



**Taskforce on Nature-related
Financial Disclosures**

**The TNFD Nature-related
Risk and Opportunity
Management and
Disclosure Framework
Beta v0.4 Annex 4.3
Disclosure Metrics
Annexes**

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Metrics Annex 1: Dependency and impact disclosure metrics

The following metrics should be used to support Metrics and Targets B and Strategy A disclosures.

The TNFD is proposing a set of 10 core global indicators for disclosure, relating to dependencies and impacts on nature (*Metrics and Targets B and Strategy A*). These core global indicators and metrics are outlined in Table 1. They relate to impact drivers within ecosystems on which the organisation has an impact or dependency.

To demonstrate their alignment with global policy goals such as the Global Biodiversity Framework (GBF) and other international conventions and international policy commitments, the TNFD strongly encourages organisations to include **disclosures against all of the core global indicators of relevance** to their business model, sector(s), biome(s) and priority locations.

If organisations do not report against any of the core global indicators and metrics listed in Table 1, they should provide a short explanatory statement as to why they have not reported.

The following considerations should be made in relation to the dependency and impact metrics:

- They should be considered in conjunction with the disclosure guidance for recommended disclosure Metrics and Targets B, which also considers external trends, changes to the state of nature and ecosystem services, and contextual information regarding measurement techniques, limitations and assumptions.
- For each metric disclosed, organisations should state the measurement baseline and indicate the percentage change from the previous reporting period.
- It is best practice to disclose metrics separately for the organisation's direct operations, upstream activities and downstream activities, and any financed activities in the case of financial institutions. Acknowledging that this may not be possible for all organisations at this time, organisations should disclose direct operations at a minimum, and upstream and downstream activities where relevant and to the extent possible. At this point, the TNFD particularly encourages reporting upstream activities, as well as direct impacts, for metrics focused on the use of natural commodities.
- Organisations should state the location the metric refers to, referring back to the priority location identified in recommended disclosure Strategy D where relevant.

For impact drivers, organisations should ensure the metric enables report users to determine what the impact driver is (i.e. what type of pollutant has been emitted), how much impact has taken place (i.e. the volume of pollutant emitted) and where the impact is located, with reference to spatial data where possible.

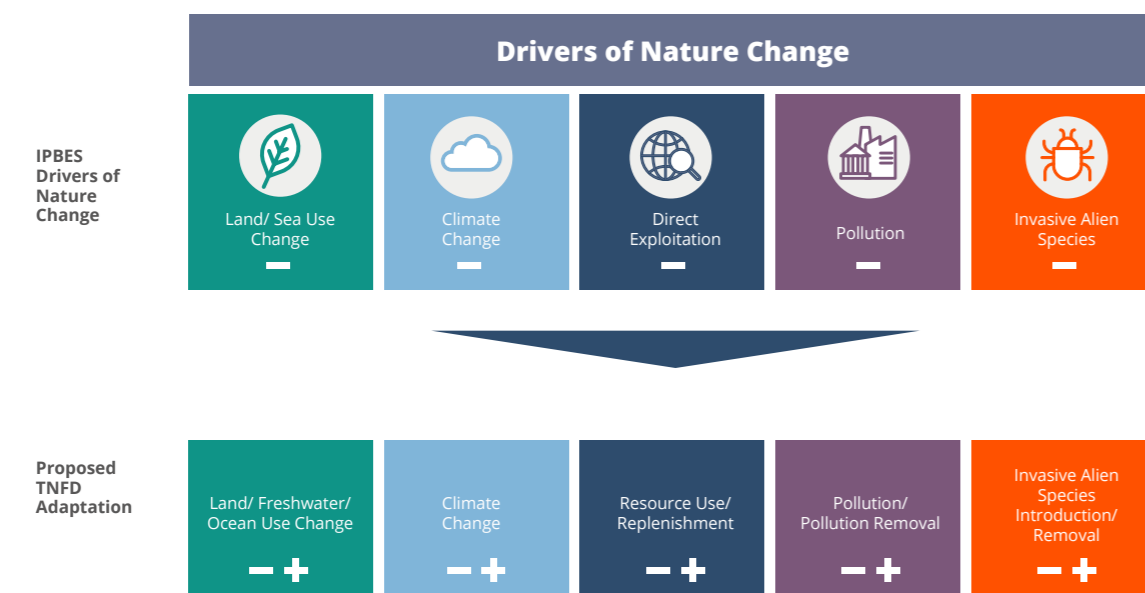
This draft set of core indicators and metrics will be revised based on feedback on the v0.4 TNFD draft beta release and a final recommended set of core disclosure indicators for dependencies and impacts on nature will be included in v1.0 of the TNFD framework. Release in September 2023.

Overview of nature-related dependencies and impacts

The TNFD defines:

- **Dependencies on nature** as aspects of ecosystem services that an organisation or other actor relies on to function;
- **Impacts on nature** as changes in the state of nature, which may result in changes to the capacity of nature to provide social and economic functions; and
- **Impact drivers** as measurable quantities of a natural resource that are used as an input to production and measurable non-product outputs of a business that affect nature. They can be positive or negative and can be mapped to the IPBES¹ drivers of nature change. The Taskforce has modified the descriptions of the five IPBES drivers of nature change to reflect both negative and positive changes as a result of an organisation's interactions with nature.

Figure 1: TNFD's classification of drivers of nature change, building on the IPBES drivers



¹ Intergovernmental Platform on Biodiversity and Ecosystem Services

Table 1: TNFD core disclosure metrics for dependencies and impacts on nature

Driver of nature change	Metric No.	Indicator	Metric	Connection to GBF targets
Climate change	C 1.0	GHG emissions	Scope 1, 2 and 3 GHG emissions – <i>refer to TCFD</i>	Target 7
Land/freshwater/ocean-use change	C 2.0	Total extent of land/freshwater/ocean-use change	Extent of land/freshwater/ocean use change (km ²), by type of ecosystem ² (before and after change) and business activity (absolute and change from previous year), referring to sector-specific guidance for relevant metrics	Target 1 (A.2 Extent of natural ecosystems), Target 2, Target 5, Target 11 (B.1 Services provided by ecosystems)
Land/freshwater/ocean-use change	C 2.1	Land/freshwater/ocean-use change in prioritised ecosystems	Extent of land/freshwater/ocean use change (km ²), by type of ecosystem ³ (before and after change) and business activity, for prioritised ecosystems, referring to sector-specific guidance for relevant metrics	Target 1 (A.2 Extent of natural ecosystems), Target 2, Target 5, Target 11 (B.1 Services provided by ecosystems)
Pollution/pollution removal	C 3.0	Total pollutants released to soil split by type	Total pollutants released to soil split by type, referring to sector-specific guidance on types of pollutants (tonnes)	Target 7 (7.2 Pesticide environment concentration), Target 11
Pollution/pollution removal	C 3.1	Volume of wastewater discharged and concentrations of key pollutants in the wastewater discharged	Volume of water discharged (total, freshwater, other) (cubic metre or equivalent) and concentrations of key pollutants in the wastewater discharged by type, referring to sector-specific guidance on types of pollutants	Target 7 (7.1 Index of coastal eutrophication potential), Target 11 (B.1 Services provided by ecosystems)
Pollution/pollution removal	C 3.2	Total amount of hazardous waste generated	Total amount of hazardous waste generated by type, referring to sector-specific guidance on types of waste (tonnes)	Target 7, Target 11 (B.1 Services provided by ecosystems)
Pollution/pollution removal	C 3.3	Total non-GHG air pollutants	Total non-GHG air pollutants by type: 1. Tonnes of particulate matter (PM2.5 and/or PM10) 2. Tonnes of nitrogen oxides (NO ₂ , NO and NO ₃) 3. Tonnes of volatile organic compounds (VOC or NMVOC) 4. Tonnes of sulphur oxides (SO ₂ , SO, SO ₃ , SO _x) 5. Tonnes of ammonia (NH ₃)	Target 7, Target 11 (B.1 Services provided by ecosystems)
Resource use/replenishment	C 4.0	Water withdrawal and consumption from areas of water stress	Total water withdrawal and consumption from areas of water stress (cubic metre or equivalent)	Target 11 (B.1 Services provided by ecosystems)
Resource use/replenishment	C 4.1	Quantity of high-risk natural commodities sourced from land/ocean/freshwater	Quantity of high-risk natural commodities ⁴ sourced from land/ocean/freshwater split into types (absolute (tonnes), and proportion of total, change from previous year), referring to sector-specific guidance on types of commodities	Target 5 (5.1 Proportion of fish stocks within biologically sustainable levels), Target 11 (B.1 Services provided by ecosystems)
Resource use/replenishment	C 4.2	Quantity of natural commodities sourced from priority ecosystems	Quantity and share of natural commodities sourced from priority ecosystems split into types (absolute (tonnes), proportion of total, change from previous year)	Target 5 (5.1 Proportion of fish stocks within biologically sustainable levels), Target 11 (B.1 Services provided by ecosystems)

2 When disclosing on ecosystem types, refer to the IUCN Global Ecosystem Typology: <https://global-ecosystems.org/>

3 When disclosing on ecosystem types, refer to the IUCN Global Ecosystem Typology: <https://global-ecosystems.org/>

4 Users may refer to the Science Based Targets Network (SBTN) High Impact Commodity List (HICL).

The TNFD is considering adding another core global dependency and impact metric addressing plastic production and consumption (currently an additional metric). The Taskforce is seeking feedback on whether a metric relating to plastic should be added to the list of core global metrics and if so, what this metric should be, such that it provides decision-useful insight about plastic-related issues for the majority of companies.

Additional disclosure metrics for dependencies and impacts on nature

Organisations should consider reporting the following additional metrics if relevant to the sector and biome in which they operate. The list of additional metrics includes positive impacts on nature and impact drivers that are widespread but do not affect the majority of sectors, such as light and noise pollution and the introduction of invasive species. It also includes metrics for the state of nature (ecosystem condition and extent) and ecosystem services.

Table 2: TNFD additional disclosure metrics for dependencies and impacts on nature

Category	Metric No.	Additional metric
Driver of nature change: Land/freshwater/ ocean-use change	A 1.0	• Extent of land/freshwater/ocean use changed that is sustainably managed by ecosystem type and business activity in the relevant time period (proportion of total, change from previous year)
	A 1.1	• Extent of land/freshwater/ocean voluntarily conserved or restored by ecosystem type in the relevant time period (absolute, change from previous year)
Driver of nature change: Pollution/pollution removal	A 2.0	• Volume of pollutants removed from land, atmosphere, ocean and freshwater
	A 2.1	• Volume of plastic produced/consumed

Category	Metric No.	Additional metric
Driver of nature change: Resource use/replenishment	A 3.0	• Total water withdrawal and consumption (absolute, change from previous year)
	A 3.1	• Extent of area that the organisation controls and/or manages that is used for the production of natural commodities from land/ocean/freshwater (extent of area split into types, change from previous year)
	A 3.2	• Quantity of high-risk commodities ⁵ sourced under a management or certification programme
	A 3.3	• Volume of water loss mitigated and produced
Driver of nature change: Introduction of invasive species and other	A 3.4	• Quantity of wild species extracted from natural habitats for commercial purposes
	A 4.0	• Number/extent of non-purposefully introduced species, varieties or strains in areas owned, operated, used or financed in priority areas (absolute, presence/absence and/or number removed, change year-on-year)
Ecosystem condition and extent	A 4.1	• Light and noise pollution
	A 5.0	• Quantitative measurement of change to ecosystem condition and extent in priority locations the organisation depends or impacts on – refer to additional guidance on ecosystem condition
Ecosystem services	A 6.0	• For ecosystem services impacted, measurement on the change in the provision of the service
	A 6.1	• For ecosystem services depended on, measurement on the change in the provision of the service

⁵ Users may refer to the Science Based Targets Network (SBTN) High Impact Commodity List (HICL).

Metrics Annex 2: Risk and opportunity disclosure metrics

The following metrics should be used to support Metrics and Targets A, Strategy A and Strategy B disclosures.

The TNFD Strategy recommended disclosures refer to nature-related risk and opportunities. The TNFD defines:

- **Nature-related risks** as potential threats posed to an organisation linked to their and wider society's dependencies on nature and nature impacts; and
- **Nature-related opportunities** as activities that create positive outcomes for organisations and nature by creating positive impact on nature or mitigating negative impacts on nature.

TNFD's categorisation of nature-related risks and opportunities is set out in Table 3.

Table 3: TNFD categories of nature-related risks and opportunities

Nature-related risk categories	Nature-related opportunity categories
Physical risk	Business performance
Acute	Resource efficiency
Chronic	Products and services
	Markets
Transition risk	Capital flows and financing
Policy and legal	Reputational capital
Market	Sustainability performance
Reputation	Ecosystem protection, restoration and regeneration
Technology	Sustainable use of natural resources

The core disclosure metrics in Table 4 and additional disclosure metrics in Tables 5 and 6 will be revised, based on the v0.4 TNFD draft beta release, and a final recommended set of disclosure indicators and metrics for nature-related risk and opportunities will be included in the v1.0 TNFD Release in September 2023.

The TNFD strongly encourages organisations to include **disclosures against all of the core global indicators**. If organisations do not report against any of the indicators and metrics listed in Table 4, they should provide a short explanatory statement as to why they have not reported.

Table 4: Core organisation-level risk and opportunity disclosure indicators

Category	Metric no.	Metric
Nature-related risks	C 5.0	Proportion and total annual revenue exposed to: 1) physical risks and 2) transition risks.
	C 5.1	Proportion and value of assets exposed to nature-related 1) physical risks and 2) transition risks.
	C 5.2	Proportion and value of assets/total annual revenue exposed to risks by risk ratings (for example, high, medium, low).
	C 5.3	Proportion and total annual revenue/value of assets with substantial dependence on ecosystem services or with a high impact on nature.
Nature-related opportunities	C 6.0	Value of capital allocated to nature-related opportunities, by type of opportunity, with reference to a government or regulator green investment taxonomy.

Tables 5 and 6, which provide additional risk and opportunity indicators and metrics, are non-exhaustive and should be considered within the context of the most material risks and opportunities for the reporting organisation.

Table 5: Additional organisation-level risk and opportunity disclosure indicators

Category	Metric no.	Metric
Nature-related risks	A 7.0	Financial value of nature-related risks
	A 7.1	Value of write-offs and early retirements of assets due to nature-related risks.

Table 6: Additional risk and opportunity disclosure metrics categorised by type of risk/opportunity

Risk or opportunity category	Metric no.	Indicator
Physical risk	A 8.0	• Description and value of assets/total annual revenue dependent on area affected by physical risk
	A 8.1	• Number of locations/business lines/facilities exposed to physical risk
	A 8.2	• Value of capital expenditure on infrastructure asset repair or replacement as a result of nature-related loss and damage
	A 8.3	• Percentage increase in insurance costs due to nature-related loss and damage in the previous year
	A 8.4	• Capital expenditure on adaption due to nature-related physical risks
	A 8.5	• Costs associated with the relocation of operations and suppliers due to physical nature-related risks
Policy and legal risk	A 9.0	• Description and value of fines/penalties received in the year due to nature-related impacts
	A 9.1	• Description and value of clean-up costs due to nature-related impacts
	A 9.2	• Description and costs related to loss of operating areas
	A 9.3	• Description and value of litigation action taken against the organisation associated with nature-related issues

Risk or opportunity category	Metric no.	Indicator
Market risk	A 10.0	• Description of exposure to/costs related to loss of market access
	A 10.1	• Description of exposure and costs related to raw material and natural resource price volatility
Reputational risk	A 11.0	• Exposure to increased operational costs/loss of revenue due to reputational risks
Technological risk	A 12.0	• Expenditure on R&D for new and alternative technologies related to mitigation and adaptation of nature-related risks
Resource efficiency opportunity	A 13.0	• Value of operational cost savings due to more efficient use of nature-related resources, such as adoption of circular economy practices
Products and services opportunity	A 14.0	• Increase in revenue from new products and services producing demonstrable positive impacts on nature
Markets opportunity	A 15.0	• Increase in market valuation due to positive nature-related performance/reduction in nature negative outcomes
	A 15.1	• Access to new sources of finance/capital due to improved nature performance
	A 15.2	• Value of green finance instruments used, such as green bonds and sustainability-linked bonds
	A 15.3	• Year-on-year change in ESG rating scores for previous 3 years
Reputational capital opportunity	A 16.0	• Change in revenue/brand value due to reputational impact of nature-related issues

Metrics Annex 3: Response disclosure metrics

The following metrics should be used to support the Risk and Impact Management B disclosure.

The below list is non-exhaustive and each organisation should consider the most appropriate response metrics for its unique business model and reporting context. All suggested metrics in Table 7 are additional.

Table 7: Disclosure metrics for responses to nature-related issues

Category of nature-related responses	Metric no.	Metrics
Changes to nature (dependency and impact): mitigation hierarchy steps	A 17.0	• Circular material use rate (%)
	A 17.1	• Proportion of sites producing nature action plans (%)
	A 17.2	• Type, scope (activities, geographies) and prices applied for biodiversity and ecosystem-related pricing schemes
	A 17.3	• Rate of reuse and recycling (%)
	A 17.4	• Credible and transparent third-party certification: % and/or value of production, consumption and sourcing of raw materials, per certification type
	A 17.5	• Production, consumption and sourcing of raw materials that is traceable (%)
	A 17.6	• Suppliers committed to sustainable production (%)
A 17.7	• Restoration of negatively impacted ecosystems (investment and extent) split into ecosystem/biome type and split into (I): <ul style="list-style-type: none"> • Required by regulation • Required by certifier • Voluntary 	

Category of nature-related responses	Metric no.	Metrics
	A 17.8	• Value of operational/capital expenditure categorised into mitigation hierarchy actions (avoid, reduce, restore and regenerate, transform) (value and/or proportions)
	A 17.9	• Extent, duration and monitoring frequency of ecosystem restoration projects
	A 17.10	• Value of total investment in projects that avoid or reduce negative nature impacts or restore ecosystems where impacts cannot be avoided (value / proportion of projects)
	A 17.11	• Value of investment in nature-based solutions by type
Voluntary conservation, restoration and regeneration	A 18.0	• Extent, duration and monitoring frequency of voluntary ecosystem restoration projects
	A 18.1	• Value of investment in and extent of additional conservation actions split into type of action and type of ecosystem/biome applied to
	A 18.2	• Value of investment in nature-related community development programs intended to enhance positive impacts for Indigenous Peoples
Participation in voluntary and mandatory credit market schemes	A 19.0	• Voluntary credit market schemes: Value of total biodiversity offsets purchased and sold by type
	A 19.1	• Mandatory credit market schemes: Value of total biodiversity offsets purchased and sold by type
Capital allocation / investment	A 20.0	• Value of investment in nature-related interventions and solutions as defined in relevant government or regulator green investment taxonomy

Metrics Annex 4: Disclosure metrics for the agriculture and food sector

Organisations in the agriculture and food sector should disclose the following metrics for recommended disclosures Metrics and Targets B and Strategy A. These are relevant to the following sub-sectors and industries, unless otherwise specified:

- *Agricultural products;*
- *Meat, poultry and dairy;*
- *Processed food;*
- *Food retailers and distributors; and*
- *Restaurants.*

The TNFD strongly encourages organisations to include disclosures against all of the core sector indicators of relevance to their business model, sector(s), biome(s) and priority locations. If organisations do not report against any of the core sector indicators and metrics listed in Table 1, they should provide a short explanatory statement as to why not.

The Taskforce welcomes feedback on both the number and content of the core sector metrics for the agriculture and food sector proposed here, to inform the final selection for the TNFD v1.0 release in September 2023.

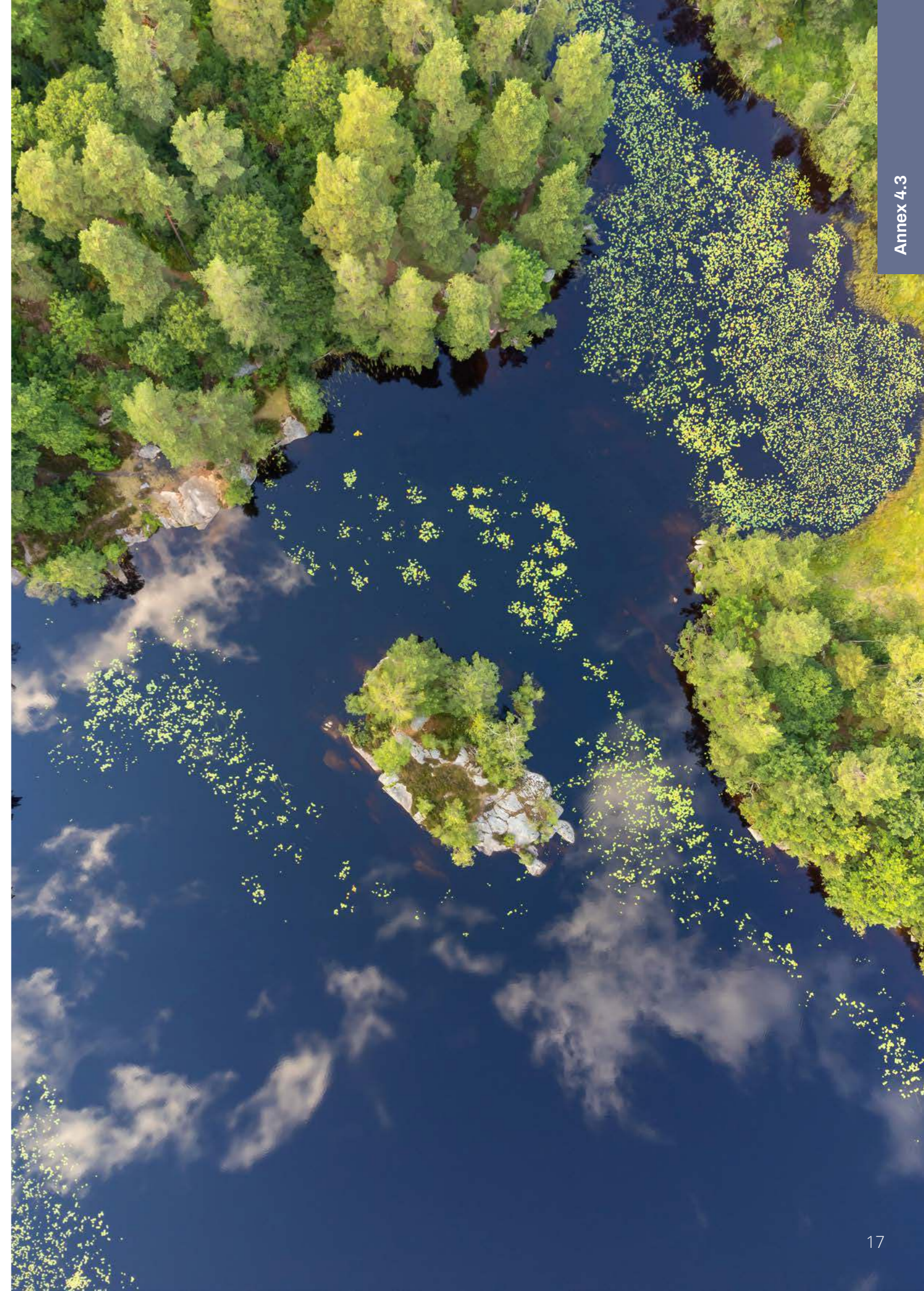


Table 1: Core and additional disclosure metrics for the agriculture and food sector

Metrics category	Sub-category	Cross-sector indicator	Metric no.	Core or additional	Metrics for agriculture and food sector	Source
Impact drivers	Climate change	Scope 1, 2 and 3 GHG emissions – refer to TCFD	SC 1.0	Core	Scope 1, 2, 3 GHG gas emissions including from land use change and emissions of GHGs (including CO ₂ , CH ₄ , N ₂ O) from animal production and/or crop production and sourcing	Adapted GRI13, 2022, GBF target 7
Impact drivers	Land/freshwater/ocean-use change	Extent of land/freshwater/ocean use change, by type of ecosystem ⁶ (before and after change) and business activity, for prioritised ecosystems	SC 2.0	Core	Size of agriculture driven terrestrial natural ecosystem conversion in km ² since 2020* – at least primary forests, other naturally regenerating (second-growth) forests and freshwater natural ecosystems, linked to land owned, leased operated, financed or sourced from <small>* Or other regional or sectoral cutoff dates</small>	GBF target 1 & target 2, SBTN draft targets for land 2023
Impact drivers	Pollution/pollution removal	Total pollutants released to soil split by type	SC 3.0.0	Core	Intensity of pesticides used by toxicity hazard level (either extremely hazardous, highly hazardous, moderately hazardous, slightly hazardous, or unlikely to present an acute hazard) against baseline.	Adapted from CDSB Biodiversity; GBF target 7; FAO; GRI13; SASB; WHO
			SC 3.0.1	Core	Volume and intensity (as proportion of the total cropland area owned, leased managed or sourced from by the entity) of excess fertiliser (incl. manure and biosolids) released to soil, water and air by fertiliser nutrients (i.e. nitrogen-based (N), phosphate-based (P ₂ O ₂) and potassium-based (K ₂ O) and methods of application and if relevant by metals	Adapted from FAO, 2021, GBF target 7
		Total amount of hazardous waste generated by type	SC 3.1	Core	Total weight (tonnes) and percentage of food loss and/or waste by type of food along the relevant stages of the value chain in which the entity is involved and disaggregation of total food waste destination (e.g. landfill, composting, controlled combustion, refuse, land application, co-digestion)	Adapted from SASB: Food Retailers & Distributors, 2018; FAO, 2021; GBF target 16; UNEP, 2021, Food waste Index
		Volume of plastic produced/consumed	SC 3.2	Core	Total weight of plastic packaging (primary, secondary and tertiary) used/sold for food products, and indicate the raw material content (% virgin fossil-fuel based, % virgin renewable, % post-industrial recycled, % post-consumer recycled, none), and indicate total weight of plastics which are commonly classified as problematic (PS, PVC, EPC, multilayer plastic packaging, undetectable carbon black)	Adapted from SASB Processed Foods, 2018; CDP W10.8; Global Plastic Commitment 2022, GBF target 16
		Volume and concentrations of key pollutants in the wastewater discharged	SC 3.3	Core	Concentration of key pollutants in the wastewater: nutrients (nitrogen and phosphorus levels), pesticides, organic loading (including crop and livestock excreta), pathogens, metals, other and emerging pollutants (including antibiotics and other veterinary medicines)	GBF target 7, FAIRR Index, FAO 2017: Water pollutants from agriculture: global review
		Total non-GHG air pollutants by type	SC 3.4	Core	Emissions of Nitrogen oxides (NO _x), Sulfur oxides (SO _x), Ammonia (NH ₃), Particulate matter (PM10 and PM2.5), Non-methane volatile organic compounds (NMVOCs)	GRI13 2022, GBF target 7 & target 11

⁶ When disclosing on ecosystem types, refer to the IUCN classification of ecosystem typology

Metrics category	Sub-category	Cross-sector indicator	Metric no.	Core or additional	Metrics for agriculture and food sector	Source
Impact drivers	Resource use/ replenishment	Quantity of high-risk natural commodities sourced from land/ocean/freshwater split into types (absolute and percentage of total, change from previous year)	SC 4.0.0	Core	Percentage of agricultural products or animal feed produced or sourced from regions with High or Extremely High Baseline Water Stress	GBF target 11, SASB: Meat, Dairy, Poultry, 2028, FB-MP-440a.1 & SASB Processed Foods, 2018, FB-PF-440a.1
			SC 4.0.1	Core	Percentage of agricultural products on the HICL sourced that are certified to a third-party environmental and/or social standard, and percentages by standard	GBF target 11, SASB Agricultural products, FB-AG-430a.1
Impact drivers	Climate change	Scope 1, 2 and 3 GHG emissions – refer to TCFD	SA 1.0	Additional	Gross global scope 1 emissions from refrigerants	SASB, 2018, Food retailers, FB-FR-110b.1
	Land/ freshwater/ ocean use change	Extent of land/freshwater/ ocean use changed that is sustainably managed by ecosystem type and business activity in the relevant time period (proportion of total, change from previous year)	SA 2.0	Additional	Percentage of agricultural land under regenerative practices or of commodities sourced from farms implementing regenerative agricultural practices	GBF target 10
			SA 2.1	Additional	Percentage of agricultural products sourced that are certified to a third-party environmental and/or social standard, and percentages by standard	SASB Agricultural products, FB-AG-430a.1
			SA 2.2	Additional	Percentage of cropland owned, leased, operated and/or sourced from with at least 10%, and ideally more than 20%, of natural vegetation per 1kmx1km/cultivated area	GBF Target 10 complementary indicator; UNSTAT, 2022; Nature, 2021)
			SA 2.3	Additional	Crop breed diversity in production area which is owned, leased, operated or sourced from (ha physical area)	ADBI, draft monitoring framework of the GBF
Impact drivers	Pollution/ pollution removal	Total pollutants released to soil split by type	SA 3.0	Additional	Nitrogen use intensity (kg N output per kg N input) (as proportion of the total cropland area owned, leased managed or sourced from by the entity), differentiated by crop, animal-crop and food system uses, and disclosure of methodology used to calculate N use efficiency (Farm, watershed, national and global)	Adapted based on Zhang 2020, Li and Zhang (2022) from ADBI 2022 Agrobiodiversity Index
Impact drivers	Pollution/ pollution removal	Volume of water discharged (total, freshwater, other)	SA 3.1.0	Additional	Volume of water discharged (total, freshwater, other) per crop and/or product dry matter and/or animal protein	TNFD
			SA 3.1.1	Additional	Volume of wastewater discharged to the environment from 1) crop product processing facilities and/or 2) animal processing facilities and volume of wastewater reused	Adapted from SASB Agricultural Products, 2018

Metrics category	Sub-category	Cross-sector indicator	Metric no.	Core or additional	Metrics for agriculture and food sector	Source
Impact drivers	Pollution/ pollution removal	Concentrations of key pollutants in the wastewater discharged	SA 3.2.0	Additional	Water pollutant loading rate (kg pollutant per month), including locally developed model results for pollutants from non-point source, based on average N and P nutrient loads over past 5 years of operations	SBTN Freshwater SBT's 2022
		N/A	SA 3.3.0	Additional	Percentage of food loss and/or waste (%) as total food produced/ handled and percentage diverted (%)	Adapted SASB Restaurants, 2018
			SA 3.3.1	Additional	Total weight of food loss and/or waste (metric tonnes) and the food loss percentage (%), by the organisation's main products or product categories	Adapted from GRI, 2022; WRAP, 2022
			SA 3.3.2	Additional	Total nutritional density of food waste and/or food loss (in calories)	CEC, 2019
Impact drivers	Pollution/ pollution removal	Volume of plastic produced / consumed	SA 3.4.0	Additional	Total weight (metric tonnes) of non-plastic packaging (primary, secondary and tertiary packaging) for food products by entity by packaging type	Adapted from SASB: Processed Foods, 2018
			SA 3.4.1	Additional	(1) Percentage total of sourced and purchased non-plastic packaging made from recycled materials, 2) Percentage total of sourced and purchased packaging made from renewable materials, 3) Percentage total of sourced and purchased packaging made from compostable materials and 4) For each material used those which are recycled, reused and composted, according to local laws and regulations	Adapted from SASB Processed food, 2018
Impact drivers	Pollution/ pollution removal	Pollutants removed from land, atmosphere, ocean and freshwater	SA 3.5	Additional	Avoided pesticide use per hectare (as proportion of the total cropland area owned, leased managed or sourced from by the entity) by pesticide toxicity level (either extremely hazardous, highly hazardous, moderately hazardous, slightly hazardous, or unlikely to present an acute hazard).	Adapted from GRI 13; WHO
Impact drivers	Resource use/ replenishment	Total water withdrawal and consumption from areas of water stress	SA 4.0	Additional	Volume of water used (total, freshwater, other) from areas of water stress to produce a kg of crop and/or product dry matter and/or animal protein	TNFD
		Quantity and share of natural commodities sourced from priority ecosystems split into types (absolute, % of total, % change from previous year)	SA 4.1	Additional	Amount of produced or sourced commodity volumes and proportion (%) demonstrated as deforestation-free and/or conversion free	Adapted from CDP Forest questionnaire, F1.5a; Afi,2022

Metrics category	Sub-category	Cross-sector indicator	Metric no.	Core or additional	Metrics for agriculture and food sector	Source
Impact drivers	Invasive species and other	N/A	SA 5.0	Additional	Percentage of animal production or animal protein sourced that receives (1) medically important antibiotics and (2) not medically important antibiotics, by animal type	SASB: Meat, Dairy and Poultry 2018
Changes to the state of nature	Ecosystem condition and extent	Quantitative measurement of change to ecosystem condition and extent in priority locations the organisation depends or impacts on	SA 6.0	Additional	Proportion of land with soil degradation in the total area of agricultural production, including soil erosion, reduction in soil fertility, salinization of irrigated lands and waterlogging	FAO, 2021
			SA 6.1	Additional	Trends in the amount of litter in the water column including microplastics and on the seafloor	GBF draft monitoring framework, 2022
			SA 6.2	Additional	Coastal and freshwater eutrophication; plastic debris density: 1) Chlorophyll-A concentration 2) In-situ concentration of nitrogen, phosphate and silica	GBF draft monitoring framework, 2022
			SA 6.3	Additional	Name, amount/volume/concentration pesticides by location (per land/ marine area sensitivity), weighted by toxicity levels (1, 8, 16 and 64 for low-risk, "normal", more hazardous and non-approved substances) (Adapted from GBF monitoring framework, 2022)	UN WCMC 2021
			SA 6.4	Additional	Volume per month (MI/month) of discharge flow and mass of nutrients per volume (mg P/l)	SBTN, 2022
			SA 6.5	Additional	Changes in soil organic carbon stocks (over 5+ years relative to a baseline)	GBF draft monitoring framework, 2022
			SA 6.6	Additional	Species threat, abatement and restoration (STAR)	IUCN, Mair et al 2021)
			SA 6.7	Additional	Local species population indexes (e.g. farmland bird index)	OP2B
			SA 6.8	Additional	Diversity of pollinators and natural predators of livestock and cropland pests	ADBI, 2022
SA 6.9	Additional	Red List Index	GBF draft monitoring framework, 2022			

Metrics Annex 5: Disclosure metrics for the tropical forest biome

Organisations interfacing with nature in the tropical forest biome should consider disclosing the following metrics for disclosure recommendation Metrics and Targets B and Strategy A. All metrics are additional.

Table 8: Quantitative additional disclosure metrics for the tropical forest biome

Metrics category	Driver of nature change	Cross-sector indicator	Metrics no.	Metrics for tropical forests biome	Source
Impact drivers	Land/ freshwater/ocean-use change	Extent of land/ freshwater/ ocean use change, by type of ecosystem ⁷ (before and after change) and business activity, for prioritised ecosystems	BA 2.0	Natural forest cover loss within areas of direct operational control. This should include a description of methods and tools used to assess natural forest cover loss.	TNFD
			BA 2.1	Landscape-level or country-ecoregion-level natural forest cover loss within areas of indirect operational control (i.e. sourcing locations)	TNFD
			BA 2.2	Spatial overlap (ha) of business activities with deforestation hotspots	TNFD
Ecosystem condition and extent	N/A	Quantitative measurement of change to ecosystem condition and extent in priority locations the organization depends or impacts on	BA 6.0	Ecosystem condition as measured by Mean Species Abundance (MSA) (adjusted for management in case of forest-based activities such as logging)	Schipper et al. 2020 https://www.globio.info/what-is-globio
			BA 6.1	Maximum STAR-t (Species Threat Abatement and Restoration metric)	Mair et al. 2021 https://www.nature.com/articles/s41559-021-01432-0
			BA 6.2	Forest Landscape Integrity Index (in sourcing locations or areas under direct operational control for forest-based enterprises such as logging)	Grantham et al. 2020 https://www.forestintegrity.com/

When disclosing the above indicators and metrics, organisations should provide a description of the methods and tools used to assess natural forest cover loss.

⁷ When disclosing on ecosystem types, refer to the IUCN Global Ecosystem Typology: <https://global-ecosystems.org/>



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