

DRAFT EUROPEAN SUSTAINABILITY REPORTING STANDARDS

ESRS E4

Biodiversity and ecosystems



November 2022

DISCLAIMER

[Draft] ESRS E4 *Biodiversity and ecosystems* is set out in paragraphs 1–49 and Appendices A: *Defined terms* and B: *Application Requirements*. Appendices A and B have the same authority as the main body of the [draft] Standard. Each Disclosure Requirement is stated in a bold paragraph, followed by a paragraph that illustrates the objective of the disclosures. This [draft] Standard also uses terms defined in other [draft] ESRS and should be read in the context of its objective.

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Objective

1. The objective of this [draft] Standard is to specify Disclosure Requirements which will enable users of the sustainability statements to understand:
 - (a) how the undertaking affects biodiversity and ecosystems, in terms of material positive and negative, actual and potential impacts;
 - (b) any actions taken, and the result of such actions, to prevent or mitigate material negative actual or potential impacts and to protect and restore biodiversity and ecosystems; and
 - (c) the plans and capacity of the undertaking to adapt its strategy and business model(s) in line with (i) respecting the planetary boundaries of the biosphere integrity and land-system change¹, [(ii) targets outlined in the Post-2020 Global Biodiversity Framework² of no net loss by 2030, net gain from 2030 and full recovery by 2050,] the EU Biodiversity Strategy for 2030³ with the targets set under the EU Nature Restoration Plan⁴ and Enabling Transformative Change⁵ and comparable amended or new frameworks and strategies;
 - (d) the nature, type and extent of the undertaking's material risks and opportunities related to the undertaking's impacts or dependencies on biodiversity and ecosystems, and how the undertaking manages them; and
 - (e) the financial effects on the undertaking over the short-, medium- and long-term time horizons of material risks and opportunities arising from the undertaking's impacts and dependencies on biodiversity and ecosystems.
2. This [draft] Standard sets out Disclosure Requirements related to the undertaking's relationship to terrestrial, freshwater and marine habitats, ecosystems and populations of related fauna and flora species, including diversity within species, between species and of ecosystems⁶ and their interrelation with indigenous and affected communities⁷.
3. The sustainability matter 'biological diversity' covers the variability among living organisms from all sources including, inter alia, terrestrial, freshwater, marine and other aquatic ecosystems and the ecological complexes of which they are part. An environmental limit is usually interpreted as the point or range of conditions beyond which there is a significant risk of abrupt irreversible, or difficult to reverse, changes to the benefits derived from natural resource systems with impacts on human well-being (e.g., planetary boundaries).

Interaction with other ESRS

4. 'Biodiversity and ecosystems' is a topic across environmental matters. The main drivers of biodiversity and ecosystems change are climate change, pollution, land-use and sea-use change, direct exploitation and invasive alien species⁸ according to the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), are sustainability matters covered in other [draft] topical Standards.
5. These environmental sustainability matters are: climate change, pollution, land-use, freshwater-use and sea-use change, direct exploitation and invasive alien species.
6. As a general remark and to obtain an encompassing understanding of material impacts and dependencies on Biodiversity and ecosystems, the Disclosure Requirements of other

¹ <https://www.stockholmresilience.org/research/planetary-boundaries/the-nine-planetary-boundaries.html>.

² The Post 2020 Global Biodiversity Framework is designed by the Secretariat of the UN Convention on Biological Diversity (CBD) to guide actions worldwide through 2030, to preserve and protect nature and its essential services to people: <https://www.cbd.int/article/draft-1-global-biodiversity-framework>.

³ The EU Biodiversity Strategy for 2030: https://ec.europa.eu/environment/strategy/biodiversity-strategy-2030_en.

⁴ <https://dopa.jrc.ec.europa.eu/kcbd/dashboard/#EU%20NATURE%20RESTORATION%20PLAN>

⁵ <https://dopa.jrc.ec.europa.eu/kcbd/dashboard/#ENABLING%20TRANSFORMATIVE%20CHANGE>

⁶ Convention on Biological Diversity (CBD, 1992)

⁷ Kunming Declaration, Declaration from the High-Level Segment of the UN Biodiversity, Conference 2020 (Part 1) under the theme: "Ecological Civilization: Building a Shared Future for All Life on Earth"

⁸ Direct drivers of biodiversity loss: <https://ipbes.net/models-drivers-biodiversity-ecosystem-change>.

[draft] environmental ESRS should be read and interpreted in conjunction with the specific disclosure requirements of this [draft] Standard.

7. All Disclosure Requirements concerning material impacts related to biodiversity and ecosystems change arising from other [draft] ESRS are listed and referenced in this [draft] Standard, and in particular to:
 - (a) [draft] ESRS E1 *Climate change*, which addresses in particular GHG emissions and energy resources (energy consumption);
 - (b) [draft] ESRS E3 *Water and marine resources* which addresses in particular water resource (water consumption) and water resources;
 - (c) [draft] ESRS E5 *Resource use and circular economy* addresses in particular the transition away from extraction of non-renewable resources and the implementation of practices that prevent waste generation, including pollution generated by waste.
8. This [draft] Standard covers an environmental topic, however as people benefit from biodiversity and ecosystems, the undertaking's impacts on biodiversity and ecosystems affect communities. When reporting on material negative impacts on affected communities from biodiversity and ecosystem loss under [draft] ESRS E4, the undertaking shall consider the requirements of [draft] ESRS S3 *Affected communities*.
9. This [draft] Standard should be read in conjunction with [draft] ESRS 1 *General requirements* and [draft] ESRS 2 *General disclosures*.

Disclosure Requirements

ESRS 2 General disclosures

10. The requirements of this section shall be read in conjunction with the disclosures required by [draft] ESRS 2 on *Chapter 2 Governance, Chapter 3 Strategy and Chapter 4 Impact, risk and opportunity management*.
11. The resulting disclosures shall be presented alongside the disclosures required by [draft] ESRS 2, except for [draft] ESRS 2 SBM-3, for which the undertaking has an option to present the disclosures alongside the topical disclosures.
12. In addition to the requirements in [draft] ESRS 2, this [draft] Standard also includes the topic specific Disclosure Requirement E4-1 *Transition plan on biodiversity and ecosystems*.

Strategy

Disclosure Requirement E4-1 – Transition plan on biodiversity and ecosystems

13. **The undertaking shall disclose its plan to ensure that its business model and strategy are compatible with the respect of planetary boundaries of the biosphere integrity and land-system change and relevant targets outlined in [the Post-2020 Global Biodiversity Framework of no net loss by 2030, net gain from 2030, full recovery by 2050, and the EU Biodiversity Strategy for 2030.**
14. The objective of this Disclosure Requirement is to enable an understanding of the compatibility of the transition plan of the undertaking with regard relevant local, national and global ecological thresholds and boundaries as well as public policy targets related to biodiversity and ecosystems.
15. Based on the list of priority sectors provided by the Taskforce on Nature-related Financial Disclosures (TNFD)⁹, this Disclosure Requirement is mandatory for undertakings in the following industries Agriculture and Farming Forestry , Construction and Engineering , Oil and Gas – from Midstream and Downstream , Energy Production and Utilities, Water and Waste Services, Food and Beverages, Paper and Wood Products, Building materials,

⁹ The TNFD Nature-Related Risk and Opportunity Management and Disclosure Framework Beta v0.2 June 2022 p.

Chemical products, Coal Mining, Mining, Oil and Gas – Upstream and Services, Pharma and biotechnology, Textiles, Accessories, Footwear and Jewelleries, Tobacco, and Transportation

16. When disclosing its transition plan, the undertaking shall:
- (a) provide a high-level explanation on how it will adjust its strategy and business model to ensure that they are compatible with:
 - i. respecting planetary boundaries on the biosphere integrity and land-system change¹⁰;
 - ii. [the targets outlined in the Post-2020 Global Biodiversity Framework of no net loss by 2030, net gain from 2030 and fully recovery by 2050;] and
 - iii. The relevant targets as part of the EU Biodiversity Strategy for 2030 concerning the EU Nature Restoration Plan and Enabling Transformative Change.
 - (b) Include own operations and explain how it is responding to material impacts across its related value chain identified in its materiality assessment as per [draft] ESRS 2 IRO-1 *Description of the processes to identify and assess material impacts, risks and opportunities*;
 - (c) explain how its business development strategy interacts with the achievability of its transition plan;
 - (d) highlight its contribution to impact drivers and its possible mitigation actions following the mitigation hierarchy and the main path-dependencies and locked-in assets and resources (e.g., plants, raw materials) that are associated with biodiversity and ecosystems change;
 - (e) explain whether or not biodiversity offsets are part of the transition plan. And if so, where the offsets are planned to be used, the extent of use in relation to the overall transition plan, and whether the mitigation hierarchy was considered;
 - (f) indicate whether the administrative, management and supervisory bodies have approved the transition plan;
 - (g) provide information on how the process of implementing and updating the transition plan is managed;
 - (h) indicate its metrics and related tools used to measure progress that are integrated in this measurement approach; and
 - (i) indicate current challenges and limitations to draft a plan in relation to areas of significant impact and actions the company is taking to address them.
17. Where applicable, this disclosure shall refer to and contextualise information presented under other Disclosure Requirements of this [draft] Standard.
18. In case the undertaking does not have a transition plan in place, it shall provide an explanation of its biodiversity and ecosystems-related ambition and whether and when it will adopt a transition plan.

Disclosure Requirement related to [draft] ESRS 2 SBM-3 – Material impacts, risks and opportunities and their interaction with strategy and business model(s)

19. The undertaking shall describe the resilience of its strategy and business model(s) in relation to biodiversity and ecosystems. The description shall include:
- (a) an assessment of the resilience of the current business model(s) and strategy to biodiversity and ecosystems-related physical, transition and systemic risks as well as opportunities;

¹⁰ A description of the nine planetary boundaries can be found here: <https://www.stockholmresilience.org/research/planetary-boundaries/the-nine-planetary-boundaries.html>.

- (b) the scope of the resilience analysis, (i) along the own operations and related upstream and downstream value chain and (ii) the material transition and physical biodiversity and ecosystems-related risks covered;
- (c) the key assumptions made;
- (d) the time horizons used for the analysis;
- (e) the results of the resilience analysis; and
- (f) the involvement of stakeholders, including, where appropriate, holders of indigenous and local knowledge.

Impact, risk and opportunity management

Disclosure Requirement related to ESRS 2 IRO-1 Description of processes to identify and assess material biodiversity and ecosystem-related impacts, risks and opportunities

20. The undertaking shall describe the process to identify material impacts, risks and opportunities. The description of the process shall include whether and how the undertaking:
- (a) identified and assessed actual and potential impacts on biodiversity and ecosystems at own site locations and in the value chain, including assessment criteria applied;
 - (b) identified and assessed dependencies on biodiversity and ecosystems and their services at own site locations and in the value chain, including assessment criteria applied, and, if this assessment includes ecosystem services that are disrupted or likely to be;
 - (c) identified and assessed transition and physical risks and opportunities related to biodiversity and ecosystems, including assessment criteria applied based on its impacts and dependencies¹¹..
 - (d) considered systemic risks to:
 - i. its own business model; and
 - ii. society as a whole in its assessment of biodiversity and ecosystems-related risks.
 - (e) conducted consultations with affected communities on sustainability assessments of shared biological resources and ecosystems and, in particular¹²:
 - i. when a site, a raw material production or sourcing is likely to negatively impact biodiversity and ecosystems, the identification of the specific sites, raw materials production or sourcing with negative or potential negative impacts on affected communities;
 - ii. when affected communities are likely to be impacted, the undertaking, shall disclose how these communities were involved in the materiality assessment; and
 - iii. with respect to impacts on priority ecosystem services of relevance to affected communities in its own operations, the undertaking shall indicate how negative impacts may be avoided. If these impacts are unavoidable, the undertaking may indicate its plans to minimise them and implement mitigation measures that aim to maintain the value and functionality of priority services.
21. The undertaking shall disclose whether the business model(s) has been verified using a range of biodiversity and ecosystems scenarios – or other scenarios with a modelling of

¹¹ Note: Impacts or dependencies on biodiversity and ecosystems can be sources of material risks to the undertaking.

¹² Source: IFC Performance Standard 6, 2012.

biodiversity and ecosystems related consequences – with different possible pathways; and it shall also disclose the following information on the scenarios:

- (a) why the considered scenarios were taken into consideration;
- (b) how the considered scenarios are updated according to evolving conditions and emerging trends; or
- (c) whether the scenarios are informed by expectations in authoritative intergovernmental instruments such as the Convention for Biological Diversity and, where relevant, by scientific consensus, that is, in the case of biodiversity and ecosystem services, IPBES.

22. The undertaking shall specifically disclose:

- (a) the definition of the time horizons used for the analysis;
- (b) whether and how it has used scenario analysis in the assessment process;
- (c) whether or not it has sites located in or near biodiversity-sensitive areas and whether activities related to these sites negatively affect these areas:
 - i. by leading to the deterioration of natural habitats and the habitats of species and to the disturbance of the species for which a protected area has been designated; and
 - ii. where conclusions or necessary mitigation measures identified by any of the following assessments have not been implemented or are ongoing accordingly (Directive 2009/147/EC of the European Parliament and of the Council on the conservation of wild birds; Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora; an Environmental Impact Assessment (EIA) as defined in Article 1(2), point (g), of Directive 2011/92/EU of the European Parliament and of the Council on the assessment of the effects of certain public and private projects on the environment; and for activities located in third countries, in accordance with equivalent national provisions or international standards, such as the International Finance Corporation (IFC) Performance Standard 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources.
- (d) a list of material sites based on the results of paragraph 22 (c). The undertaking shall disclose these locations by:
 - i. specifying the activities negatively affecting these areas¹³;
 - ii. providing a breakdown of sites according to the impacts and dependencies identified, and to the ecological status of the areas (with reference to the specific ecosystem baseline level) where they are located; and
 - iii. specifying the biodiversity-sensitive areas impacted, as defined in paragraph 22 c ii for users to be able to determine the location and the responsible competent authority with regards to the activities specified in paragraph 22(d) i.
- (e) whether it has identified material negative impacts with regards to land degradation, desertification or soil sealing¹⁴; and

¹³ This information supports the information needs of financial markets participants subject to Regulation (EU) 2019/2088 as reflecting an additional indicator related to principal adverse impacts as set out by indicator #7 in Table 1 Annex 1 of the related Delegated Regulation with regard to disclosure rules on sustainable investments (respectively “Activities negatively affecting biodiversity-sensitive areas”).

¹⁴ This information supports the information needs of financial market participants subject to Regulation (EU) 2019/2088 as reflecting an additional indicator related to principal adverse impact as set out by indicator #10 in Table 2 of Annex 1 of the related Delegated Regulation with regard to disclosure rules on sustainable investments (respectively “Land degradation, desertification, soil sealing”).

- (f) whether it has its operations affect threatened species¹⁵.

Impact, risk and opportunity management

Disclosure Requirement E4-2 – Policies related to biodiversity and ecosystems

23. **The undertaking shall disclose its policies implemented to manage its material impacts, risks and opportunities related to biodiversity and ecosystems.**
24. The objective of this Disclosure Requirement is to enable an understanding of the extent to which the undertaking has implemented policies that address the identification, assessment, management and/or remediation of its material biodiversity and ecosystem-related impacts, dependencies, risks and opportunities, and how they are connected to and in alignment with the Post-2020 Global Biodiversity Framework and the EU Biodiversity Strategy for 2030.
25. The summarised description of the policy shall contain the information required in [draft] ESRS 2 DC-P *Policies adopted to manage material sustainability matters*.
26. In addition to the provisions of [draft] ESRS 2 DC-P the undertaking shall describe whether and how its biodiversity and ecosystems-related policies:
- (a) are connected to and in alignment with the Post-2020 Global Biodiversity framework as well as the EU Biodiversity Strategy for 2030 and other relevant EU and national policies and legislation related to biodiversity and ecosystems. The undertaking may use a cross-reference to the information provided under Disclosure Requirement ESRS E4-1;
 - (b) relate to the matters specified in ESRS E4 Application Requirement 4;
 - (c) relate to its material biodiversity and ecosystems-related impacts;
 - (d) relate to material dependencies and material physical and transition risks and opportunities;
 - (e) support traceability of products, components and raw materials with significant actual or potential impacts on biodiversity and ecosystems along the value chain;
 - (f) address production, sourcing or consumption from ecosystems that are managed to maintain or enhance conditions for biodiversity, as demonstrated by regular monitoring and reporting of biodiversity status and gains or losses; and
 - (g) address social consequences of biodiversity and ecosystems-related impacts.
27. The undertaking shall specifically disclose, whether it has adopted:
- (a) a biodiversity and ecosystem protection policy covering operational sites owned, leased, managed in or near a protected area or a biodiversity-sensitive area outside protected areas, where land with high biodiversity value refers to Article 7b (3) of Directive 98/70/EC of the European Parliament and of the Council and “protected area” means designated areas in the European Environment Agency’s Common Database on Designated Areas (CDDA);
 - (b) sustainable land / agriculture practices or policies¹⁶;

¹⁵ This information supports the information needs of financial market participants subject to Regulation (EU) 2019/2088 as reflecting an additional indicator related to principal adverse impact as set out by indicator #14 in Table 2 of Annex 1 of the related Delegated Regulation with regard to disclosure rules on sustainable investments (respectively “Natural species and protected areas”).

¹⁶ This information supports the information needs of financial market participants subject to Regulation (EU) 2019/2088 as reflecting an additional indicator related to principal adverse impact as set out by indicator #11 in Table 2 of Annex 1 of the related Delegated Regulation with regard to disclosure rules on sustainable investments (respectively “Investments in companies without sustainable land/agriculture practices”).

- (c) sustainable oceans / seas practices or policies¹⁷; and
- (d) policies to address deforestation¹⁸.

Disclosure Requirement E4-3 – Actions and resources related to biodiversity and ecosystems

- 28. **The undertaking shall disclose its biodiversity and ecosystems-related actions and the resources allocated to their implementation.**
- 29. The objective of this Disclosure Requirement is to enable an understanding of the key actions taken and planned that significantly contribute to the achievement of biodiversity and ecosystems-related policy objectives and targets.
- 30. The description of key action and resources shall follow the mandatory content defined in [draft] ESRS 2 DC-A *Actions and resources in relation to material sustainability matters*.
- 31. In addition, the undertaking shall:
 - (a) disclose to which layer in the mitigation hierarchy a key action can be allocated: avoidance, reduction and minimisation, restoration and rehabilitation;
 - (b) disclose whether it used biodiversity offsets in its action plans. If the actions contain biodiversity offsets, the undertaking shall include the following information:
 - i. the aim of the offset and key performance indicators used;
 - ii. the financing effects (direct and indirect costs) of biodiversity offsets in monetary terms; and;
 - iii. a description of offsets including area, type, the quality criteria applied and the standards that the biodiversity offsets fulfil;
 - (c) describe how it has incorporated local and indigenous knowledge and nature-based solutions into biodiversity and ecosystems-related actions;
 - (d) provide the following details for key actions:
 - i. a list of key stakeholders involved (e.g., competitors, suppliers, retailers, other business partners, affected communities and authorities, government agencies) and how they are involved, mentioning key stakeholders negatively or positively impacted by actions and how they are impacted, including impacts or benefits created for affected communities, smallholders' indigenous groups or other vulnerable groups;
 - ii. where applicable, an explanation on the need for appropriate consultations and the need to respect the decisions of affected communities;
 - iii. a brief assessment whether the key actions may induce significant negative sustainability impacts;
 - iv. an explanation whether the key action is intended to be a one-time initiative or systematic practice; and
 - v. an explanation on whether the key action plan is carried out only by the undertaking, using the undertaking's resources, or whether it is part of a wider action plan, of which the undertaking is a member. The undertaking shall then provide more information on the project, its sponsors and other participants.

¹⁷ This information supports the information needs of financial market participants subject to Regulation (EU) 2019/2088 as reflecting an additional indicator related to principal adverse impact as set out by indicator #12 in Table 2 of Annex 1 of the related Delegated Regulation with regard to disclosure rules on sustainable investments (respectively "Investments in companies without sustainable oceans/seas practices").

¹⁸ This information supports the information needs of financial market participants subject to Regulation (EU) 2019/2088 as reflecting an additional indicator related to principal adverse impact as set out by indicator #15 in Table 2 of Annex 1 of the related Delegated Regulation with regard to disclosure rules on sustainable investments (respectively "Deforestation").

Metrics and targets

Disclosure Requirement E4-4 – Targets related to biodiversity and ecosystems

32. The undertaking shall describe the biodiversity and ecosystem-related targets it has adopted.
33. The objective of this Disclosure Requirement is to allow an understanding of the targets the undertaking has adopted to support its biodiversity and ecosystems policies and address its material related impacts, dependencies, risks and opportunities.
34. The description of the targets shall follow the mandatory content defined in [draft] ESRS 2 DC-T *Tracking effectiveness of policies and actions through targets*.
35. The disclosure required by paragraph 32 shall include the following information:
 - (a) whether the undertaking has set targets related to material aspects specified in paragraph AR 4 of this [draft] Standard;
 - (b) whether the target has set dates and milestones;
 - (c) whether ecological thresholds and allocations of impacts to the undertaking were applied when setting targets. This enables users to understand whether the target set by the undertaking is based on conclusive scientific evidence. If so, the undertaking shall specify:
 - i. the ecological thresholds identified and the methodology used to identify such thresholds;
 - ii. whether or not the thresholds are entity-specific and if so, how they were determined; and
 - iii. how responsibility for respecting identified ecological thresholds is allocated in the undertaking.
 - (d) whether the targets are informed by, and / or aligned with the Post-2020 Global Biodiversity Framework, the EU Biodiversity Strategy for 2030 and other biodiversity and ecosystem-related national policies and legislation as well as authoritative intergovernmental instruments like the IPBES;
 - (e) whether or not the undertaking used biodiversity offsets in setting its targets as described in paragraph 31 (b); and
 - (f) to which of the layers of the mitigation hierarchy the target can be allocated (i.e., avoidance, minimisation, restoration and rehabilitation, compensation or offsets).

Disclosure Requirement E4-5 – Impact metrics related to biodiversity and ecosystems change

36. **The undertaking shall report metrics related to its material impacts resulting in biodiversity and ecosystem change.**
37. The objective of this Disclosure Requirement is to enable an understanding of the performance of the undertaking against impacts identified as material in the materiality assessment on biodiversity and ecosystems change.
38. If the undertaking identified sites located in or near biodiversity-sensitive areas that it is negatively affecting¹⁹ (see paragraph 22(c)), the undertaking shall disclose the number and area (in hectares) of sites owned, leased or managed in or near these protected areas or key biodiversity areas.
39. If the undertaking operates in one of the sectors for which Disclosure Requirement E4-1 is applicable and has identified material impacts with regards to land-use change, or impacts on the extent and condition of ecosystems, the undertaking shall also disclose their land-use based on a Life Cycle Assessment.

40. Performance measures on biodiversity and ecosystems are currently the object of much ongoing collective work at the time of the drafting of this [draft] Standard. That is why the Disclosure Requirements proposed in this [draft] Standard are mostly principles-based to clarify the categories of performance measures expected, as well as laying out the features of quality biodiversity and ecosystems-related measures rather than proposing specific measures per se. Wherever possible, the application requirements refer to examples of commonly used metrics and tools in the public domain to allow application of the different categories of measures required under this Disclosure Requirement. The undertaking may refer specifically to the recommendations provided by Aligning Accounting Approaches for Nature (Align)²⁰.
41. For datapoints specified in paragraphs 42 to 45, the undertaking shall consider its own operations.
42. If the undertaking has concluded that it directly contributes to the impact drivers of land-use change, freshwater-use change and / or sea-use change, the undertaking shall report relevant metrics considering:
 - (a) the conversion over time (e.g., one or five years) of land cover (e.g., deforestation or mining);
 - (b) changes over time (e.g., one or five years) in the management of the ecosystem (e.g., through the intensification of agricultural management, or the application of better management practices or forestry harvesting);
 - (c) changes in the spatial configuration of the landscape (e.g., fragmentation of habitats, changes in ecosystem connectivity);
 - (d) changes in ecosystem structural connectivity (e.g., habitat permeability based on physical features and arrangements of habitat patches); and
 - (e) the functional connectivity (e.g., how well genes, gametes, propagules or individuals move through land, freshwater and seascape).
43. If the undertaking concluded that it directly contributes to the impact drivers of accidental or voluntary introduction of invasive alien species, the undertaking shall disclose how it manages pathways of introduction and spread of invasive alien species and the risks posed by invasive alien species.
44. If the undertaking identified material impacts related to the state of species, the undertaking shall report metrics it considers relevant and:
 - (a) may be referred to in [draft] ESRS E1, [draft] ESRS E2, [draft] ESRS E3, and [draft] ESRS E5;
 - (b) consider population size, range within specific ecosystems as well as extinction risk²¹. These aspects provide insight on the health of a single species' population and its relative resilience to human induced and naturally occurring change;
 - (c) include one or more indicators that measures changes in the number of individuals of a species within a specific area, e.g., counting the number of individuals or breeding pairs may provide information on changes in suitability of an area as a breeding ground;
 - (d) include one or more indicators when disclosing information on species at global extinction risk²² such as:
 - i. the threat status of species and how activities/pressures may affect the threat status; or
 - ii. change in the relevant habitat for a threatened species as a proxy for the undertakings impact on the local population's extinction risk.

²⁰ UNEP-WCMC, Capitals Coalition, Arcadis and ICF (2022) Recommendations for a standard on biodiversity measurement and valuation, Consultation Draft. Aligning Accounting Approaches for Nature (Align).

²¹ As defined in the EU Birds and Habitats Directive 2013-2018 Reporting Guidelines.

²² As indicated in The IUCN Red List of Threatened Species. Source: <https://www.iucnredlist.org/en>.

45. If the undertaking identified material impacts related to ecosystems, the undertaking shall consider, as per ecosystem category (IUCN Global Ecosystem Typology 2.0), two aspects to obtain insights into the health of ecosystems:
- (a) ecosystems extent: the undertaking shall report an indicator that measures area coverage of a particular ecosystem without necessarily considering the quality of the area being assessed, such as habitat cover. For example, forest cover is a measure of the extent of a particular ecosystem type, without factoring in the condition of the ecosystem (e.g., provides the area without describing the species diversity within the forest).
 - (b) ecosystems condition:
 - i. one or more indicators that measures the quality of ecosystems relative to a pre-determined reference state; or
 - ii. one or more indicators that measures multiple species (rather than the number of individuals within a single species) within an ecosystem: e.g. scientifically established species richness and abundance indicators that measure the development of (native) species composition within an ecosystem against the reference state at the beginning of the first reporting period [as well as the targeted state outlined in the Post-2020 Global Biodiversity Framework], or an aggregation of species' conservation status if relevant; or
 - iii. one or more indicators that may also reflect structural components of condition such as habitat connectivity (i.e., how linked habitats are to each other).

Disclosure Requirement E4-6 – Potential financial effects from biodiversity and ecosystem-related impacts, risks and opportunities

46. **The undertaking shall disclose its potential financial effects of material risks and opportunities arising from biodiversity- and ecosystem-related impacts and dependencies.**
47. The objective of this Disclosure Requirement is to provide an understanding of:
- (a) potential financial effects due to material risks arising from biodiversity- and ecosystem-related impacts and dependencies and how these risks have a material influence (or are likely to have a material influence) on the undertaking's cash flows, performance and position, development, cost of capital or access to finance over the short-, medium- and long-term time horizons; and
 - (b) potential financial effects due to biodiversity- and ecosystem-related material opportunities and how the undertaking may financially benefit from such material opportunities.
48. The disclosure shall include:
- (a) a quantification of the potential financial effects in monetary terms or where impracticable, qualitative information. For financial effects arising from material opportunities, a quantification is not required if it would result in disclosure that does not meet the qualitative characteristics of information (see [draft] ESRS 1 Appendix C *Qualitative characteristics of information*). The quantification of the potential financial effects in monetary terms may be a single amount or a range;
 - (b) a description of the effects considered, the related impacts and dependencies to which they relate and the time horizons in which they are likely to materialise; and
 - (c) the critical assumptions used in the estimate as well as the sources and the level of uncertainty attached those assumptions.
49. In the context of this Disclosure Requirement, potential financial effects include financial effects that do not meet the recognition criteria for inclusion in the financial statement line items and notes to the financial statements.

Appendix A: Defined terms

This appendix is an integral part of the [draft] ESRS E4 and has the same authority as the other parts of the [draft] Standard.

Avoidance	Measures taken to prevent impacts from occurring in the first place, for instance by changing or adjusting the development project's location and/or the scope, nature and timing of its activities.
Biodiversity access and benefit-sharing	Access and benefit-sharing refers to the way in which genetic resources may be accessed, and how the benefits that result from their use are shared between the people or countries using the resources (users) and the people or countries that provide them (providers).
Impact drivers	All the factors that cause changes in nature, anthropogenic assets, nature's contributions to people and a good quality of life. Direct drivers of change can be both natural and anthropogenic; they have direct physical (mechanical, chemical, noise, light etc.) and behaviour-affecting impacts on nature. They include, inter alia, climate change, pollution, different types of land use change, invasive alien species and zoonoses, and exploitation. Indirect impact drivers operate diffusely by altering and influencing direct drivers (by affecting their level, direction or rate) as well as other indirect drivers. Interactions between indirect and direct drivers create different chains of relationship, attribution, and impacts, which may vary according to type, intensity, duration, and distance. These relationships can also lead to different types of spill-over effects. Global indirect drivers include economic, demographic, governance, technological and cultural ones. Special attention is given, among indirect drivers, to the role of institutions (both formal and informal) and impacts of the patterns of production, supply and consumption on nature, nature's contributions to people and good quality of life.
Biodiversity loss	The reduction of any aspect of biological diversity (i.e., diversity at the genetic, species and ecosystem levels) is lost in a particular area through death (including extinction), destruction or manual removal; it can refer to many scales, from global extinctions to population extinctions, resulting in decreased total diversity at the same scale.
Biodiversity or biological diversity	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.
Biodiversity-sensitive area	Natura 2000 network of protected areas, UNESCO World Heritage sites and Key Biodiversity Areas ('KBAs'), as well as other protected areas, as referred to in Appendix D of Annex II to Commission Delegated Regulation (EU) 2021/2139.
Biosphere or ecological integrity	Integrity refers to an unimpaired condition, a state of being complete or undivided. Biological integrity has been defined as "[t]he ability to support and maintain a balanced, integrated adaptive assemblage of organisms having species composition,

	diversity, and functional organisation comparable to that of natural habitat of the region”.
Deforestation	Temporary or permanent human-induced conversion of forested land to non-forested land. (Annex I point 21 of COMMISSION DELEGATED REGULATION (EU) 2022/1288 of 6 April 2022 supplementing Regulation (EU) 2019/2088)
Degradation or degraded ecosystem	Degradation refers to chronic human impacts resulting in the loss of biodiversity and the disruption of an ecosystem’s structure, composition, and functionality.
Dependencies	Dependency is the result of the undertaking relying on biodiversity and/or ecosystems within its business model and/or conduct of business. A prominent and scientifically well-established approach to assess, monitor and value biodiversity and ecosystem dependencies is by assessing the undertakings dependence on ecosystem services
Desertification	Desertification means land degradation in arid, semi-arid and dry sub-humid areas resulting from various factors, including climatic variations and human activities. Desertification does not refer to the natural expansion of existing deserts.
Ecological condition	Refers to the quality of an ecosystem measured in terms of its abiotic and biotic characteristics.
Ecosystem extent	Refers to the size of an ecosystem asset, whereas an ecosystem asset is the contiguous space of a specific ecosystem type characterised by a distinct set of biotic and abiotic components and their interactions.
Ecosystem conversion	Situations in which, for a given location, there is a change in ecosystem type involving a distinct and persistent change in ecological structure, composition and function which, in turn, is reflected in the supply of a different set of ecosystem services.
Ecosystem(s)	A dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit. A typology of ecosystems is provided by the IUCN Global Ecosystem Typology 2.0.
Ecosystem restoration	Any intentional activities that initiate or accelerate the recovery of an ecosystem from a degraded state.
Ecosystem services	Refers to the contributions of ecosystems to the benefits that are used in economic and other human activity, respectively the benefits people obtain from ecosystems. In the Millennium Ecosystem Assessment, ecosystem services can be divided into supporting, regulating, provisioning and cultural. The Common International Classification of Ecosystem Services (CICES) classifies types of ecosystems services.
Habitat	The place or type of site where an organism or population naturally occurs. Also used to mean the environmental attributes required by a particular species or its ecological niche.
Habitat fragmentation	A general term describing the set of processes by which habitat loss results in the division of continuous habitats into a greater number of smaller patches of lesser total and isolated from each other by a matrix of dissimilar habitats. Habitat fragmentation may occur through natural processes (e.g., forest and grassland fires, flooding) and through human activities (forestry, agriculture, urbanisation).

Invasive or alien species	Species whose introduction and/or spread by human action outside their natural distribution threatens biological diversity, food security, and human health and well-being. “Alien” refers to the species having been introduced outside its natural distribution (“exotic”, “non-native” and “non-indigenous” are synonyms for “alien”). “Invasive” means “tending to expand into and modify ecosystems to which it has been introduced”. Thus, a species may be alien without being invasive, or, in the case of a species native to a region, it may increase and become invasive, without actually being an alien species.
Key Biodiversity Area	Sites contributing significantly to the global persistence of biodiversity, in terrestrial, freshwater and marine ecosystems. Sites qualify as global KBAs if they meet one or more of 11 criteria, clustered into five categories: threatened biodiversity; geographically restricted biodiversity; ecological integrity; biological processes; and, irreplaceability. The World Database of Key Biodiversity Areas is managed by BirdLife International on behalf of the KBA Partnership.
Land degradation	Refers to the many processes that drive the decline or loss in biodiversity, ecosystem functions or their benefits to people and includes the degradation of all terrestrial ecosystems.
Land-use (change)	The human use of a specific area for a certain purpose (such as residential; agriculture; recreation; industrial, etc.). Influenced by, but not synonymous with, land cover. Land use change refers to a change in the use or management of land by humans, which may lead to a change in land cover.
Land-system (change)	Land systems are the terrestrial component of the Earth system, encompassing all processes and activities related to the human use of land. These include socio-economic, technological and organisational inputs and arrangements, as well as the benefits gained from land and the unintended social and ecological outcomes of societal activities. The land systems concept combines land use (the activities, arrangements and inputs associated with land use) with land cover (the ensemble of physical characteristics of land discernible by Earth Observation).
Mitigation hierarchy	<p>The mitigation hierarchy comprises:</p> <ul style="list-style-type: none"> a. Avoidance: measures taken to avoid creating impacts from the outset, such as careful spatial or temporal placement of elements of infrastructure, in order to completely avoid impacts on certain components of biodiversity. This results in a change to a “business as usual” approach. b. Minimisation: measures taken to reduce the duration, intensity and / or extent of impacts that cannot be completely avoided, as far as is practically feasible. c. Rehabilitation / restoration: measures taken to rehabilitate degraded ecosystems or restore cleared ecosystems following exposure to impacts that cannot be completely avoided and / or minimised. d. Compensation or Offset: measures taken to compensate for any residual significant, adverse impacts that cannot be avoided, minimised and / or rehabilitated or restored. Measures to achieve No Net Loss or a Net Gain of biodiversity for at least as long as the

	<p>project’s impacts are biodiversity offsets. Offsets can take the form of positive management interventions such as restoration of degraded habitat, arrested degradation or averted risk, where there is imminent or projected loss of biodiversity. Measures that address residual impacts but are not quantified to achieve No Net Loss or not secured for the long term are compensation, otherwise known as compensatory mitigation.</p>
Natural resources	<p>Natural assets (raw materials) occurring in nature that can be used for economic production or consumption.</p>
Nature-based solutions	<p>Nature-based solutions are understood as 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.</p>
[No net loss or net gain]	<p>[A target for a development project in which the impacts on biodiversity caused by the project are balanced or outweighed by measures taken to avoid and minimise the project’s impacts, to undertake on-site restoration and finally to offset the residual impacts, so that no loss remains. Where the gain exceeds the loss, the term ‘Net Gain’ (NG) may be used instead of No Net Loss.]</p>
Physical risks	<p>All global economic enterprise depends on the functioning of earth systems, such as a stable climate and ecosystem services, such as the provision of biomass (raw materials). Nature-related physical risks are a direct result of an organisation’s dependence on nature. Physical risks arise when natural systems are compromised, due to the impact of climatic events (e.g., extremes of weather such as a drought), geologic events (e.g., seismic events such as an earthquake) events or changes in ecosystem equilibria, such as soil quality or marine ecology, which affect the ecosystem services organisations depend on. These can be acute, chronic, or both. Nature-related physical risks arise as a result of changes in the biotic (living) and abiotic (non-living) conditions that support healthy, functioning ecosystems. Physical risks are usually location-specific. Nature-related physical risks are often associated with climate-related physical risks.</p>
Planetary boundaries	<p>This concept allows to estimate a safe operating space for humanity with respect to the functioning of the Earth. The boundary level for each key Earth System process that should not be transgressed if we are to avoid unacceptable global environmental change, is quantified.</p>

Protected area	A protected area is a clearly defined geographical space, recognised, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values.
Raw material	Primary or secondary material that is used to produce a product.
Systemic risks	Risks arising from the breakdown of the entire system, rather than the failure of individual parts. They are characterised by modest tipping points combining indirectly to produce large failures with cascading of interactions of physical and transition risks (contagion), as one loss triggers a chain of others, and with systems unable to recover equilibrium after a shock. An example is the loss of a keystone species, such as sea otters, which have a critical role in ecosystem community structure. When sea otters were hunted to near extinction in the 1900s, the coastal ecosystems flipped and biomass production was greatly reduced.
Soil degradation	“Soil degradation” means the diminishing capacity of the soil to provide ecosystem goods and services as desired by its stakeholders, according to IPBES as referred to in paragraph 100 of Decision No 1386/2013/EU.
Soil sealing	A “sealed area” means any area where the original soil has been covered (such as roads) making it impermeable. This non-permeability can create environmental impacts as described in Annex IV EMAS Regulation - EU 2018/2026).
Sustainable land practices	-
Sustainable agriculture practices	-
Sustainable ocean	-

practices	
Sustainable seas practices	-
Threatened species	Threatened species means endangered species, including flora and fauna, listed in the European Red List or the IUCN Red List, as referred to in Section 7 of Annex II to Delegated Regulation (EU) 2021/2139.
Transition risks	Nature-related transition risks are risks that result from a misalignment between an organisation's or investor's strategy and management and the changing regulatory, policy or societal landscape in which it operates. Developments aimed at halting or reversing damage to nature, such as government measures, technological breakthroughs, market changes, litigation and changing consumer preferences can all create or change transition risks.

Appendix B: Application Requirements

This appendix is an integral part of the [draft] ESRS E4. It supports the application of the requirements set for in paragraphs 1 to 49 and has the same authority as the other parts of [draft] Standard.

ESRS 2 General disclosures

Strategy

Disclosure Requirement E4-1 – Transition plan on biodiversity and ecosystems

AR 1. Targets under paragraph 16(a)iii may be:

- (a) the following targets under the EU Nature Restoration Plan:
 - i. 5 - The decline of pollinators is reversed.
 - ii. 6 - The risk and use of chemical pesticides is reduced by 50%, and the use of more hazardous pesticides is reduced by 50%.
 - iii. 8 - At least 25% of agricultural land is under organic farming management, and the uptake of agro-ecological practices is significantly increased.
 - iv. 9 - Three billion additional trees are planted in the EU, in full respect of ecological principles.
 - v. 10 - Significant progress in the remediation of contaminated soil sites.
 - vi. 11 - At least 25,000 km of free-flowing rivers are restored.
 - vii. 13 - The losses of nutrients from fertilisers are reduced by 50%, resulting in the reduction of the use of fertilisers by at least 20%.
 - viii. 15 - The negative impacts on sensitive species and habitats, including on the seabed through fishing and extraction activities, are substantially reduced to achieve good environmental status.
- (b) enabling Transformative Change:
 - i. Business for biodiversity²³
 - ii. Financing for biodiversity²⁴

AR 2. When providing information under paragraph 16, the undertaking may in addition to the mentioned frameworks and policies consider the Sustainable Development Goals using the SDG Compass²⁵ as guidance and with focus on the following targets:

- (a) 2 - End hunger, achieve food security and improved nutrition and promote sustainable agriculture²⁶;
- (b) 6 - Ensure availability and sustainable management of water and sanitation for all²⁷;
- (c) 14 - Conserve and sustainably use the oceans, seas and marine resources for sustainable development²⁸; and
- (d) 15 - Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss²⁹.

²³ <https://dopa.jrc.ec.europa.eu/kcbd/actions-tracker/#Business%20for%20biodiversity>

²⁴ <https://dopa.jrc.ec.europa.eu/kcbd/dashboard/#Financing%20for%20biodiversity>

²⁵ https://www.globalcompact.de/fileadmin/user_upload/Dokumente_PDFs/SDG_Compass_English.pdf

²⁶ <https://sdgs.un.org/goals/goal2>

²⁷ <https://sdgs.un.org/goals/goal6>

²⁸ <https://sdgs.un.org/goals/goal14>

²⁹ <https://sdgs.un.org/goals/goal15>

Impact, risk and opportunity management

Disclosure requirements related to [draft] ESRS 2 IRO-1 – Description of the processes to identify and assess material biodiversity and ecosystem-related impacts, risks and opportunities

- AR 3. In the absence of a yet to be established global set of relevant scenarios and following the principle-based approach as defined within this [draft] Standard, the undertaking may refer to the guidance provided by TNFD³⁰ and the following tools and methodologies when applying and disclosing on relevant scenarios under paragraph 22:
- (a) “Methodological Assessment Report on Scenarios and Models of Biodiversity and Ecosystem Services” published by the IPBES in 2016³¹;
 - (b) the Globio model³² allows trends in biodiversity and ecosystem services to be modelled under future socio-economic development scenarios, as well as different policy interventions;
 - (c) the Risk Filter Suite³³ by WWF includes, in its Water Risk Filter tool, TCFD-aligned scenarios of water risks for 2030 and 2050 based on climate scenarios (IPCC CMIP5 Representative Concentration Pathways – RCP) and socio-economic scenarios (IIASA Shared Socioeconomic Pathways – SSP). Among physical water risks, the tool includes risks related to ecosystem services status;
 - (d) the ENCORE³⁴ allows exploration of future scenarios in terms of the potential impacts and dependencies of activities on biodiversity (available for some sectors, e.g., agriculture and mining);
 - (e) the EXIOBASE³⁵ is a global, detailed Multi-Regional Environmentally Extended Supply-Use Table (MR-SUT) and Input-Output Table (MR-IOT). The MR-IOT that can be used for the analysis of the environmental impacts associated with the final consumption of product groups; and
 - (f) climate change scenarios as drivers for biodiversity and ecosystems aspects (see [draft] ESRS E1).
- AR 4. The materiality assessment under [draft] ESRS E4 includes the undertaking’s:
- (a) contribution to direct impact drivers on biodiversity loss as defined by IPBES³⁶:
 - i. climate change;
 - ii. land-use change (e.g., land artificialisation), freshwater-use change and sea-use change;
 - iii. direct exploitation;
 - iv. invasive alien species;
 - v. pollution; and
 - vi. others.
 - (b) impacts on the state of species (i.e., species population size, species global extinction risk);
 - (c) impacts on the extent and condition of ecosystems (classified as per the IUCN Global Ecosystem Typology 2³⁷ and defined within the UN SEEA EA

³⁰ <https://framework.tnfd.global/disclosure-recommendations/strategy/>

³¹ Source: <https://ipbes.net/assessment-reports/scenarios>

³² Source: <https://www.globio.info/why-use-globio>

³³ Source: www.riskfilter.org/

³⁴ Source: <https://encore.naturalcapital.finance/en>

³⁵ Source: <https://www.exiobase.eu/>

³⁶ The direct driver climate change is to be reported under [draft] ESRS E1 *Climate Change* and pollution under [draft] ESRS E2 *Pollution*.

³⁷ <https://portals.iucn.org/library/sites/library/files/documents/2020-037-En.pdf>

- accounting framework (e.g., land degradation, desertification and soil sealing); and
- (d) impacts and dependencies on ecosystem services (as defined within the UN SEEA EA accounting framework).
- AR 5. When assessing the materiality of impacts, dependencies, risks and opportunities the undertaking shall consider the provisions in [draft] ESRS 2 IRO-1 and [draft] ESRS 1 Chapter 3 *Double materiality as the basis for sustainability disclosures* and describe its considerations.
- AR 6. The undertaking shall consider conducting its materiality assessment in line with the first three phases of the LEAP approach by TNFD³⁸: Locate (paragraph AR 7), Evaluate (paragraph AR 8) and Assess (paragraph AR 9). For further guidance the undertaking may refer to the TNFD Nature-Related Risk & Opportunity Management and Disclosure Framework.
- AR 7. Phase 1 relates to the localisation of relevant sites regarding its interface with biodiversity and ecosystems. To identify these relevant sites the undertaking shall consider:
- (a) developing a list of locations of direct assets and operations and related upstream and downstream value chain that are relevant to the undertakings business activities. Furthermore, the undertaking may provide information about sites for which future operations have been formally announced.
- (b) listing the biomes and ecosystems it is interfacing³⁹ with based on the list of locations identified under paragraph AR 7(a).
- (c) identifying the current integrity and importance of biodiversity and ecosystem at each location taking into consideration the information provided in paragraph 22.
- (d) developing a list of locations where the undertaking is interfacing with locations in or near biodiversity-sensitive areas taking into consideration the information provided in paragraph 22.
- (e) identifying which sectors, business units, value chains or asset classes are interfacing with biodiversity and ecosystems in these material sites. Instead of disclosure per site, the undertaking may choose to disclose per raw material procured or sold by weight in tons, if such practice offers greater transparency.
- AR 8. In Phase 2, the undertaking shall consider evaluating actual or potential impacts and dependencies on biodiversity and ecosystem-related for relevant sites by:
- (a) identifying business processes and activities that interface with biodiversity and ecosystems;
- (b) identifying actual and potential impacts and dependencies;
- (c) indicating the size, scale, frequency of occurrence and speed of the impacts on biodiversity and ecosystems taking into consideration the disclosures under paragraph 23. Furthermore, the undertaking may disclose:
- i. the percentage of its suppliers' facilities which are located in risk prone areas (with threatened species on the IUCN Red List of Species, the Birds and Habitats Directive or nationally list of threatened species, or in officially recognised Protected Areas, the Natura 2000 network of protected areas and Key Biodiversity Areas);
- ii. the percentage of its procurement spend from suppliers with facilities which are located in risk prone areas (with threatened species on the IUCN Red List of Species, the Birds and Habitats Directive or nationally list of threatened species, or in officially recognised Protected Areas, the

³⁸ The TNFD Nature-Related Risk and Opportunity Management and Disclosure Framework Beta v0.2 June 2022.

Natura 2000 network of protected areas and Key Biodiversity Areas);
and

- (d) indicating the size and scale of the dependencies on biodiversity and ecosystems, including on raw materials, natural resources and ecosystem services taking into consideration the disclosures under paragraph 25. The undertaking may rely on the international classifications such as the Common International Classification of Ecosystem Services (CICES).

AR 9. Based on the results of Phase 1 and 2, the undertaking shall consider **assessing** material risks and opportunities in Phase 3 along the following categories:

- (a) physical risks:
 - i. acute risks (e.g., natural disasters exacerbated by loss of coastal protection from ecosystems, leading to costs of storm damage to coastal infrastructure, disease or pests affecting the species or variety of crop the undertaking relies on, especially in the case of no or low genetic diversity, species loss and ecosystem degradation); and
 - ii. chronic risks (e.g., loss of crop yield due to decline in pollination services, increasing scarcity or variable production of key natural inputs, ecosystem degradation due to operations leading to, for example, coastal erosion and forest fragmentation, ocean acidification, land loss to desertification and soil degradation and consequent loss of soil fertility, species loss).
- (b) transition risks, including^{40,41}:
 - i. policy and legal: e.g. introduction of regulation or policy (e.g. changes such as increased land protection), ineffective biodiversity governance in an area, across boundaries (i.e. transboundary governance) and cooperation resulting in biodiversity and ecosystem change (e.g. biodiversity-rich ecosystems crossing national boundaries), exposure to sanctions and litigation (e.g. spills of polluting effluents that damage human and ecosystem health; or violation of biodiversity-related rights, permits or allocations; or negligence towards or killing of threatened species), enhanced reporting obligations on biodiversity, ecosystems and related services;
 - ii. technology: e.g. substitution of products or services with a lower impact on biodiversity or dependence on ecosystem services, lack of access to data or access to poor quality data that hamper biodiversity-related assessments, transition to more efficient and cleaner technologies (i.e. with lower impacts on biodiversity), new monitoring technologies (e.g. satellite), adaptation technologies required to cope with new future scenarios and trends (e.g. climate resistant crops, mechanical pollinators, water purification, flood protection) used by regulators;
 - iii. market: e.g., shifting supply, demand and financing, volatility or increased costs of raw materials (e.g., biodiversity-intense inputs for which price has raised due to ecosystem degradation);
 - iv. reputation: e.g., changing societal, customer or community perceptions as a result of an organisation's role in loss of biodiversity, violation of nature-related rights through operations, negative media coverage due to impacts on critical species and/or ecosystems, biodiversity social conflicts over endangered species, protected areas, resources or pollution;
- (c) contribution to systemic risks, including:
 - i. ecosystem collapse risks that a critical natural system no longer functions, e.g., tipping points are reached and the collapse of

⁴⁰ Source: TNFD, 2022, p.37

⁴¹ Source: CDSB Biodiversity Application Guidance 2021

- ecosystems resulting in wholesale geographic or sector losses (summing physical risks);
- ii. aggregated risk linked to fundamental impacts of biodiversity loss to levels of transition and physical risk across one or more sectors in a portfolio (corporate or financial); and
 - iii. contagion risks that financial difficulties of certain corporations or financial institutions linked to failure to account for exposure to biodiversity-related risks spill over to the entire economic system as a whole.
- (d) opportunities, including^{42,43}:
- i. business performance categories: 1) resource efficiency; 2) products and services; 3) markets; 4) capital flow and financing; 5) reputational capital; and
 - ii. sustainability performance categories: 6) ecosystem protection, restoration and regeneration; 7) sustainability use of natural resources.
- AR 10. When conducting the materiality assessment, the undertaking may refer to the Tools Catalogue provided by TNFD⁴⁴, rely on information provided by the EU Business @ Biodiversity Platform, which provides periodic updates on available tools, metrics and data sources relevant for this [draft] Standard. The undertaking may further refer to the “Exploring Natural Capital Opportunities, Risks and Exposure” (ENCORE) tool during all phases and specifically in:
- (a) Phase 1 to:
 - i. Protected Planet database, a source of data on protected areas and other effective area-based conservation measures (OECMs), the Natura 2000 network of protected areas;
 - ii. the Common Database on Designated Areas (CDDA) as the official source of protected area information from European countries to the World Database of Protected Areas (WDPA);
 - iii. the Global Biodiversity Information Systems (<https://www.gbif.org/>); The Ocean Data Viewer (<https://data.unep-wcmc.org/>); and
 - iv. the tool “Trase”⁴⁵ on deforestation risk to assess raw materials or to the tool “Bioscope”⁴⁶ to assess the impact drivers of biodiversity change for raw materials and to address the materiality of impact drivers of biodiversity change by raw material.
 - (b) and Phase 2 and / or 3 to:
 - i. information provided by the WWF Risk Filter Suite that includes the Biodiversity Risk Filter - a web-based tool integrating spatially explicit biodiversity data. It allows firms to understand and assess biodiversity impacts and dependencies, risks and opportunities, prioritise areas of action and develop tailored response plans; and
 - ii. national, European or international specialised databases (for example Global Forest Watch (<https://www.globalforestwatch.org/>); The Living Planet Database (<https://livingplanetindex.org/home/index>), The International Waterbird Census Database (<http://wpe.wetlands.org/>).

Presentation of information:

⁴² Source: TNFD, 2022, p.37

⁴³ Source: CDSB Biodiversity Application Guidance 2021

⁴⁴ <https://framework.tnfd.global/the-leap-nature-risk-assessment-process/tools-catalogue/>

⁴⁵ The tool “Trase” can be found here: <https://supplychains.trase.earth/>. It only covers deforestation risk and for a limited number of countries to date.

⁴⁶ The tool “Bioscope” can be found here: <https://bioscope.info/>. It covers commodities and resources purchased from 170 sectors in 43 countries, including the EU countries.

AR 11. The undertaking may consider the below tables to present its materiality assessment of material sites identified under paragraph AR 7:

Ecosystem service...	Actual or potential dependencies	
...	Change of functionality	Financial loss
...	Limited, moderate or significant	Limited, moderate or significant
...

Site location	Threatened species, protected areas, key biodiversity areas	Actual or potential impacts			
...	...	Frequency of occurrence	Speed of impact	Severity of impact	Potential for mitigation
...	...	High, medium or low	<1 year or 1-3 years or >3 years	High, medium or low	High, medium or low
...

When disclosing on paragraph AR 7(d), the undertaking may consider the below table for presentation:

Where are the raw materials produced or sourced from?	Absolute weight of raw materials (and percentage of the raw material weight)
In areas with species listed on the IUCN Red List of Threatened Species, the Birds and Habitats Directive or on national lists of threatened species	...
In officially recognised protected Areas	...
In other Key Biodiversity Areas	...

Impact, risk and opportunity management

Disclosure Requirement E4-2 – Policies related to biodiversity and ecosystems

AR 12. The undertaking may also provide information on how the policy refers to the production, sourcing or consumption of raw materials⁴⁷:

- (a) refer to policies limiting procurement from suppliers that cannot demonstrate that they are not contributing to significant conversion of protected areas or key biodiversity areas (e.g., through certification);
- (b) refer to recognised standards or third-party certifications overseen by regulators; and
- (c) originating from ecosystems that have been managed to maintain or enhance conditions for biodiversity, as demonstrated by regular monitoring and reporting of biodiversity status and gains or losses.

⁴⁷ Refers to IFC Performance Standard 6.

- AR 13. When disclosing how its policies are connected to and in alignment with policies and legislation relation to biodiversity and ecosystems under paragraph 26(a)26(a), the undertaking may also disclose connections and alignment with other global goals and agreements such as the SDGs 2, 6, 14 and 15 or any other well established global convention related to biodiversity and ecosystems.
- AR 14. When disclosing policies related to social consequences of biodiversity and ecosystems related dependencies and impacts under 26(e), the undertaking may notably refer to the Nagoya Protocol⁴⁸ and the Convention for Biological Diversity (CBD)⁴⁹, but may also refer to IFC Performance Standard 4, 5, 6 and 7⁵⁰ and the Core Principles from the Accountability Framework, Principle 2 “Respect for Human Rights”⁵¹.
- AR 15. When disclosing on the social consequences of policies under paragraph 26(g), the undertaking may provide information in relation to:
- (a) the fair and equitable benefit-sharing from the benefits arising from the utilisation of genetic resources⁵²; and
 - (b) the prior informed consent (i.e., the permission given by the competent national authority of a provider country to a user prior to accessing genetic resources, in line with an appropriate national legal and institutional framework) for access to genetic resources.
- AR 16. This information may be complemented on how the policy allows the undertaking to:
- (a) avoid its negative impacts on biodiversity and ecosystems in its operations and related value chain (upstream and downstream);
 - (b) reduce and minimise its negative impacts on biodiversity and ecosystems in its operations and throughout the value chain that cannot be avoided;
 - (c) restore and rehabilitate degraded ecosystems or restore cleared ecosystems following exposure to impacts that cannot be completely avoided and/or minimised; and
 - (d) mitigate material biodiversity loss drivers as disclosed in the section, impacts, dependencies, risks and opportunities.
- AR 17. When disclosing its policies, if referring to third-party standards of conduct, the undertaking may disclose whether the standard used⁵³:
- (a) is objective and achievable based on a scientific approach to identifying issues, and realistic in assessing how these issues can be addressed on the ground under a variety of practical circumstances;
 - (b) is developed or maintained through a process of ongoing consultation with relevant stakeholders with balanced input from all relevant stakeholder groups, including producers, traders, processors, financiers, local people and communities, indigenous peoples, and civil society organisations representing consumer, environmental and social interests, with no group holding undue authority or veto power over the content;
 - (c) encourages a step-wise approach and continuous improvement - both in the standard and its application of better management practices, and require the establishment of meaningful targets and specific milestones to indicate progress against principles and criteria over time;
 - (d) is verifiable through independent certifying or verifying bodies, which have defined and rigorous assessment procedures that avoid conflicts of interest,

⁴⁸ The Nagoya Protocol can be found here: <https://www.cbd.int/abs/>.

⁴⁹ The Convention for Biological Diversity can be found here: <https://www.cbd.int/convention/>.

⁵⁰ IFC Performance Standards can be found here:

https://www.ifc.org/wps/wcm/connect/topics_ext_content/ifc_external_corporate_site/sustainability-at-ifc/publications/publications_handbook_pps.

⁵¹ The Accountability Framework Core Principles can be found here: <https://accountability-framework.org/the-framework/contents/core-principles/>.

⁵² Defined by the CBD as genetic material with real or potential value available at: <https://www.cbd.int/convention/articles/?a=cbd-02>.

⁵³ Refers to IFC Performance Standard 6.

and are compliant with ISO guidance on accreditation and verification procedures or Article 5(2) of Regulation (EC) No 765/2008; and

- (e) conforms to the ISEAL Code of Good Practice.

Disclosure Requirement E4-3 – Actions and resources related to biodiversity and ecosystems

- AR 18. As regards to paragraph 35(f), the undertaking may disclose whether it considers an “avoidance” action plan, which prevents damaging actions before they take place. Avoidance often involves a decision to deviate from the business-as-usual project development path. An example of avoidance is altering the biodiversity and ecosystem footprint of a project to avoid destruction of natural habitat on the site and/or establishing set-asides where priority biodiversity values are present and will be conserved. At a minimum, avoidance should be considered where there are biodiversity and ecosystem-related values that are in one of the following categories: particularly vulnerable and irreplaceable, of particular concern to stakeholders, or where a cautious approach is warranted due to uncertainty in impact assessment or the efficacy of management measures. The three main types of avoidance are defined below:
- (a) avoidance through Site Selection (Locate the entire project away from areas recognised for important biodiversity values);
 - (b) avoidance through Project Design (Configure infrastructure to preserve areas at the project site with important biodiversity values); and
 - (c) avoidance through Scheduling (Time project activities to account for patterns of species behaviour (e.g., breeding, migration) or ecosystem functions (e.g., river dynamics)).
- AR 19. When disclosing under paragraph 31(b), the undertaking may refer to “The BBOP Principles on Biodiversity Offsets” (2018), “IUCN Policy on Biodiversity Offsets” (2016), and “Guidance on achieving no net loss or net gain of biodiversity and ecosystem services” (2020, EU document).
- AR 20. The disclosure required by paragraph 31(d) may also include for each key action:
- (a) an explanation whether the action is intended to be a one-time initiative or a systematic practice.
 - (b) if the action is individual or collective, and for a collective, the undertaking may explain its role and whether the success of it depends on the undertaking’s support.
 - (c) a description of how the action(s) to contribute to systemwide change, notably to alter the drivers of biodiversity and ecosystem change, e.g., through technological, economic, institutional, and social factors and changes in underlying values and behaviours⁵⁴.
- AR 21. When disclosing policies regarding sourcing of raw materials under paragraph 26(e), the undertaking may refer to what action the undertaking may take to shift suppliers when they contribute to significantly negatively impacting those protected areas or key biodiversity areas.
- AR 22. In the context of this Disclosure Requirement, “local and indigenous knowledge” refer to the understandings, skills and philosophies developed by societies with long histories of interaction with their natural surroundings. For rural and indigenous peoples, local knowledge informs decision-making about fundamental aspects of day-to-day life.⁵⁵

⁵⁴ The system-wide approach in paragraph 39 refers to the Taskforce on Nature-related Financial Disclosures (TNFD) Proposed Technical Scope from June 2021 and the Science-Based Targets for Nature (SBTN) Initial Guidance for Business from September 2020.

⁵⁵ Local and Indigenous Knowledge Systems (LINKS) by UNESCO

Metrics and targets

Disclosure Requirement E4-4 – Targets related to biodiversity and ecosystems

- AR 23. When determining ecological thresholds to set targets, the undertaking may refer to the guidance provided by TNFD on the use of the methods by Science-Based Targets Initiative for Nature (SBTN)⁵⁶, the relevant work outlined in the Sustainable Development Performance Indicator (SDPI) online platform, or any other guidance with a scientifically acknowledged methodology that allows the setting of science-based targets by identifying ecological thresholds and, if applicable, entity-specific allocations.
- AR 24. When disclosing information required under paragraph 35 for the purpose of setting targets the undertaking shall consider the need for an informed and willing consent of local and indigenous communities, the need for appropriate consultations and the need to respect the decisions of these communities.

Presentation of information

The targets related to material impacts may be presented in a table as illustrated below:

Type of target according to mitigation hierarchy	Baseline value and base year	Target value and geographical scope			Connected policy or legislation ⁵⁷
		2025	2030	Up to 2050	
Avoidance					
Minimisation					
Rehabilitation and restoration					
Compensation or offsets					

The targets related to aspects listed in paragraph AR 4 of this [draft] Standard, may be presented in a table as illustrated below:

Type of target	Baseline value and base year	Target value and geographical scope			Connected policy or legislation ⁵⁸
		2025	2030	Up to 2050	

- AR 25. Measurable targets related to biodiversity and ecosystems may be expressed as:
- (a) size and location of all habitat areas protected or restored, whether directly or indirectly controlled by the undertaking, and whether the success of the restoration measure was or is approved by independent external professionals;
 - (b) area of land with a permanently protected land status as of the end of the reporting period;
 - (c) area of land with a protected land status as of the end of reporting period;
 - (d) recreated surfaces (environments in which management initiatives are implemented so as to create a habitat on a site where it did not exist initially); or
 - (e) number or percentage of projects / sites whose ecological integrity was improved (e.g., installation of fish passes, wildlife corridors).

⁵⁶ https://framework.tnfd.global/wp-content/uploads/2022/11/TNFD_Additional_Draft_Guidance_v0-3_B.pdf

⁵⁷ Refer to Global and EU goals and targets related to biodiversity and ecosystems

⁵⁸ Refer to Global and EU goals and targets related to biodiversity and ecosystems

Disclosure Requirement E4-5 – Impact metrics related to biodiversity and ecosystems change

- AR 26. The undertaking shall consider and describe these considerations as per the following when preparing the information required under this Disclosure Requirement:
- (a) methodologies and metrics used and explanation for why these methodologies and metrics are selected, as well as their assumptions, limitations and uncertainties, as well as any changes in methodologies made over time and why they occurred;
 - (b) the scope of the metrics and methodologies:
 - i. undertaking, site, brand, commodity, corporate business unit, activity;
 - ii. entire value chain, upstream or downstream value chain, or own operations and leased assets;
 - iii. aspects (as set out in paragraph AR 4) covered.
 - (c) the biodiversity components of the metrics: species specific, ecosystem specific;
 - (d) a description of the geographies covered by the methodology and, an explanation of why the relevant geographies identified were not included;
 - (e) how the metrics integrate ecological thresholds (e.g., the biosphere integrity and land-system change planetary boundaries⁵⁹) and allocations;
 - (f) the frequency of monitoring, key indicators being monitored, and the baseline condition/value and baseline year/period, as well as the reference period;
 - i. whether the parametrisation of these metrics rely on primary data, secondary data, modelled data or on expert judgement, or a mixture of these;
 - ii. an indication of which action is measured and monitored via the metrics and how they relate to the achievement of targets;
 - iii. whether metrics are mandatory (based on legislation) or voluntary. If they are mandatory, the undertaking may consider listing the relevant legislation; if voluntary, refer to the voluntary standard/procedure used; and
 - iv. whether the metrics are informed by or correspond to expectations or recommendations of relevant and authoritative national, EU-level or intergovernmental guidelines, policies, legislation or agreements, such as the Convention for Biological Diversity (CBD) and IPBES.
- AR 27. When selecting metrics, the undertaking shall consider using and describing these considerations to use technically robust and verifiable information, as well as data and methods that, from a scientific perspective, are fit for decision making and responsive to decision making over the appropriate timeframe and spatial scale. For example, there should be an accepted theory of the relationship between the indicator and the purpose, with agreement that change in the indicator indicates change in the issue of concern. Uncertainties should be reduced as far as possible. Data or mechanisms used should be supported by well-established organisations and updated over time. Robust modelled data and expert judgment can be used where data gaps exist⁶⁰. The methodology must be sufficiently detailed to allow for meaningful comparison of impacts and mitigation activities over time. Information gathering processes and definitions must be systematically applied. This enables a meaningful review of the undertaking's performance over time and helps internal and peer comparison⁶¹.
- AR 28. If a metric corresponds to a target, the baseline for both shall be aligned. The biodiversity baseline is an essential component of the larger biodiversity and ecosystems

⁵⁹ A description of the nine planetary boundaries can be found here : <https://www.stockholmresilience.org/research/planetary-boundaries/the-nine-planetary-boundaries.html>.

⁶⁰ Source: UNEP-WCMC, Conservational International and Fauna and Flora International, 2020.

⁶¹ Source: UNEP-WCMC, Conservational International and Fauna and Flora International, 2020.

management process. The baseline is necessary to inform impact assessment and management planning, as well as monitoring and adaptive management⁶². The undertaking may refer to the work in “Good Practices for the Collection of Biodiversity Baseline Data” (Gullison, 2015) for baseline creation, and in particular the checklist available on page 18.

- AR 29. When identifying relevant metrics, the undertaking may refer to the biodiversity and ecosystems-related indicators listed for the Sustainable Development Goals⁶³, IPBES Assessment Report 2019⁶⁴ and the Report on biodiversity measurement approaches developed by the Business for Biodiversity Platform⁶⁵.
- AR 30. Methodologies available to collect data and measure the undertakings’ impacts on biodiversity state may be separated into three categories as follows⁶⁶:
- (a) primary data: collected in-situ using on the ground surveys;
 - (b) secondary data: including geospatial data layers that are overlaid with geographic location data of business activities:
 - i. at the species level, data layers on the ranges of different species can be used to predict the species that may be present at different locations. This includes operation sites and sourcing locations. Range layers, each will have differing levels of accuracy depending on factors (e.g., whether species ranges have been refined based on availability of habitat). Information on the threat status of the species, and the activities that threaten them, can provide an indication of the likely contribution that business activities may be having on driving population trends and threat status;
 - ii. at the ecosystem level, data layers reflecting change in the extent and condition o ecosystems can applied, including levels of habitat fragmentation and connectivity;
 - (c) modelled biodiversity state data: Model-based approaches are commonly used for measuring ecosystem level indicators (e.g., extent, condition, or function). Models quantify how the magnitude of different pressures affects the state of biodiversity. These are referred to as pressure-state relationships and are based on globally collected data. Modelling results are applied locally to estimate how undertaking-level pressures will cause changes in ecosystem condition.
- AR 31. An impact driver generally has three main characteristics: magnitude (e.g., amount of contaminant, noise intensity), spatial extent (e.g., area of land contaminated) and temporal extent (duration of persistence of contaminant)⁶⁷.
- AR 32. The undertaking may refer to the “Land-use related environmental indicators for Life Cycle Assessment” by the Joint Research Center⁶⁸ or an equally established scientific approach, when disclosing on paragraph 39.
- AR 33. When disclosing under paragraph 43 on the introduction of invasive alien species, the undertaking may refer to the guidance provided by TNFD on invasive alien species removal. The undertaking may further disclose, for example, the pathways and number of invasive alien species or the extent of surface covered by invasive alien species.
- AR 34. When reporting on the state of species under paragraph:

⁶² Source: Gullison, R.E., J. Hardner, S. Anstee, M. Meyer. 2015. Good Practices for the Collection of Biodiversity Baseline Data. Prepared for the Multilateral Financing Institutions Biodiversity Working Group and Cross-Sector Biodiversity Initiative.

⁶³ Source: <https://sustainabledevelopment.un.org/content/documents/11803Official-List-of-Proposed-SDG-Indicators.pdf>

⁶⁴ Supplementary material in chapter 2.2 available at <https://ipbes.net/global-assessment>.

⁶⁵ Source: https://ec.europa.eu/environment/biodiversity/business/news/news-277_en.htm

⁶⁶ Source: Align (2022), “Recommendations for a standard on 8 biodiversity measurement and valuation, draft 01”, unpublished.

⁶⁷ Source: Align (2022), “Recommendations for a standard on 8 biodiversity measurement and valuation, draft 01”, unpublished

⁶⁸ https://epica.jrc.ec.europa.eu/uploads/QMS_H08_MonscenReff_del-land-use_FINAL.pdf

- (a) 44(d)i, the undertaking may consider that contribution to extinction risk metrics use threat assessments and range sizes of the species present at a given location to estimate how different activities at that location may drive species extinctions globally.
 - (b) 44(d)ii, the undertaking may consider that changes in species area of habitat-metrics measure the change in habitat size as a proxy of a change to a species population size. Indicators such as these can be used when direct population counts are not possible to obtain, however, direct in-situ population measures are preferred.
- AR 35. When disclosing under paragraph 45 on the extent and condition of ecosystems, the undertaking may refer to metrics and information provided by the United Nations System of Environmental Economic Accounting Ecosystem Accounting (UN SEEA EA)⁶⁹.
- AR 36. The undertaking may disclose in units of area (e.g., m² or ha) on land-use using guidance provided by the Eco-Management and Audit Scheme (EMAS)⁷⁰:
- (a) total use of land;
 - (b) total sealed area;
 - (c) total nature-oriented area on site; and
 - (d) total nature-oriented area off site.
- AR 37. The undertaking may disclose, for example, land cover change, which is the physical representation of the drivers “habitat modification” and “industrial and domestic activities”, i.e., the man-made or natural change of the physical properties of Earth’s surface at a specific location. The undertaking may refer to the CDSB Biodiversity Application Guidance 2021⁷¹:
- AR 38. Land cover is a typical variable that can be assessed with earth observation data. Examples include: Validated global land-cover datasets have been produced annually since 2015 by the Copernicus Global Land Service⁷². A high-resolution alternative is ESA’s WORLDCOVER⁷³ dataset, a global land cover map with a spatial resolution of 10 meters. However, this dataset has so far only been generated for the year 2020, so no changes can be assessed yet, but an annual calculation is envisaged. Alternatively, the undertaking may refer to the following metrics and open-access tools: the Invest Habitat Quality Model, the Corine Land Cover, the ESRI Land Cover, the catalogue of Earth Engine Data, the Eurostat Land Use and Land Cover Survey, the habitat modification metric from the ENCORE database or the Biodiversity Intactness Index⁷⁴.
- AR 39. Data layers on the ranges of different species may be used to predict the species that may be present at different locations. This includes operation sites and sourcing locations. Range layers has differing levels of accuracy depending on factors, e.g., whether species ranges have been refined based on availability of habitat. Information on the threat status of the species, and the activities that threaten them, can provide an indication of the likely contribution that business activities may be having on driving population trends and threat status.

⁶⁹ <https://seea.un.org/ecosystem-accounting/>

⁷⁰ As proposed by the COMMISSION REGULATION (EU) 2018/ 2026 of 19 December 2018 amending Annex IV to Regulation (EC) No 1221/2009 of the European Parliament and of the Council on the voluntary participation by organisations in a Community eco-management and audit scheme (EMAS).

⁷¹ Source: https://www.cdsb.net/sites/default/files/biodiversity-application-guidance-single_disclaimer.pdf

⁷² Source: <https://land.copernicus.eu/global/products/lc>

⁷³ Source: <https://esa-worldcover.org/en>

⁷⁴ <https://naturalcapitalproject.stanford.edu/software/invest>,
<https://land.copernicus.eu/pan-european/corine-land-cover>,
<https://livingatlas.arcgis.com/landcover/>,
<https://developers.google.com/earth-engine/datasets/tags/landcover>,
https://ec.europa.eu/eurostat/statistics-explained/index.php?title=LUCAS_-_Land_use_and_land_cover_survey,
<https://encore.naturalcapital.finance/en/drivers/7>,
[https://www.nhm.ac.uk/our-science/data/biodiversity-indicators/about-the-biodiversity-intactness-index.html#:~:text=The%20Biodiversity%20Intactness%20Index%20\(BII,given%20area%2C%20despite%20human%20impacts.\)](https://www.nhm.ac.uk/our-science/data/biodiversity-indicators/about-the-biodiversity-intactness-index.html#:~:text=The%20Biodiversity%20Intactness%20Index%20(BII,given%20area%2C%20despite%20human%20impacts.))

- AR 40. When reporting on material impacts related the ecosystems under paragraph 44, the undertaking may consider a third aspect of on the functioning of ecosystems by using:
- (a) an indicator that measures a process (or function) that the ecosystem completes or reflects the ability to undertake that specific process (or function): e.g., net primary productivity, which is the measure of plant productivity that measures the rate that energy is stored by plants and made available to other species in the ecosystem. It is a core process that occurs for ecosystems to function. It is related to many factors, such as species diversity, but does not measure these factors directly; or
 - (b) an indicator that measures changes to the population of scientifically identified.
- AR 41. When reporting on impacts contributing to state changes under paragraph 44, indicators for ecosystem extent and condition shall form the core of measurements but can be supplemented with species level indicators for a more complete assessment.
- AR 42. At the ecosystem level, data layers reflecting change in the extent and condition of ecosystems may be applied, including levels of habitat fragmentation and connectivity.

Disclosure Requirement E4-6 – Potential financial effects from biodiversity and ecosystem-related risks and opportunities

- AR 43. The undertaking may include an assessment of its related products and services at risk over the short-, medium- and long-term time horizons, explaining how these are defined, how financial amounts are estimated, and which critical assumptions are made.
- AR 44. The quantification of the potential financial effects in monetary terms under paragraph 46 may be a single amount or a range.



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