to be done (categorically or hypothetically) (Henderson, 2002).
Ontology	The science of what is, of the kinds and structures of objects, properties, events, processes and relations in every area of reality (Smith, 2012). The philosophical study of the nature of being, becoming, existence, or reality, as well as the basic categories of being and their relations (IPBES, 2019a).

Paradigm	Dominant thought patterns based on a deep set of beliefs and shared social agreements about the nature of reality and how the world works (Meadows, 1999).
Pathways	Descriptions of the temporal evolution of specific scenario aspects, representing different strategies for moving from a business-as-usual situation towards a desired future vision for a sustainable world (Chan et al., 2019; Pereira et al., 2020). “Pathways” consist of descriptions of different strategies for moving from the current situation towards a desired future vision or set of specified targets. They are descriptions of purposive courses of actions that build on each other, from short-term to long-term actions into broader transformation. They are closely related to normative or policy or target-seeking scenarios (IPBES, 2021b). Pathways are plausible trajectories of development in certain fields (e.g., policy and governance, socio-economical, technical, energy-industrial) towards a future state of a system. They evolve over time and can be combined with other assumptions or conditions to create scenarios. Different types of pathways can be understood depending on the scenario framing (IPCC, 2022).
Path dependency	The notion that further technological modifications are functions of prior technical changes, thereby implying that once a dominant technology emerges, it would be difficult to shift to competing technologies (Löschel & Schymura, 2013).
Planetary Health	Describes the health of human civilisations and the natural systems on which they depend; a new interdisciplinary and transdisciplinary approach that aims to investigate the effects of environmental change on human health, and to study the political, economic, and social systems that govern those effects (The Lancet Planetary Health, 2017).
Plurality	Refers to the existence or inclusion of a diverse range of perspectives, practices, interpretations, or disciplines. It suggests that there are multiple viewpoints, approaches, and understandings within a given context. It recognizes that different languages, research traditions, and cultural contexts may contribute to a rich and varied understanding of the subject matter, while also acknowledging the potential challenges of navigating and translating these diverse perspectives. It is used to highlight the importance of incorporating a variety of perspectives and disciplines in order to recognise and honour this diversity through the development of context specific forms of engagement, that include diverse actors, visions and worldviews, and remain open to ongoing contestation, renegotiation and change. Plurality therefore includes within it a commitment to ongoing renegotiation of power (Pascual et al., 2021).
Pluriverse	A call to recognize a diversity of world views and conceptualizations of planetary well-being, particularly those opposed to Eurocentric traditional development models (Demaria & Kothari, 2017; Escobar, 2015; Kaul et al., 2022; Kothari et al., 2019).

Policy autonomy	Delegation of authority to agencies to become actively engaged in policy formulation (Bach, 2012).
Policy inertia	Lack of evidence-based policy formulation and policy coherence through learning and feedback mechanisms (IPBES, 2019a).
Policy instrument	A policy instrument is a specific tool or mechanism that policymakers use to implement a chosen policy option. While a policy option represents a broad course of action or decision, a policy instrument is the concrete means by which that option is put into practice. In other words, policy instruments are the practical tools and methods used to achieve the objectives set by a policy. Policy instruments can take various forms and may include (see Chapter 5): 1. Regulatory Instruments: Laws, rules, and regulations that prescribe certain behaviors or actions and set penalties for non-compliance. 2. Economic Instruments: Financial tools such as taxes, subsidies, grants, and other economic incentives or disincentives designed to influence behavior. 3. Information and Education Instruments: Campaigns, educational programs, and information dissemination to raise awareness and encourage specific behaviors. 4. Voluntary Approaches: Programs that encourage individuals or organizations to take specific actions without imposing mandatory requirements. This could include voluntary agreements or partnerships. 5. Direct Provision of Services: Government provision of services or resources to achieve policy goals directly. 6. Research and Development Funding: Investments in research and development to spur innovation and technological advancements in line with policy objectives.
Policy option	Defined in terms of their ability to achieve the stated policy goals (IPBES, 2021b). In this assessment, potential course of action or decision that can be taken by a government, organization, or individual to address a particular issue or achieve a specific goal. In the context of government and public administration, policy options are the different choices available to policymakers when designing and implementing policies. These options are often based on analysis, research, and consideration of various factors, including social, economic, and political implications. Policy options can range from regulatory measures and legislative changes to financial incentives, awareness campaigns, and international cooperation. The selection of a policy option depends on the goals and values of the decision-makers, as well as the context and nature of the issue at hand (see Chapter 5).
Polycrisis	A single, macro-crisis of interconnected, runaway failures of Earth's vital natural and social systems that irreversibly degrades humanity's prospects (Homer-Dixon et al., 2021).

Population dynamics	Population dynamics is the study of why population numbers change in time and space and how these processes operate through biological, social, and environmental processes (Turchin, 2003). Population dynamics include population size, age structure, urbanization and migration.
Power	Power is the capacity of actors to mobilize agency, resources, and discourses, as well as to utilize or shape institutions to achieve a goal. Power can be both constraining and enabling, and the capacity of one actor can inhibit the capacity of another actor. Power in the context of human-nature relationships can be manifested in multiple and non-exclusive ways through discourses and social structures. Discursive power is the power to use discourses or knowledge production to shape worldviews, identities, and values. Related to discursive power is the power to frame how issues are understood, communicated, and discussed (framing power). Structural power is the result of historically-specific socio-cultural, political, and economic systems that reproduce social positions and/or hierarchies among social groups. Structural power relations determine, for example, who has the power to make rules regarding access, use, and responsibilities about nature/NCP, and who is excluded from this process (rule-making power); as well who has the formal or informal rights regarding nature/NCP which in turn determines the use of these assets and whose values are emphasized (operational power) (IPBES, 2021b).
Power relations	Refers to the relative status, power, and/or dominance in interpersonal relationships and interactions, reflected in whether expectations and behaviours are reciprocal or imposed (<i>Power Relations</i> , n.d.).
Rebound effect	The absolute or relative difference between the potential environmental benefits and the actual environmental benefits (Font Vivanco et al., 2016).
Reciprocity (ayni)	In the Andes, ayni refers to how things get in balance or out of balance in the cycle of life. Even though it is often translated into reciprocity in English, the word ayni carries a much broader meaning (IPBES, 2019b).
Reflexivity	That which takes account of itself or a person's self. Mental operations that are turned or directed back on the mind itself (Holland, 1999; Salzman, 2002).
Regenerative agriculture	Regenerative agriculture is an approach to farming and land management that focuses on restoring and improving the health of ecosystems. The goal is not only to sustainably produce food but also to regenerate the soil, water, and biodiversity, ultimately creating a more resilient and sustainable agricultural system (Tittonell et al., 2022).
Relational Values	Relational values refer to the importance of desirable, meaningful, and often reciprocal relationships - beyond means to an end - between humans and nature, and among humans (including across generations) through nature (e.g. sense of place, spirituality, responsibility, care, reciprocity, stewardship) (IPBES, 2021b).
Response options	The diverse range of human actions to address specific issues, needs, objectives, opportunities, or problems in the governance and management of the nexus that account for a diversity of worldviews, behaviours, norms and values. Response options can encompass

	combinations of voluntary or mandatory policies, strategies, measures, and interventions that are intended, designed and/or implemented to change nexus elements and interlinkages between nexus elements directly, and those that modify direct or indirect drivers shaping the nexus. The nexus assessment focuses on actions, policies and enablers in particular as important response options. The response options presented in this assessment are a non-exhaustive list, with implementation dependent on national and local circumstances (See definition being considered by the IPBES nexus assessment, Chapters 1 and 4).
Sacred Natural Sites	Areas of land or water that have special spiritual significance to peoples and communities. They consist of natural features, ranging from entire ecosystems, such as mountains, forests or islands, to single natural features such as a tree, spring or boulder, and are very important for the conservation of nature and culture. Sacred natural sites have been managed based on indigenous and local knowledge systems, developed over long periods of time, and are source of cultural identity (IPBES, 2021b). In Uganda, they are places respected by pastoralists. These traditional spaces are <i>akiriket</i> (decision making places), shrines and sacred sites (IPBES, 2021a).
Scale	The spatial, temporal, quantitative and analytical dimensions used to measure and study any phenomenon. The temporal scale is comprised of two properties: (i) temporal extent - the total length of the time period of interest for a particular study (e.g. 10 years, 50 years, or 100 years); and 2) temporal grain (or resolution) - the temporal frequency with which data are observed or projected within this total period (e.g. at 1-year, 5-year or 10- year intervals). The spatial scale is comprised of two properties: 1) spatial extent - the size of the total area of interest for a particular study (e.g. a watershed, a country, the entire planet); and (ii) spatial grain (or resolution) - the size of the spatial units within this total area for which data are observed or predicted (e.g. fine-grained or coarse-grained grid cells) (IPBES, 2021b).
Scenarios	Plausible stories about how the future may unfold that can be told in words, numbers, illustrations, and/or maps—often combining quantitative and qualitative elements (IPBES, 2019a). They are not predictions about the future; rather possibilities used in situations of large uncertainty, based on specified, internally consistent sets of underlying assumptions (IPBES, 2016; Raskin, 2005), based on a coherent and internally consistent set of assumptions about key driving forces and relationships (Millennium Ecosystem Assessment (Program), 2005).
<i>Sentipensar</i>	A combination of thinking and feeling (Escobar, 2020; IPBES, 2023).
Social Justice	Specific habit of justice that is “social” in that it inspire, works with, and organizes others to accomplish together a work of justice, and that it aims at the good of the community (all) rather than that of one agent (<i>Defining Social Justice</i> Michael Novak, 2000).

Social Movements	collective enterprises to establish a new order of life, or networks of informal interactions among individuals, groups and/or organisations, engaged in political or cultural conflicts on the basis of shared collective identities and goals (BLUMER, 1939; Diani, 1992).
Social tipping point	A point within a social ecological system where a small quantitative change inevitably triggers a non-linear change in the social component of the system, driven by self-reinforcing positive feedback mechanisms that inevitably and often irreversibly lead to a qualitatively different state of the social system (Milkoreit et al., 2018).
Social tipping process	Positive feedback mechanisms associated with the potential tipping of a social system (shorthand for all human systems) into a new state, encompassing the required rapid, transformational system change to combat the climate and sustainability crises (Otto, Donges, et al., 2020; Winkelmann et al., 2022).
Social-ecological misfit	Situations in which the physical extent of pollution does not overlap with the areas of competence of actors involved in resource management or policy regulation (Ingold et al., 2018).
Socio-ecological systems	Integrated systems where humans are recognized as part of nature. The functions of such systems arise from the interactions and interdependence of the social and ecological subsystems. The system's structure is characterized by reciprocal feedbacks, emphasising that humans must be seen as a part of, not apart from, nature (Berkas & Folke, 1998).
Socio-economic transformations	Co-evolutionary processes that include changes in modes of production, work relations and culture (Kemp et al., 2018).
Socionature	A concept that conveys that society and nature are inseparable and should not be analyzed in abstraction from each other. They are always coproductive (Bear, 2017).
Sociotechnical transitions	Long-term complex systemic change processes involving multiple actors. Associated with deep structural changes in transport, energy, agri-food, and other systems, involving alterations in their overall configuration (includes technology, policy, markets, consumer practices, infrastructure, cultural meaning, and scientific knowledge) (Geels, 2011).
Spirituality	Spirituality is the core value for Indigenous People and local communities, and should be highlighted as the basis for all rationality for protecting Indigenous Peoples' and local communities' lands (IPBES, 2022c).
Story	Description of a sequence of events, with a recognizable beginning, middle, and end, including characters or actors (heroes, villains, and victims), a setting in which it takes place, and a plot, containing an energy that moves the narrative forward because something changes (Riedy, 2022).
Structures	The stable norms, rules, regulations, institutions, and governance arrangements that influence how societies and individuals function. Structures generate consistent patterns in social behaviours, interactions, and relationships. In dynamic analyses, they both affect and are emergent from patterns of behaviours and interactions. In this

	assessment, they broadly refer to ways of organising, regulating, and governing (Porpora, 1989; Stinchcombe, 2015)
Sustainable Development Goals (SDGs)	A set of goals adopted by the United Nations on September 25, 2015 to end poverty, protect the planet, and ensure prosperity for all as part of a new sustainable development agenda. Each goal has specific targets to be achieved over the next 15 years (IPBES, 2021b).
Sustainable Resource Management	Refers to both (a) ensuring that consumption does not exceed levels of sustainable supply and (b) ensuring that the earth's systems are able to perform their natural functions (i.e. preventing disruptions like in the case of GHGs affecting the ability of the atmosphere to 'regulate' the earth's temperature). It requires monitoring and management at various scales. The aim of sustainable resource management is to ensure the long-term material basis of societies in a way that neither resource extraction and use nor the deposition of waste and emissions will surpass the thresholds of a safe operating space (UNEP, 2017).
Technocracy	A form of governance that is strongly reliant on elite technical experts, whose understandings are distinctively based on forms of scientific and technical knowledge that are especially imprinted by colonial modern emphasis on categorization, simplification, and measurement of nature and the classification and stratification of people or societies (Arias-Maldonado & Trachtenberg, 2019; Stirling, 2023).
Technology	The application of scientific and other knowledge to practical tasks by ordered systems that involve people and organizations, production actions and skill, living organisms and machines (Robson & Tsou, 2023).
Telecoupling	Conceptual perspective on coupled social-ecological systems that allows for an understanding not only of long-distance flows of goods or finance, but also flows of values, policies, ideas, role models etc. (Liu et al., 2019).
Tipping point	A level of change in system properties beyond which a system reorganizes, often abruptly, and does not return to the initial state even if the drivers of the change are abated (IPCC, 2022).
Transformation	A change in the fundamental attributes of natural and human systems, or a thorough or dramatic change in form, composition, structure, appearance, or functionality. In terms of systems, it refers to changes that are fundamental, broad and deep (IPCC, 2022); Transformations can lead to both desirable and undesirable outcomes (Blythe et al., 2018).
Transformative change	A fundamental, system-wide reorganization across technological, economic and social factors, including paradigms, goals and values (IPBES, 2019a). In this assessment, transformative change refers to deliberate or emergent process that involve shifting views, structures, and practices that perpetuate the status quo towards new configurations that embody normative principles consistent with the 2050 Vision for Biodiversity.

	It represents a non-linear form of change that is broader, deeper, and more dynamic than incremental approaches; when underlying causes are addressed and barriers to transformative change are overcome, biodiversity can be valued, conserved, restored and wisely used in all contexts and at all scales. The IPBES Global Assessment defines transformative change as ‘a fundamental, system-wide change across technological, economic and social factors, including paradigms, goals and values. We build on this definition through reference to the depth, breadth and dynamics of system. Depth refers to change that goes beyond addressing the symptoms of environmental change or their proximate drivers, such as new technologies, incentive systems or protected areas, to include changes to underlying drivers, including consumption preferences, beliefs, ideologies and social inequalities (IPBES, 2019a; Patterson et al., 2017; Scoones et al., 2015). Breadth refers to change across multiple spheres, with emerging consensus that transformation requires co-evolutionary change across different spheres of society, including personal, economic, political, institutional and technological ones (Harvey, 2010; O’Brien & Sygna, 2013; Pelling et al., 2015; Temper et al., 2018; Westley et al., 2011). Dynamics and processes refer to the emergent patterns of change across ‘depths’, ‘breadths’ and time that unfold as non-linear pathways. These may be characterised by ‘punctuated equilibrium’ in which more stable periods of incremental change are punctuated by bursts of change in which underlying structures are reorganised into new states (Patterson et al., 2017; Westley et al., 2011).
Transformative governance	Refers to the strategies, actions, and roles of key actors implemented at different spatial scales (from local to global) that enable transformative change towards biodiversity conservation, sustainable and equitable use of biodiversity, and sustainable development and well-being more broadly, including both changing values and institutions (Visseren-Hamakers et al., 2021).
Transformative potential	Describes when an action, strategy or initiative only partially addresses the six principles of transformative change, or when the action has limited engagement with these principles (e.g. only addresses views and practices and not structures; or only does not fully engage with pluralism). A strategy, initiative, policy or action with transformative potential can realize its potential for transformative change with more complete engagement with the full set of principles (see Chapter 1).
Transformative strategies	Transformative Strategies is based around the idea that strategic thinking is critical for organizational success in today’s environment (Tjemkes & Mihalache, 2021).
Transition	The process of changing from one state or condition to another in a given period of time. Transitions can involve individuals, firms, cities, regions and nations, and can be based on incremental or transformative change (IPCC, 2022). <i>(See socio-technical transitions)</i>

Underlying causes	The deep rooted socio-political and cultural patterns that shape and reinforce indirect drivers of biodiversity loss, and that currently serve as obstacles to achieving good quality of life for all. This assessment highlights what underlies current modes of social organisation and ways of interacting with nature that are causing the multi-layered socio-environmental degradation associated with the polycrisis. This assessment identifies the following key underlying causes: the domination of nature and people, the concentration of power and wealth, and the prioritization of individualist values and immediate interests. These underlying causes are not isolated variables but have historically co-evolved and continue to enforce each other to have far-reaching and systemic impacts (see Chapter 1).
Value, values	Values reflect life goals, beliefs and general guiding principles. They also reflect the opinions or judgements of the importance of specific things in particular situations and contexts. When considering the values of nature, values can refer to nature itself, how nature contributes to people's quality of life, in addition to the way people express the value of life-supporting processes, functions, and systems - interrelating biophysical, spiritual, or symbolic aspects. Within the assessment we refer to broad, specific values and value indicators; as well as to instrumental, intrinsic and relational values (IPBES, 2022b).
Value-action gap	Instances wherein consumers do not behave or act in accordance with their beliefs about the environment (Franco & Ghisetti, 2022).
Value chains	The International Resource Panel refers to all stages in a product's life, from supply of raw materials through to disposal after use, and encompasses the activities linked to value creation such as business models, investments and regulation (UNEP, 2021).
Vested interests	Special benefits enjoyed based on existing economic, political, or social privileges. Vested interests arise because certain people and groups benefit from what businesses and institutions do or make possible—for example, through the services they provide, the supplies they purchase, or the jobs they fund (Moe, 2015).
Vision	A desirable future (an endpoint in time) which we want to achieve. Visions usually consist of statements depicting the explicit desires, assumptions, beliefs and paradigms that underlie the desired future (IPBES, 2021b).
Visioning	Process of creating a vision, a representation of a desirable future state, which can be operationalized in specific qualitative and quantitative goals and targets, or be more general (Wiek & Lang, 2016).
Well-being	The value that someone attaches to personal circumstances in a social state of affairs (Dasgupta, 2001). <i>See human well-being.</i>
Worldviews	Overarching systems of meaning and meaning making that significantly extent inform and influence how humans interpret, enact, and co-create reality (Hedlund-de Witt, 2013). Personal, historical, ideological, or other point of view that helps define: what is, where it all comes from, where are we going, what is good and what is not, how should we act, what is true and what is false (Vidal, 2008).

	Mental lenses through which human social groups perceive, think about, interpret, inhabit and modify the world. Rooted in cultural traditions, they shape and are shaped by knowledge systems, languages and values. Epistemic worldviews pertain to diverse knowledge systems that hold often implicit philosophical assumptions about how nature and values can be known, while human-nature worldviews guide perspectives on our conceptualization of and relationship with nature based on underlying value systems (IPBES, 2019a).
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