

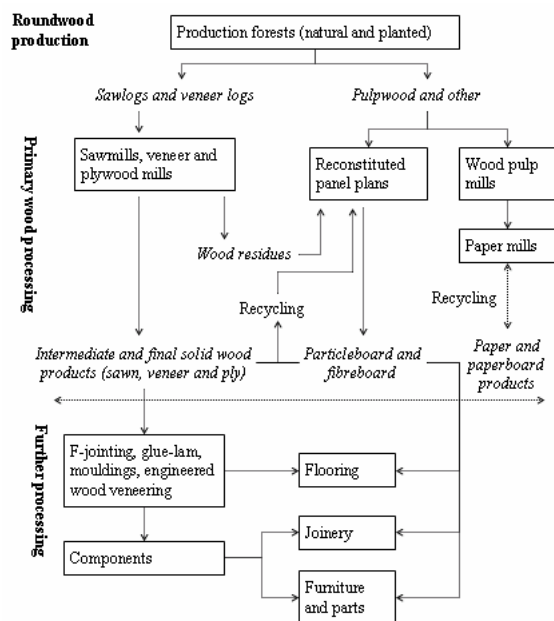


European Bank
for Reconstruction and Development

Sub-sectoral Environmental and Social Guidelines: Wood Processing

PROCESS DESCRIPTION

Primary wood processing converts timber into sawlogs, veneer, plywood or panels such as MDF, DB, OSB, or pulpwood and other forms required for paper and paperboard products.



(Source: UNCTAD)

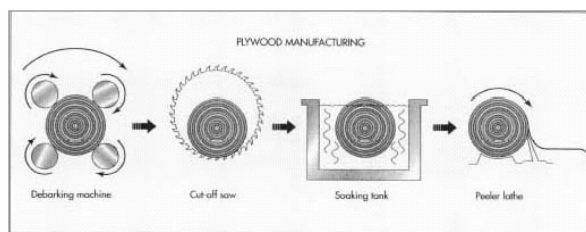
The manufacture of wood products can be broadly categorised into saw timber board/logs production and wood panel production.

Sawmills use both softwood and hardwood from either own logging operations or external local and regional suppliers. At the sawmill the timber is segregated, cut to size, and dispatched. Wood processed at sawmills is often seasoned, heat treated or treated with preservatives. Chemical treatment is commonly undertaken under vacuum conditions in pressurised vessels. The latest preserving technique involves the irradiation of logs and timber.

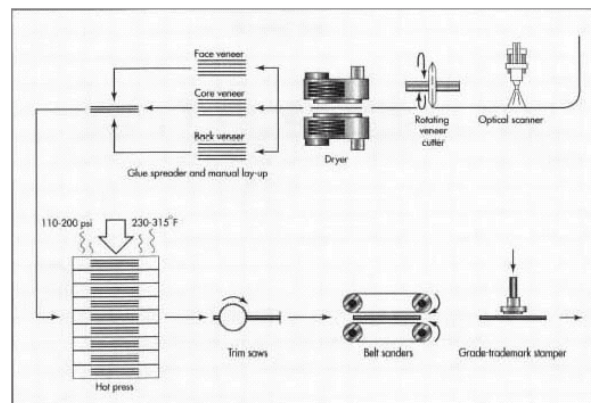
At plywood factories logs are cut into thin sheets (veneer) that are glued together to form panels. The processes include log conditioning,

debarking, drying, grading, adhesive application and pressing followed by trimming, filling, cutting to size, sanding and coating (by melamine paper or painting). The processes required to produce plywood are shown below:

1. Processing logs into strips of veneer



2. Pressing the veneer into a sheet of plywood



Chipboard is a particle board made of small wood particles and a binder (usually a synthetic resin). Wood is mechanically taken apart and then reconstituted using a synthetic resin adhesive. Chipboard production involves the following processes: debarking, chipping/milling, drying, sifting/particle classification, glue blending, mat forming and pressing followed by final trimming and sanding.



European Bank
for Reconstruction and Development

Sub-sectoral Environmental and Social Guidelines: Wood Processing

KEY ENVIRONMENTAL, HEALTH AND SAFETY RISK/LIABILITY FACTORS

Energy use and climate change impacts

Direct climate change impacts are limited to operational energy use associated with dryers, cutters, pressers, lighting and heating, and transportation/logistics. Good practice in developed western economies would include measuring energy use and consequent carbon emissions, setting targets and developing carbon management strategies to reduce impacts (energy efficiency measures, renewable energy use). However, the greatest risks are associated with the climate change impacts of illegal logging and deforestation, and related impacts on ecosystem services and biodiversity. Therefore Chain of Custody assurances and sourcing from responsibly managed forests are important to mitigate risks.

Soil and groundwater contamination

Adverse environmental impacts could occur through soil and groundwater contamination caused by chemicals used in wood processing (as preservatives, adhesives, solvents, hardeners and other forms of wood treatment). Preservatives used may include formaldehyde, PCP (pentachlorophenol), lindane, MDI (Methyl diphenyl di-isocyanate), TBT (tributyl tin) compounds, CCA (copper/chrome/arsenate) and coal tar creosote. These chemicals may be stored on site in bulk storage tanks and may cause contamination through accidental spillages, poor handling, water runoff, over-use and improper cleaning of tanks and disposal. A by-product of PCP wood processing is dioxin (a group of chemicals known to increase the risk of cancer). Even after the use of hazardous chemicals has ceased damage might be possible through contamination of the property and

subsequent leaching from stormwater discharges. Regulation governing the use and disposal of hazardous substances and chemicals exists in most countries and must be complied with. In some cases this will include bans on the use of certain chemicals in wood processing.

Occupational Health and Safety and Associated Claims

The main hazards in the wood processing workplaces are related to dust, machinery, manual handling, exposure to chemicals and vehicles. Injuries may also be caused by noise, and accidental slips. A comparatively high proportion of major injuries are caused by machinery. A study by the UK government found that 27% of major injuries were attributable to machinery in the wood processing industry, compared to 10% in the manufacturing industry. Manual handling of heavy equipment and loads can lead to muscle sprains, back injuries and even fractures. Accidents can occur during operation and maintenance of equipment, timber stacking and storage, and warehousing/logistics. Woodworking employees often suffer from the following injuries: lacerations, amputations, severed fingers, and blindness. Chemicals used to treat the wood can be extremely hazardous to human health, some being known carcinogens. There may also be health-related claims from neighbouring residents, particularly in relation to exposure to dust, formaldehyde and MDI.

Dust & noise abatement

Noise is caused by the mechanically driven transport, cutting, milling, shaping and dust extractor installations in the wood processing sector. Noise may pose health and safety problems for the workers. Considerations to assess impacts of noise would include frequency, intensity and hearing protection provided to



workers. Worker well-being may also be affected by vibration levels. Most sites are located close to raw material sources and therefore are not close to residential areas. However, there could be impacts on wildlife depending on the ecosystems surrounding the site. Local regulations may set limits on environmental noise or worker noise exposure.

Dust is emitted from mechanical woodworking processes. The impacts of dust depend on the fineness (grain size and grain size distribution), dust composition and its quantity. The inhalation of wood dust, particularly hardwood dust, can result in the absorption of harmful substances found in wood, which in turn can lead to serious illnesses. To reduce the quantity of dust generated, machines must be fitted with extractor systems, which are necessary as a health precaution as well as a fire and explosion prevention measure. Sites may be subject to local and national legislation on worker exposure to wood dust and fire hazards.

The available control measures, such as installation of dust cyclones and filters as well as acoustic boards and sound barriers may incur substantial costs.

Fire risk

Due to the flammable nature of the raw materials and the high levels of dust, sawmills and plywood/chipboard production sites may represent a fire hazard. Significant capital expenditure may be required to install adequate fire prevention and protection measures. Uncontrolled fires at sawmills may not only destroy the business but also cause significant damage to neighbouring properties and habitats.

Waste management

Several waste streams can be found in the wood processing industry. These include packaging waste, process waste and hazardous waste. Management of these streams can include recycling, reuse, incineration with energy recovery, treatment and disposal to landfills. Companies should monitor and report on waste streams and have a strategy for minimising waste and impacts. Regulation on waste management is constantly evolving. The EU directives on landfill of waste, non-hazardous and hazardous wastes, and packaging and packaging waste, legislate the management of waste streams.

OTHER POTENTIAL ENVIRONMENTAL ISSUES

Transport related issues and planning constraints

The environmental impacts of transport vary depending on the distribution network and locations involved. There are associated energy use and climate change impacts and these should be minimised through distribution efficiencies and cleaner forms of transport. If transport routes cut through ecologically sensitive areas this could have an impact on local biodiversity.

In the planning and development stage, permission for new routes may be withheld if these routes compromise high value ecosystems or the rights of indigenous people. The pressure might be felt through the action of NGOs and other pressure groups or community action against the company or government.

Water Supply and Wastewater Management

Site drainage and wastewater discharges may be contaminated. These effluents can be intercepted and directed to the sewer (with the



European Bank
for Reconstruction and Development

Sub-sectoral Environmental and Social Guidelines: Wood Processing

approval of the authorities) or treated on site in order to comply with local and national regulations and to prevent contamination of local watercourses.

Typically, timber treatment and timber product sites are well established and therefore features such as the drainage system may be old and in poor repair and act as conduits for pollution.

SUMMARY OF KEY SOCIAL, LABOUR AND COMMUNITY RISK/LIABILITY FACTORS

Labour standards

Labour standards may be formal, such as national level regulation and international agreements, or informal, expressed through norms and values. In addition, fair wages and working hours and acceptable decent working conditions should be expected.

Labour standards should apply to the company's own employees as well as to all contractors and sub-contractors engaged. In addition, labour standards should be expected to be enforced by key suppliers.

Community engagement

Apart from the environmental impacts of the company's operations on local communities, there are also significant social and economic impacts, which might be positive or negative. To mitigate the negative impacts companies should conduct stakeholder engagement exercises regularly and in particular before opening a new facility. The actual impacts on communities would be site-specific but could include the need for relocation and resettlement, intimidation by

company security, and reduced access to traditional lands and sources of food.

OTHER POTENTIAL SOCIAL, LABOUR AND COMMUNITY ISSUES

Upstream supply chain risks

Labour standards and human rights violations in the company's supply chain can impact its ability to continue to serve discerning markets. Trade customers and retail consumers increasingly expect responsible sourcing from suppliers. It is therefore incumbent upon wood processing companies to ensure that ethical practices are followed all through their supply chains. This can be ensured by working with suppliers who demonstrate similar values and principles (e.g. through supplier audits to ensure that suppliers subscribe to acceptable labour standards). Upstream risks can be mitigated by partnering with suppliers who are certified under schemes such as the Forest Stewardship Council (FSC).

FINANCIAL IMPLICATIONS

Regulatory compliance

There are costs associated with ensuring compliance with regulatory requirements. This might involve the costs of purchase and installation of equipment (for fire prevention for instance).

Decommissioning costs for sites with irradiation facilities

The costs associated with decommissioning a wood processing site which has used irradiation techniques to sterilise wood can be significant if the company goes insolvent. The entire radiation plant would need to be removed before the site can be deemed fit for use.



ENVIRONMENTAL, HEALTH & SAFETY IMPROVEMENTS

Companies can implement improvements to better manage the environmental and health & safety risks of their business. Examples of such improvements are given below.

Environmental Improvements

- Upgrade storage areas to allow for proper containment of accidental spills and leakages including the provision of bunding for bulk storage tanks;
- Develop procedures for the handling and storage of hazardous chemicals;
- Use less toxic and persistent preservatives (in place of substances such as TBT and creosote), including moving from solvent based to water based materials; similarly, switching to naturally derived adhesives to replace petroleum derived chemicals;
- Review timber sources on a regular basis to ensure that sustainable sources are being used; source from certified suppliers (FSC or PEFC certified)
- Check log tags (used to identify a tree log from the time it has been cut down) and logging permits to ensure that chain of custody integrity has been maintained;
- Implement measures to minimise wastage;
- Identify and address the impacts of the transportation methods used;
- Consider measures to improve energy efficiency and intensity (for instance by switching to renewable sources of energy)

- Consider monitoring and reporting energy use and carbon emissions (with targets);
- Implement an environmental management system, potentially certified to a recognised standard such as ISO14001.

Health and Safety Improvements

- Develop a formal Health and Safety policy;
- Conduct regular training for workers and managers on safety procedures;
- Develop Key Performance Indicators (KPIs) for Health and Safety measures with monitoring, reporting and target setting;
- Ensure safe machine use by:
 - Providing personal protective equipment (PPE) to staff;
 - Ensuring that all machinery is guarded according to manufacturer's instructions with guards inspected regularly and maintained;
 - Ensuring that sufficient space at machines is provided for staff to work safely;
 - Ensuring that all staff are trained in the use of machinery by competent trainers;
 - Ensuring that all machines are braked and fitted with necessary safety features;
 - Displaying information sheets on the safe use of the machines used in the workshop.



- Provide Local Exhaust Ventilation, suitable vacuum cleaners for wood dust and respiratory protective equipment;
- Reduce injuries sustained through manual handling by:
 - Training staff in manual handling;
 - Setting workbenches and machine tables at a comfortable height;
 - Storing tooling next to the machine to reduce carrying distance where possible;
 - Providing strong, thick gloves for handling tooling and pallets;
 - Providing panel trolley and lifting hooks for moving boards;
- Reduce the impacts of noise pollution by:
 - Using noise enclosures where practicable, and maintaining them in good condition;
 - Using low-noise tooling where possible;
 - Planning maintenance programmes for machinery and LEV systems;
 - Providing suitable hearing protectors for staff and training on proper use;
 - Training staff in risks of noise exposure and systems of work to reduce noise exposure (e.g. suitable feed rates for certain jobs, timber control etc.).
- Ensure safe vehicle use by:
 - Ensuring that fork-lift trucks are maintained and inspected regularly;
 - Ensuring that trucks are operated only by approved and trained staff;
 - Marking pedestrian walkways;
 - Ensuring that only authorised personnel are allowed in yards for deliveries and dispatch.
- Control the risk of injury or property damage caused by electricals by :
 - Regular inspection, maintenance and upgrade of electrical systems;
 - Training staff to spot and report any defective plugs, discoloured sockets or damaged cable/equipment;
 - Ensuring that no personal electrical appliances, e.g. toasters or fans, are allowed.
- Consider implementing a Health and Safety management system, certified to a recognised standard, such as the Occupational Health and Safety Assessment Series OHSAS 18001 and the International Labour Office ILO-OSH 2001 systems.

SOCIAL, LABOUR AND COMMUNITY IMPROVEMENTS

Social and Labour

- Implement a formal code of business conduct, which outlines the principles by which individual employees and the organisation must conduct themselves;



- Ensure fair wages in line with national law and sector standards average;
- Develop a policy covering labour practices for contractors and sub-contractors;
- Develop a policy to ensure labour standards and human rights are respected upstream along the supply chain;
- Develop a whistleblowing policy to allow anonymous reporting of any ethical violations without fear of repercussion.

Community

- Plan regular consultation sessions with local communities to understand on-going impacts (positive and negative);
- Develop policies to protect the right of indigenous people to access land and food sources, to preserve traditional ways of life and to enjoy ecosystem services;

In addition, best practice would include:

- Investment in local infrastructure (such as roads, hospitals, schools etc.);
- Development of local skills and capacity building.

ENVIRONMENTAL, HEALTH AND SAFETY ACTION PLAN

Environment

- Source from sustainably managed forests - international timber certification schemes such as the Forest Stewardship Council (FSC) or the Programme for the Endorsement of Forest Certification schemes (PEFC);

- Implement an environmental management system certified to a recognised standard such as ISO 14001;
- Implement a programme to monitor and reduce environmental impacts associated with dust, noise, odour, and hazardous chemicals use;
- Implement a programme to reduce environmental impacts associated with transportation, warehousing and logistics;
- Implement a programme to monitor and reduce impacts associated with waste streams and waste-to-landfill.

Health and Safety

- Implement a Health and Safety management system;
- Monitor and report progress against Key Performance Indicators (KPIs);
- Develop a schedule for regular training of workers and maintenance of equipment;
- Encourage a culture of 'safety first' through communication from the top;
- Incentivise a culture of safety by linking H&S performance to reward structures.

SOCIAL, LABOUR AND COMMUNITY ACTION PLAN

- Design and communicate an appropriate code of business conduct that considers concerns of key stakeholders (shareholders, employees, government bodies, Non-Governmental Organisations);



- Implement best-practice labour standards (in line with ILO principles); consider signing up to international frameworks such as the UN Global Compact;
- Implement a process to assess labour and human rights conditions for contractors and sub-contractors;
- Implement a process to assess upstream labour and human rights conditions;
- Design a robust and on-going community engagement process to measure and report on impacts (positive and negative) on local communities;
- Consider measuring and communicating wider socio-economic impacts (job creation, infrastructure development) – for example using the WBCSD Measuring Impact Framework.
- Check the historical and current use of the site and the surrounding area to identify the potential for contamination;
- Check how waste is handled on-site – especially hazardous waste. Does the site use a licensed waste contractor, or incinerate or bury waste on-site? Can the site provide evidence of waste transfer notes indicating the location of final disposal?
- Are chemicals stored appropriately and checked for compatibility, for example chemicals contained separately on a concrete floor within a bunded area?
- Check that waste storage areas are clean of debris and that skips are covered to prevent waste escaping. For example, check that waste containers have lids or are stored in an area with a roof;
- Check for signs of ground contamination from chemicals stored and used at the site, for example looking for stained earth/concrete, dead vegetation near storage containers and production areas, and the integrity, condition and age of storage tanks;
- What is the standard of housekeeping on site? Look for evidence that the walking and working surfaces are kept clean and dry;
- Check the age and condition of equipment, look for signs of wear and tear, degradation, leaks and breaks;
- Have there been any recent (within the last three years) incidents on site such as serious injuries, fires / explosions, spills (check the accident and near miss figures at the site, contact the local fire department and local environmental authorities). Is there insurance in place to cover such incidents?

GUIDE TO INITIAL DUE DILIGENCE SITE VISITS

The issues and risks associated with a site will vary depending on size of operation, site location, country of operation and quality of management. When assessing the site these are some of the actions that should be considered:

Environmental

- Check whether the company has procedures for ensuring the origin of timber and for working with suppliers;
- Check the status of environmental permits at the site, to include discharges to air and water, disposal of waste and noise;
- Check whether any Environmental Health and Safety (EHS) fines remain outstanding;



- Have the premises been inspected recently (within the past 2 years) by the regulatory authorities for health, safety and environment?

Labour issues

- Check that labour standards, contracting and remuneration are in line with national law and are consistent with the average for the sector;
- Check that hours worked, including overtime, are recorded and that staff receive written details of hours worked and payment received;
- Has the Company received inspections from the local labour inspectorate in the previous three years? Have these resulted in any penalties, fines, major recommendations or corrective action plans?
- Check whether staff are wearing appropriate personal protective equipment (PPE), for example eye protection and dust masks in wood cutting areas and vapour respirators in varnishing areas; check whether there are adequate health and safety provisions (such as guards on saws);
- Check whether the site and in particular the varnishing areas have adequate ventilation (check for odours) and whether the site has an exhaust burner;
- Check signage around the site. Does it convey the health & safety risks? Are fire exits clearly marked? Are there separate routes for pedestrians and vehicles painted on floors in car parks and delivery areas?

- Does the organisation have a grievance mechanism which allows employees to raise workplace concerns?

- Are employees free to form, or join, a workers' organisation of their choosing?

Community engagement

- Is there a policy and process for regular consultation with local community representatives?
- Is there a policy to prioritise community concerns and integrate into management decisions?
- Is there a process to communicate progress to local communities and other relevant stakeholders (such as local government authorities, NGOs etc.)?



European Bank
for Reconstruction and Development

Sub-sectoral Environmental and Social Guidelines: Wood Processing

REFERENCES AND ADDITIONAL SOURCES

International Labour Organization declaration

<http://www.ilo.org/declaration/thedeclaration/lang--en/index.htm>

UN Global Compact

<http://www.unglobalcompact.org/>

The World Business Council for Sustainable Development (WBCSD)

<http://www.wbcsd.org/>

The Forest Stewardship Council

<http://www.fsc.org/>

The Programme for the Endorsement of Forest Certification schemes (PEFC)

<http://www.pefc.org>

Forest Peoples Programme

<http://www.forestpeoples.org/>

Wood processing and furniture making: cleaner production fact sheet

http://www.usaid.gov/our_work/environment/compliance/ane/ane_guidelines/woodandfurniture.pdf

Example H&S risk assessment for wood working company

<http://www.hse.gov.uk/risk/casestudies/pdf/woodworking.pdf>