



Guideline

Sustainability in the Wood Industry and Greenhouse Gas Accounting of Wood Products

Imprint

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Coordination:

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Consulting for sustainability, innovation, and subsidy management. Texulting develops strategies, supports SMEs in projects, and drives transformation toward climate protection and the circular economy.

Project partner:

Holzcluster Steiermark GmbH – Graz, Austria

Innovation network for the timber and forestry industry. Focuses on sustainable value creation, research, and networking within the industry.

LignoSax e. V. – Saxony, Germany

Association of the Wood and Furniture Industry in Saxony. Advocates for the interests of the industry, promotes competitiveness, and supports companies in future-oriented topics.

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SUSTAINABILITY IN THE WOOD INDUSTRY – A GUIDELINE FOR THE WOOD INDUSTRY

This guide is aimed at small and medium-sized enterprises in the woodworking industry. It shows how you can put the most important sustainability and climate protection requirements into practice—without unnecessary theory, but with clear steps and examples from the industry.

The wood industry has a special role to play: wood products store CO₂, replace emission-intensive materials such as concrete or steel, and are therefore key to a climate-neutral future. At the same time, companies are under pressure: increasing customer demands, stricter laws, and growing expectations for transparency.

The guide provides answers to key questions:

- Which legal requirements are relevant to me?
- How do I start a carbon footprint assessment for a product or my company?
- Which data is necessary—and where can I find it?
- Which measures have a quick impact?

The goal: to provide you with a compact overview that allows you to take immediate action. No more, no less—just the most important information you need to get started.



“At a glance – why this guide?”

Clarity

Understanding legal requirements

Practice

CO₂ balances & examples from the wood industry

Implementation

Quick measures for the company

3 DIMENSIONS OF SUSTAINABILITY

Sustainability means maintaining a balance between ecological, economic, and social aspects. Only when all three dimensions are considered can development truly be sustainable.



Sustainable companies consider the impact of their business activities on the environment. They are committed to protecting natural resources and minimizing their ecological footprint.

Sustainable companies strive for long-term economic success. They invest in sustainable technologies and processes that not only protect the environment but also increase efficiency and reduce costs.

Sustainable companies contribute to social justice. They ensure fair working conditions, promote equal opportunities, and participate in social projects in their local communities.

Relevance for the wood industry

The industry combines all three dimensions in a unique way:

- Forests store CO₂ and provide the most important renewable raw material.
- Wood products are competitive and replace emission-intensive materials.
- Companies create jobs in rural areas and ensure regional value creation.

This means that the wood industry is not only part of the problem, but also a central part of the solution.

Sustainability as part of the corporate strategy

In a time of global ecological, social, and economic challenges, sustainability is becoming increasingly important for companies. What was once considered a voluntary measure is now developing into a key competitive factor. Companies that systematically integrate sustainability into their business strategy not only secure their future viability, but also tap into new market potential, strengthen their brand, and meet increasing regulatory requirements. The following strategic advantages result from the integration of a sustainable corporate strategy:

Competitive advantage and market entry

Sustainable companies are increasingly meeting the expectations of customers, investors, and business partners. In many industries, sustainability is already a prerequisite for participating in tenders or for inclusion in supply chains.

Cost reduction and increasing efficiency

Operating costs can be reduced through measures such as energy efficiency, waste prevention, and optimized logistics. Investments in sustainable technologies often pay for themselves quickly through savings.

Risk management

Sustainability strategies help to identify and manage regulatory, environmental, and social risks at an early stage– for example, by complying with environmental standards or ensuring deforestation-free supply chains.

Access to capital

Investors and banks increasingly favor companies with sustainable business models. The EU taxonomy and ESG (environmental, social, governance) criteria have a significant influence on capital allocation.

Sustainable Development Goals (SDG)

The Sustainable Development Goals (SDGs) are 17 global goals for sustainable development that were adopted by the United Nations in 2015 as part of the 2030 Agenda. They are aimed at governments, businesses, and civil society worldwide and identify necessary goals to be achieved in order to combat poverty, protect the planet, and ensure social prosperity. The following SDGs are particularly relevant for companies in the timber industry:



SUSTAINABILITY IN THE WOOD INDUSTRY

The timber industry plays a key role in climate protection

The timber industry plays a central role in the transformation towards a climate-friendly and resource-efficient economy. As a link between sustainable forestry, industrial processing, and climate-relevant products, it makes a significant contribution to achieving global environmental goals in several ways.

Substitution of fossil materials

Replacing fossil raw materials and building materials such as cement with wood

CO₂ storage and reduction

CO₂ storage function of wood products

Promotion of sustainable forestry

Limiting deforestation and preserving biodiversity

Renewable resources and circular economy

Ideal use of wood as a renewable resource in the circular economy

Certificates and evidence for the timber industry

Sustainability requires evidence, this is the only way to build trust among customers, investors, and authorities. Three types of evidence are particularly important for the timber industry:



FSC (Forest Stewardship Council)

Internationally recognized seal for sustainable forestry. Criteria: environment, social issues, economic efficiency.



PEFC (Programme for the Endorsement of Forest Certification)

Largest forest certification system worldwide. Strengthens regional forestry operations, practical and cost-effective.



Chain of Custody (CoC)

Proof of complete traceability from the forest to the finished product. Without CoC, a certificate loses its effect in the supply chain.



EUDR-Kurzcheck

From 2026: Obligation to document the origin of wood products. Required are:

- Geographical coordinates of the logging areas
- Proof of legality
- Risk assessment and mitigation, if necessary
- Supplier declaration

Conclusion:

Certificates are not optional extras, but a prerequisite for market access and competitiveness. Companies that make their supply chain transparent secure customer trust and future opportunities.

Advantages for your company



Cost savings

Sustainability initiatives such as energy efficiency and waste reduction lead to significant cost savings, which are made transparent in your reporting.



Access to capital

Investors and financial institutions favor companies with documented sustainability efforts, which significantly improves their access to capital, insurance, and subsidies.



Innovation

Sustainability promotes innovation by encouraging companies to develop new environmentally friendly products or processes that help them stand out in the market.



Strengthen customer trust

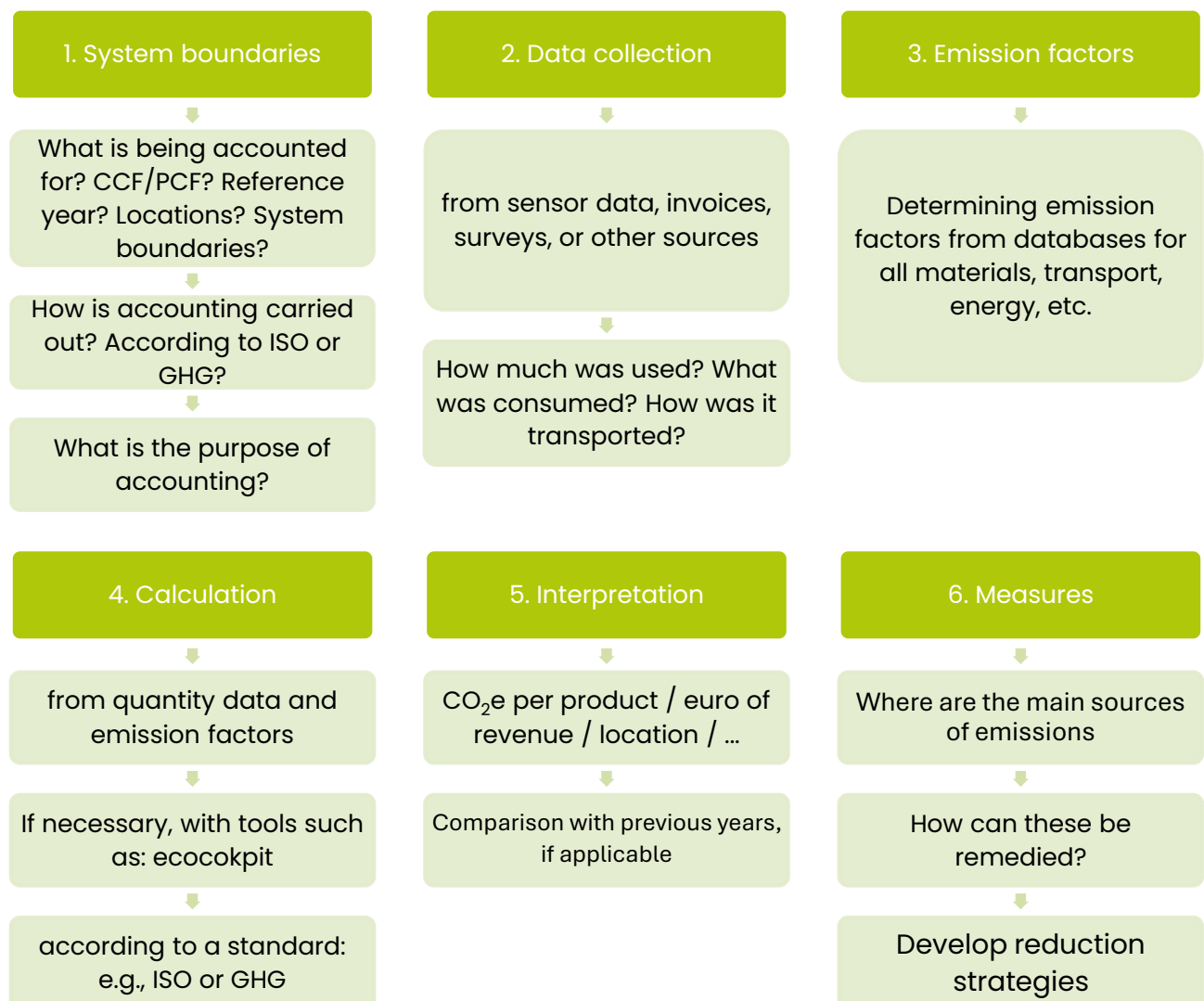
Sustainability reports promote trust among your customers by demonstrating your responsible corporate governance. This supports customer loyalty and attracts new customers.

BASICS OF CO₂ ACCOUNTING

The carbon footprint records all direct and indirect greenhouse gas emissions caused by an activity, product, or company.

In addition to identifying potential emission savings, creating a carbon footprint can also reveal process inefficiencies and opportunities for cost reduction. It focuses on climate-relevant emissions and is therefore part of the more comprehensive life cycle assessment, which analyzes various environmental impacts over the entire product life cycle. The calculation is based on so-called emission factors, which determine how much CO₂ equivalent is produced for a certain amount of material, energy, or activity.

The **accounting process** typically involves the following steps:



Relevant accounting standards

The **Greenhouse Gas Protocol (GHG)** is the world's most widely used standard for accounting for greenhouse gas emissions. Developed in the late 1990s, it divides emissions into three scopes (categories). This structure enables consistent and comparable recording of emissions across different industries.



The **ISO 14064 and ISO 14067** standards are largely based on the GHG Protocol, but their expanded set of rules is designed for auditability and verification. They provide a methodological framework for preparing reliable emissions inventories and support companies in developing reduction strategies and in the external verification of their climate inventories.

The **ISO 14064** standard for a CCF (**C**orporate **C**arbon **F**ootprint) focuses on an organization and regulates the quantification, reporting, and verification of greenhouse gas emissions.

The **ISO 14067** standard for a PCF (**P**roduct **C**arbon **F**ootprint) focuses on a defined product. Here, the entire life cycle, from cradle to grave, or sections thereof, can be considered. Often, the path to leaving the company premises (cradle-to-gate) is considered.

Practical examples

In order to make the theoretical principles of CO₂e accounting tangible, two specific wood products were analyzed as part of the GreenWood project. The aim was to demonstrate how CO₂

accounting is carried out in practice—from data collection to evaluation of the results and derivation of recommendations for action.

For practical reasons, a CCF was also created for both companies in order to determine the total emissions of the companies in the reference year and allocate these proportionally to the product. This approach significantly improves the data basis and informative value of the PCF.

A CO₂ balance was defined in accordance with the GHG Protocol with reference to the year 2024. For the PCF, the life cycle from cradle to grave is to be considered. This means up to the point of leaving the factory gate (cradle-to-gate).

For the CCF, in addition to the usual determination of consumption data from invoices (electricity, fuel, water, materials, and waste, etc.), a survey was also conducted on the commuting behavior of employees.

First, the production process for both products was analyzed, recording all the machines and materials used. Energy consumption and material quantities were noted, as were residual and waste materials.

The ecocokpit calculation tool was used for this purpose. It is available free of charge and enables systematic recording and calculation of data and values. It also offers an impressive reporting function.

The creation of the system boundaries for carbon footprint analysis resulted in the inclusion of value-added activities (cradle to gate) for both products. In cooperation with the manufacturing companies, data for Scope 1, 2, and 3 was collected and then evaluated using the ecocokpit carbon footprint analysis tool.

PCF Glulam Timber

The Bichler sawmill in Styria produces a wide range of wood products for the regional and international market. One of its key products is glued laminated timber, which was selected due to its importance in timber construction.

A “DUO” type glued laminated timber measuring 16 cm x 20 cm x 800 cm was defined as the functional unit.

Scope 1 mainly determined the diesel consumption of the company's own vehicle fleet, as well as the use of wood residues to operate the drying chamber.

No emissions were determined for **Scope 2**. The sawmill obtains green electricity from a hydroelectric power plant.

The main **Scope 3** emissions are from processed spruce wood, upstream transport of purchased wood, and employee commuting. Additional emissions are generated by spare parts and packaging, glue and lubricants, business travel, and waste.



There is **potential for optimization** by improving the CO₂ emissions of the vehicle fleet, which can be achieved in the long term by switching to electric transport or in the short term by switching to HVO100 diesel, which is produced from vegetable waste and causes 90% less CO₂e emissions.



PCF Transport wooden crate „Galerie“

As a service and manufacturing company for packaging, Holzindustrie Dresden produces various transport products. One of its core products is wooden transport crates. A “small gallery” transport crate was defined as a functional unit.



Scope 1 consists of fuel for the company fleet and natural gas for two CHP units. The waste heat is used for heating and drying chambers.

Scope 2 covers external electricity procurement. Around 60% of the company's own electricity requirements are covered by CHP units and a PV system.

The main emissions in **Scope 3** are from the transport of raw materials and supplies to the company, with wood accounting for the lion's share. Other significant factors are the processed solid wood and plywood, as well as employee commuting.

There is **potential for optimization** in reducing transport emissions by purchasing materials locally instead of from distant foreign countries. The (partial) conversion from natural gas CHP plants to heat generation using heat pumps or solar thermal energy in conjunction with a green electricity tariff can also contribute to reducing emissions.



GUIDELINE FOR CALCULATING THE CARBON FOOTPRINT

This action guide provides concrete, practical step-by-step instructions to facilitate the independent creation of a carbon footprint. The instructions can be applied to both products and individual processes.

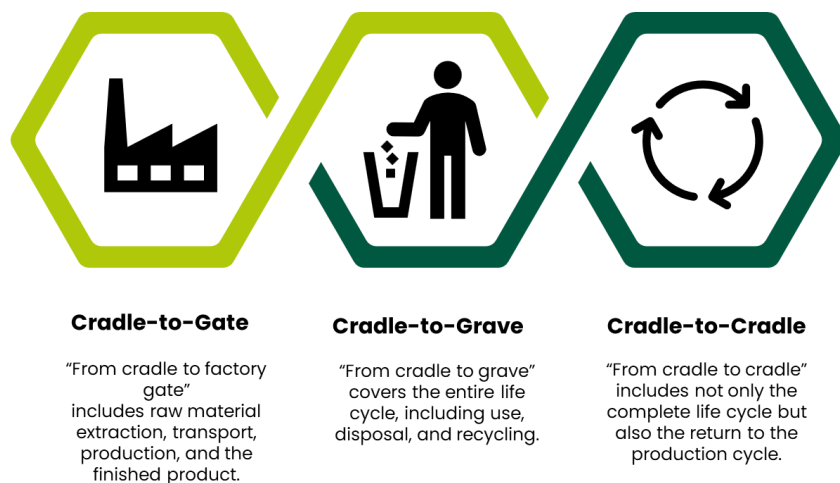
1 Purpose and benefit

The first step is to clearly define the objectives and framework conditions. It must be determined what purpose it serves. Is it a balance sheet for internal control, for regulatory requirements, for communication with stakeholders, or for marketing purposes? It is equally important to determine the organizational and temporal boundaries of the system: Which locations, business units, or products are considered? Over what period of time? In addition, a suitable standard such as the GHG Protocol or ISO 14064 is selected.

2 Determine system boundaries

The next step is to define the system boundaries to decide which emissions are to be considered. At the company level, this is done according to scopes or categories, which include various direct and indirect emissions.

For products, it is also determined which life cycle phases are to be examined- for example, from raw material extraction to delivery or disposal.



➔ **Recommendation:** For starters, it makes sense to choose "cradle-to-gate" because data collection is much easier here and much of the data is already available within the company.

3 Data collection

The quality of a carbon footprint depends largely on the data used. First, internal consumption data such as energy, materials, transport, and business travel are collected. In addition, suppliers can be surveyed, or industry-specific databases can be used to fill in any gaps. A distinction is made between primary data (directly measured or collected) and secondary data (average values, studies). Transparent documentation of data sources and assumptions is crucial to ensure the traceability and subsequent comparability of the results.

4 Conversion to CO₂ equivalents

The data collected is then converted into greenhouse gas emissions. Standardized emission factors are used for this purpose, which are available for different energy sources, materials, or modes of transport. All relevant greenhouse gases such as carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), and hydrofluorocarbons are converted into so-called CO₂ equivalents (CO₂e). This enables a uniform assessment of the climate impact and ensures that different emissions can be compared and aggregated.

➔ **Recommendation:** A good place to start is the free Probas database from German Federal Environment Agency.

Example: 500 kWh of electricity was consumed. According to the electricity bill, the emission factor is 0.363 kg CO₂e/kWh.

Emissions = activity data x emission factor

500 kWh x 0.363 kg CO₂e/kWh = 181.5 kg CO₂e

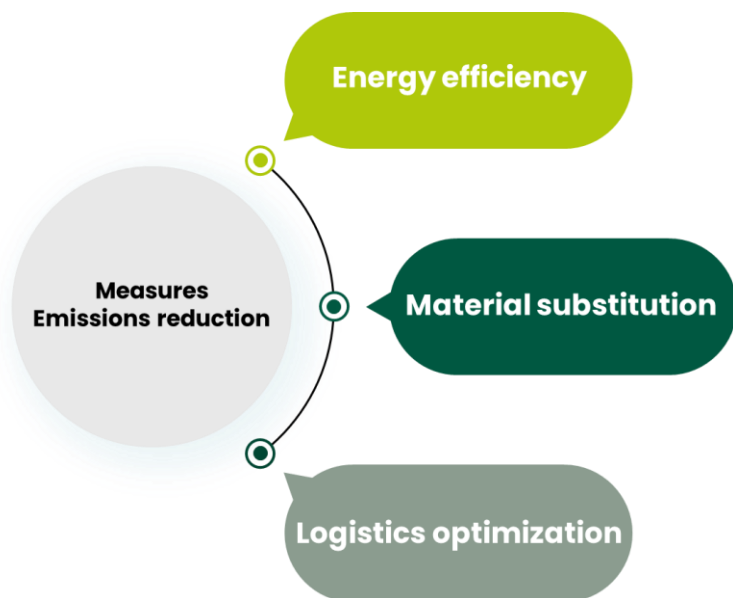
5 Accounting and consolidation

Once the emission values are available, the actual accounting process begins. The emissions are allocated to the respective sources, totaled, and consolidated if necessary. For companies, this often means that emissions from different locations are combined. At the product level, operational emissions must be allocated proportionally to the individual products using allocation methods. This results in a complete and structured emissions balance sheet that represents the total emissions and can be used for further analysis.

➔ **Recommendation:** The free ecocockpit tool has proven useful for the first steps.

6 Analysis and interpretation

The final balance sheet is analyzed to identify key areas and fields of action. This reveals which processes, materials, or life cycle phases have the greatest impact on overall emissions. Such “hotspots” provide valuable information for possible reduction measures, for example through more efficient energy use, alternative materials, or more sustainable transport routes. At the same time, comparisons can be made with previous years or benchmarks to evaluate progress and further develop the company's climate strategy in a targeted manner.



7 Reporting and communication

Finally, the results are summarized in a structured report and communicated to internal and external stakeholders. Transparency is important here: all system boundaries, methods, data sources, and assumptions must be disclosed in a comprehensible manner. This creates credibility and ensures comparability. Many companies publish their carbon footprint in their sustainability report. If necessary, independent verification in accordance with standards such as ISO 14064 can also be carried out to have the results officially confirmed.



SUSTAINABILITY REPORTING

What is sustainability reporting?

Sustainability reporting is the process by which companies disclose their environmental, social, and governance (ESG) performance. It serves to facilitate informed communication with stakeholders and strengthens confidence in sustainable corporate management.

Key aspects of sustainability reporting include:

- Presentation of the company's sustainability strategy
- Disclosure of environmental and climate protection measures
- Report on social responsibility and ethical corporate governance
- Integration of sustainable processes into business operations and supply chains

Benefits for companies

Sustainability reporting creates transparency, strengthens stakeholder confidence, and helps companies identify environmental and social risks at an early stage. It promotes efficiency, innovation, and competitiveness and supports compliance with legal requirements such as the EU CSRD. This makes sustainable business practices strategically useful.



Cost savings



Image and reputation



Innovation



Risk minimization



Future ability



Access to capital



Employee satisfaction



Competitive advantage



Legal compliance

Contents of the report



General information

- Company data
- Organization profile
- Strategy/Corporate governance
- Stakeholder involvement

The materiality analysis determines which areas and topics must be reported on and what can be excluded.



Economic

Economic performance
Market presence
Procurement practices
Anti-corruption
Competition
Taxation



Environment

Materials
Energy
Water and waste water
Biodiversity
Emissions
Waste



Social

Employment
Employer-employee relationship
Occupational safety and health protection
Training and continuing education

Relevance for the woodworking industry

Due to their direct work with natural resources, creating a sustainability report is particularly relevant for wood processing companies: it creates transparency regarding resource efficiency, supports internal management, and promotes efficiency gains. It also strengthens communication with stakeholders and clearly demonstrates the company's contribution to climate protection and the circular economy.

MEASURES TO REDUCE EMISSIONS

Wood processing companies can significantly reduce their emissions through targeted measures. The following categories offer particular potential for savings:

| Energy | Supply chain | Production | Circular economy |
|---|--|---|---|
| The use of renewable energies, such as solar power or the utilization of wood waste, significantly reduces CO ₂ emissions. | Optimized supply chains, e.g., through regional procurement and digital logistics, reduce transport emissions. | In production, energy-efficient machines and automated processes help to conserve resources and minimize waste. | In addition, the circular economy- for example, using recycled wood and waste recycling, strengthens sustainability and reduces material consumption. This integrates climate protection in an economically sensible way. |



CHALLENGES AND SOLUTIONS

Creating a carbon footprint assessment presents a number of challenges, both technical and organizational. Below are some potential stumbling blocks—and how to overcome them.



GUIDELINE FOR SME

Establishing CO₂ accounting as a strategic tool

| | |
|-----------------------|---|
| Recommendation | Integrate carbon footprints into product development and corporate strategy |
| Explanation | Transparent climate balances strengthen market position and meet the requirements of customers, legislators, and subsidy programs. CO ₂ balances can also be used as a basis for investment. This allows technologies to be selected that are low in emissions and lead to long-term cost savings. |
| Practical tip | Use tools such as ecocockpit to get started. |

Establish systematic data collection

| | |
|-----------------------|---|
| Recommendation | Regularly record energy, material, and transportation data. |
| Explanation | Reliable data is the basis for credible carbon footprint assessments. |
| Practical tip | Develop simple Excel templates or use digital data collection. |

Prefer sustainable materials and increase resource efficiency

| | |
|-----------------------|---|
| Recommendation | Choose regional, certified woods (e.g., FSC, PEFC). Optimize material usage and reduce waste rates. |
| Explanation | Short transport routes and sustainable forestry reduce the carbon footprint. Less material consumption means lower purchasing costs and lower disposal costs. |
| Practical tip | Document origin and certificates for customers and auditors. Use wood waste for your own energy production or as a secondary raw material. |

Increase energy efficiency

| | |
|-----------------------|--|
| Recommendation | Optimize processes such as drying, planing, and CNC machining. |
| Explanation | Energy costs can be reduced. Furthermore, energy is often the biggest driver of emissions in production. |
| Practical tip | Take advantage of subsidy programs for efficiency measures (e.g., BAFA, KfW) and conduct energy audits. |

Involving and training employees

| | |
|-----------------------|--|
| Recommendation | Raise employee awareness of climate protection and carbon footprints. |
| Explanation | Sustainability can only be achieved with everyone's participation. Employees can serve as drivers of innovation in this process. |
| Practical tip | Offer internal training courses or workshops—e.g., on how to use ecocockpit. |

Creating transparency for customers

| | |
|-----------------------|---|
| Recommendation | Communicate CO ₂ values openly—e.g., on product labels or in offers. |
| Explanation | Sustainability is increasingly becoming a decisive factor in purchasing decisions. |
| Practical tip | Develop simple product environmental profiles or environmental declarations (EPDs). |

Support circular economy

| | |
|-----------------------|--|
| Recommendation | Design products so that they can be repaired, recycled, or returned. |
| Explanation | Cradle-to-cradle approaches reduce resource consumption in the long term. |
| Practical tip | Use wood waste as an energy source or for new products (e.g., briquettes). |

Using cooperations and networks

| | |
|-----------------------|--|
| Recommendation | Network with other companies, associations, and research institutions. |
| Explanation | Joint projects facilitate innovation and knowledge transfer. |
| Practical tip | Join networks such as the Corporate Climate Protection Network. |



For anyone who would like to learn more beyond this guide, the online course **Sustainability in the Wood Industry** is available on the Udemy platform. It offers significantly deeper insight, further examples, and more detailed explanations.

Link:

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This **guide to sustainability in the wood industry** was developed as part of the Erasmus+ project “**2024-1-DE02-KA210-VET-000248309 – GREENWOOD – Green Resourceful Education and Empowerment in Nature and Wood.**”

The guide does not claim to be exhaustive. All content, legal information, and examples described refer to the **status as of May 2025**. Changes due to new laws, guidelines, or market conditions are possible.

The three project partners are equally responsible for the content:

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