GOAL 1: At least halve the rate of loss of natural forests globally by 2020 and strive to end natural forest loss by 2030

Key messages

- We are not on track to meet Goal 1's milestone of halving natural forest loss globally by 2020. Although partly offset by regrowth, natural forests continued to disappear at an increasing rate. Relative to 2001–13, the average gross annual rate of global tree cover loss was 42 percent higher in 2014–17 (the years following the adoption of the New York Declaration on Forests (NYDF) in 2014).
- When considering regrowth, average rates of global net forest loss in 2010–15 declined by 23 percent, compared to a 2000–10 baseline. Regenerated or newly planted trees are unlikely to offset carbon emissions from natural forests, however, and both ecosystem structure and function differ markedly between older and younger forests.
- In the tropics, there are no signs that aggregate gross tree cover loss is slowing: 2017 saw the second-highest gross tree tropical cover loss since 2001. This was fueled in part by continued expansion of agricultural production areas for commodities like palm oil in Southeast Asia and soy in Latin America, as well as fires in the Amazon and hurricanes in the Caribbean. Resolution of the long-standing conflict in Colombia appears to have increased access to forests previously occupied by rebels.
- As with tropical tree cover loss, 2017 was the second-highest year on record for gross emissions from tropical forests. Average annual CO_2 emissions from tropical tree cover loss in 2014–17 increased by 68 percent compared with the baseline of 2001–13, heightening the need for renewed urgency in meeting NYDF and other climate goals.
- One positive development in 2017 was that tree cover loss in Indonesia's primary forests decreased by 60 percent relative to 2016, corresponding to a decrease of 0.2 gigatons of CO_2. This is likely due to Indonesia's peat drainage moratorium, which took effect last year; tree cover loss in protected primary forests on peat soils decreased by 88 percent relative to 2016.

OVERVIEW OF GOAL AND INDICATORS

The NYDF's overarching goal, Goal 1, aims to reduce natural forest loss by 50 percent by 2020 and halt natural forest loss by 2030.

While natural forests clearly do not include monoculture tree plantations, Goal 1 does not specify if the aim is to reduce and then end gross or net loss of natural forests:

- Ending *gross* natural forest loss would mean that, from year to year, there would be no measurable clearing of natural forest area.

- Ending *net* natural forest loss would mean that the measurable area of natural forest regeneration/reforestation would be equal to or greater than the measurable area of gross natural forest loss over a specified time period.

To assess progress toward Goal 1, despite uncertainties and limitations, we used two global data sets as proxies for forest area monitoring to show trends. We used data from Hansen and others from 2013, updated through the year 2017 by Global Forest Watch (GFW)[1] for Indicator 1.1 and data from the Food and Agriculture Organization of the United Nations' (FAO) Global Forest Resources Assessment[2] for Indicator 1.2. Key differences between these two sources of global data are outlined in the *2015 NYDF Progress Assessment*. In last year's *NYDF Progress Assessment*, we added Indicator 1.3 as an additional proxy for monitoring tropical deforestation and associated emissions based on an analysis by Zarin and others in 2016. For this year's assessment, we updated their analysis through the year 2017.[3] The proxy indicators are outlined in Table 1.

Table 1. Criterion and indicators to track Goal 1

CRITERION	INDICATOR
1. Rate of forest loss	1.1 Annual global gross forest/tree cover loss (ha) 1.2 Annual global net natural forest/tree cover change (ha) 1.3 Annual tropical forest loss (ha) and associated carbon emissions ($Mt\ CO_2$)

FINDINGS

Criterion 1: Rate of forest loss

Indicator 1.1: Annual gross tree cover loss

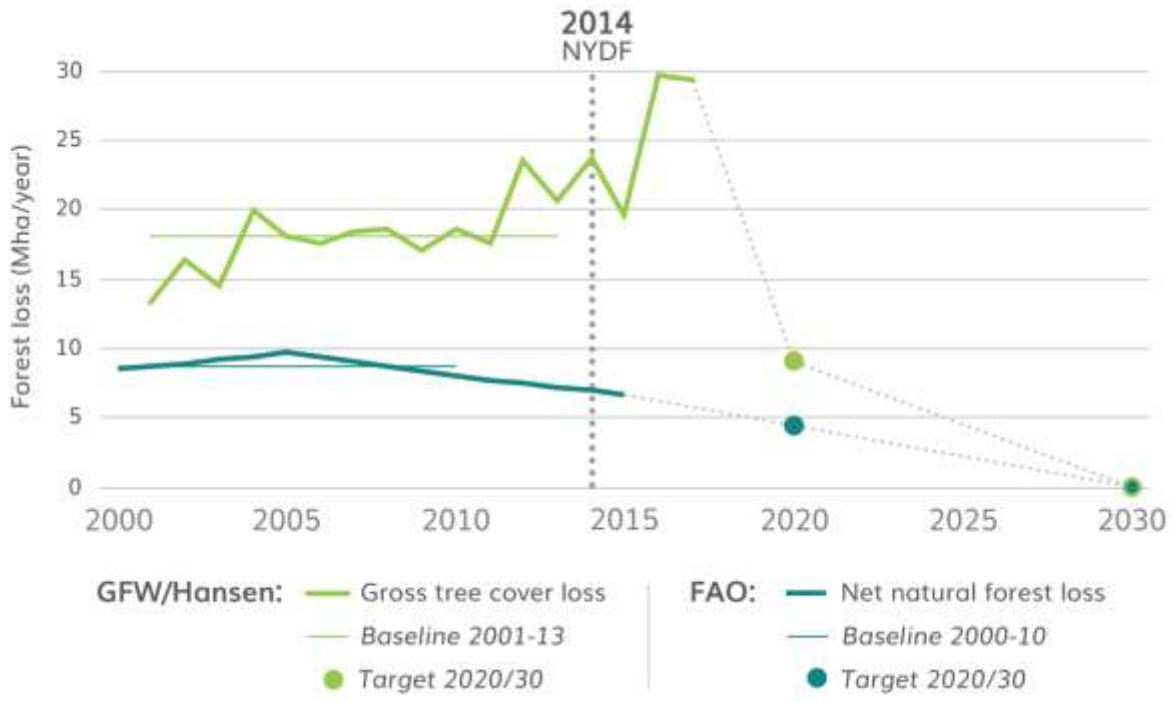
If we consider natural forest loss to be gross tree cover loss, then satellite-based measurements indicate that we are not on track to meet the goal of halving natural forest loss globally by 2020. The global annual rate of gross tree cover loss rose by 42 percent in 2014 to 2017 compared to the 2001 to 2013 baseline (Figure 1). Global tree cover loss in 2017 was the second-highest since measurements began in the year 2000, and just one percent lower than the highest year (2016).

Indicator 1.2: Annual net forest change

If natural forest regrowth is counted as offsetting natural forest clearing, then the annual net loss of natural forest appears to be declining after peaking at 9.7 million hectares in 2005 (see

Figure 1).[4] Compared to a 2000 to 2010 baseline period, average rates of net forest loss in 2010 to 2015 declined by 23 percent.

Figure 1. Forest loss relative to 2020 and 2030 targets, in million hectares



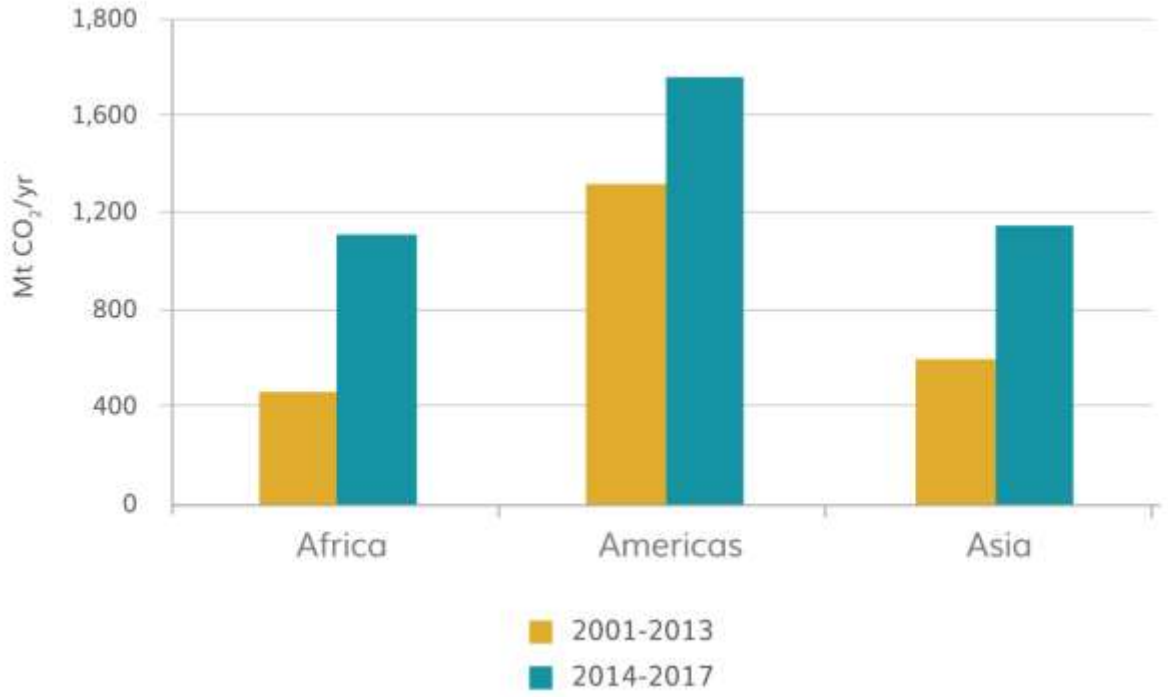
Source: Hansen, M. C., Potapov, P. V., Moore, R., Hancher, M., Turubanova, S. A., Tyukavina, A. et al. (2013). Tree Cover Loss (Hansen/UMD/Google/USGS/NASA). Global Forest Watch database.; Food and Agriculture Organization of the United Nations. (2015). *Global forest resources assessment 2015*. Rome: FAO.

Note: For the Hansen/Global Forest Watch estimates, the line represents the default crown cover threshold of 30 percent. For FAO, the line represents a crown cover threshold of 10 percent.

Indicator 1.3: Gross tropical tree cover loss and associated carbon emissions

In the tropics, rates of gross tree cover loss and associated carbon emissions are increasing. Gross tree cover loss in tropical countries totaled 14.2 million hectares, with associated emissions of 4.6 gigatons of CO_2 in 2017.[5] Although tropical tree cover loss was lower in 2017 than in 2016 (the highest year yet), it was 34 percent higher, and emissions were 36 percent higher, than in the next-highest year, 2014. Moreover, based on an updated analysis[6] of Zarin and others, average annual emissions from tropical tree cover loss over 2014 to 2017 were 68 percent higher than over the historical average benchmark period of 2001 to 2013. Relative emissions in Africa increased the most on a percentage basis between these two periods, followed by Asia and Latin America (Figure 2, Figure 3). One positive development in 2017 was that tree cover loss in Indonesia's primary forests decreased by 60 percent relative to 2016, corresponding to a decrease of 0.2 gigatons of CO_2.[7] This is likely due in part to Indonesia's peat drainage moratorium, which took effect last year; tree cover loss in protected primary peat swamp forests decreased by 88 percent relative to 2016.

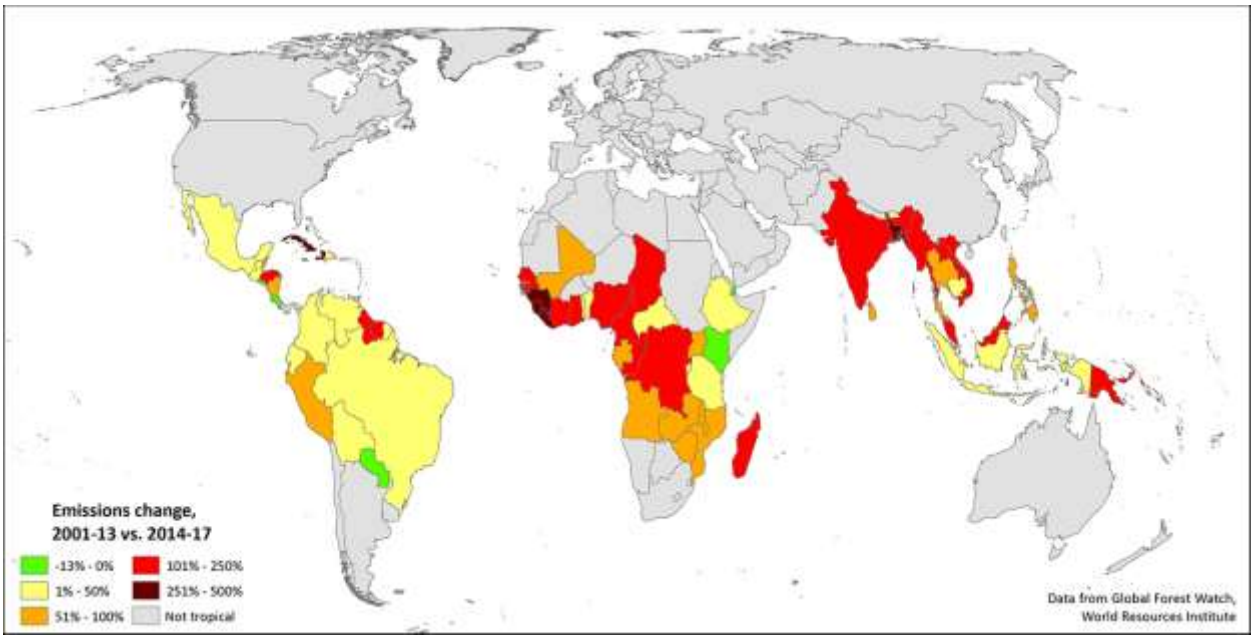
Figure 2. Average annual emissions from tropical tree cover loss, in megatons of CO_2



Source: World Resources Institute analysis based on data provided by University of Maryland, the Woods Hole Research Center, and Global Forest Watch.

Note: Analysis includes forests with greater than 25 percent tree cover density.

Figure 3. Increase in average annual CO_2 emissions from tropical gross tree cover loss between 2001–13 and 2014–17, in percent



Source: World Resources Institute analysis based on data from University of Maryland/Global Forest Watch.

Note: Negative values represent decreases in emissions.

Average annual emissions from gross tree cover loss increased in over 70 tropical forested countries in 2014 to 2017 compared with the 2001 to 2013 baseline (see Figure 3). Some of the largest percent increases in forest loss occurred in West Africa; for example, of the 10 countries[8] with the greatest percent increases in tree cover loss, seven were in Africa (six of which were in West Africa), two were in the Caribbean, and one was in Asia.[9] Paraguay was the only sizeable forested country with lower average annual emissions in the last four years compared with the baseline period. The almost universal increase in tropical tree cover loss and emissions heightens the urgency for redoubling efforts to meet NYDF and other climate goals.

Data developments

There is still no globally consistent data source that estimates the extent or rate of loss of natural forests worldwide, but several new data developments are underway that are making progress toward addressing this limitation.

- **Mapping global plantations.** Global Forest Watch is compiling and synthesizing the best available spatial information on the extent and geographic location of the world's planted forests and agricultural tree crops into a global Spatial Database of Planted Trees (SDPT). This mapping effort will allow GFW to report more confidently on areas of tree cover change in natural forests. The map can be used to track national and global progress toward major international commitments related to forests, climate, and biodiversity. The SDPT will continually evolve and improve as new data are produced by governments and independent researchers. Version 1.0 of the database is expected to be published in October 2018.
- **Thirty-four countries submit "forest reference levels" to the United Nations Framework Convention on Climate Change**. Over the last 10 years, significant progress in forest area change monitoring has been made across many developing countries, driven largely by increased donor support in the REDD+ context.[10] This is reflected by the increasing number of countries developing and/or submitting for international review their forest reference emission levels, which include estimates of historical deforestation and emissions from deforestation. By early 2018, 38 reference levels had been submitted from 34 countries. Comparing global and national approaches to estimating deforestation rates in these countries, Harris and others[11] found in 2018 that the gross tree cover loss data of Hansen and others represent a reasonably accurate, unbiased, and consistent way to monitor deforestation across tropical REDD+ countries.
- **Tracking global tree cover gain.** While the Global Forest Watch platform currently reports only gross tree cover loss on an annual basis, forthcoming data on global gross tree cover gain, scheduled for release by GFW in the coming year, will allow for the annual monitoring of regrowth and re-establishment of the tree canopy. As a precursor to this data product, in August 2018, Song and others published an analysis showing that over 35 years from 1982 to 2016, there was a global net gain in tree cover resulting from a net loss in the tropics being outweighed by a net gain outside the tropics.[12]This result is contrary to the prevailing view that forest area has declined globally, as reported by the FAO. The authors acknowledge definitional differences between their tracking of "tree cover" and the FAO's reporting of "forests," though Song and others' finding on gross

tree cover loss roughly matches the FAO's figure of forest loss since 1990. Their results underscore the importance of monitoring both gross and net changes in forest area to improve our understanding of how and where these changes are affecting the maintenance of important ecosystem services.

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[1] Hansen, M. C., Potapov, P. V., Moore, R., Hancher, M., Turubanova, S. A., Tyukavina, A. et al. (2013). Tree cover loss (Hansen/UMD/Google/USGS/NASA). Global Forest Watch database.

[2] Food and Agriculture Organization of the United Nations. (2015). *Global forest resources assessment 2015.* Rome: FAO.

[3] Zarin, D.J., Harris, N.L., Baccini, A., Aksenov, D., Hansen, M.C., Azevedo-Ramos, C., et al. (2016). Can carbon emissions from tropical deforestation drop by 50% in 5 years? *Global Change Biology*, *22*.

[4] Food and Agriculture Organization of the United Nations. (2015). *Global forest resources assessment 2015.* Rome: FAO.

[5] Estimate includes above-ground biomass carbon pool only; other pools are excluded from this estimate.

[6] In the original analysis of Zarin et al. (2016), all or part of the global datasets were replaced or supplemented with national-level data for Brazil, Indonesia, Democratic Republic of the Congo, Malaysia, Colombia, Ecuador, Guyana, and Mexico. These countries cumulatively accounted for two thirds of the historical average emissions benchmark. In the absence of annual updates from some countries listed above, we reverted to the use of Global Forest Watch's gross tree cover loss and biomass loss as proxies for deforestation and emissions for all countries. Emissions and tree cover loss are reported for the entire area of every country except Indonesia and Democratic Republic of the Congo, which shows tree cover loss and emissions just within primary forests, and Malaysia, which shows data only for outside plantations (based on the Transparent World plantation boundaries). We did not use SEEG (System for Estimating Greenhouse Gas Emissions) data for emissions from Brazil because they were not available at time of publication. Emissions and tree cover loss are only for areas with greater than 25 percent tree cover density.

[7] Global Forest Watch.

[8] Considering only countries with an annual tree cover loss average of more than 60 hectares per year between 2001 and 2013.

[9] Global Forest Watch.

[10] Romijn, E., Lantica, C.B., Herold, M., Lindquist, E., Ochieng, R., Wijaya, A., et al. (2015). Assessing change in national forest monitoring capacities of 99 tropical countries. Forest Ecology and Management, 352.

[11] Harris, N., Davis, C., Goldman, E.D., Petersen, R., & Gibbes, S. (2018). *Comparing global and national approaches to estimating deforestation rates in REDD+ countries*. Working Paper. Washington, DC: World Resources Institute.

[12] Song, X.P., Hansen, M.C., Stehman, S.V., Potapov, P.V., Tyukavina, A., Vermote, E.F., & Townshend, J.R. (2018). Global land change from 1982 to 2016. *Nature*.