AN EMERGING FRAMEWORK FOR TIMBER BUILDINGS

POLICY AND STANDARDS BRIEFING

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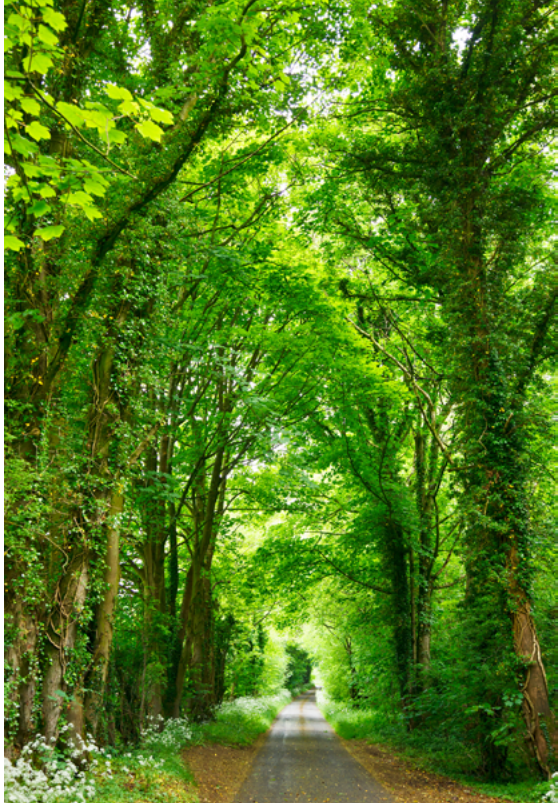
CONTENT

PURPOSE OF THIS BRIEFING

This briefing presents an overview of recent developments in policy and standards and their direct implications for stakeholders and experts in the construction sector and timber industry. It will help stakeholders anticipate and prepare for forthcoming policy and standardisation changes as we provide insights into how these sectors can align their practices with environmental best practice.

This briefing is intended for professionals, policymakers, and advocates within the construction sector and timber industry, and provides them with actionable information to navigate the evolving policy landscape.

SUMMARY



This briefing explores recent developments in two major EU legal frameworks which impact forests, wood, and construction:

- **The Renewable Energy Directive (RED III)**
- **The Construction Products Regulation (CPR)**

In 2023, a revised Renewable Energy Directive entered into force, seeking to operationalise the often mentioned but seldom applied 'cascading use principle'. This principle will help prioritise long-lasting uses of forest biomass (typically construction) instead of shorter uses such as paper packaging, and incineration.

The new requirements of the RED III are discussed in the first section of this briefing, as well as their context and implications for the construction sector. In the second part of the briefing, we present the CPR Acquis - the process initiated by the new CPR to update the existing framework of standards for construction products - and we assess its relevance for timber construction products.

POLICY AND STANDARDS DEVELOPMENT IN THE FIELD

Implementing the cascading use principle in the EU

Cascading wood use – a concept lost in the woods

Forests provide solutions to climate change by sequestering carbon from the atmosphere, as well as providing renewable materials and ecosystem services both locally and globally. Yet forests themselves are also under increasing threat from climate change. We need to use the available wood in Europe more sustainably to preserve both forest ecosystems and wood resources. This means longer wood product lifespans, improved circularity from reuse and recycling, burning less wood for energy, and adopting forest management approaches that maximise the ecological and social functions of forests, instead of focusing solely on wood production.

Using data from the 2023 State of the Energy Union report, we can estimate that forest biomass represented nearly 30% of Europe's renewable energy supply in 2021, or 263 million cubic metres (Mm^3).[1,2] The report also indicates that between 2008-2021, fuelwood, wood residues, and by-products increased by 29.5% and wood pellets by 413% - marking a very high increase in wood incineration for energy.

The EU Joint Research Centre (JRC) collects and analyses information from EU Member States about wood uses.[i] The JRC has found that the cascading use principle is not effectively applied in Europe - wood burning from both primary and secondary wood has increased faster than wood material applications.[3]

- Between 2009-2017, wood used for material applications and burned for energy increased, but energy incineration grew proportionally more than material uses.
- The share of secondary wood products increased by more than 50 million Mm^3 between 2009-2017, representing 48% of the wood incinerated for energy or 201 Mm^3 in 2017.

i Consult the JRC's Interactive Sankey diagrams of woody biomass flows in the EU and Member States here : https://knowledge4policy.ec.europa.eu/visualisation/interactive-sankey-diagrams-woody-biomass-flows-eu-member-states_en

- Secondary wood that successfully cascaded into further material applications increased slightly by 10 Mm^3 between 2009 and 2017, representing 73 Mm^3 in 2017. This figure is much lower than secondary wood that is burned instead of maintained in material use.

The JRC also concluded in recent studies that Member States underreport significant volumes of woody biomass, including felling volumes and wood used for bioenergy. It seems possible that even more primary wood is incinerated directly without first being used in material products.

The cascading use principle under the Renewable Energy Directive III

In November 2023, the revised Renewable Energy Directive (RED III)[4] entered into force. It provides new incentives and rules to support the deployment of renewable energies and to meet the target of 40% share of renewables in the EU energy mix by 2030. The RED III also introduces principles and rules for Member States to **prioritise the use of woody biomass in material applications, before burning wood for energy.**

Citing Article 3(3) of the RED III:

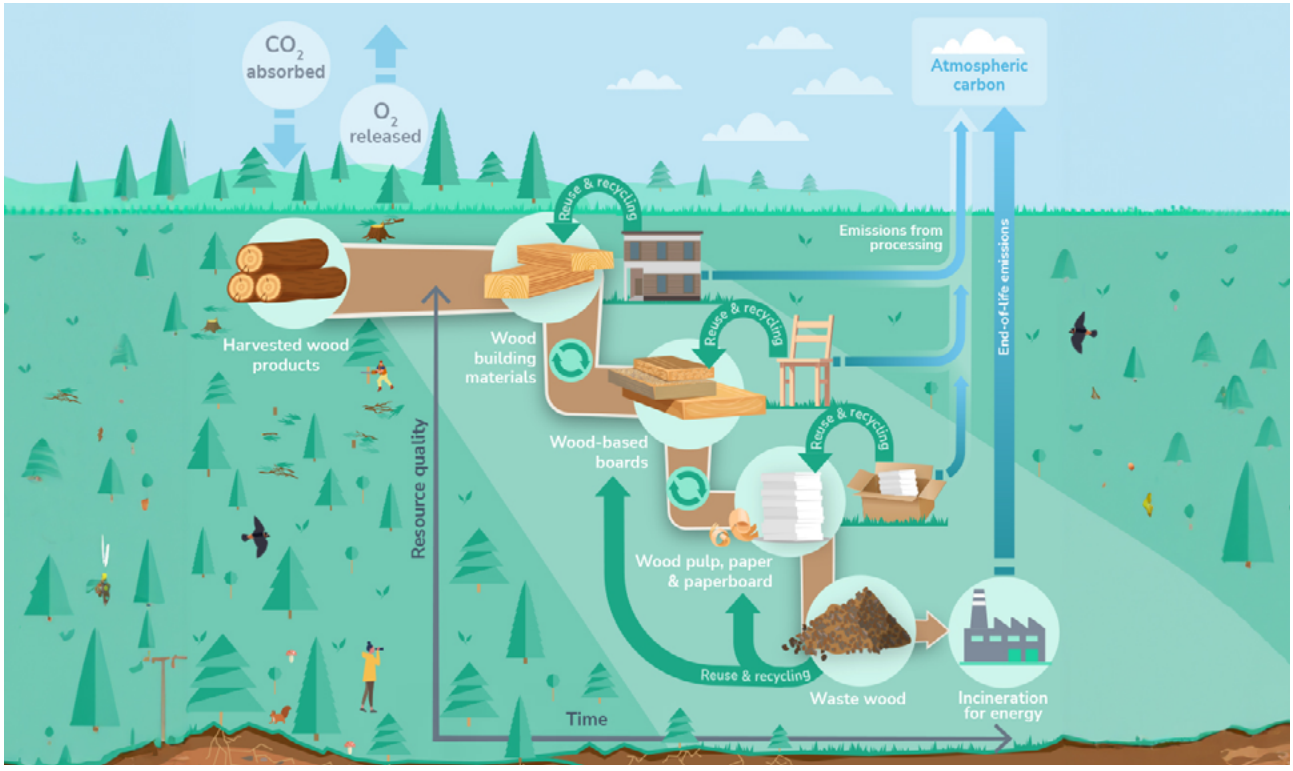
'Member States shall take measures to ensure that energy from biomass is produced in a way that minimises undue distortive effects on the biomass raw material market and an adverse impact on biodiversity, the environment and the climate. To that end, they shall take into account the waste hierarchy set out in Article 4 of Directive 2008/98/EC and shall ensure the application of the principle of the cascading use of biomass, with a focus on support schemes and with due regard to national specificities.

Member States shall design support schemes for energy from biofuels, bioliquids and biomass fuels in such a way as to avoid incentivising unsustainable pathways and distorting competition with the material sectors, with a view to ensuring that woody biomass is used according to its highest economic and environmental added value in the following order of priorities:

a) wood-based products;
b) extending the service life of wood-based products;
c) re-use;
d) recycling;
e) bioenergy; and
f) disposal.'

Article 3(3) clearly sets out cascading use (see Figure 1), and requires Member States to implement the principle by phasing out support schemes for wood burning from logs, veneer logs, industrial grade roundwood, stumps and roots, and wood burning for electricity. Unfortunately, the text also allows various derogations, which will likely weaken implementation and lead to slower progress on cascading.

Figure 1 The cascading use principle. Source: ECOS (2023) Seeing the forest through the trees.



Misalignment between environmental ambition and analytical tools

Increasing the use of both primary and secondary wood for construction and other long-lasting material applications nevertheless still faces setbacks. The JRC recently conducted a 'Techno-economic and environmental assessment of construction and demolition waste management in the EU'. The authors draw two possible interpretations of lifecycle assessment (LCA) results - based on different assumptions. Firstly, the authors suggest that, following standard LCA practice, waste wood incineration could represent a more climate-friendly use of the wood than recycling to particle board, or even reuse with minimal modifications.[5] This conclusion is based on the assumption that wood burning is carbon neutral, despite clear evidence of the contrary - not to mention the biodiversity impacts of forest management for bioenergy production.[6,7,8,9] The authors' second interpretation takes into account the importance of cascading use, and then concludes that wood reuse is the preferred option.

Technical and economic progress needed for a better cascading use of wood

Typically, high quality tree parts (the stem) will be used to manufacture construction timber and other sawn products. When there is lack of demand for the other parts of the tree for other material applications, these are often collected and used for incineration - instead of being left on the forest floor. This means that increased demand for construction timber can be linked with an increase in burning wood for energy that could instead be used for long-lasting material uses.[10]

It is problematic when the forest and wood industry incentivise removing and making use of entire trees. It negatively affects the resilience of forest ecosystems, biodiversity conservation, and climate mitigation.[11] Leaving behind tree residues, as well as stumps and roots, is important for maintaining healthy forest soils and to support their carbon storage function.[12]

The other problem in the value chain is the industrial wood processing sector's limited capacity to transform roundwood into construction timber. There is therefore a bias for planting coniferous species, because of their more uniform, straight stems. This bias has driven the conversion of forests (typically grown in boreal regions), from broadleaved species to commercial, productive, coniferous species. This often reduces the tree species diversity of (semi-)natural forests, which now face increased resilience risks.

Successful implementing the cascading use principle therefore also requires technical and economic change in the use of timber. Policies and standards should increase the share of harvested wood used for construction products[13] while providing clear guidelines for ecological forestry that leave a share of residues in the forest. Architects and designers should specify the use of wood-based products from forests where locally-adapted tree species are grown, which strengthens forest resilience. This demand would encourage the processing industry to advance technical capacity for processing broadleaved tree species, and other tree material, into high-value construction products. In parallel, the new RED III rules must be effectively implemented to phase out wood for incineration - **EU forests cannot sustain wood demand for both construction and bioenergy**.[14]

Conclusion

The misleading assumption that burning biomass for energy is carbon neutral has been driving increased incineration in the EU for many years. There is now an attempt to limit further wood incineration and transition towards the more reasoned use of wood resources. Implementing the cascading use principle for wood in EU law is a step forward – previously the principle was only mentioned in the 2018 EU Bioeconomy Strategy[15] with no clear vision for its roll out.

A progressive phase-out of burning virgin wood biomass whilst increasing combustion-free, renewable energy sources is not the only solution, but it is an important step for climate mitigation, forest ecosystem protection, and forest restoration - in combination with circular and more efficient use of wood for material applications, including buildings.

EU standards for construction products: deep dive into the CPR Acquis process

Introduction

European standards (EN) on construction products set test methods, thresholds, and criteria for characteristics of products placed on the EU market. These include mechanical resistance and stability, fire safety, health and safety, environmental performance, noise protection, energy efficiency, and thermal insulation. In practice, most standards only address some of these requirements.

Environmental performance and circularity tend to be largely missing meaning that there is a lack of clear requirements for construction products to become greener. The so-called 'CPR Acquis' (to develop and update CPR-related standards) could improve the situation. This process has been initiated as part of the new Construction Products Regulation (CPR), albeit with limited political ambition to address environmental performance.

The new Construction Products Regulation

The newly revised Construction Products Regulation (CPR)[16] aims to mainstream sustainability of construction products.[17] Slated for adoption at the end of 2024, the new CPR is emerging in parallel to the Ecodesign for Sustainable Products Regulation (ESPR)[18] – the new flagship EU law for ecodesign, which will push the most polluting products off the market and incentivise manufacturers to prioritise the environment. The ESPR serves as the framework for improving product durability, circularity, as well as health and environmental impacts, including greenhouse gas emissions from the entire lifecycle. Entering into force on 18 July 2024, the ESPR serves as the backbone of the CPR, holding EU institutions accountable for also fulfilling these objectives within the construction sector. This ambition must now be met with action.

The European Commission holds powers to adopt new requirements for construction products under harmonised standards, albeit with no clear obligation. Nevertheless, it appears possible that the ESPR could require progress in setting product-specific environmental requirements should the CPR fail to do so. While the ESPR and CPR have planted **the importance of improving the environmental performance of construction products**, it is the European Commission and industry standardisers that must make sure this bears fruit.

Some reporting requirements have already been approved in the new legal text. Building on the environmental ambition of the ESPR - CPR Article 15 obliges product manufacturers to report the global warming potential of products in the Declaration of Performance and Conformity. Lifecycle assessment calculations - conducted according to EN 15804+A2 on Environmental Product Declarations (EPD)[19] - must be reported as of 2025. By 2031, the full scope of EPD impact indicators will also have to be reported.

A large suite of ENs and harmonised standards (hENs) will need to be updated to meet the new CPR. Many of these standards are outdated, sometimes stemming from the Construction Products Directive, the obsolete CPR predecessor.[20] This means that **new or revised standard should include new environmental requirements** where they did not previously. This is the goal of the CPR Acquis process led by the European Commission DG GROW, which involves predominantly industry representatives and Member States, with ECOS as the only environmental civil society organisation participating.

Normally, the development of hEN standards is the initiative of the European Commission, however the CPR Acquis process will now be responsible for identifying standardisation needs and drafting standardisation requests. This means that **industry standardisers themselves will most likely draft their own 'terms of reference' for the standards they will develop**, which could then gain quasi-legal status. This industry-dominated approach risks the environmental integrity of these standards, if public interests are not represented in the process. Progressive industry figures and public authorities therefore need to seize this opportunity and make a real improvement to the environmental performance of construction products.

An opportunity to improve the environmental performance of products via standards

The CPR Acquis process opens technical discussions for setting specific thresholds in standards and could thereby improve the environmental performance of construction products. Thresholds could relate to the reusability or recyclability of product designs, limiting the use of substances of concern, or increasing recycled content. This work can result in setting performance classes for given criteria, similar to the A to G scale used for the energy performance in household appliances and automobiles.

The suite of standards for timber structures stemming from CEN/TC 124 will be up for discussion and could support making key structural components of timber buildings more circular, durable, and fire-resistant by setting product design and manufacturing requirements.[ii]

The CPR Acquis process also opens the way for entirely new standards. This can be raised during the expert consultation process, in an effort to bring standards up-to-date with technological developments in manufacturing and construction of newer forms of timber products. This could also enable a broader range of tree species to be increasingly used (such as hardwoods), or to address other aspects of timber product performance.

The CPR Acquis offers an opportunity to set new requirements for testing reclaimed timber parts for reuse and recycling in construction projects. Current EN standards for timber testing were conceived for new timber with given specifications and a high degree of uniformity. By contrast, wood that has already lived a life and is reclaimed, such as the wood reclaimed from old building structures, flooring, boats, or any other valuable source, poses new challenges to current quality test methods.

Current European standards for strength grading[iii] (based on either visual or machine grading), require knowledge of both the tree species and the growth area - which is not possible in many circumstances for re-used wood. These standards are also not yet able to take proper account of previous grading, degradation in service, or potential effects on the grading criteria stemming from difference in growth conditions of timber in very old buildings.

The Norwegian SIRKTRE project is advancing on this topic with a draft standard series, NS 3691[21], which sets out requirements for processing and evaluating reused or recycled wood. This work is aimed for adaptation and adoption at the European level as part of the CPR Acquis process and could facilitate timber reuse and recycling in the EU.

Timeline of the CPR Acquis process for timber

The European Commission DG GROW has announced the start of the process for timber construction products for September 2024. The process is expected to take two years, i.e. into 2026. The actual **development or revision of hEN standards would therefore likely only start after 2026**. In an attempt to mitigate delays in adopting a host of new standards to meet the new CPR, the European Commission requires that standards will be developed over an extremely ambitious period of 18 months, much shorter than the typical 2-4 years. The EU market for timber products will therefore not benefit from new/revised standards for a few more years, and industry standardisers will be challenged by the time pressure.

ii This would include existing hEN standards related to EN 14080:2013 - requirements for glued laminated timber, EN 14081-1:2005+A1:2011 - strength grading methods for structural timber with rectangular cross section, and EN 14250:2010 - requirements for some prefabricated structural members.

iii EN 14081-1 and related standards enable sorting of timber into higher grades (stronger, stiffer, denser) and lower grades to match timber to the requirements of use.

ECOS key recommendations for a successful CPR acquis process for timber and bio-based materials

The European Commission and CPR Acquis process (including subsequent standards) should hold up to the ambition set in the ESPR and CPR.

- Set clear minimum requirements for construction products:
  - Improve reusability or recyclability in product design.
  - Sustainable sourcing.
  - Limit the use of substances of concern.
  - Increasing recycled content.
- Include new standards for testing reused and recycled timber to facilitate access to the EU market, including via public procurement tenders.
- Define classes of performance for large volume, high impact products so that users can make informed choices and drastically reduce impacts by choosing the best products.

ABOUT ECOS

ECOS is an international NGO with a network of members and experts advocating for environmentally-friendly technical standards, policies and laws. We ensure the environmental voice is heard when they are developed and drive change by providing expertise to policymakers and industry players, leading to the implementation of strong environmental principles.

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NS 3691-2 Evaluation of recycled wood – Part 3: Visual strength sorting