



GLOBAL FOREST WATCH & EUDR FOREST MONITORING

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GLOBAL FOREST WATCH (GFW) AND EU FOREST MONITORING NEEDS



- Wall-to-wall information (every location is covered)
- Frequent updates (annually and soon in near-real-time)
- Open for everyone to use, for varied user and policy needs
- Comparable across countries (same definitions and methods)
- Used to understand shared progress to regional/ global goals
- Every dataset has strengths and limitations, however combination of satellite derived information with ground data allows continuous improvements

GLOBAL Forest Watch

exico

Global Tree Cover Loss

mapped annually at 30-meter resolution since 2001







DRIVERS OF TREE COVER LOSS BY REGION 2001-2023 Drivers of tree cover loss by region, 2001-2023



Curtis et al 2018 and Forest Loss | Global Forest Review (wri.org)

Source: Curtis et al. 2018, https://doi.org/10.1126/science.aau3445.



WORLD RESOURCES INSTITUTE

GLOBAL FOREST WATCH

CUSTOMIZABLE DATA

LOCATION OF TREE COVER LOSS IN FINLAND

In **Finland**, the top **2** regions were responsible for **60%** of all tree cover loss between **2001** and **2022**. **Western Finland** had the most tree cover loss at **1.51 Mha** compared to an average of **876 kha**.

1	Western Finland	1.51 Mha
2	Eastern Finland	1.12 Mha
3	Oulu	830 kha
4	Lapland	491 kha
5	Southern Finland	425 kha

2000 tree cover extent | >30% tree canopy

TREE COVER LOSS IN FINLAND COMPARED TO OTHER AREAS

From **2001** to **2022**, **Finland** lost **4.38 Mha** of relative tree cover, equivalent to a **20%** decrease since **2000** and **0.95%** of the global total.

16	Madagascar	4.62 Mha
17	Myanmar	4.56 Mha
18	Finland	4.38 Mha
19	Laos	4.37 Mha
20	Mozambique	4.03 Mha

2000 tree cover extent | >30% tree canopy | these estimates do not take tree cover gain into account

FOREST-RELATED GREENHOUSE GAS FLUXES IN FINLAND

Between 2001 and 2022, forests in Finland emitted 42.7 MtCO₂e/year, and removed -77.6 MtCO₂e/year. This represents a **net carbon sink** of -34.9 MtCO₂e/year.



Which GFW tool is right for you?





GLOBAL FOREST WATCH P R O

GFW map and dashboards

Explore hundreds of spatial data sets and interactive charts that summarize key statistics about forests across the globe.

Forest Watcher

A free mobile and web app that enables you to take GFW data offline and into the field.

GFW Pro

The enterprise version of GFW, enables companies and financial institutions to securely monitor and manage deforestation in their supply.

609 million (A) hectares of forest

7.6 million

people monitoring

m

User-monitored areas of interest, Q2 2023-Q1 2024

EU DEFORESTATION REGULATION



GFW data must be adjusted using other open source data



GLOBAL FOREST WATCH

What is Considered a "Forest?"

FOREST RESOURCES ASSESSMENT (FRA) adopts the FAO's definition of "forest" to provide global forest area and area change information based on biophysical and land use criteria.



GLOBAL FOREST WATCH (GFW) provides core data sets on tree cover, gain and loss based on biophysical criteria, and uses the term "tree cover" instead of "forest." Contextual data sets available on GFW such as planted forests can be used to align tree cover with the forest definition used in the FRA.



Global Forest Watch and Forest Resources Assessment | GFW Blog



EU DEFORESTATION REGULATION

- GFW and EUDR Deforestation
 - Setting baselines
 - Identifying deforestation
 - Mapping commodities
- **GFW and EUDR Forest Degradation**
 - Identifying primary and naturally regenerating forests
 - Tracking conversion
 - Identifying planted forests, plantations (and other wooded lands)

EU DEFORESTATION REGULATION



WATCH

MAPPING FOREST TYPES





GLOBAL FOREST WATCH

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MAPPING FOREST TYPES: SBTN NATURAL LANDS MAP





SBTN NATURAL LANDS MAP



<u>sciencebasedtargetsnetwork.org/wp-content/uploads/2024/09/Technical-Guidance-2024-</u> <u>Step3-Land-v1-Natural-Lands-Map.pdf</u>

SBTN Natural Lands Map v1 | Earth Engine Data Catalog | Google for Developers

LAND TARGETS



Target 1 No Conversion of Natural Ecosystems

Stop direct and indirect conversion of all natural, terrestrial ecosystems Target 2 Land Footprint Reduction

Reduce the global occupation of production systems and liberate land, ideally for ecosystem restoration



Target 3 Landscape Engagement

Engage in materially relevant landscape initiatives to support actions and enabling conditions that lead to substantial improvements in nature

*For Forest, Land and Agriculture (FLAG) companies: to set land targets you must additionally set an SBTi FLAG target.



SBTN NATURAL LANDS MAP

• Goal:

Companies set targets to have zero deforestation & conversion of natural ecosystems in their supply chains since 2020^{*}

Challenge:

Companies need to know1. what land was natural in 2020,2. where they have sourced their products

Creating a data product to help companies set a baseline for measuring deforestation/conversion

*Or earlier if the company has previous deforestation-free commitments

ACCOUNTABILITY FRAMEWORK INITIATIVE: NATURAL FORESTS – A FOREST THAT IS A NATURAL ECOSYSTEM

Forest: land spanning >0.5 hectares with trees higher than 5 meters and a canopy cover of >10%, or trees able to reach these thresholds in situ. It does not include land that is predominantly under agricultural or other land use (FAO definition).

 Quantitative thresholds (e.g., for tree height or canopy cover) established in legitimate national or sub-national forest definitions may take precedence over the generic thresholds in this definition. Natural ecosystem: 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 2

REGIONAL DATA

Regional data bring local knowledge and locally relevant land cover/use classes

- MapBiomas Brazil, Amazon, Atlantic Forest, Chaco, Pampa, Venezuela, Colombia, Ecuador, Peru, Bolivia, Paraguay, Uruguay, Chile, Argentina, Indonesia
- ETH/EcoVision Cocoa Map in Côte d'Ivoire & Ghana
- South Africa National Land Cover
- New Zealand LUCAS Land Use
- European Primary Forest Database



- CORINE Land Cover grasslands
- US National Land Cover Database agriculture & built classes
- Digital Earth Africa cropland

OPERATIONAL DEFINITION OF NATURAL FORESTS:

Tree cover greater than 5 meters in height and more than 0.5 hectares, excluding planted forests grown for wood or wood fiber production or perennial tree crops. Height or minimum mapping thresholds may vary based on local definitions.



VALIDATION AND ACCURACY

Independent accuracy assessment of natural/nonnatural designation by IIASA Overall accuracy of 91.2%

REFERENCE



Validation data set

		Natural	Non- natural	Total	User's Accuracy
MAP	Natural	3540	135	3675	96.3%
	Non-natural	281	770	1051	73.2%
	Total	3821	905	4726	
	Producer's Accuracy	92.6%	85.1%		91.2%

Coming soon: validation of Natural Forests! 3

MAPPING FOREST TYPES: SPATIAL DATABASE OF PLANTED TREES (SDPT)





SDPT



...



Global spatial database of planted forests and tree crops Created by harmoinizing national and regional sources

- V1 launched in 2019
- V2.0 set to be on GFW in Nov 2024

Improvements	V1.0	V2.0
Mode year	2015	2020
Coverage	82 countries	158 countries
# countries with species info	43 countries	52 countries



Reaches near-global coverage

90% of total planted forest area reported by FAO FRA

- SDPT v2.0 264 million ha
- FAO FRA 2020 293 million ha

New planting year information

Carbon removal factors for newly added data



How is it used?

- JRC 2020 forest extent map
- In forthcoming JRC 2020 forest type map
- Expediting inspections of timber shipments
- Estimating carbon sequestration rates

Future:

- V2.1 out soon incorporates more species-specific data sources 'likely-species' attribute
- SDPT v3.0 in 2025

MAPPING FOREST TYPES: FOREST MANAGEMENT





IIASA FOREST MANAGEMENT

Lesiv et al. (2022). Global forest management data for 2015 at a 100 m resolution. Scientific Data, 9(1), 199.)



Past work	Current work
Global Forest management map at 100m	Global Forest management map at 100m
2015	2020
Legend (main FAO forest categories)	More classes: rubber and fruit tree
Input RS: Proba-V 100m	plantations (in compliance with EUDR)
Training and validation data collected by	Input RS: Sentinel 1 and Sentinel 2
experts and in the crowdsourcing	Revised training data set for 2020 with
campaign (Geo-Wiki tools)	additional classes collected mainly by
Methodology: per biome, random forest	experts
	Methodology: testing various models,
	including Cat Boost

TRAINING DATA

- Revising the published training data set 2015 in change areas
- Adding two more classes:
 - Rubber and fruit plantations
- Collecting more data in low accuracy areas



- 11 Forest without any signs of management activities, including primary forests
 20 Naturally regenerating forest with signs of management, e.g., logging, clear cuts
 31 Planted forest
- 32 Plantation forest (rotation time up to 15 years)
- 40 Oil palm plantations
- 53 Agroforestry

FOREST MANAGEMENT NEXT STEPS

- New forest management map May 2025
- The map and training data of open access
- Independent validation by the end of 2025

Geo-Wiki Webpage



MAPPING FOREST TYPES: NATURAL FOREST MAPPING





GOOGLE FOREST TYPES

- Wall to wall forest types 2020 for EUDR
- In development
- Validation using SBTN validation data

WHAT'S NEXT?



COMING SOON TO EUROPE

- Near-real time information: (sub)-weekly alerts showing changes in tree cover
- Enables quick action in response to unplanned changes
- Currently available in the tropics

Actionable data



RADD EXPANSION TO EUROPE (WAGENINGEN UNIVERSITY)

- Covering all EU forest types at 10m
- Technical improvements include e.g. a seasonal model that can deal with droughts and frozen conditions
- Operational in early-2025 on GFW



Small-scale logging in Romanian Carpathian Mountains

Credit: van der Woude, Reiche (Wageningen University)





Large clearcuts in Northern Sweden

GLOBAL ALL LANDS VEGETATON ALERTS (UNIVERSITY OF MARYLAND)

Date of first disturbance detection

2023-09-30

2024-09-30

- <u>New data from</u> <u>NASA/ University of</u> <u>Maryland (UMD)</u>
- Tracks vegetation fraction every 2-4 days
- Based on HLS, 30 m, from 1 Jan 2023
- Identifies anomalies compared to the average vegetation fraction for the same period (+/- 15 days) within the last 3 years
- Potential to monitor all lands and forest types – inc. OWL



KEY TAKEAWAYS

- Satellite monitoring provides wall-to-wall information on status and changes of our forest resources –comparable across countries
- Open data have enormous potential to serve varied EU forest monitoring needs for all stakeholders
- Every dataset has strengths and limitations, however combination of satellite derived information with ground data allows continuous improvements
- Local knowledge is essential to interpret satellite derived information
- GFW is constantly evolving to incorporate the **best and latest global data** and is working with partners to acquire and generate new datasets that fill critical information gaps.
 - Near-real-time disturbance information coming soon to Europe...

THANK YOU

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