

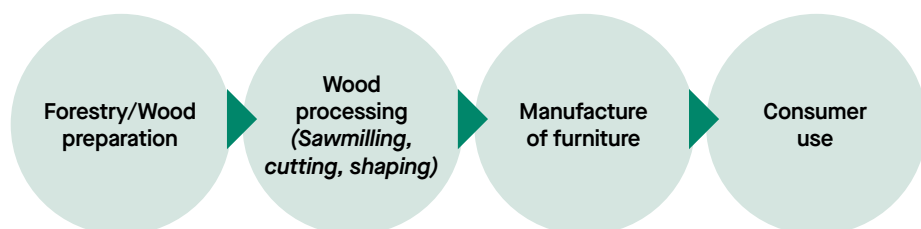
Manufacture of furniture

CLIMATE & EFFICIENCY INVESTMENTS



Decarbonising wood processing: A strategic imperative

By 2050, global roundwood consumption is projected to increase by up to 272 million m³ per year, representing growth of approximately 49% on top of already high production levels.¹ At the same time, climate change is increasing forests' vulnerability to stressors such as wildfires, droughts, storms, and pests, highlighting the need to rethink forest and land management. As decarbonisation is not a single, straightforward action but a complex puzzle with many factors to consider, **wood processing** plays a critical intermediary role in enabling the transition. With rising demand for low-carbon materials, the sector is well positioned to drive innovation and support a net-zero future.



Manufacture of furniture

Furniture manufacturing transforms wood materials into products like tables, chairs, and cabinets through cutting, assembly, and finishing. It operates in batch or semi-continuous modes, using significant electricity and some thermal energy. Production requires high precision and compliance with safety and environmental standards.

From a greenhouse gas perspective, furniture manufacturing generates **Scope 1 and Scope 2** emissions, mainly from on-site fuel use and purchased electricity for operations.

Key emissions drivers in the manufacture of furniture

Scope 1 – Direct emissions

Scope 1 emissions in furniture manufacturing mainly come from on-site fuel combustion for thermal processes, with additional emissions from mobile equipment and backup generators.

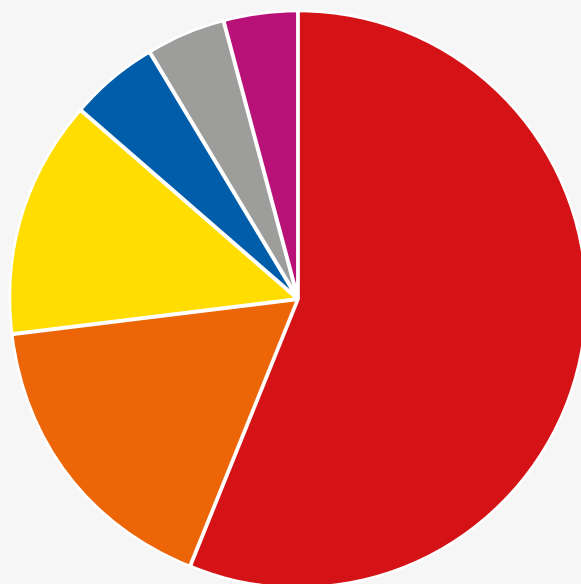
Scope 2 – Indirect emissions

Scope 2 emissions stem from purchased electricity used to power machinery, dust extraction, lighting, and other production systems.

¹ The State of the World's Forests 2024



Carbon footprint structure Manufacture of furniture



Key emissions drivers²

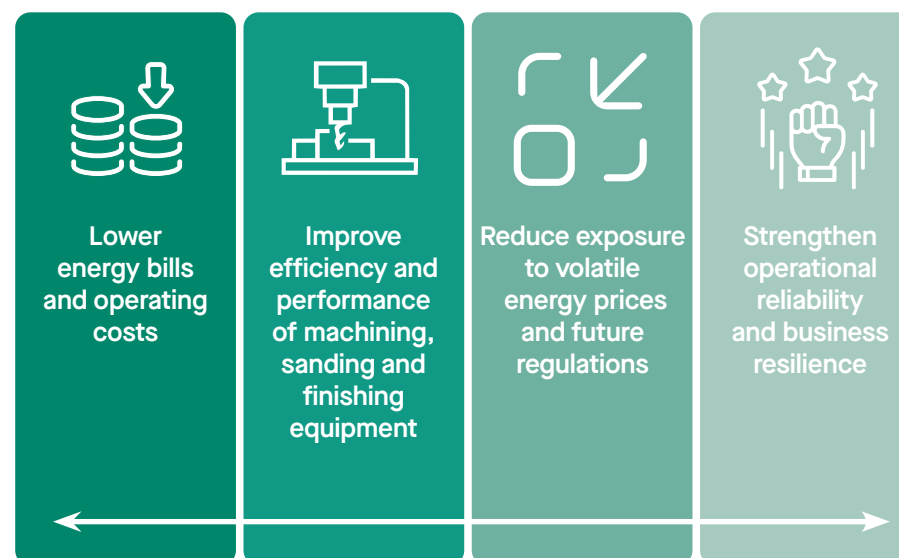
- Machine drive 56.3%
- Facility HVAC 17%
- Facility lighting 13.1%
- Process heating 5.1%
- Others 4.6%*
- Other facility support 3.9%

* Onsite transportation 1.8%, Process cooling and refrigeration 1.5%, Conventional boiler use 0.7%, Other process use 0.6%

Why decarbonisation matters

Reducing emissions from on-site operations and overall energy use presents furniture manufacturers with a clear opportunity to cut costs, mitigate operational risks, and enhance long-term resilience. Furniture production relies heavily on electricity, as well as fuels for curing, hot pressing, and facility heating – making energy a significant contributor to both greenhouse gas emissions and production costs.

By reducing Scope 1 and 2 emissions, bakery manufacturers can



Decarbonisation Roadmap

Manufacture of furniture				
Investment measure	Energy cost savings (%)	Payback period (years)	CO ₂ reduction potential	Benefits
CNC woodworking centres	12% - 18%	Over 10 years	✓	CNC woodworking centres automate cutting, drilling, milling, and routing with high precision, reducing material waste and energy use. Their efficiency lowers operating and production costs, and when powered by renewable energy, they help reduce emissions and support sustainable furniture production.
Battery electric vehicles (BEVs)	50%	5 - 6	✓	Electric vehicles offer higher energy efficiency through advanced battery systems and regenerative braking, reducing overall energy consumption during operation. They offer a clean solution for transporting products, reducing fuel costs and improving operational sustainability.
Electric forklifts	50%	2 - 3	✓	Electric forklifts are battery-powered material-handling vehicles used to move ingredients and finished products within bakery facilities. They offer high energy efficiency by converting stored electrical energy directly into motion with minimal losses. This efficiency reduces fossil fuel costs and CO ₂ emissions.
Industrial process chiller	20%-30%	Over 10 years	✓	Industrial process chillers provide precise temperature control to maintain product quality and protect equipment. Their efficient operation reduces energy consumption, promoting more sustainable operations.
Water source heat pumps	20% - 30%	Over 10 years	●	Water source heat pumps are systems that use water as a medium to efficiently transfer heat for heating and cooling. They help companies reduce energy consumption and operational costs while lowering greenhouse gas emissions.
Air-to-air heat pumps	15% - 25%	Over 10 years	●	Air-to-air heat pumps provide efficient heating and cooling by transferring energy rather than generating it. Their high efficiency reduces electricity consumption, contributing to more sustainable building operations.
Air-to-water heat pumps	10% - 20%	Over 10 years	●	Air-to-water heat pumps are systems that extract heat from the air to provide efficient heating and hot water. They help companies reduce energy use, cut costs, and lower emissions.
Ground source heat pumps	15% - 25%	Over 10 years	●	Ground source heat pumps are systems that use the stable temperature of the ground to provide efficient heating and cooling. They help companies reduce energy consumption, lower costs, and cut greenhouse gas emissions.

CO₂ reduction potential ● Very low ● Low ● Medium ✓ High

Decarbonisation Roadmap

Investment measure	Energy cost savings (%)	Payback period (years)	CO ₂ reduction potential	Benefits
Edge-banding machines	20%-25%	Over 10 years	●	Edge-banding machines automatically apply and finish edges on wood panels, reducing energy use, material waste, and production costs. Modern systems also lower emissions and support sustainable furniture manufacturing.
Packaging machine	20% - 30%	Case-specific	✓	Packaging machines in the furniture industry ensure precise, efficient, and consistent packaging of furniture components. They protect product quality, minimise material waste, and reduce energy use, supporting more sustainable manufacturing.
PV self-consumption	Up to 100% based on the system capacity and electricity demand	6 - 7	●	A PV (photovoltaic) system converts sunlight into electricity for on-site use. It provides clean, renewable energy to power production, refrigeration, and other operations, reducing reliance on grid electricity and lowering operational costs. Pairing a PV system with battery storage enables multi-shift companies to rely on renewable electricity while reducing exposure to electricity price volatility.
Li-ion batteries	Case-specific	4 - 8	Case Specific	Lithium-ion (Li-ion) batteries are energy storage systems that store electricity and release it when needed. Their energy-saving potential comes from maximising the use of on-site renewable electricity, reducing reliance on grid power during peak periods. This delivers tangible cost savings through improved energy management and lower operating expenses.
Building insulation materials	50%	4 - 5	✓	Building insulation reduces heating and cooling costs, boosts energy efficiency, and supports decarbonisation by lowering emissions and environmental impact.
LED lighting	5% - 10%	5 - 6	●	LED lighting provides high-efficiency illumination with lower energy consumption compared to conventional lighting solutions. Its reduced electricity demand supports decarbonisation and enhances building performance.

For more detailed information on how to reduce costs and lower your CO₂ footprint, along with additional measures tailored for your business, contact the bank.

