# FOREST DECLARATION ASSESSMENT 2026

## Technical Annexes – Theme 1

October 2026

Forest Declaration Assessment

Annex A

# Key terms

TREE COVER LOSS: Stand replacement disturbance which is considered to be clearing of at least half of tree cover within a 30-meter pixel. The exact threshold is variable both through space and time and is biome-dependent (updated from Hansen et al., 2013). Such a change may or may not be permanent. Non-permanent tree cover loss routinely occurs in the context of logging, fire, or shifting agriculture. Tree cover loss data is often analyzed as a first step to measure deforestation.

DEFORESTATION: A tree cover loss event that is permanent in nature, e.g., when forest is converted to permanent agriculture, cleared for mining or for infrastructure development; or when it occurs within humid tropical primary forest boundaries (Forest Declaration Assessment, 2022).

GROSS DEFORESTATION: The total amount of deforestation occurring at the global, regional, or national scale within a specific time period, without accounting for any regeneration or reforestation that may have taken place in the area during that time.

GROSS ZERO DEFORESTATION: The Glasgow Leaders' Declaration on Forests and Land Use calls to "... halt and reverse forest loss and land degradation by 2030" but does not specify whether the goal should be to reach gross or net zero by the end of the decade. The 2021-2030 benchmark presented in this report for the different indicators uses the "gross zero" interpretation.

FOREST LANDSCAPE RESTORATION (FLR): A planned process (sometimes referred to as "forest and landscape restoration") aimed at regaining ecological functionality and enhancing human well-being across forests and related ecosystems that have lost their structure, function, biodiversity or have otherwise been damaged or degraded. This concept emerged from the recognition that higher-quality forest landscapes can meet human needs while conserving biological diversity and providing essential ecosystem functions and services.

AREA UNDER RESTORATION: The extent of the area where efforts are being made to restore ecosystems that have been degraded or converted. As used in this report, this definition encompasses various types of forest landscape restoration activities including reforestation, managed and unmanaged assisted natural regeneration, or productive systems such as agroforestry and silvopasture. While different in the processes and outcomes, all these activities aim to provide net gain in ecosystem condition, the recovery of ecosystem services, and human well-being.

REFORESTATION: The direct human-induced conversion of non-forested land to forested land through planting and/or seeding on land that was forested but that has been converted to non-forested land.

ASSISTED NATURAL REGENERATION: Forest restoration method that enhances the natural processes of forest recovery by protecting and nurturing existing native tree seedlings and mother trees in degraded areas. This approach aims to accelerate the natural regeneration of forests by removing barriers to native vegetation growth, such as competition from invasive species, soil degradation, and/or disturbances like fire or overgrazing.

AGROFORESTRY AND SILVOPASTURAL SYSTEMS: Land-use management practices that combine agriculture and/or pasture with some degree of tree cover. These systems integrate trees, crops, and/or livestock on the same piece of land, offering multiple benefits for both the environment and local communities. These practices can result in low density, sparse tree cover that may not qualify as 'forests' – i.e. areas characterized by tree cover equal to or higher than 30% (Rayden, Jones, Austin, & Radachowsky, 2023). Despite this, in the context of forest landscape restoration, these practices can improve ecosystem conditions by enhancing habitat connectivity, restoring degraded or lost ecosystem services, and promoting sustainable production within the landscape.

TROPICAL MOIST FORESTS (TMFs): Include all closed forests in the humid tropics with two main forest types: the tropical rain forest and the tropical moist deciduous forest. Tropical rain forest is found in permanently humid areas, i.e., those with, at most, only limited seasonality in rainfall distribution, while tropical moist deciduous forest, also called monsoon forest, is found in areas with a distinct dry season. The TMFs are characterized by low variability in annual temperature and high levels of rainfall (>200 cm annually). In the Holdridge life zones classification scheme, the TMFs include the moist forest, the wet forest, and the rain forest. The TMFs are located mostly in the tropical moist and humid climatic domains, but they also include small areas of gallery forests in the tropical dry domain.

DEGRADED FORESTS: Moist forest cover where disturbances were observed over a period shorter or equal than 2.5 years (900 days). The methodology assumes that the duration of the disturbance - and, consequently, the period over which the disturbance is detectable in satellite imagery - is a proxy of the disturbance impact, where disturbance of longer duration corresponds to higher impact on the forest and the higher the risk of having a permanent conversion of the TMF. All disturbance events for which the impacts are detectable over a period of more than 2.5 years (900 days) are considered as deforestation processes.

TROPICAL MOIST FOREST REGROWTH: Two-phase transition from moist forest to (i) deforested land and then (ii) vegetative regrowth. A minimum of 3-year duration of permanent moist forest cover presence is needed to classify a pixel as forest regrowth to avoid confusion with agriculture (Vancutsem et al., 2021).

ANNEX B

# Methodology

## 1. Regional aggregation

The regional classification adopted in this Assessment is based on the global distribution of forests by climatic domain (FAO, 2020). The geographic distribution of each climatic domain was overlaid with national borders, and each country was assigned to the climatic domain that overlapped with the largest percentage of its area. Regions are defined by a combination of continent and climatic domain. Country boundaries and continent assignments are based on the Database of Global Administrative Areas (GADM), version 4.1. The regional aggregation used in this Assessment is detailed in Table A.1.

## 2. Forest loss indicators

The Assessment's reporting framework evaluated progress in the forest loss and degradation indicators by comparing the latest available value of each indicator with two values: the baseline value and Assessment define annual targets for any given indicator. A multi-year baseline was chosen to smooth out any single-year anomalies, and 2018-2020 were selected as the baseline period to represent the years immediately preceding the adoption of the Glasgow Leaders' Declaration. The latest available value of each indicator is compared to a 2018-20 baseline, in order to calculate the percent decrease or increase (improvement or worsening, respectively) of a given indicator in comparison to the reference period. Furthermore, the latest available value for each indicator is benchmarked against a pathway that delivers the 2030 objectives (e.g., reaching zero deforestation by 2030). While multiple reduction pathways are in principle possible, for all deforestation, tropical primary forest loss, and forest degradation indicators, a linear reduction pathway between the baseline value (i.e., the 2018-2020 average) and the 2030 target (i.e., no loss) is established. This is consistent with previous NYDF Assessment and Forest Declaration Assessment reports, which also tracked progress against a linear reduction pathway. Each year of the decade – going from 2021 to 2030 – requires a 10 percent reduction in loss relative to the baseline to reach zero by 2030. When the 10 percent reduction is not achieved in a given year, a higher percent reduction is required in following years to meet the linear reduction pathway.

Table A.1. Regional aggregation

| Region | Countries |
|---|---|
| Boreal Europe | Faroe Islands; Finland; Iceland; Norway; Russia; Svalbard and Jan Mayen; Sweden |
| Boreal North America | Canada; Greenland; Saint Pierre and Miquelon |
| Temperate Africa | Algeria; Egypt; Gibraltar; Lesotho; Libya; Morocco; South Africa; Tunisia; Western Sahara |
| Temperate Asia | Afghanistan; Aksai Chin; Armenia; Azad Kashmir; Azerbaijan; Bahrain; China; Cyprus; Georgia; Iran; Iraq; Israel; Japan; Jordan; Kazakhstan; Kuwait; Kyrgyzstan; Lebanon; Mongolia; North Korea; Oman; Pa-li-chia-ssu; Pakistan; Palestine; Qatar; Saudi Arabia; Shaksgam Valley; South Korea; Syria; Tajikistan; Turkey; Turkmenistan; United Arab Emirates; Uzbekistan; Yemen |
| Temperate Europe | Albania; Andorra; Austria; Belarus; Belgium; Bosnia and Herzegovina; Bulgaria; Croatia; Czechia; Denmark; Estonia; France; Germany; Greece; Guernsey; Hungary; Ireland; Isle of Man; Italy; Jersey; Latvia; Liechtenstein; Lithuania; Luxembourg; Malta; Moldova; Monaco; Montenegro; Netherlands; North Macedonia; Poland; Portugal; Romania; San Marino; Serbia; Slovakia; Slovenia; Spain; Switzerland; Ukraine; United Kingdom; Vatican City |
| Temperate Latin America and the Caribbean (LAC) | Argentina; Chile; Falkland Islands; Uruguay |
| Temperate North America | United States of America |
| Temperate Oceania | Nauru; New Zealand; Norfolk Island |
| Tropical Africa | Angola; Benin; Botswana; Burkina Faso; Burundi; Cabo Verde; Cameroon; Central African Republic; Chad; Comoros; Côte d'Ivoire; Democratic Republic of the Congo; Djibouti; Equatorial Guinea; Eritrea; Ethiopia; Gabon; Gambia; Ghana; Guinea; Guinea-Bissau; Kenya; Liberia; Madagascar; Malawi; Mali; Mauritania; Mauritius; Mayotte; Mozambique; Namibia; Niger; Nigeria; Republic of the Congo; Réunion; Rwanda; São Tomé and Príncipe; Senegal; Seychelles; Sierra Leone; Somalia; South Sudan; Sudan; Swaziland; Tanzania; Togo; Uganda; Zambia; Zimbabwe |
| Tropical Asia | Arunachal Pradesh; Bangladesh; Bhutan; Brunei; Cambodia; India; Indonesia; Jammu and Kashmir; Kaurik; Laos; Lapthal; Malaysia; Maldives; Myanmar; Nepal; Papua New Guinea; Philippines; Sang; Singapore; Sri Lanka; Taiwan; Thailand; Timor-Leste; Vietnam |
| Tropical LAC | Anguilla; Antigua and Barbuda; Aruba; Bahamas; Barbados; Belize; Bermuda; Bolivia; Bonaire, Sint Eustatius and Saba; Brazil; British Virgin Islands; Cayman Islands; Colombia; Costa Rica; Cuba; Curaçao; Dominica; Dominican Republic; Ecuador; El Salvador; French Guiana; Grenada; Guadeloupe; Guatemala; Guyana; Haiti; Honduras; Jamaica; Martinique; México; Montserrat; Nicaragua; Panama; Paraguay; Peru; Puerto Rico; Saint Kitts and Nevis; Saint Lucia; Saint Vincent and the Grenadines; Saint-Barthélemy; Saint-Martin; Sint Maarten; Suriname; Trinidad and Tobago; Turks and Caicos Islands; Venezuela; Virgin Islands, U.S. |
| Tropical Oceania | Australia; Fiji; Kiribati; Micronesia; New Caledonia; Palau; Solomon Islands; Tuvalu; Vanuatu |

The tree cover loss underlying deforestation and tropical primary forest loss was calculated using a >30 percent tree cover density threshold for the year 2000 (Hansen et al., 2013). Improvements in the detection of tree cover loss due to the incorporation of new satellite data and methodology changes between 2011 and 2015 may result in higher estimates of loss in recent years compared to earlier years (Weisse & Potapov, 2021) but does not affect the comparison of 2023 data to the 2018-20 baseline.

## Deforestation

Deforestation (ha/yr) is estimated as the part of global tree cover loss (Hansen et al. 2013, updated through 2024) that leads to a permanent conversion of forest to a new land use according to a map of the drivers of tree cover loss (Sims et al., 2025). Deforestation includes all tree cover losses that are attributed to the conversion to permanent agriculture or to human settlements, and to the production of hard-commodities (Sims et al., 2025), as well as tree cover loss due to shifting agriculture in humid tropical primary forests (Turubanova, Potapov, Tyukavina, & Hansen, 2018). Starting from 2025, deforestation estimates are based on an new model of the drivers of tree cover loss (Sims et al., 2025). The new maps of drivers has a spatial resolution of 1 kilometers, , as opposed to the 10 kilometers resolution of the map of drivers used in previous years (Curtis, Slay, Harris, Tyukavina, & Hansen, 2018). Furthermore, the latest classification of drivers presents some notable improvements such as, for instance, the disaggregation of 'commodity-driven deforestation' (Curtis et al., 2018) in 'permanent agriculture' and 'hard-commodities' (Sims et al., 2025). The definition of the drivers is provided in Table A.2.

Table A.2. Drivers of tree cover loss, as defined in Sims et al. (2025).

| Driver | Definition |
|---|---|
| Permanent agriculture | Long-term, permanent tree cover loss for small- to large-scale agriculture. This includes perennial tree crops such as oil palm, cacao, orchards, nut trees, and rubber, as well as pasture and seasonal crops and cropping systems, which may include a fallow period. |
| Hard commodities | Tree cover loss due to the establishment or expansion of mining or energy infrastructure. Mining activities range from small-scale and artisanal mining to large-scale mining. Energy infrastructure includes power lines, power plants, oil drilling and refineries, wind and solar farms, flooding due to the construction of hydroelectric dams, and other types of energy infrastructure. |
| Shifting cultivation | Tree cover loss due to small- to medium-scale clearing for temporary cultivation that is later abandoned and followed by subsequent regrowth of secondary forest or vegetation. |
| Forest management | Forest management and logging activities occurring within managed, natural or semi-natural forests and plantations, often with evidence of forest regrowth or planting in subsequent years. This includes harvesting in wood-fiber plantations, clear-cut and selective logging, establishment of logging roads, and other forest management activities such as forest thinning and salvage or sanitation logging. |
| Wildfire | Tree cover loss due to fire with no visible human conversion or agricultural activity afterward. Fires may be started by natural causes (e.g. lightning) or may be related to human activities (accidental or deliberate). |
| Settlements and infrastructure | Tree cover loss due to expansion and intensification of roads, settlements, urban areas, or built infrastructure (not associated with other classes). |
| Other natural disturbances | Tree cover loss due to other non-fire natural disturbances, including storms, flooding, landslides, drought, windthrow, lava flows, sediment flow or meandering rivers, natural flooding, insect outbreaks, etc. If tree cover loss due to natural causes is followed by salvage or sanitation logging, it is classified as forest management. |

Following the adoption of the latest map of drivers, the deforestation time series was recalculated and led to estimates that are 20 percent higher – in average – than those published in previous Forest Declaration Assessment reports. Thus, latest estimates of deforestation should not be compared with previous years' deforestation estimate, nor with the progress towards the zero-deforestation goal.

Global spatial data on forest change (Hansen et al. 2013, updated through 2023) differs in its definitions and methods from official national forest statistics. Moreover, the deforestation statistics used in this Assessment are derived from a map of drivers of tree cover loss (Sims et al., 2025) that attributes all tree cover loss to the same driver over the entire assessment period, even if changes in drivers do occur over time in regions or countries.

## Humid tropical primary forest loss

Humid tropical primary forest loss (ha/yr) measures the tree cover loss within humid tropical primary forests, which are defined as mature natural humid tropical forest cover that has not been completely cleared and regrown in recent history (Turubanova et al., 2018). No corresponding map of primary forest is available globally; hence, this indicator is limited to the humid tropics.

Global maps of primary forest differ in their definitions from national primary forest maps. The statistics presented here are therefore different from official country statistics on loss of primary forests.

## Gross greenhouse gas (GHG) emissions from forest loss

GHG emissions from global deforestation (measured in metric tons of carbon dioxide equivalent per year) are estimated by combining maps of benchmark carbon stocks in 2000, tree cover loss, gain, and extent and additional contextual geospatial data (Gibbs et al., 2025, updated through 2024). Our estimates of gross GHG emissions include aboveground carbon, belowground carbon, deadwood and litter carbon, as well as soil organic carbon. $CO_2$, CH4, and $N_2O$ emissions from peat drainage and forest fires are also included. Emissions are attributed to deforestation using Sims et al. (2025) following the same categories used for the global deforestation indicator. Gross GHG emissions from humid tropical primary forest loss ($tCO_2e$/yr) are estimated by overlaying gross emissions from Gibbs et al. (2025) with humid tropical primary forest extent in 2001 (Turubanova et al., 2018).

## 3. Forest degradation indicators

### Degradation in Tropical Moist Forests

The indicator presents the extent of degraded tropical moist forests, defined as moist forest cover where disturbances were observed over a period shorter than 2.5 years (Vancutsem et al., 2021). Country data on tropical moist forest (TMF) regrowth is retrieved from the TMF Data Portal to calculate regional aggregates.

### Loss of forest ecological integrity

Changes in forest ecological integrity are tracked here by a proxy indicator based on the Forest Landscape Integrity Index (FLII; Grantham et al. 2020). The FLII, which assigns ecological integrity scores to forested 300-meter pixels globally, is sensitive to the presence or absence of key anthropogenic pressures known to drive forest degradation, which makes it an advance ('leading') indicator of both forest degradation and recovery. It integrates (i) readily observable pressures (infrastructure, croplands and anthropogenic deforestation) in a given pixel, (ii) inferred, diffuse pressures (such as hunting and logging) associated with these readily observable pressures that occur in nearby pixels, and (iii) declines in forest connectivity in the broader landscape around a pixel.

The FLII is a continuous variable from 0-10 but has been categorized for this analysis into three classes. The indicator used represents the net total of all transitions of forests both downward and upward between higher and lower integrity classes in a given geography. It sums the areas that have transitioned to lower integrity classes (i.e., high to medium, high to low, and medium to low) and subtracts any areas that have increased (low to medium, low to high, medium to high), excluding areas that were permanently deforested as these are covered by other indicators presented above. All recent results are net declines, so for simplicity the indicator is referred to as 'net integrity loss'.

The Glasgow Leaders' Declaration calls for a halt to land degradation (including forest degradation) by 2030, so for this Assessment the 2030 target is taken to be equivalent to no further net integrity loss by that date. The FLII cannot be calculated prior to 2018 so the earliest year of change presented below is 2018-2019 and thus the baseline is calculated across two, not three, years of change. Due to a data availability constraint, the 2025 update cannot yet be calculated.

This Assessment defines the FLII category thresholds as ≤ 7.6 for low integrity; > 7.6 and < 9.8 for medium integrity; and ≥ 9.8 for high integrity forests. These thresholds differ slightly from those set out by Grantham et al. (2020) and used in earlier FDA reports, due to a re-benchmarking exercise associated with some corrections to the underlying algorithm since the initial publication. The revised thresholds should be considered provisional until they are validated in a peer-reviewed paper.

While the FLII aims to reflect, directly or indirectly, the effect of most anthropogenic drivers of degradation, it currently takes a conservative approach to fire. Because it is a global indicator, it treats fire as a natural process, which is often the case in many dry and boreal forest ecosystems, and hence not a process that reduces ecological integrity. This tends to underestimate loss of integrity where fire now increasingly occurs in previously unburnt humid forest ecosystems, and also where fire in other ecosystems occurs at frequencies and intensities that exceed the natural range of variation.

## 4. Restoration indicators

In absence of a global dataset of the area under restoration, this Assessment evaluates progress on forest restoration targets through two separate parameters: tropical moist forest regrowth (Vancutsem et al., 2021), and area under restoration.

### Tropical moist forest regrowth

Country data on tropical moist forest (TMF) regrowth is retrieved by the TMF Data Portal to calculate regional aggregates.

### Area under restoration

The area under restoration is estimated from two separate sources of project-level data: Restor and the Brazilian Restoration Observatory.

Project-level data are retrieved from the Restor database (Crowther et al., 2022). The Restor database houses user-provided restoration site data. All polygons updated on platform go through a site validity assessment, which includes i) automated polygon geometry checks, ii) automated profile completeness scoring (0–100, reflecting the information provided at both site and organization levels), and iii) manual review.

Following this process, each site is assigned a validity confidence level. For our analysis, we only included sites with "high" or "good" validity confidence.

- High confidence is given to sites that passed polygon shape validity checks with a high score, with additional manual verification for all sites larger than 100,000 hectares
- Good confidence is assigned to sites that passed polygon shape validity checks with a medium score, with manual verification for:
    - All sites larger than 100,000 hectares
    - A sample of smaller sites (under 100,000 hectares), with emphasis on those with lower profile completeness
    - All sites with a low completeness score not associated with the organization

The restoration sites included in this analysis are those which have been made publicly viewable on the Restor platform – and this subset of sites is generally of higher quality than the full suite of locations in the full database (which includes sites uploaded for private use). However, Restor makes no guarantee that the summaries provided are accurate or complete.

The query used to retrieve estimates of area under forest restoration is outlined below.

| Field | Selected Values |
|---|---|
| Type of site | 'Restoration' |
| Project stage | 'Ongoing' or 'Complete' |
| Intervention type | 'Active restoration' or 'Assisted natural regeneration' or 'Passive Natural regeneration' or 'Agroforestry' or 'Other Sustainable Production' |
| Pre-intervention land-use | 'Deforested land' or 'Degraded forest' or 'Mining or extractives' or 'Grazing land' or 'Cropland' or 'Not used for production' |
| Target land cover following restoration | 'Natural forests' or 'Production forests' |
| Biomes | 'Tropical and subtropical moist broadleaf forests' or 'Tropical and subtropical dry broadleaf forests' or 'Tropical and subtropical coniferous forests' or 'Temperate broadleaf and mixed forests' or 'Temperate conifer forests' or 'Boreal forests or taiga' or 'Mediterranean forests, woodlands, and scrub' |

Restor uses the RESOLVE biome classification, and each site is only assigned to a single biome type. Large sites and those at biome boundaries have been assigned to the biome which occupies the largest percentage of their total area.

All project level data stored in the BRO database were included in the analysis. BRO data are ground validated.

The georeferenced polygons of all project areas were processed to remove overlaps and avoid double counting, both within each database and across the two platforms. The total area under restoration was then calculated at regional and global scales.

Despite these efforts to combine data from multiple platforms, the results should be considered only an approximate "best guess" of global restoration progress. The figures may severely underestimate the true extent of restoration worldwide and are almost certainly insufficient to support decision-making.