International Standard

ISO 13391-3

First edition
2025-04

Wood and wood-based products — Greenhouse gas dynamics —

Part 3: Displacement of greenhouse gas emissions

Produits en bois et dérivés du bois — Dynamique des gaz à effet de serre —

Partie 3: Déplacement des émissions de gaz à effet de serre

Reference number
ISO 13391-3:2025(en)

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CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
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This document was prepared by Technical Committee ISO/TC 287, *Sustainable processes for wood and wood-based products*.

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Introduction

0.1 Overview

The United Nations Framework Convention on Climate Change (UNFCCC)[2] names two overarching goals for climate change mitigation:

— "[…] control, reduce or prevent anthropogenic emissions and of greenhouse gases in all relevant sectors […]"; and

— "[…] conservation and enhancement, as appropriate, of sinks and reservoirs of all greenhouse gases including biomass, forests and oceans as well as other terrestrial, coastal and marine ecosystems".

Wood-based products often have lower value chain greenhouse gas emissions than alternative materials or systems, which provides an advantage in achieving climate goals and commitments.

Forest and climate policy efforts that solely focus on the forest carbon balance under the second goal miss out on an equally important task that the forest sector has, which is to reduce greenhouse gas emissions in other sectors through displacement.

However, displacement benefits from the use of harvested wood products (HWPs) cannot be attributed directly to the forest sector, even though wood-based products play a role in achieving reductions in greenhouse gas emissions. This reduction is observed in the decrease of greenhouse gas emissions in the relevant industrial sector for the displaced material(s). The calculation of displacement potential offers an opportunity for quantifying this information to better observe the impact of wood-based products.

Calculation of displacement potentials refers to comparing wood-based products with alternative non-wood-based and wood-based products that would fulfil the same functions in society. The displacement potential can be a useful way for organizations to highlight greenhouse gas emissions avoided outside of the wood-based value chain through the use of wood-based products when the alternative products have higher fossil fuel-based greenhouse gas emissions. The aim of this document is to specify overarching requirements on how to make relevant assumptions, not to establish product specific data.

Assessment of the displacement potential of wood-based products is informed by life cycle assessments (LCA) to compare greenhouse gas emissions between different wood-based and alternative product choices fulfilling the same function. The displacement potential represents the difference between greenhouse gas emissions for the wood-based product(s) and prevented greenhouse gas emissions from the alternative product(s). As this document aims to provide results at the organizational or other aggregated level, displacement potentials are calculated for the entire volume of wood-based products considered when calculating the overall greenhouse gas dynamics of wood-based products.

Displacement potentials are calculated to contribute to a fuller picture of the greenhouse gas dynamics of using wood-based products. This complements the components described in ISO 13391-1 and ISO 13391-2, relating to the value chain greenhouse gas emissions (embodied carbon) of wood-based products, storage of carbon in wood-based products and the carbon balance within the forest. Displacement potentials include the assessment of greenhouse gas emissions from alternative products. These counterfactual emissions are distinct from the direct or indirect emissions caused within the wood-based value chain and are therefore not part of greenhouse gas inventory reporting methodology at the organizational level.

0.2 Key considerations and limitations

Calculating the displacement potential adds a useful dimension when assessing the climate impact of the forest-based sector. However, it is a relatively new field. It is essential for any assessment of the displacement potential based on this document to recognize the limitations created by the system boundaries set to conduct the calculations, which exclude the broader market effects of placing wood and wood-based products on the market. This document does not allow its users to claim to what extent the displacement potential and the associated climate change mitigation will actually be realized.

Displacement potential calculations are based on a counterfactual scenario about what other materials would have been used in the absence of wood. This requires a technical assessment informed by life cycle assessment data for wood-based products and the alternative products they potentially displace in each

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context (e.g. buildings, packaging, energy). While the greenhouse gas emissions prevented by using a wood-based product instead of its alternative can be assessed, it is not, on a product level, possible to verify whether this change takes place.

Many factors influence the realization of a displacement potential, as complex market dynamics and a growing world economy do not necessarily lead to less production of alternative products. Effects of market dynamics and changing consumption patterns are not addressed in the methodology proposed by this document.

In contexts external to this document, displacement potential would be used to evaluate the additional benefit of wood-based products displacing alternative products, especially in the case where new displacement occurs, or a shift in consumption patterns is observed. However, such analysis requires a large amount of data about the wood-based products' markets, with a level of detail which is often not available. It also requires data for all markets of alternative product(s), current market shares and relevant environmental product declarations (EPDs) or life cycle assessments (LCAs). This is not practicable at an organizational level at this time.

The displacement potential that an organization reports using this document reflects all the wood-based products they placed on the market, regardless of whether they enter pre-existing wood-dominated markets or not. Comparing subsequent reports, the difference between reports will reflect increases or decreases of volumes of different products sold, shifts in the market which have occurred relative to alternative products, alterations in the EPD values of the wood-based products and their alternative products, etc. Therefore, it is possible to build a trend of displacement potential achieved over time. Such information is of wider application outside this document, for example in tracking organizational contribution to climate change mitigation. Further insights can follow from a wider market analysis, investigating the extent to which the wood-based product category increases its market share over time, at the expense of the alternative products.

Data availability and assumptions made to realize the calculations of the displacement potential can lead to bias and have an impact on the result, impacting the estimation of the displacement potential.

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Wood and wood-based products — Greenhouse gas dynamics —

Part 3: Displacement of greenhouse gas emissions

1 Scope

This document provides a methodology for determining the greenhouse gas emissions from alternative products (or a representative mix of alternative products). It also provides a methodology for calculating the displacement potential for wood and wood-based products.

NOTE "Emissions from alternative products" is a term defined in ISO 13391-1.

This document also deals with situations that do not lead to displacement.

This document is intended to be used by organizations seeking to understand, commit to or contribute to climate change mitigation. These organizations can be either private or public, regardless of type or size, and located in any jurisdiction or any position within a specific value chain.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 13391-1, *Wood and wood-based products — Greenhouse gas dynamics — Part 1: Framework for value chain calculations*

ISO 14025, *Environmental labels and declarations — Type III environmental declarations — Principles and procedures*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 13391-1 and the following apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1
displacement factor
quantity of potentially avoided greenhouse gas emissions due to displacement relative to the quantity of biogenic carbon within the wood-based product which is displacing the alternative product(s)

Note 1 to entry: Measured in quantity of avoided greenhouse gas emissions per quantity of biogenic carbon (expressed in t CO_2e/t CO_2e).

Note 2 to entry: “Displacement”, “wood-based product” and “greenhouse gas” are defined in ISO 13391-1:2025, 3.3, 3.23 and 3.7.

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