

ACTIVITY BASED ACCOUNTING RULES FOR FOREST CARBON ACCOUNTING (April 25, 2025)

NOTE: These proposed rules would apply to biogenic carbon from harvest and use of wood products, including biogenic removals occurring on existing or new forest lands. The reference to net biogenic carbon emissions includes removals and a negative, net emission would be a net removal. Harvesting and using wood involves other emissions, such as those from fossil fuel use, and these need to be assigned as appropriate and in the appropriate scope. Emissions from substitute products will also enter into the emissions inventories of companies. If companies use wood products to replace alternatives, this will happen automatically because of reduced reporting of emissions from the alternatives. To avoid double-counting, substitution benefits are therefore not deducted from the emissions of wood products or forestry.

SCOPE 3 RULES: Scope 3 land management net biogenic carbon emissions from the use of wood products shall be included as a separate category for land management net biogenic carbon emissions. They are based on the sum of the emissions of wood products that are in the supply chain of a reporting company. The scope 3 land management net biogenic CO₂ emissions of a wood product, which shall also be used for product-level accounting, shall be the change in the total, biogenic terrestrial carbon stocks due to wood harvest and/or associated forestry management used to generate that wood product relative to the carbon that would be stored without that harvest, wood use and associated forestry management. Biogenic terrestrial carbon stock includes carbon stored in any wood “pool” either within or outside the forest. The analysis shall be based first on estimating the biogenic effects of producing and using wood biomass, and then of allocating these effects to different primary wood products. This method separately assesses the effects of wood harvest and use from the effects of forest management, and the combined effect determines the emissions of a wood product.

Scope 3 emissions are the sum of the “effects of harvest and subsequent use” and the “effects of management through artificial regeneration or that otherwise increase productivity.” These net emissions are first calculated for all harvested roundwood and then allocated to products or co-products based on specific requirements.

Note:

Effects of harvest and subsequent use: The biogenic effects of harvest and subsequent use of roundwood shall be measured by estimating changes in the biogenic terrestrial carbon stock of all wood carbon storage pools as a result of the wood harvest 30 years after harvest. Pools shall include the following:

Terrestrial carbon pools: Terrestrial carbon pools include forest carbon pools and external wood pools:

- *Forest carbon pools:* These pools shall include live above-ground vegetation, live below-ground vegetation, standing and downed dead wood (including slash, felled saplings and other wood downed), and forest floor and soil organic carbon pools. (Slash includes all downed vegetation added to the forest floor carbon pools due, and all wood pools suffering mortality, due to harvesting or forest management activities.)
- *External Wood Carbon Pools:* These pools include carbon stored in all wood products prior to decomposition or combustion, and after they are used, when stored in landfills.

Please note that carbon that remains stored in a wood product is not emitted. Other language for the land sector standard was developed previously, which sets separate rules for counting product storage. Product storage is optional and reported under additional categories. This makes sense because product storage is not a “removal.” It simply represents a transfer of carbon into wood products that has already been removed from the atmosphere, typically through growth into trees. This product language was developed under the assumption of using MLP, and since there were almost always no emissions associated with harvesting wood, it would be more than double-counting to then treat product storage as a removal.

This language does not recognize product storage as a removal but simply the lack of an emission: If carbon is stored in a product, it has not been emitted. This is not only appropriate but necessary to accurately reflect what are truly emissions and what are not. In fact, this difference highlights differences with the MLP. Because the MLP makes it inappropriate to recognize that carbon stored in products is not emitted, it cannot distinguish between the effects of harvesting wood for long-lived construction and harvesting wood for direct combustion or paper use. These have different climate effects as one emits carbon and one does not. It highlights how the MLP, by not accounting for the real effects on atmospheric carbon, does not incentivize better uses of wood (often represented with the language, circular economy).

Because carbon stored in products is not an emissions, companies reporting any product carbon storage separately should make clear that this product storage has already been counted as a non-emission. The language addressing product storage language, which was developed under the assumption of a MLP, should therefore be revisited.

Allowable methods: Companies may use one of the following methods to measure the aggregate changes to the terrestrial carbon pools due to roundwood harvests:

Committed emissions approach without estimating subsequent forest carbon growth: Under this approach, companies shall account for changes in both forest and external wood carbon pools estimated to occur due to the harvest 30 years after the harvest. The committed emissions pools shall be based on best available scientific estimates for changes in carbon stocks following harvest activities and wood uses that occur by the end of 30 years. Losses of carbon occur due to decomposition of slash, roots, and other wood felled or suffering mortality due to the wood harvest, wood burned as a final energy product, wood that decomposes or is burned as a waste in the production of other wood products, and wood decomposing in landfills or from any other storage method after human use. Methane from wood in landfills shall also be counted based on its GWP₁₀₀ global warming potential. Under this approach, neither foregone growth, nor other changes of carbon stocks in forests if not harvested, nor regrowth of forests after harvest shall be counted.

Committed emissions with subsequent growth option: Companies shall account for changes in all wood pools after 30 years using the committed emissions approach except that the net effects of the harvest on subsequent growth of forest carbon storage pools over the 30 years following harvest shall also be counted.

- Such net effects shall be based on the estimated changes in the aggregate of forest carbon storage pools due to forest growth post-harvest minus the estimated changes in those pools without the harvest from the date of harvest.
- Companies choosing this subsequent regrowth option shall estimate regrowth based on typical levels of regrowth for the forests in question based on the area of traceability while using conservative estimates where traceability is limited.
- Growth estimates post-harvest shall assume the same forest types and conditions of the forest and shall account for prevailing forest management practices of that type and under those conditions in the area harvested.

Explanation of 30 years: Any emissions from land use change assigned to a product depend on the period used to evaluate the effect on the climate. For example, when land is cleared for agricultural use, the products generated may in theory be produced indefinitely. If emissions were assigned to all agricultural products generated indefinitely, land use emissions would become infinitely small. The decision to assign emissions to products based on a shorter time frame instead represents a judgment about the importance placed on shorter-term rather than longer-term mitigation. This has many reasons, including damages that are avoided in the short-term that would otherwise not have occurred, the reduced risk of crossing tipping points, and the effort to extend the time at which the most serious damages might occur to allow new mitigation technologies to develop. The 30-year period represents roughly how policymakers committed to climate stabilization have been addressing mitigation in practice. Examining net effects after 30 years

means that only mitigation that has actually occurred by 30 years counts. It also serves as a proxy for the formal use of a discount rate that values earlier mitigation more than later mitigation indefinitely. (See the modest effects of varying discount rates discussed in Peng et al. Nature 2023).

Effects of prior management through artificial regeneration or that otherwise increases productivity:

If the specific forest lands harvested to produce the relevant roundwood have been subject to significant management activities since 1990 that have altered productivity since that time, and this management has altered the carbon stock on the date of harvest, the increases or decreases in carbon stocks shall reduce or increase the emissions of each product at both the product level and as incorporated into Scope 3 inventories:

- If management of the lands harvested increased the cumulative carbon stock at the time of harvest of above the stock that would have prevailed in the absence of management, these increases shall be deducted from the net emissions.
- If management decreased the carbon stock at the time of forest harvest below the carbon stock that would have prevailed in the absence of management, this decrease shall be added to harvest emissions.
- Forest carbon stocks shall include all carbon pools and not merely merchantable timber.
- Companies using this approach shall not use the committed emissions with subsequent growth method. *[Note: the rationale for this is that companies can claim benefits for forest management pre-harvest or after harvest, but not both. Assigning the benefits to both would double-count the effects of management.]*

Special rules for short-rotation plantations: For roundwood harvested from planted forests harvested on a rotation of 30 years or less, the above rules shall apply except that the change in forest carbon stocks due to a forest harvest shall be based on the average change in carbon stock during the life of the rotation due to use of land as a plantation while accounting for the years of use. The formula shall be as follows:

$$(\text{CARB}_{\text{nat}} - \text{CARB}_{\text{plantavg}}) * \text{ROT}_{\text{plant}}/30$$

In which:

CARB_{nat} = the carbon stock of native vegetation of land used for the plantation

$CARB_{plantavg}$ = the average carbon stock of the plantation over its rotation period

ROT_{plant} = the number of years of the rotation of the plantation

Hectare example:

Carbon stock of native vegetation (all forest pools) = 120 tonnes of carbon;

Average carbon stock of plantation over its rotation (all forest pools) equals 80 tonnes;

Rotation is 15 years.

Carbon loss of the hectare = $(120-80) \times (15/30) = 20tC/ha$.

Explanation: Short-term rotation plantations are similar to agriculture. However, that does not make the use of land emission-free. If not converted to a plantation or otherwise used by people, the land could and likely either would: (a) grow and sequester carbon in native vegetation or (b) continue to store carbon as a native plant type. The difference between these carbon stocks and those of the plantation represents an average carbon loss due to the use of land for forestry. However, the effect of the use of the land as a plantation can be estimated per year over 30 years assuming that is the period used to evaluate climate effects. The emissions then assigned to the wood generated depend on the sum of these per year estimates. The formula above does this. This in effect uses carbon opportunity costs, which the land sector protocol recommends for agricultural use.

Sourcing area and forest types:

In general: Land management net biogenic emissions for roundwood shall be based on the net emissions of the weighted average wood harvested from the sourcing area to which it is traced following traceability requirements and recommendations (See interim traceability requirement in the LSR Standard).

Specific forest types: If specific wood products can be provably sourced from a particular forest type or tree type within that sourcing area, and for which reliable information can be used to estimate the changes in carbon stock as a result of the generation of that product in accordance with the rules specified here, the emissions can be based on estimates using that specific forest type.

Note: In estimating emissions from wood, one issue is the area to which it can be traced, and another issue could be the forest type to which the wood can be traced. For example, it might be possible to trace wood products to the Southeastern United States, which would be the sourcing area, but also possible, because of the wood type, to estimate that it comes from loblolly pine plantations. This language

means that in such a context, loblolly pine plantations could be used for estimating the changes in terrestrial carbon stock over time.

Wood product categories: The biogenic carbon of wood products shall generally be analyzed using the following categories to account for net emissions per ton of wood by dry matter used for each product although more refined categories may be used:

- Fuel wood burned directly
- Fuel wood used as wood pellets
- Fuel wood used as charcoal
- Wood devoted to pulp and paper use
- Wood devoted to panels
- Wood devoted to sawn timber products and veneer other than construction
- Wood devoted to sawn timber products used for construction

Biogenic emissions include emissions from decomposition of any wood wasted in converting that biomass into a final wood product except to the extent wood wastes are used for alternative products and emissions are allocated according to allocation rules to these alternative products

Allocation of land management net emissions from roundwood to specific wood products: In assigning land management net biogenic emissions from roundwood to products or co-products of the roundwood, the following rules shall apply.

In general: Net land management biogenic emission shall first be assigned to all roundwood generated in accordance with methods described above. These emissions shall then be assigned to the different products generated on roundwood from that stand based on economic allocation based on the value of the wood type prior to incorporation into each product.

Allocation Rules for fuel wood: The following allocation rules applies to fuel wood:

- If whole trees are harvested for use as fuel, all net biogenic emissions shall be allocated to the fuel wood.
- For wood used as a fuel that is a portion of harvested trees and such a portion is physically capable of being used to produce non-energy wood products, its net land management biogenic emissions shall be allocated based on percentage of dry matter.

- Wood used as fuel wood means wood that is providing energy for purposes other than energy used in generation of other wood products. The portion of wood burned as a waste or for energy use during the production of other wood products shall not be treated as a wood fuel or separately assigned product emissions but when burned, its net land management biogenic emissions shall be assigned to the wood products generated.

SCOPE 1 RULES: The following rules for accounting net land management biogenic carbon emissions under Scope 1 shall apply to forests owned or controlled by a company that qualify and are selected by the company under consolidation rules for defining Scope 1 land areas. *[Note: The GHG Protocol has general rules that allow companies to select from among different consolidation approaches for defining scope 1.]*

General rule: Net emissions or removals for forested lands owned or controlled by a company shall be based on the sum of:

- (1) Harvest emissions: the net effects of harvest on aggregate terrestrial carbon pools both internal and external to forests due to wood harvests;
- (2) Forest management emissions: At the choice of the company, the effect of forest management activities, including harvest, on forest carbon accumulation rates.

If the sum results in net emissions, these shall be reported as land management net biogenic carbon emissions in Scope 1. If the sum indicates removals, these shall be reported as land management biogenic removals in Scope 1 but shall be subject to general removals requirements in accounting for such removals.

Harvest emissions: The effects of wood harvest for Scope 1 shall be based on changes in all terrestrial carbon pools due to the wood harvest without estimating subsequent forest harvest regrowth. A company may use one of two approaches to estimate these emissions:

- The committed emissions approach as described for Scope 3;
- An approach that accounts for and reports carbon losses that occur each year from the year of harvest for up to 30 years. In each year, this estimate shall be based on the estimated total losses of carbon from each carbon storage pool from both that year's harvests and carbon losses in the current year associated with harvests that occurred in the previous 30 years. Companies using such a method must be able to estimate and include ongoing carbon losses from wood harvests that occurred over the previous 30 years.

Forest management emissions: A company may incorporate into its accounting of forestry emissions an estimate of the effects of forest management and harvest on forest carbon accumulation rates and changes in forest carbon pools that specifically result from these changes in rates. If companies do so, they must have reasonable information to establish that management activities and harvests have led to an increase in forest growth rates and carbon stocks due to the management of forests since 1990 relative to the growth that would occur without such management and harvest. If forests have been harvested since 1990, companies may also estimate increased growth rates as a result of that harvest relative to the predominant native forests of that land area and of the same stand age. In making this estimate, companies may use one of the following methods:

- If sufficient reliable information is available, companies may compare the forest carbon growth of a forest area with that of similar, unmanaged forests of the same stand age, or
- Companies may use forest growth models that reliably estimate the effects of management and/or harvest on forest carbon accumulation rates and resulting stock changes.

Terrestrial carbon storage pools: Carbon storage pools shall be defined as they are defined for Scope 3.

Smoothing: Companies harvesting differential quantities of roundwood in different years shall separately report net forestry emissions or removals that occur each year but may account for emissions or removals based on a rolling annual average of up to 30 years except that they may only use a length of period for which they have reliable data.

Conversion of agricultural land to forest: If companies plant trees on pre-existing agricultural land since a baseline year on which they have reported emissions, they may account for the carbon stock gains as removals, but they shall report the average, annualized carbon losses to replace foregone food production as leakage and report net removals after deducting this leakage.

Reporting of changes in carbon stocks: In addition to the accounting above, if companies can do so with reasonable effort, companies are recommended to report aggregate changes in forest stocks on Scope 1 lands in a separate reporting category called “Changes in Forest Carbon Stocks.” Such changes shall not count as emissions or removals and shall not be aggregated with emissions and removals.

Aggregation of removals: Removals due to forest management and harvest shall only be aggregated with emissions from forest management and harvest, and not with any other emissions categories required by the GHGP, unless emissions from leakage are also estimated, reported and included in the aggregation.

TARGET SETTING RECOMMENDATIONS: Target-setting for the provision and consumption of wood products should be based on reducing the emissions intensity of wood products such that, if universally met, the provision and consumption of wood products would achieve a global emissions target for such activities sufficient to meet 1.5 degree targets.

Target setting for Scope 1: Companies that produce wood products are recommended to set targets that reduce the emissions intensity of their contributions to the major categories of wood products they provide to a level that if universally met, would keep emissions from wood products to the target level while still meet rising global demand for such wood products.

Target-setting for Scope 3: Companies that purchase wood products should set targets that reduce the emissions intensity of major categories of wood products to a level that if universally met, would satisfy rising global demand for such wood products while meeting these global targets for production and consumption.