

EXPOSURE DRAFT

ESRS E4

Biodiversity and ecosystems

April 2022



Open for comments until 8 August 2022

PTF-ESRS

Project Task Force on European sustainability reporting standards

 **EFRAG**

DISCLAIMER

This Exposure Draft has to be read in conjunction with the cover note for ESRS public consultation. It has been prepared under the sole responsibility of the EFRAG PTF-ESRS and is submitted to public consultation by EFRAG SRB to inform the upcoming standard-setting steps. It therefore does not reflect the EFRAG SRB's position at this stage, nor the position of the European Union or European Commission DG Financial Stability, Financial Services and Capital Markets Union (DG FISMA), nor the position of organisations with which the EFRAG PTF-ESRS has cooperated. The final version of the [draft] Standard will be produced by the EFRAG SRB starting from this Exposure Draft, taking into consideration the outcome of the public consultation and the requirements of the final CSRD.

[Draft] ESRS 4 Biodiversity and ecosystems is set out in paragraphs 1–69 and Appendices A: Defined terms and B: Application Guidance. All the paragraphs, including those in the Appendices A and B, have equal authority. Each Disclosure Requirement objective is stated in a bold paragraph, followed by a paragraph that illustrates the principle to be followed in the preparation of the respective disclosures. The [draft] Standard also uses terms defined in other [draft] ESRS and should be read in the context of its objective.

EXPLANATORY NOTE

The content of this [draft] Standard, including the application guidance, is subject to possible changes before the issuance of the final [draft], following the expected developments of relevant international pronouncements of practice setting initiatives.

Table of contents

Objective	4
Interactions with other ESRS	5
Disclosure requirements	5
General, Strategy, Governance and Materiality assessment	5
Disclosure Requirement E4-1 – Transition plan in line with the targets of no net loss by 2030, net gain from 2030 and full recovery by 2050	6
Policies, Targets, Action Plans and Resources	6
Disclosure Requirement E4-2 – Policies implemented to manage biodiversity and ecosystems	6
Disclosure Requirement E4-3 – Measurable targets for biodiversity and ecosystems	8
Disclosure Requirement E4-4 – Biodiversity and ecosystems action plans	9
Performance Measurement	10
Disclosure Requirement E4-5 – Pressure metrics	10
Disclosure Requirement E4-6 – Impact metrics	11
Disclosure Requirement E4-7 – Response metrics	11
Optional Disclosure Requirement E4-8 – Biodiversity-friendly consumption and production metrics	12
Taxonomy Regulation for biodiversity and ecosystems	12
Optional Disclosure Requirement E4-9 – Biodiversity offsets	12
Disclosure Requirement E4-10 - Financial effects from biodiversity-related impacts, risks and opportunities	13
Appendix A: Defined terms	14
Appendix B: Application Guidance	20
General, Strategy, Governance and Materiality assessment	20
Disclosure Requirement E4-1 – Transition plan in line with the targets of no net loss by 2030, net gain from 2030 and full-recovery by 2050	20
Biodiversity and ecosystems-related specific application guidance on ESRS 2 Disclosure Requirement SBM 4 (paragraph 47 (d)) on the resilience of the strategy and business model	20
Biodiversity and ecosystems-related specific application guidance on ESRS 2 Disclosure Requirements IRO 1 and IRO 2 on materiality assessment	21
Policies, Targets, Action Plans and Resources	29
Disclosure Requirement E4-2 – Policies implemented to manage biodiversity and ecosystems	29
Disclosure Requirement E4-3 – Measurable targets for biodiversity and ecosystems	30
Disclosure Requirement E4-4 – Biodiversity and ecosystems action plans	31
Performance Measurement	32
Disclosure Requirement E4-5 – Pressure metrics	32
Disclosure Requirement E4-6 – Impact metrics	35
Disclosure Requirement E4-7 – Response metrics	36
Optional Disclosure Requirement E4-8 – Biodiversity-friendly consumption and production metrics	37
Optional Disclosure Requirement E4-9 – Biodiversity offsets	37

Objective

1. The objective of this [draft] Standard is to specify disclosure requirements which will enable users of sustainability statements to understand:
 - (a) how the undertaking affects biodiversity and ecosystems, in terms of material positive and negative actual or potential impacts;
 - (b) any actions taken, and the result of such actions, to prevent, mitigate or remediate actual or potential adverse impacts and to protect and restore biodiversity and ecosystems;
 - (c) to what extent the undertaking contributes to (i) the European Green Deal's ambitions for protecting the biodiversity and ecosystems, the EU Biodiversity Strategy for 2030¹, the SDGs 2 Zero Hunger, 6 Clean water and sanitation, 12 Responsible consumption, 14 Life below water and 15 Life on land, the Post-2020 Global Biodiversity Framework² and (ii) the respect of global environmental limits (e.g., the biosphere integrity and land-system change planetary boundaries³);
 - (d) and the plans and capacity of the undertaking to adapt its business model and operations in line with the transition to a sustainable economy and with the preservation and restoration of biodiversity and ecosystems in general; and in particular in line with the objective of (i) ensuring that by 2050 all of the world's ecosystems and their services are restored to a good ecological condition, resilient, and adequately protected⁴ and (ii) contributing to achieving the objectives of the EU Biodiversity Strategy by 2030 at latest;
 - (e) the nature, type and extent of the undertaking's material risks and opportunities related to the undertaking's impacts and dependencies on biodiversity and ecosystems, and how the undertaking manages them; and
 - (f) the effects of risks and opportunities, related to the undertaking's impacts and dependencies on biodiversity and ecosystems, on the undertaking's development, performance and position over the short-, medium- and long-term and therefore on its ability to create enterprise value.
2. This [draft] Standard derives from the [Draft Corporate Sustainability Reporting Directive] stating that the sustainability reporting standards shall specify information to disclose about biodiversity and ecosystems.
3. 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 ecosystems⁵ and their interrelation with many indigenous and local communities⁶.
4. '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 of. An environmental limit is usually interpreted as the point or range of conditions beyond which there is a significant risk of

¹ The EU Biodiversity Strategy for 2030: https://ec.europa.eu/environment/strategy/biodiversity-strategy-2030_en

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

⁴ Guidance document on integrating ecosystems and their services in decision-making (2019)

⁵ Convention on Biological Diversity (CBD, 1992)

⁶ 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"

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).

Interactions with other ESRS

5. 'Biodiversity and ecosystems' is a cross-topic subject as the main drivers of biodiversity loss according to the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) are climate change, pollution, land-use change, natural resource use and exploitation and invasive species⁷.
6. So as to provide a comprehensive overview of what is material to biodiversity and ecosystems, all the relevant disclosure requirements for the main biodiversity loss and degradation impact drivers arising from other ESRS are listed and referenced in this Standard, and in particular to:
 - (a) ESRS E1 Climate change;
 - (b) ESRS E2 Pollution;
 - (c) ESRS E3 Water and marine resources;
 - (d) ESRS E5 Resource use and circular economy.
7. The content of this [draft] Standard related to Strategy, governance and materiality assessment, as well as Policies, targets, action plans and resources shall be read in conjunction respectively with ESRS 2 General, strategy, governance and materiality assessment and ESRS 1 General principles.
8. This [draft] Standard covers sector-agnostic disclosure requirements. Sector-specific disclosure requirements are prescribed separately and in accordance with the classification specified by [draft] ESRS SEC 1 Sector classification⁸.

Disclosure requirements

General, Strategy, Governance and Materiality assessment

9. The provisions of this [draft] Standard shall be read in conjunction with and reported alongside the disclosure requirements of ESRS 2.
10. Appendix B of this [draft] Standard contains specific biodiversity and ecosystems -related application guidance the undertaking shall follow when disclosing information under ESRS 2, in particular with regards to Disclosure Requirements IRO 1, 2 and 3 regarding the materiality assessment of biodiversity and ecosystems -related impacts, risks and opportunities and the outcome of this process.
11. In addition to the requirements in ESRS 2, this [draft] Standard also includes the topic-specific ESRS E4 Disclosure Requirement 1 on transition in line with the targets of no net loss by 2030, net gain from 2030 and full recovery by 2050.

⁷ Direct drivers of biodiversity loss: <https://ipbes.net/models-drivers-biodiversity-ecosystem-change>

⁸ To be issued at a later date.

Disclosure Requirement E4-1 – Transition plan in line with the targets of no net loss by 2030, net gain from 2030 and full recovery by 2050

12. **The undertaking shall disclose its plans to ensure that its business model and strategy are compatible with the transition to achieve no net loss by 2030, net gain from 2030 and full recovery by 2050⁹.**
13. The principle to be followed under this Disclosure Requirement is to provide an understanding of the transition plan of the undertaking and its compatibility with the preservation and restoration of biodiversity and ecosystems in line with the Post-2020 Global Biodiversity Framework and the EU Biodiversity Strategy for 2030.
14. The undertaking shall disclose its plans for its own operations and throughout its upstream and downstream value chain.
15. The undertaking shall disclose whether the administrative, management and supervisory bodies have approved the transition plan.
16. If the undertaking cannot disclose the above required information, because it has not adopted a transition plan in line with the targets of no net loss by 2030, net gain from 2030 and full recovery by 2050, it shall disclose this to be the case, it shall then also provide reasons for not having adopted such a plan and may report a timeframe in which it aims to have such a plan in place.

Policies, Targets, Action Plans and Resources

17. The specific biodiversity and ecosystems-related ESRS E4 Disclosure Requirements 2 to 4 developed hereafter refer to ESRS 2 and shall be read as complementary to that Standard.

Disclosure Requirement E4-2 – Policies implemented to manage biodiversity and ecosystems

18. **The undertaking shall disclose its policies related to biodiversity and ecosystems.**
19. The principle to be followed under this Disclosure Requirement is to provide an understanding of the extent to which the undertaking has policies that address prevention, mitigation or remediation of actual or potential adverse impacts and protection and restoration of biodiversity and ecosystems and of how the undertaking monitors and manages its material biodiversity and ecosystems-related impacts and risks and opportunities arising from impacts and dependencies and addresses the strategies of no net loss by 2030, net gain from 2030, and full recovery of biodiversity and ecosystems by 2050.
20. The description of policies related to biodiversity and ecosystems shall follow the principles defined in ESRS 1 Disclosure Principle 1 on Policies adopted to manage material sustainability matters.
21. The undertaking shall indicate which below matter the described policy addresses:
 - (a) material biodiversity and ecosystems-related impacts;
 - (b) its contribution to material biodiversity loss drivers;

⁹ The First Draft of the Post-2020 Global Biodiversity Framework (2021) states “by 2050, biodiversity is valued, conserved, restored and wisely used, maintaining ecosystem services, sustaining a healthy planet and delivering benefits essential for all people” and “to take urgent action across society to conserve and sustainably use biodiversity and ensure the fair and equitable sharing of benefits from the use of genetics resources, to put biodiversity on a path to recovery by 2030 for the benefit of planet and people”.

- (c) material dependencies and material physical and transition risks and opportunities;
 - (d) biodiversity friendly production, consumption and sourcing of raw materials;
 - (e) screening and engaging with suppliers on biodiversity and ecosystems;
 - (f) the social consequences of biodiversity and ecosystems related dependencies and impacts; and
 - (g) other.
22. The disclosure required by paragraphs 21(a) and (b) shall provide information on how the policy allows the undertaking to:
- (a) avoid its negative impacts on biodiversity and ecosystems in its operations and throughout the value chain (downstream and upstream);
 - (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/rehabilitate degraded ecosystems or restore cleared ecosystems following exposure to impacts that cannot be completely avoided and/or minimised;
 - (d) compensate for residual impacts (impacts that cannot be completely avoided and/or minimised and/or restored on site) by means of offsets; and
 - (e) mitigate material biodiversity loss drivers as disclosed in the section dependencies, impacts, risks and opportunities.
23. The disclosure required by paragraph 21(d) shall provide information on how the policy allows the undertaking to:
- (a) produce, source or consume with or from third-party certification;
 - (b) ensure traceability (i.e. the ability to follow a product or its components through stages of the supply chain) of production, sourcing or consumption of raw materials;
 - (c)** produce, source or consume 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.
24. The disclosure required by paragraph 21(f) on policies regarding the social consequences of biodiversity and ecosystems related dependencies and impacts shall provide information in relation to:
- (a) the fair and equitable benefit-sharing from the benefits arising from the utilisation of genetic resources;
 - (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;
 - (c) the prior informed consent or approval and involvement (of the communities) for access to traditional knowledge associated with genetic resources that is held by indigenous and local communities; and
 - (d) the protection of the rights of local and indigenous communities; notably recognising the close and traditional dependence of many indigenous and local communities embodying traditional lifestyles on biological resources, and the desirability of sharing equitably benefits arising from the use of traditional knowledge, innovations and practices relevant to the conservation of biological diversity and the sustainable use of its components.
25. The undertaking shall state how its policies disclosed are connected to and in alignment with EU and national policies and legislation related to biodiversity and ecosystems.

26. The undertaking may state how its policies disclosed are connected to and in alignment with global goals and agreements, notably:
 - (a) the SDGs 2, 6, 12, 14 and 15;
 - (b) the Post-2020 Global Biodiversity framework;
 - (c) any global convention related to biodiversity and ecosystems.
27. If the undertaking cannot disclose the above required information, it shall disclose this to be the case, it shall then also provide reasons for not having adopted such policies and may report a timeframe in which it aims to have such policies in place.

Disclosure Requirement E4-3 – Measurable targets for biodiversity and ecosystems

28. **The undertaking shall disclose the biodiversity and ecosystem-related targets it has adopted.**
29. The principle to be followed under this Disclosure Requirement is to provide 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.
30. The description of the targets shall follow the principles defined in ESRS 1 related to the Disclosure Principle 2 on targets, progress and tracking effectiveness.
31. The disclosure required by paragraph 28 shall include targets related to:
 - (a) material impacts on biodiversity and ecosystems;
 - (b) material biodiversity and ecosystems loss impact drivers;and may include targets related to:
 - (c) material dependencies on biodiversity and ecosystems;
 - (d) material physical or transition risks.
32. The disclosure required by paragraph 31(a) shall include targets related to:
 - (a) avoidance of biodiversity and ecosystems loss;
 - (b) reduction and minimisation of biodiversity and ecosystems loss; and/or
 - (c) restoration/rehabilitation of biodiversity and ecosystems.
33. The disclosure required by paragraph 31(a) and 31(c) may include targets related specifically to biodiversity friendly sourcing and consumption of raw materials such as targets related to:
 - (a) avoidance of production, sourcing or consumption of raw materials of concern or at risk of extinction;
 - (b) minimisation of production, sourcing or consumption of raw materials of concern or at risk of extinction;
 - (c) absolute demand reduction for raw materials of concern or at risk of extinction;
 - (d) increasing certified biodiversity friendly production and/or procurement of raw materials of concern or at risk of extinction (per third party certification schemes for reported biodiversity-risk commodities, % of total production/ consumption certified); and

- (e) increasing non-certified biodiversity friendly production and/or procurement of raw materials of concern or at risk of extinction (other than with a third-party certification scheme).
34. The targets disclosed under paragraph 27 shall include where applicable:
- (a) regarding the timeframe of the target: short-term relates to 1-5 years from the baseline year, medium-term to 5-10 years and long-term to 10 years and more, but no later than 2050;
 - (b) a presentation with milestones including a set date in 2030;
 - (c) how the targets respect and are in alignment with ecological thresholds (e.g. the biosphere integrity and land-system change planetary boundaries¹⁰) and allocate responsibility for respecting these thresholds to the organisational level;
 - (d) whether the targets are informed by, connected to and in alignment with expectations in authoritative intergovernmental instruments such as the Convention for Biological Diversity (CBD) and, where relevant, by scientific consensus, that is, in the case of biodiversity and ecosystem services, IPBES; and
 - (e) whether targets are mandatory (based on legislation) or voluntary. If they are mandatory, the undertaking shall list the relevant legislation;
35. The undertaking shall state how its targets disclosed are connected to and in alignment with EU and national policies and legislation related to biodiversity and ecosystems.
36. The undertaking may state how its targets disclosed are connected to and in alignment with global goals and agreements, notably:
- (a) the SDGs 2, 6, 12, 14 and 15;
 - (b) the Post-2020 Global Biodiversity framework;
 - (c) any global convention related to biodiversity and ecosystems.

Disclosure Requirement E4-4 – Biodiversity and ecosystems action plans

37. **The undertaking shall disclose its biodiversity and ecosystems-related actions and action plans and allocation of resources to meet its policy objectives and targets.**
38. The principle to be followed under this Disclosure Requirement is to provide transparency on the key actions taken and planned to achieve biodiversity and ecosystems-related targets and to manage related risks, impacts and opportunities.
39. The description of the biodiversity and ecosystems-related action plans and resources shall follow the principles defined in ESRS 1 Disclosure Principle 3 Actions, action plans and resources in relation to policies and targets.
40. The disclosure required by paragraph 36 shall cover action plans and resources related to the undertaking's own operations and its upstream and downstream value chain.
41. The undertaking shall describe how it has incorporated traditional knowledge and nature-based solutions into biodiversity and ecosystems-related actions and actions plans.
42. For each action plan or stand-alone action, the undertaking shall include the description of:

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

- (a) the geographical scope of the actions, including explanation of any limitations as to geographical boundaries or activities;
 - (b) a list of the stakeholders involved in the stand-alone action or action plan and how they are involved, or/and a list of stakeholders impacted negatively or positively by the stand-alone action or action plan and how they are impacted, including impacts or benefits created for local communities, smallholders (i.e. small-scale agricultural or forest producers with high dependence on family labour, generally having low levels of productivity, small land footprint, significant economic and information constraints and/or farmers profit being the primary source of income for the smallholder and their family), indigenous groups, women, the poor, marginalised and vulnerable groups and individuals;
 - (c) the material impact each action or action plan aims to tackle;
 - (d) actions categorised according to the mitigation strategy: avoid (conserve), reduce and minimise, restore/rehabilitate;
 - (e) an elaboration of the reason(s) why it selected such action over other possible actions;
 - (f) an explanation whether the action is intended to be a one-time initiative or a systematic practice;
 - (g) if the action is individual or collective: for a collective action, the undertaking shall explain its role;
 - (h) whether the success of the action depends on the undertaking or supporting actions by other undertakings, and to what degree; and
 - (i) a brief assessment whether key actions may induce significant adverse sustainability impacts.
43. The undertaking may describe the actions or actions plans to contribute to systemwide change, notably to alter the drivers of nature loss, e.g. through technological, economic, institutional, and social factors and changes in underlying values and behaviours¹¹.

Performance Measurement

Disclosure Requirement E4-5 – Pressure metrics

44. **The undertaking shall report pressure metrics.**
45. The principle to be followed under this Disclosure Requirement is to provide information on material impact drivers that unequivocally influence biodiversity, ecosystem services and underlying ecosystems.
46. The information required under paragraph 43 shall cover pressure metrics that pertain to material impact drivers that unequivocally influence biodiversity, ecosystem services and underlying ecosystems. It shall include, but not be limited to, land-use or habitat change, climate change, pollution, natural resource use and exploitation, as well as invasive species.
47. If land-use or habitat change or degradation has been assessed by the undertaking as a material impact driver of biodiversity and ecosystem services loss, the undertaking shall report pressure metrics that pertain to land-use or habitat change or degradation. Land-use or habitat change or degradation can include the conversion of land cover (e.g., deforestation or mining), changes in the management of the ecosystem or agro-ecosystem (e.g., through the intensification of agricultural management or forest

¹¹ The system-wide approach in paragraph 72 refers to the Taskforce for Nature Financial related Disclosures (TNFD) Proposed Technical Scope from June 2021 and the Science-Based Targets for Nature (SBTN) Initial Guidance for Business from September 2020.

harvesting) or changes in the spatial configuration of the landscape (e.g., fragmentation of habitats, changes in ecosystem connectivity).

48. If climate change has been assessed by the undertaking as a material impact driver of biodiversity and ecosystem services loss, the undertaking shall report pressure metrics that pertain to climate change, as laid out in ESRS E1.
49. If pollution has been assessed by the undertaking as a material impact driver of biodiversity and ecosystem services loss, the undertaking shall report pressure that pertain to pollution, as laid out in ESRS E2, but not limited to sources of pollution covered in ESRS E2.
50. If natural resource use and exploitation has been assessed by the undertaking as a material impact driver of biodiversity and ecosystem services loss, the undertaking shall report pressure metrics that pertain to natural resource use and exploitation as laid out in ESRS E3 for water use and ESRS E5 for natural resources use, but not limited to natural resources covered in ESRS E3 and E5.
51. If invasive species has been assessed by the undertaking as a material impact driver of biodiversity and ecosystem services loss, the undertaking shall report pressure metrics that pertain to invasive species control and eradication.
52. If the undertaking has identified any other material impact drivers of biodiversity and ecosystem services loss, the undertaking shall report pressure metrics that pertain to those particular additional material impact drivers.

Disclosure Requirement E4-6 – Impact metrics

53. **The undertaking shall report metrics for material biodiversity and ecosystem-related impacts, either by material geographical locations, and/or by material raw materials.**
54. The principle to be followed under this Disclosure Requirement is to provide an understanding of the progress of the undertaking towards no net loss and net gain, including how biodiversity offsets may be integrated in this measurement approach.
55. The information required under paragraph 52 shall include a description of the assessment of the impact on species and ecosystems in particular:
 - (a) when reporting on their impact on species, the undertaking shall consider two aspects – population size, and extinction risk. These aspects provide insight on the health of a single species' population and its relative resilience to human induced and naturally occurring change;
 - (b) when reporting on their impact on ecosystems, the undertaking shall consider three aspects: condition, extent, and functioning. Together they give insight into the overall health of an ecosystem.

Disclosure Requirement E4-7 – Response metrics

56. **The undertaking shall disclose response metrics.**
57. The principle to be followed under this Disclosure Requirement is to provide an understanding of how the undertaking minimises, rehabilitates or restores material impacts on biodiversity and ecosystems in material geographical locations of sites and/or raw materials identified.

Optional Disclosure Requirement E4-8 – Biodiversity-friendly consumption and production metrics

58. **The undertaking may disclose metrics on its biodiversity-friendly consumption and production.**
59. The principle to be followed under this optional Disclosure Requirement is, if the undertaking so decides, to provide an understanding of its consumption and production that qualifies as being biodiversity friendly.
60. The disclosure required by paragraph 58 shall include:
 - (a) the list of any third-party certification schemes that it uses for its raw material, as well as the volume and percentage of its production and/or consumption covered;
 - (b) the volume and percentage of supply of raw material traceable to mill or to plantation level; and
 - (c) the volume and percentage of raw material that comes from ecosystems that have been managed to maintain or enhance conditions for biodiversity, as demonstrated by regular monitoring and reporting of biodiversity levels and gains or losses.

Taxonomy Regulation for biodiversity and ecosystems

61. The undertaking shall disclose information required by Article 8 of the Regulation (EU) 2020/852 (Taxonomy Regulation) in conjunction with the Commission Delegated Regulation (EU) 2021/2178 and in conjunction with upcoming technical screening criteria for determining the conditions under which an economic activity qualifies as contributing substantially to the protection and restoration of biodiversity and ecosystems.
62. The Taxonomy Regulation in its Article 8(2) requires undertakings to disclose information on the proportion of the turnover, capital expenditure ('CapEx') and operating expenditure ('OpEx') or on their green asset ratio associated with economic activities that qualify as environmentally sustainable.
63. The information to be disclosed under the biodiversity and ecosystems-related provisions of the Taxonomy regulation is complementary to the information disclosed under the provisions of this Standard.

Optional Disclosure Requirement E4-9 – Biodiversity offsets

64. **The undertaking may disclose the actions, development and financing of biodiversity and ecosystems mitigation projects (offsets) inside and outside its value chain.**
65. The principle to be followed under this optional Disclosure Requirement is to provide an understanding of the extent and quality of the development; investment and implementation of projects or programmes inside or outside the undertaking's value chain that compensate for any residual, significant adverse impacts on biodiversity that cannot be avoided, reduced or removed, minimised, or restore biodiversity loss inside or outside the undertaking's value chain (also commonly referred to as biodiversity offsets).
66. The information disclosed under paragraph 63 shall include:
 - (a) The aim of the offset and key performance indicators used;
 - (b) the financing (direct and indirect costs) of biodiversity offsets in monetary terms; and
 - (c) a description of offsets including area, type, the quality criteria applied and the standards that the biodiversity offsets fulfil.

Disclosure Requirement E4-10 – Potential financial effects from biodiversity-related impacts, risks and opportunities

67. The undertaking shall disclose its potential financial effects of risks and opportunities arising from biodiversity-related impacts and dependencies.
68. The principle to be followed under this Disclosure Requirement is to provide an understanding of the potential effects of risks and opportunities, arising from the undertaking's biodiversity-related impacts and dependencies, on the undertaking's development, performance and position over the short, medium and long term and therefore on its ability to create enterprise value, considering that those potential future financial effects may not meet at the reporting date the recognition criteria set for financial statements. Such information is complementary to the information requested under the Taxonomy Regulation.
69. The undertaking may include an assessment of the market size of related products and services at risk over the short-, medium-, and long-term, explaining how these are defined, how financial amounts are estimated and which critical assumptions are made.

Appendix A: Defined terms

This appendix is an integral part of the [draft] ESRS E4.

Agro-ecosystems	Agroecosystems, are defined as communities of plants and animals interacting with their physical and chemical environments that have been modified by people to produce food, fibre, fuel and other products for human consumption and processing (Maes, 2018 cited by: https://biodiversity.europa.eu/ecosystems/agroecosystems).
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. (Conway, M., Rayment, M., White, A., and Berman, S. (2013) Exploring Potential Demand for and Supply of Habitat Banking in the EU and Appropriate Design Elements for a Habitat Banking Scheme. Final Report submitted to DG Environment, ICF GHK, London)
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). (CBD, 2010)
Biodiversity 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. (IPBES online glossary)
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. (IPBES online glossary)
Biodiversity no net loss or biodiversity no net gain	In which the impacts on biodiversity caused by a project (or plan or programme) are balanced or outweighed by measures taken to avoid and minimise the project's (plan's or programme'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" may be used Instead. (Conway et al., 2013)

Biodiversity offsetting	Measures taken to compensate for any residual significant, adverse impacts that cannot be avoided, minimised and/or rehabilitated or restored, in order to achieve no net loss or a net gain of biodiversity. Offsets can take the form of positive management interventions such as restoration of degraded habitat, arrested degradation or averted risk, protecting areas where there is imminent or projected loss of biodiversity. (Carbon Disclosure Project (CDP), Business and Biodiversity Offsets Programme (BBOP), 2012)
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. (IPBES online glossary)
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”. (Karr and Dudley 1981, Karr et al. 1986)
Conservation	The protection, care, management and maintenance of ecosystems, habitats, wildlife species and populations, within or outside of their natural environments, in order to safeguard the natural conditions for their long-term permanence. (International Union for Conservation of Nature (IUCN))
Deforestation	The human-induced conversion of forested land to non-forested land, which can be permanent, when this change is definitive, or temporary when this change is part of a cycle that includes natural or assisted regeneration, according to IPBES as referred to in paragraph 100 of Decision No 1386/2013/EU of the European Parliament and of the Council (25). (Joint ESAs final report on Regulatory Technical Standard (RTS) under Sustainable Finance Disclosure Regulation (SFDR), 2021)
Degraded ecosystem	Degradation ¹² refers to chronic human impacts resulting in the loss of biodiversity and the disruption of an ecosystem’s structure, composition, and functionality.
Dependencies	Aspects of ecosystem services that an undertaking or other actor relies on to function. Dependencies include ecosystems’ ability to regulate water flow, water quality, and hazards like fires and floods; provide a suitable habitat for pollinators (who in turn provide a service directly to economies), and sequester carbon (in terrestrial, freshwater and marine realms). Provided by Task Force on Nature-related Financial Disclosures (TNFD) (2022) from Science Based Targets Network (SBTN) 2022 Working Definition (unpublished)
Ecological condition	Refers to the state of ecological systems ¹³ , which includes their physical, chemical, and biological characteristics and the processes and interactions that connect them.

¹² <https://www.ser-rrc.org/what-is-ecological-restoration/>

¹³ <https://www.epa.gov/report-environment/ecological-condition>

Ecosystem conversion	<p>Human-induced change of a natural ecosystem to another land use or profound change in the natural ecosystem's species composition, structure, and/or function.</p> <p>Deforestation is one form of conversion (conversion of natural forests).</p> <p>Conversion includes severe degradation or the introduction of management practices that result in a substantial and sustained change in the ecosystem's former species composition, structure, or function.</p> <p>Change to natural ecosystems that meets this definition is considered to be conversion regardless of whether or not it is legally permitted. (CDP, 2021)</p>
Ecosystem(s)	<p>A dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit. (IPBES glossary). A typology of ecosystems is provided by the IUCN Global Ecosystem Typology 2.0¹⁴.</p>
Ecosystem preservation	<p>The set of policies and measures to maintain the conditions favouring the evolution and continuity of the ecosystems and natural habitats, as well as the conservation of viable populations of species in their natural environments and the components of biodiversity outside their natural habitats. (IUCN definitions)</p>
Ecosystem restoration	<p>Any intentional activities that initiate or accelerate the recovery of an ecosystem from a degraded state. (IPBES glossary)</p>
Ecosystem services	<p>The benefits people obtain from ecosystems. In the Millennium Ecosystem Assessment, ecosystem services can be divided into supporting, regulating, provisioning and cultural. (IPBES online glossary).</p> <p>The TNFD (2022) gives the following definition of each category:</p> <ol style="list-style-type: none"> 1. Provisioning services represent the contributions to benefits that are extracted or harvested from ecosystems (e.g. timber and fuel wood in a forest, freshwater from a river). 2. Regulating and maintenance (supporting) services result from the ability of ecosystems to regulate biological processes and to influence climate, hydrological and biochemical cycles, and thereby maintain environmental conditions beneficial to individuals and society. Provisioning services are dependent on these regulating and maintenance (supporting) services (e.g. the provision of freshwater depends on the ability of forests to absorb carbon and regulate climate change). 3. Cultural services are the experiential and intangible services related to the perceived or actual qualities of ecosystems whose existence and functioning contributes to a range of cultural benefits (e.g. the recreational value of a forest or a coral reef for tourism).
Environmental pressures	<p>Human activities exert pressures on the environment and affect its quality and the quantity of natural resources. (Organisation for Economic Co-operation and Development (OECD), 2003)</p>
Genetic resources	<p>The genetic material with real or potential value. (IUCN definitions)</p>
Habitat	<p>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. (IPBES online glossary)</p>

¹⁴ <https://www.iucn.org/content/iucn-global-ecosystem-typology-20>

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). (IPBES online glossary)
Invasive (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. (IPBES glossary)
Key Biodiversity Areas	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. (Integrated Biodiversity Assessment Tool (IBAT))
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. (IPBES online glossary)
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). (EEA)
Mitigation hierarchy	The sequence of actions to anticipate and avoid impacts on biodiversity and ecosystem services; and where avoidance is not possible, minimise; and, when impacts occur, rehabilitate or restore; and where significant residual impacts remain, offset. (CDP, Cross-Sector Biodiversity (CSBI), 2015)
Natural ecosystem	An ecosystem that substantially resembles—in terms of species composition, structure, and ecological function—one that is or would be found in a given area in the absence of major human impacts. This includes human-managed ecosystems where much of the natural species’ composition, structure, and ecological function are present. (CDP, Afi, 2019)
Natural habitat	Natural habitats are areas composed of viable assemblages of plant and/or animal species of largely native origin, and/or where

	human activity has not essentially modified an area's primary ecological functions and species composition. (CDP, International Finance Corporation (IFC), 2012)
Natural resources	Natural assets (raw materials) occurring in nature that can be used for economic production or consumption. (OECD Glossary of Statistical Terms)
Physical risks / opportunities from nature loss	<p>Physical risks resulting from nature loss can be categorised as event driven (acute), or longer-term shifts (chronic) in the way in which natural ecosystems function – or cease to function. Physical risks may have financial implications for organisations, such as direct damage to assets, the loss of (local and regional) ecosystem services crucial to production processes or employee well-being, and indirect impacts from supply chain disruption. These risks may also have financial and non-financial implications for other parties, such as the loss of global ecosystem services crucial to human well-being.</p> <p>Physical opportunities may also have financial implications for organisations, such as increased resilience of business production processes or demand. (TNFD, 2021)</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. (Rockström et al. 2009)</p> <p>The selection of planetary boundaries emerges from the definition of what constitutes unacceptable human-induced global environmental change. The position of a planetary boundary is a function of the degree of annoyance the global community is willing to take, e.g., how close to an uncertainty zone around a dangerous level or threshold of an Earth System process humanity is willing to place itself, and/or how long a boundary can temporarily be transgressed before a threshold is crossed. The position is furthermore a function of the social and ecological resilience of the impacted society. Boundaries are identified for processes where the time needed to trigger an abnormal irreversible change within an ethical time horizon – a timeframe short enough to influence today's decisions yet long enough to provide the basis for sustainability over many generations to come, and within which decisions taken can influence whether or not the estimated threshold is crossed. (Rockström et al. 2009)</p>
Protected area	<p>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. (IUCN, 2018)</p> <p>The Common Database on Designated Areas (CDDA) is more commonly known as Nationally designated areas. It is the official source of protected area information from European countries to the World Database of Protected Areas (WDPA).</p>

Raw material	Raw material – primary or secondary material that is used to produce a product. (International Organisation for Standardisation ISO 14040:2006)
Sustainable use (of biodiversity and its components)	The use of components of biological diversity in a way and at a rate that does not lead to the long-term decline of biological diversity, thereby maintaining its potential to meet the needs and aspirations of present and future generations. (IPBES online glossary)
Systemic risks from nature loss	Systemic risks are 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. (TNFD, 2022)
Societal or ecological thresholds	A sustainable future relies on ensuring that no one falls short on life’s essentials, and that collectively we do not overshoot our pressure on Earth’s life-supporting systems. Societal or ecological thresholds ¹⁵ identified by science help establish the foundations and ceilings that earth and society should seek to operate within to prevent harm to people and the natural environment.
Transition risks from nature loss	Transition risks are risks that result from a misalignment between an undertaking’s or an investor’s strategy and management and the changing landscape in which it operates. Developments aimed at halting or reversing the damage to nature, such as government regulations or policy, technological developments, market changes, litigation and changing consumer preferences, can all result in transition risks. (TNFD, 2022)

¹⁵ <https://impactmanagementplatform.org/thresholds-and-allocations/>

Appendix B: Application Guidance

The provisions of this appendix shall be applied in conjunction with the [draft] disclosure requirements defined in paragraphs 1 to 69.

This appendix describes how to apply the disclosure requirements, has the same authority as the disclosure requirements and is an integral part of the proposed [draft] ESRS E4 Biodiversity and ecosystems.

General, Strategy, Governance and Materiality assessment

Disclosure Requirement E4-1 – Transition plan in line with the targets of no net loss by 2030, net gain from 2030 and full-recovery by 2050

- AG 1. When disclosing its transition plan, the undertaking is expected to provide a high-level explanation on how it will adjust its strategy and business model to ensure compatibility with the targets of no net loss by 2030, net gain from 2030 and, through recovery and restoration, full recovery by 2050 explicitly taking into consideration the entire value chain.
- AG 2. The undertaking shall, where applicable, refer to and contextualise information presented under other disclosures requirements of this [draft] Standard.
- AG 3. When describing its transition plan, the undertaking shall highlight the main identified drivers of biodiversity loss and possible mitigation actions following the mitigation hierarchy (avoid, minimise, restore, offset) and in particular the main path-dependencies and locked-in assets and resources (e.g., plants, raw materials) that are associated with biodiversity and ecosystems loss. The undertaking shall provide its metrics and related tools used to measure progress to No net loss/Net gain, including how biodiversity offsets are integrated in this measurement approach and how this process is managed.
- AG 4. When disclosing the information required under paragraph 14, the undertaking shall explain how its business development strategy interacts with the achievability of its transition plan.
- AG 5. When disclosing the information required under paragraph 15, the undertaking shall provide information on the level of approval to which the Transition Plan is subjected.
- AG 6. The undertaking may make specific reference to international frameworks used in the developing of the Transition Plan in line with the targets of no net loss by 2030 and net gain by 2050 (e.g., the Post-2020 Global Biodiversity Framework from the Convention for Biological Diversity, or the work of IPBES). The undertaking may also make specific reference to the EU Biodiversity Strategy.

Biodiversity and ecosystems-related specific application guidance on ESRS 2 Disclosure Requirement SBM 4 (paragraph 47 (d)) on the resilience of the strategy and business model

- AG 7. The description of the resilience of the undertaking's strategy and business model(s) in relation to biodiversity and ecosystems shall include an assessment of the resilience of the current business model(s) and strategy to biodiversity and ecosystems-related physical and transition risks:
 - (a) whether the business model(s) has been verified by conducting a range of biodiversity and ecosystems scenarios - or other scenarios with a modelling of biodiversity and ecosystems related consequences - with different possible pathways and information on the scenarios:
 - i. why the considered scenarios were taken into consideration;

- ii. how the considered scenarios are updated according to evolving conditions and emerging trends;
 - iii. 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;
- (b) the scope of the resilience analysis, (i) along the own operations and the 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 horizon over which the analysis has been conducted; and
 - (e) the results of the resilience analysis.

AG 8. The undertaking may refer to the following scenarios or tools to report on (a):

- (a) “Methodological Assessment Report on Scenarios and Models of Biodiversity and Ecosystem Services’ published by the IPBES in 2016¹⁶;
- (b) the Globio model¹⁷ allows trends in biodiversity and ecosystem services to be modelled under future socio-economic development scenarios, as well as different policy interventions;
- (c) the Water Risk Filter¹⁸ by WWF includes TCFD-aligned future scenarios that combine climate and socioeconomic scenarios and provides 2030 and 2050 quantitative projections of physical risks. Despite being focused on water, among the physical risks the tool includes risks also linked to ecosystem services status considering the fragmentation status of rivers, catchment ecosystem services degradation level, and projected impacts on freshwater biodiversity;
- (d) the current version of ENCORE¹⁹ allows exploration of future scenarios in terms of the potential direct impacts of each commodity on biodiversity (available for some sectors, e.g. agriculture and mining); and
- (e) climate change scenarios as drivers for biodiversity and ecosystems aspects (see ESRS E1).

AG 9. The description of the resilience assessment shall cover the involvement of relevant stakeholders, including, where appropriate, holders of indigenous and local knowledge.

Biodiversity and ecosystems-related specific application guidance on ESRS 2 Disclosure Requirements IRO 1 and IRO 2 on materiality assessment

AG 10. The process to identify and assess biodiversity and ecosystems-related impacts, risks and opportunities shall cover:

- (a) biodiversity and ecosystems-related impacts, including the state of species and ecosystems;
- (b) impact drivers of biodiversity loss and degradation;
- (c) short-, medium- and long-term dependencies;
- (d) short-, medium- and long-term biodiversity and ecosystems-related physical risks and opportunities;

¹⁶ Source: <https://ipbes.net/assessment-reports/scenarios>

¹⁷ Source: <https://www.globio.info/why-use-globio>

¹⁸ Source: <https://waterriskfilter.org/>

¹⁹ Source: <https://encore.naturalcapital.finance/en>

- (e) short-, medium- and long-term biodiversity and ecosystems-related transition risks and opportunities; and
- (f) systemic risks the undertaking contributes to.

AG 11. When disclosing information under AG 10, the undertaking may rely on primary, secondary or modelled data collection or other relevant approaches to assess material impacts, risks and opportunities:

- (a) information provided by the EU Business @ Biodiversity Platform, which provides periodic updates on available tools, metrics and data sources in the field of business and biodiversity;
- (b) the “Exploring Natural Capital Opportunities, Risks and Exposure” (ENCORE)²⁰;
- (c) the following databases:
 - iv. Global Forest Watch (<https://www.globalforestwatch.org/>);
 - v. The Living Planet Database (<https://livingplanetindex.org/home/index>);
 - vi. The International Waterbird Sensus Database (<http://wpe.wetlands.org/>);
 - vii. The Global Biodiversity Information Systems (<https://www.gbif.org/>);
 - viii. The Ocean Data Viewer (<https://data.unep-wcmc.org/>).

AG 12. The undertaking may also consider:

- (a) when disclosing information under AG10(b), the definitions of impact drivers provided by authoritative sources such as the most recent Threats Classification Scheme by the IUCN²¹, which largely forms the basis for the drivers listed by ENCORE, or the impact drivers’ list from the Global Assessment Report by IPBES²²;
- (b) when disclosing information under AG10(f), the undertaking may rely on the common international classification of ecosystem services such as the Common International Classification of Ecosystem Services (CICES)²³.

AG 13. Impacts and dependencies materiality shall be assessed by geographical sites locations and raw materials:

- (a) geographical site locations impacts are material:
 - i. given the undertaking’s own operations or upstream and downstream value chain high impacts on biodiversity and ecosystems; and/or
 - ii. because the raw materials, natural resources or ecosystem services on which the undertaking depends are disrupted or likely to be disrupted;
- (b) raw materials impacts are material:
 - i. given the undertaking’s own operations or upstream and downstream value chain current or likely high impacts on those raw materials and their ecosystems; and/or

²⁰ The ENCORE’s drivers’ list can be found here : <https://encore.naturalcapital.finance/en/data-and-methodology/drivers>

²¹ The Threat Classification Scheme can be found here : <https://www.iucnredlist.org/resources/threat-classification-scheme>

²² The IPBES drivers’ list can be found here: <https://ipbes.net/models-drivers-biodiversity-ecosystem-change>

²³ The classification CICES can be found here: <https://cices.eu/>. It has been developed from the work on environmental accounting undertaken by the European Environment Agency (EEA).

- ii. because the raw materials production or their related ecosystem services on which the undertaking depends are disrupted or likely to be disrupted.

AG 14. The process to assess the materiality of impacts under (a) on geographical locations shall refer to the provisions of ESRS 2 Disclosure Requirement IRO 1, and in particular take into consideration the likelihood (frequency of occurrence and speed of impact) and the severity of impacts on biodiversity and ecosystems (including the remediability, i.e., the potential for mitigation).

AG 15. The undertaking shall consider at a minimum the biodiversity and ecosystems-related impacts on:

- (a) threatened species (IUCN Red list²⁴, the EU Birds Directive²⁵, the EU Habitat Directive²⁶ and national lists of threatened species);
- (b) protected areas, with possible reference to the Protected Planet database, which contains a source of data on protected areas and other effective area-based conservation measures (OECMs)²⁷, the Natura 2000 network of protected areas²⁸; and
- (c) key biodiversity areas, with possible reference to the Key Biodiversity Areas database²⁹.

AG 16. In addition, to assess the materiality of geographical locations under (b), the undertaking shall use a methodology that allows to assess how its own operations or upstream and downstream value chain depend on raw materials or ecosystem services that are disrupted or likely to be, including loss of functionality and financial loss;

AG 17. To assess the materiality of raw materials required in AG13(b) the undertaking shall use a methodology that allows to assess how its raw materials production, sourcing or consumption cause high impacts or are likely to cause high impacts on biodiversity and ecosystems, or how an undertaking depends on raw materials that are disrupted or likely to be, considering at a minimum the following data:

- (a) raw material;
- (b) region or country of sourcing;
- (c) related threatened species or threatened ecosystems, as well as protected areas and key biodiversity areas.

AG 18. The undertaking may refer to the tool “Trase”³⁰ on deforestation risk to assess raw materials or to the tool “Bioscope”³¹ to assess the impact drivers of biodiversity loss for raw materials and to address the materiality of impact drivers of biodiversity loss by raw material.

²⁴ The International Union for Conservation of Nature (IUCN) Red List can be found here:

<https://www.iucnredlist.org/>

²⁵ The Birds directive can be found here:

https://ec.europa.eu/environment/nature/legislation/birdsdirective/index_en.htm

²⁶ The Habitats directive can be found here:

https://ec.europa.eu/environment/nature/legislation/habitatsdirective/index_en.htm

²⁷ The database can be found here: <https://www.protectedplanet.net/en>

²⁸ Source: https://ec.europa.eu/environment/nature/natura2000/index_en.htm

²⁹ The database can be found here: <https://www.keybiodiversityareas.org/kba-data>

³⁰ 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.

³¹ 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.

AG 19. The undertaking shall disclose the following biodiversity and ecosystems-related material risks by categories in its own operations and its upstream and downstream value chain^{32,33}:

(a) physical risks:

- i. acute: e.g. natural disasters exacerbated by loss of coastal protection from nature, 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;
- ii. chronic: 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:

- 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 loss and nature degradation (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:

- i. ecosystem collapse: risks that a critical natural system no longer functions (e.g. tipping points are reached, 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);

³² Source: TNFD, 2022, p.37

³³ Source: CDSB Biodiversity Application Guidance 2021

- iii. contagion: risks that financial difficulties at one or more financial institutions linked to failure to account for exposure to biodiversity-related risks spill over to the financial system as a whole.

AG 20. The undertaking shall disclose the following material biodiversity and ecosystems-related opportunities by categories in own operations and on the upstream and downstream value chain³⁴³⁵:

- (a) resource efficiency: e.g. transition to more efficient services and processes requiring less natural resources;
- (b) markets: e.g. development of less resource-intensive products and services, nature-based solutions, diversification of business activities;
- (c) financing: e.g. access to biodiversity related or green funds, bonds or loans;
- (d) resilience: e.g. diversification of biodiversity-related resources (e.g.: use of different plant species) and business activities (e.g. start a new business unit on ecosystem restoration), investing in green infrastructures, adopting a landscape approach to biodiversity management and implement nature-based solutions, Participation in programmes and adoption of resource-efficiency, recycling and circularity mechanisms that reduce the dependencies and impacts on biodiversity and ecosystems;
- (e) reputation: positive stakeholder relations as a result of a proactive stance on managing nature-related risks (e.g. leading to preferred partner status).

AG 21. The description of the process to identify and assess biodiversity and ecosystems-related impacts, risks and opportunities shall include:

- (a) a description of the process and how the context of biodiversity and ecosystem services related dependencies and impacts was taken into account following AG 10 to AG 18;
- (b) a description of the process to identify those physical and transition risks and opportunities, including a definition of the considered time horizons, scenario analysis, how size and scale of the risks and opportunities are assessed;
- (c) the processes to select material transition and physical risks and opportunities:
 - i. the identification of geographical location of own assets and value chain;
 - ii. the methodologies to screen its activities in order to identify its actual and potential biodiversity and ecosystems physical risks in its own operations and upstream and downstream value chain, including whether these methodologies adopt a spatially-explicit approach;
 - iii. the definition of the considered time horizons, scenario analysis, assessment of size and scale of the risks and opportunities and how material physical risks are selected, in consideration of severity (scale, scope, remediability) and likelihood criteria;
 - iv. adaptation solutions that can reduced the identified physical biodiversity and ecosystems risks;
- (d) the interconnection between material impacts and risks and opportunities arising from impacts and dependencies;
- (e) a description of how the undertaking has considered systemic risks in its assessment of biodiversity and ecosystems-related risks;

³⁴ Source: TNFD, 2022, p.37

³⁵ Source: CDSB Biodiversity Application Guidance 2021

- (f) a description of how the processes cover the undertaking's own operations and its upstream and downstream value chain;
- (g) the process for conducting consultations with affected local communities regarding the sustainability assessment of shared biological resources and ecosystems and in particular³⁶:
 - i. when a site or a raw material production or sourcing is likely to adversely impact ecosystem services, the identification of the specific sites and raw materials production or sourcing with adverse or potential adverse impacts on affected local communities;
 - ii. when affected local communities are likely to be impacted, the undertaking, shall disclose how these communities were involved in the determination of material ecosystems;
 - iii. with respect to impacts on priority ecosystem services of relevance to affected local communities in its own operations, the undertaking shall indicate how adverse 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;
 - iv. with respect to other impacts on priority ecosystem services, the undertaking may indicate its plans to minimise impacts on ecosystem services and implement measures that increase resource efficiency of their operations.

AG 22. The outcome of the materiality assessment process shall include a breakdown of the material impacts, dependencies, risks and opportunities by geographical site location and/or by raw material produced, sourced or consumed or by categories (for risks and opportunities) and shall cover its own operations and its upstream and downstream value chain.

AG 23. More specifically, the undertaking shall disclose whether it has identified material negative impacts with regards to land degradation, desertification or soil sealing³⁷.

AG 24. When disclosing by geographical site location, the undertaking shall provide:

- (a) a breakdown of material geographical site locations of the undertaking's according to the impacts and dependencies identified, and to the ecological status of the areas (with reference of the specific ecosystem baseline level) where they are located; and
- (b) the mention of site-coordinates using a universally valid location syntax for users to be able to determine the exact location.

AG 25. The undertaking may also disclose:

- (a) information about sites for which future operations have been formally announced where applicable;
- (b) 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);
- (c) 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

³⁶ Source: IFC Performance Standard 6, 2012.

³⁷ This information supports the information needs of financial market participants subject to Regulation (EU) 2019/2088 as reflecting an additional 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.

recognised Protected Areas, the Natura 2000 network of protected areas and Key Biodiversity Areas).

Presentation of information

AG 26. The undertaking may use the illustrative below tables, as per the proposed materiality approach by “ENCORE”, to present their materiality assessment of their sites by geographical locations.

Natural element / Raw material / Ecosystem service...	Potential dependencies	
...	Loss of functionality	Financial loss
....	Limited, moderate or severe	Limited, moderate or severe

Geographical location of site	Threatened species, protected areas, key biodiversity areas	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

Presentation of information

AG 27. The disclosure by raw materials of the undertaking according to the impacts and dependencies identified, shall include the ecological status of the areas where they are production or sourcing.

AG 28. The undertaking may use the table below 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	

AG 29. The undertaking shall disclose specifically whether it has geographical site locations located in biodiversity-sensitive areas with activities negatively affecting those areas³⁸, where:

- (a) a biodiversity-sensitive area means 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;
- (b) activities negatively affecting biodiversity-sensitive areas' means activities that are characterised by all of the following:
 - i. those activities lead to the deterioration of natural habitats and the habitats of species and disturb the species for which a protected area has been designated;
 - ii. for those activities, none of the conclusions, mitigation measures or impact assessments adopted pursuant to any of the following Directives or national provisions or international standards that are equivalent to those Directives have been implemented:
 - 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, conclusions, mitigation measures or impact assessments adopted in accordance with national provisions or international standards that are equivalent to the Directives and impact assessments listed in points (i), (ii) and (iii).

AG 30. The undertaking shall also disclose specifically³⁹:

- (a) whether it has material impacts on threatened species on its own operations; and
- (b) whether it has a biodiversity protection policy covering operational sites owned, leased, managed in, or adjacent to, a protected area or an area of high biodiversity value 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

³⁸ This information supports the information needs of financial market participants subject to Regulation (EU) 2019/2088 as reflecting a mandatory principal adverse impact as set out by indicator #7 in Table 1 of Annex 1 of the related Delegated Regulation with regard to disclosure rules on sustainable investments.

³⁹ This information supports the information needs of financial market participants subject to Regulation (EU) 2019/2088 as reflecting an additional 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.

“protected area” means designated areas in the European Environment Agency’s Common Database on Designated Areas (CDDA).

Policies, Targets, Action Plans and Resources

Disclosure Requirement E4-2 – Policies implemented to manage biodiversity and ecosystems

AG 31. When disclosing policies regarding the biodiversity friendly production, consumption and sourcing of raw materials under 21(d), the undertaking may⁴⁰:

- (a) refer to recognised standards or third-party certifications;
- (b) refer to traceability systems (i.e. the system that tracks through documentation the trail of products and/or raw materials along the value chain) and verification practices that could identify where the supply is coming from, and if species and ecosystems may be at risk;
- (c) refer to policies limiting procurement from suppliers that can demonstrate that they are not contributing to significant conversion of protected areas or key biodiversity areas (e.g. through certification);
- (d) refer to what actions the undertaking may take to shift suppliers when they contribute to significantly adversely impacting those protected areas or key biodiversity areas;
- (e) refer to specific legal requirements to which the undertaking is subject and on which policies are based.

AG 32. When disclosing policies related to social consequences of biodiversity and ecosystems related dependencies and impacts under 21(f), the undertaking shall notably refer to the Nagoya Protocol⁴¹ and the Convention for Biological Diversity (CBD)⁴², but may also refer to IFC Performance Standard 4, 5, 6 and 7⁴³ and the Core Principles from the Accountability Framework, Principle 2 “Respect for Human Rights”⁴⁴.

AG 33. When disclosing its policies, if referring to third-party standards of conduct, the undertaking shall consider whether the standard used⁴⁵:

- (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 step-wise 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;

⁴⁰ Refers to IFC Performance Standard 6.

⁴¹ The Nagoya Protocol can be found here: <https://www.cbd.int/abs/>

⁴² The Convention for Biological Diversity can be found here: <https://www.cbd.int/convention/>

⁴³ 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

⁴⁴ The Accountability Framework Core Principles can be found here : <https://accountability-framework.org/the-framework/contents/core-principles/>

⁴⁵ Refers to IFC Performance Standard 6.

- (d) is verifiable through independent certifying or verifying bodies—which have defined and rigorous assessment procedures that avoid conflicts of interest, and are compliant with ISO guidance on accreditation and verification procedures; and
- (e) conforms to the ISEAL Code of Good.

AG 34. The undertaking shall also disclose, where applicable, whether it has adopted:

- (a) land/agriculture practices or policies⁴⁶;
- (b) sustainable oceans/ seas practices or policies⁴⁷;
- (c) policies to address deforestation⁴⁸.

Disclosure Requirement E4-3 – Measurable targets for biodiversity and ecosystems

AG 35. Targets related to impacts on biodiversity and ecosystems, and biodiversity and ecosystems loss impact drivers shall adhere to the mitigation hierarchy and disclose how they have adhered to it: priority shall be given to setting targets for “avoidance”, and then “reduction and minimisation” before “restoration/rehabilitation” targets.

AG 36. Targets related to material biodiversity and ecosystems loss drivers shall pertain to impact drivers that unequivocally influence biodiversity and ecosystems processes, including, but not limited to, land-use change, climate change, pollution, natural resource use and exploitation, as well as invasive species.

AG 37. Targets related to raw materials shall follow the mitigation hierarchy ‘avoidance’ and “reduction and minimisation” before working on “biodiversity friendly production”.

AG 38. To improve comparability, when setting new targets, the undertaking shall select a recent base year preceding the first reporting year.

AG 39. When disclosing information required under paragraph 28 for the purpose of setting targets the undertaking can 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

AG 40. 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 ⁴⁹
		2025	2030	Up to 2050	
Target on avoidance					
Target on reduction and minimisation					

⁴⁶ This information supports the information needs of financial market participants subject to Regulation (EU) 2019/2088 as reflecting an additional 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.

⁴⁷ This information supports the information needs of financial market participants subject to Regulation (EU) 2019/2088 as reflecting an additional 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.

⁴⁸ This information supports the information needs of financial market participants subject to Regulation (EU) 2019/2088 as reflecting an additional 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.

⁴⁹ Refer to Global and EU goals and targets related to biodiversity and ecosystems

Target on restoration/rehabilitation					
--------------------------------------	--	--	--	--	--

AG 41. The targets related to material biodiversity and ecosystems loss impact drivers, material dependencies on biodiversity and ecosystems, and material physical or transition risks 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 ⁵⁰
		2025	2030	Up to 2050	
Target on material biodiversity and ecosystems loss impact drivers					
Target on material dependencies					
Target on material physical or transition risks					

Disclosure Requirement E4-4 – Biodiversity and ecosystems action plans

AG 42. As regards to paragraph 42(d), the undertaking shall consider “avoidance” actions and action plan which prevent damaging actions before they take place. Avoidance often involves a decision to deviate from the business-as-usual project development path. The clearest examples of avoidance are altering the 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 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.

AG 43. 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)).

AG 44. ‘Reduction and minimisation’ reduces the extent, intensity, and duration of impacts on biodiversity that are not prevented by avoidance.

AG 45. As regards to paragraphs 42(g) and 42(h), the undertaking shall specify if a given action plan is:

- (a) carried out only by the undertaking, using the undertaking’s resources, at the level of the undertaking’s own operations;
- (b) involves the contribution of other stakeholders (competitors, suppliers, retailers, other business partners, local communities and authorities, government agencies...);

⁵⁰ Refer to Global and EU goals and targets related to biodiversity and ecosystems

- (c) is part of a wider action plan, of which it is a member; it shall then provide more information on the project, its sponsors and other participants.

Performance Measurement

Disclosure Requirement E4-5 – Pressure metrics

- AG 46. Performance measures on Biodiversity and ecosystems are currently the object of many ongoing collective work at the time of the drafting of this Standard. That is why the disclosure requirements proposed in this [Draft] Standard are mostly principles-based, so as 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 say. Wherever possible, the application guidance refers 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.
- AG 47. Metrics should 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 exist⁵¹. 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 allows a meaningful review of an undertaking's performance over time and helps internal and peer comparison⁵².
- AG 48. Limitations may include incompleteness of datasets, lag in responsiveness of the indicators that can obscure performance, difficulty to communicate complex results.
- AG 49. The biodiversity baseline as per paragraph (f) is an essential component of the larger biodiversity and ecosystems management process. The baseline is necessary to inform impact assessment and management planning, as well as monitoring and adaptive management⁵³. 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.
- AG 50. If the metric corresponds to a target, the baseline for both should be aligned.
- AG 51. To align with ecological thresholds per paragraph 33(c), the undertaking may refer to the Biodiversity Performance Index (BPI) developed by R3.0, CSO and Manomet or to the Science-Based Targets Initiative for Nature (SBTN).
- AG 52. When reporting on paragraph (g) on the parametrisation of the metrics, the determination of the most appropriate methodology for assessments should be based on four key characteristics:
- (a) spatial precision of state measurement;
 - (b) accuracy of measurement;
 - (c) responsiveness of measurement to mitigation;

⁵¹ Source: UNEP-WCMC, Conservation International and Fauna and Flora International, 2020.

⁵² Source: UNEP-WCMC, Conservation International and Fauna and Flora International, 2020.

⁵³ 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.

(d) feasibility to apply at scale.

AG 53. Methodologies available to collect data and measure the undertakings' impacts on biodiversity state can be separated into three categories as follows⁵⁴:

- (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.

AG 54. The undertaking may refer the Biodiversity Measurement Navigation Wheel and the Report on biodiversity measurement approaches developed by the Business for Biodiversity Platform⁵⁵.

AG 55. The undertaking shall consider 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:
 - iii. undertaking, site, brand, commodity, corporate business unit, activity;
 - iv. entire value chain, upstream, downstream value chain or own operations and leased assets;
 - v. impact driver covered;
- (c) the biodiversity components of the metrics: species specific, ecosystem specific;
- (d) a description of the geographies covered by the methodology and, if applicable, an explanation of why the relevant geographies identified were not included;
- (e) how the metrics allow for the respect of ecological thresholds (e.g. the biosphere integrity and land-system change planetary boundaries⁵⁶);

⁵⁴ Source: Align (2022), "Recommendations for a standard on 8 biodiversity measurement and valuation, draft 01", unpublished.

⁵⁵ Source: https://ec.europa.eu/environment/biodiversity/business/news/news-277_en.htm

⁵⁶ A description of the nine planetary boundaries can be found here : <https://www.stockholmresilience.org/research/planetary-boundaries/the-nine-planetary-boundaries.html>

- (f) the frequency of monitoring, key indicators being monitored, and the baseline condition/value and baseline year/period, as well as the reference period;
- (g) whether the parametrisation of these metrics rely on primary data, secondary data, modelled data or on expert judgement, or a mixture of these;
- (h) an indication of which actions are measured and monitored via the metrics how they relate to targets achievement;
- (i) whether metrics are mandatory (based on legislation) or voluntary. If they are mandatory, the undertaking shall list the relevant legislation; if voluntary, refer to the voluntary standard/procedure used;
- (j) 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, where relevant, by scientific consensus, that is, in the case of biodiversity and ecosystem services, IPBES.

AG 56. Metrics chosen shall be responsive to actions and give an appraisal of the undertaking's impacts and dependencies on biodiversity and ecosystems, which is accurate as feasible.

AG 57. If the undertaking has not adopted metrics with regards to ESRS E4 Disclosure Requirements 5 to 8, it shall disclose:

- (a) whether such metrics will be adopted and when; or
- (b) reasons why the undertaking does not plan to adopt such metrics; and/or
- (c) whether the undertaking measures progress without a specific metric, and if so how and what progress has been achieved in terms of the outcomes related to risks, opportunities and impacts underpinning the materiality of the topic.

AG 58. All metrics shall cover the undertaking's own operations and its upstream and downstream value chain.

AG 59. All metrics shall be connected to the material impact drivers and impacts identified by the undertaking.

AG 60. 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)⁵⁷.

AG 61. The undertaking shall disclose, for material impact drivers, how it manages the risks of land use or habitat change or degradation.

AG 62. 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.

AG 63. Examples of metrics include⁵⁸:

- (a) area (Ha) of forest, grassland or wetland converted due to urbanisation;
- (b) area (Ha) of degraded land converted to agricultural land;
- (c) area (Ha) of land converted to monoculture;

⁵⁷ Source: Align (2022), "Recommendations for a standard on 8 biodiversity measurement and valuation, draft 01", unpublished

⁵⁸ Source: CDSB Biodiversity Application Guidance 2021

- (d) area (Ha) of mangrove protected and/or restored;
- (e) area (Ha) of marine area for aquaculture (e.g. to grow mussels).

AG 64. Land cover is a typical variable that can be assessed with earth observation data. Examples include: Validated global land-cover datasets are produced annually since 2015 by the Copernicus Global Land Service⁵⁹. A high-resolution alternative is ESA's WORLDCOVER⁶⁰ 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 Index⁶¹.

AG 65. The accidental or voluntary introduction of invasive alien species is one of the most common threats to species, as well as a very important factor in ecosystems' decline and deterioration. Hence, the undertaking shall disclose if the impact driver is material, how it manages pathways of introduction and spread of invasive alien species and the risks posed by invasive alien species in its own operations and its value chain. The undertaking may disclose, for example, the pathways and number of invasive alien species identified in or adjacent to the undertaking's own operations or its value chain sites, or the extent of surface covered by invasive alien species.

Disclosure Requirement E4-6 – Impact metrics

AG 66. The content of paragraphs AG46 to AG59 are applicable also to the preparation of the information under this Disclosure Requirement.

Presentation of information⁶²

AG 67. When reporting on impact (state changes), indicators for ecosystem extent and condition shall form the core of measurements, supplemented with species level indicators for a more complete assessment.

AG 68. When disclosing information on species population size, the undertaking shall report an indicator that measures changes in the number of individuals of a species within a specific area: e.g. number of individuals of species of interest. For example, the number of breeding pairs of a bird species of interest - measures the local population size and may provide information on changes in suitability of an area as a breeding ground.

AG 69. When disclosing information on species global extinction risk, the undertaking shall report:

- (a) an indicator that measures the threat status of species and how activities/pressures may affect the threat status. 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; or

⁵⁹ Source: <https://land.copernicus.eu/global/products/lc>

⁶⁰ Source: <https://esa-worldcover.org/en>

⁶¹ <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://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.))

⁶² Source: Align (2022), "Recommendations for a standard on 8 biodiversity measurement and valuation, draft 01", unpublished

- (b) an indicator that measures change in the available habitat for a species as a proxy for impact on local or global extinction risk. Change in species Area of Habitat (AoH) 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.

AG 70. When disclosing information on 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: e.g. 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).

AG 71. When disclosing information on ecosystems condition, the undertaking shall report:

- (a) an indicator that measures the quality of ecosystems relative to a pre-determined reference state; or
- (b) an indicator that measures multiple species (rather than the number of individuals within a single species) within an ecosystem: e.g. means Species Abundance that measures the average change in population size of native species in an area from a reference intact state or Potentially Disappeared Fraction that measures the average change in local species richness in an area from a reference intact state; or
- (c) an indicator that may also reflect structural components of condition such as habitat connectivity (i.e., how linked one piece of habitat is to another).

AG 72. When disclosing information on ecosystems functioning, the undertaking shall report:

- (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 keystone species of the assessment area to indicate changes to ecosystem functioning: e.g abundance of keystone species.

Disclosure Requirement E4-7 – Response metrics

AG 73. The content of paragraphs from AG46 to AG 59 are applicable also to the preparation of the information under this Disclosure Requirement.

AG 74. Examples of response metrics include:

- (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);
- (e) number or percentage of projects / sites whose ecological transparency was increased (installation of fish passes, wildlife corridors, etc.).

AG 75. When disclosing information under paragraph 56 the undertaking can consider the need for an informed and willing consent of affected local communities, the need for appropriate consultations and the need to respect the decisions of these communities.

Optional Disclosure Requirement E4-8 – Biodiversity-friendly consumption and production metrics

AG 76. The content of paragraphs from AG46 to AG 59 are applicable also to the preparation of the information under this Disclosure Requirement.

AG 77. When disclosing information about certifications or meeting a particular standard set by third parties, the undertaking may include a brief explanation of the certification scheme and how it benefits ecosystems and biodiversity.

Optional Disclosure Requirement E4-9 – Biodiversity offsets

AG 78. The undertaking shall indicate if the offsets occurred after all previous steps in the mitigation hierarchy have been considered and no alternatives are available. Offsets shall also not impair existing biodiversity that is “protected by EU nature legislation”.

AG 79. The undertaking, when disclosing the type of offsets, shall consider the following:

- (a) averted-loss – conservation projects that conserve threatened biodiversity values, which may include creating new protected areas and, in some cases, supporting existing but highly threatened protected areas, or;
- (b) restoration – conservation projects that restore biodiversity values, and in some cases enhance or create new habitat.

AG 80. The undertaking shall disclose if the offsets it has developed or purchased follow a set of generally accepted principles for offset design ⁶³:

- (a) follow the mitigation hierarchy – Offsets are not intended to relieve project developers of performing other types of mitigation;
- (b) support landscape-level conservation – Offsets should be designed considering the ecological processes and functions of the landscape;
- (c) provide additionality – only the gains in biodiversity that would not have occurred in the absence of a conservation project qualify as a biodiversity offset. The offset must not duplicate or replace an existing and adequately functioning restoration or conservation project;
- (d) achieve no net loss or net gain requires adequate scale – offsets should generate biodiversity gains (additionality) commensurate with the impacts of the project. In some cases, the scale of the offset may be expanded in size to accommodate uncertainties in design and expected effectiveness.

AG 81. When considering offsets, the undertaking shall carefully consider the optimal location of offsets which is not always straightforward⁶⁴: offsets shall in principle be implemented locally, where this is ecologically appropriate and practical. It may sometimes be better to implement the offsetting in a more suitable but ecologically appropriate off-site location (e.g. ensuring it is functionally connected to existing wider viable populations) where, for example, the viability of the habitat may be greater and it may contribute to restoring habitat connectivity.

⁶³ Source: http://bbop.forest-trends.org/documents/files/bbop_principles.pdf

⁶⁴ Source: Guidance on achieving no net loss or net gain of biodiversity and ecosystem services, 2020

AG 82. For offsets developed or purchased in Europe, the baseline shall be set at the date of implementation of the Habitats Directive in 1994.

AG 83. When considering offsets, the undertaking shall carefully consider the following:

- (a) In-kind (like-for-like) vs. out-of-kind (trading up) – An offset typically seeks to generate benefits for the biodiversity value(s) impacted by a project. Offsets with these characteristics are known as in-kind or like-for-like offsets. Sometimes, however, it may be desirable to implement an offset that restores or conserves a biodiversity value of greater conservation value than that which is to be impacted by the project. For example, if a project impacts very common natural habitat in the landscape, it may be desirable to trade up to an offset that conserves a rarer and/or threatened habitat that has been identified as a priority for conservation. Such an out-of-kind offset should only be implemented after appropriate consultation with conservation stakeholders to ensure both its technical validity – that the offset is genuinely of greater conservation value, and its public acceptance – that stakeholders view the offset as greater in perceived value;
- (b) Stakeholder participation fortifies offset design – An undertaking with responsibilities and interests related to biodiversity conservation and the human welfare impacts (both positive and negative) of land use decisions should be engaged in the biodiversity offset planning process. A sample list of stakeholders may include: environmental regulators; conservation organisations operating in the area; and local communities that may be affected by either losses of biodiversity that the offset seeks to replace, or loss of land or resources due to the implementation of the offset;
- (c) Offsets' benefits should last as long as project impacts – Offsets require sustained management to ensure that the benefits endure over time. To achieve such continuity, it is recommended to ensure legal protection of offset areas and secure funding to manage the offset for its entire design life. Offset design should be integral to conservation planning and other land use planning in the project landscape. This may mean that in locations where the public sector has prioritised areas for conservation through a robust scientific and consultative process, trading up may be the most logical and preferable option, as it should in theory assist in achieving the most important objectives of the region's conservation plan. In jurisdictions where offsets are regulated or becoming common due to lender and corporate standards, the concept of "aggregated offsets" may be used to achieve large-scale conservation goals by joining the offset obligations of multiple companies into a single large conservation project. In locations where conservation planning is less developed, there is a weaker context both for trading up as well as determining the optimal design for the offset in other regards. In these cases, consultation with experts and organisations with experience in the area may play a valuable role in assisting with the offset's design. Project proponents are advised to contract specialists with experience in designing offsets that meet international standards and to work with government and local conservation organisations that have sufficient local knowledge and the ability to set up and manage successful conservation projects that will serve as an offset.

AG 84. The undertaking may refer to "The BBOP Principles on Biodiversity Offsets" (2018), "Biodiversity Offsets: A User Guide" (2016), and "Guidance on achieving no net loss or net gain of biodiversity and ecosystem services" (2020, EU document).



EFRAG is co-funded by the European Union and EEA and EFTA countries. The contents of the documents are however the sole responsibility of the EFRAG PTF- ESRS and do not necessarily reflect those of the European Union or the Directorate-General for Financial Stability, Financial Services and Capital Markets Union (DG FISMA). Neither the European Union nor DG FISMA can be held responsible for them.