1. Where do the products come from?

1. Where do the products come from?

Traceability is the ability to track sources of wood in finished products through the supply chain to – as close as is practical – their origins. A clear sense of all the links in the products' supply chain will be useful for the procurement manager to assess:

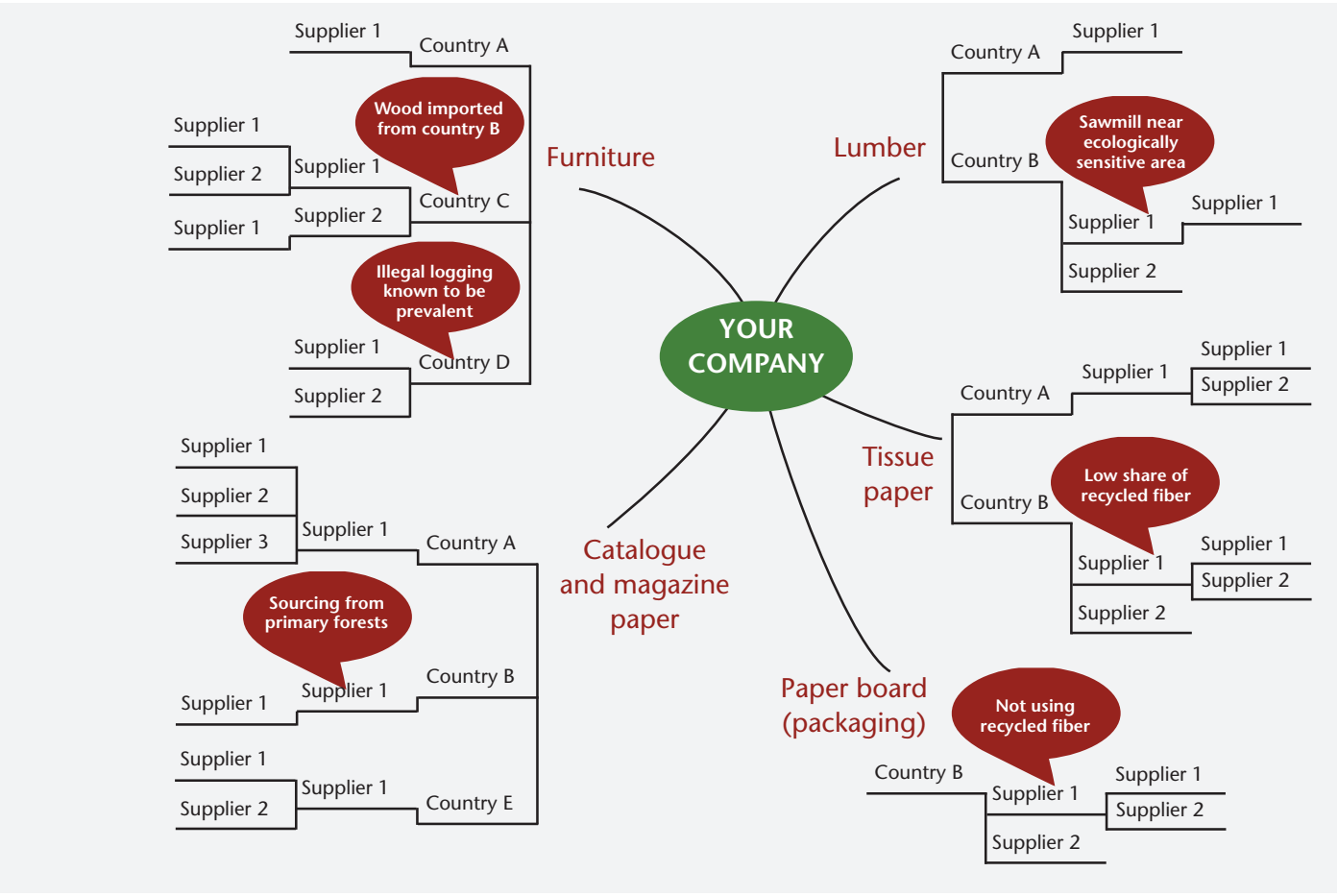
- Whether the sources of wood can be accurately identified.
- Whether the products have the properties they are claimed to have. For instance, whether:
  - The wood was harvested and processed in compliance with relevant laws
  - The wood comes from sustainably managed forests
  - The unique ecological and cultural features of the forest where the wood was sourced have been maintained
  - The products were manufactured with environmental controls in place
  - Harvesting and manufacturing processes complied with social standards.

Tracing the origin of wood and paper-based products is not always straightforward. Supply chains can sometimes link many wood producers and dealers across several countries, and procurement portfolios can be complex, with multiple supply chains (Figures 2 and 3).

Figure 2. Wood and paper-based products have many inputs

Wood and paper-based products have many inputs. The inputs can be very different for different products, both in terms of the amount used and the characteristics of the supply chain.

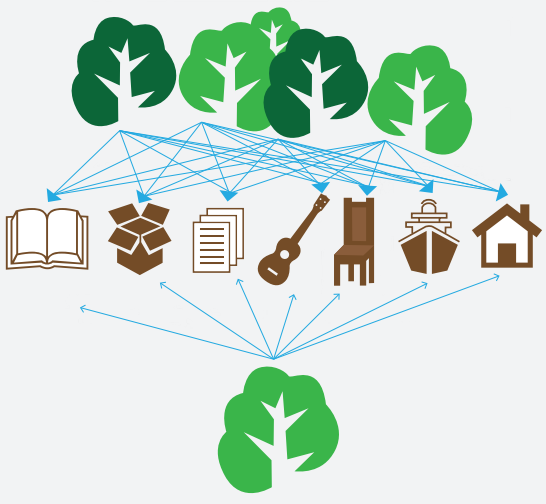
Figure 3. Example of a company's portfolio of wood or paper-based products



The supply chain associated with each product varies depending on the product, the location of the purchaser in the supply chain, and the context of the procurement. This figure shows an example of how a company may engage in a number of different supply chains, each with its own challenges and opportunities.

Forest products are difficult to trace because, a finished product might include different types of trees, and many products can come from the same tree (Figure 4).

Figure 4. Many products, many trees



It is easier to establish traceability for solid wood products than for paper-based products. Paper products are manufactured in pulp mills that typically draw wood from many sources. In the most complex cases, a network of dealers buying wood from many different loggers, landowners and sawmills may supply a pulp mill (Box 1). In a sawmill, logs usually lose their link to individual landowners in a sorting yard in the same way an agricultural business would combine grain from individual farmers in a common silo. The wood collected from sawmills – often chips that are by-products of solid-wood products manufacturing – further lose their individual identity during the paper making process.

Several technological approaches are emerging to help trace and verify the origin of the raw materials in products (Table 2). There are also new technological applications that seek to increase the overall transparency of the supply chains regarding the origin of the raw materials (Table 3).

Understanding the position of a company in the supply chain, can help identify priorities and key areas of influence. Also, depending on the location and/or complexity of the supply chain, the need for due diligence is greater in some places than in others.

Requesting documentation from suppliers is a common method of tracing the origin of raw materials. A supply chain can be regarded as a chain of legally binding contractual relationships; purchasers can trace the supply chain through contracts, and require that their suppliers commit to providing raw materials that were harvested in compliance with the law, or meet other customer specifications.[2] In places where the law – both background law and contract law – is strong and properly enforced, sales contracts can be a good compliance mechanism.

In addition to sales contracts, other documents for tracing the origin of raw materials include:

- Licensing permit(s) from the relevant authorities giving permission to harvest
- Certificate of a sustainable forest management standard
- Certificate of origin
- Chain of custody (CoC) certificate[3]
- Certificate of legality
- Harvesting/management plans
- Phytosanitary certificates – issued by state/local authorities regarding the plant health requirements for the import of non-processed products
- Bill of lading – a receipt for cargo and contract of transportation between a shipper and a carrier that describes the goods being transported and is issued when the shipment is received in good order.
- Export documents
- Transportation certificates

All of these documents should carry appropriate stamps and seals from the relevant governmental or certification agencies. However, false documentation can be common in certain countries and additional systems to trace the raw materials back to their origins, within the limits of feasibility, may be needed in some cases.

Working with those directly involved in the supply chain will help develop a better understanding of the challenges, costs and other impacts associated with implementing additional tracking systems. Forest managers, forest owners, government agencies and certification bodies active in the area can provide useful information.

A high degree of vertical integration makes traceability simpler. However, in some countries such as in the United States, companies are becoming less integrated, selling their forest lands and thereby externalizing traceability.

[2] In some cases competition laws may limit the amount of information that customer and supplier may exchange. In the US, for instance, a pulp mill owned by a company may buy chips from sawmills owned by one or more companies. All these companies may compete against each other to buy logs from landowners, and the information about their respective suppliers may be highly proprietary business information; sharing this information directly or through a common customer may be improper and perceived as anti-competitive.

[3] A Chain of Custody certificate documents and systematically verifies the flow of the materials from their origin in the forest to their end-use.

Table 1. Technologies to trace and verify the origin of wood in the supply chain

Technology	Used by	Tested	Process	Product scope	Contacts
DNA Fingerprinting	Forest managers Manufacturers Importers Retailers	Global	Wood samples are taken from standing trees before harvest as part of the forest inventory process and stored for later use. Samples are taken from the same trees and logs during harvesting and processing, according to harvest and log transportation records. The second set of samples is physically matched to the first set and the DNA of the paired samples is compared. If the DNA is an exact match, this proves the two samples come from the same tree, validating the documentation. Testing is applied to a small, randomly selected portion of paired samples to minimize testing costs (USD 0.75 – 1.00 per m^3).	Solid wood	Double Helix Tracking Technologies Pte. Ltd. Phone: +65 6227 9706 http://www.doublehelixtracking.com/
DNA mapping			Genetic variation within a population of trees can be measured and mapped out. DNA extracted from wood samples can be compared to these maps to determine origin and verify claims. This works even with finished products. By conducting random sampling and testing of product shipments, costs are limited to less than 1% of product value.	Solid wood	
Electronic barcoding	Forest managers Processers Importers	West Africa Central Africa Central America South America Southeast Asia	Unique barcodes are attached to trees in the forest and, using software installed onto PDAs, data is collected (e.g. GPS location and species), and uploaded into the software's central online database. Upon harvest, the barcode remains on the stump and corresponding barcodes are attached to felled logs thereby linking them to the source tree. This process is repeated at each point of timber transformation. Timber can then be tracked and traced, using barcode technology, in real time, along the chain of custody, with the software system reconciling data at every control point and alerting users to irregular or possible illegal activities for resolution.	Solid wood	Helveta Ltd. Phone: +44 (0)1235 432 100 www.helveta.com
Fiber analysis	Manufacturers Importers Retailers	Global	Samples of paper are broken down into slurry and examined under a microscope by trained analysts. While fiber analysis is not a traceability tool, it can identify certain characteristics about the fibers that compose paper products, including whether the species are hardwood or softwood varieties and, in some cases, the genus of the trees.	Paper	Integrated Paper Services Phone:+1 (920) 749 3040 www.ipstesting.com Institute for Paper Science and Technology Darmstadt Technical University Phone: +49 6151 16 2454 www.pmv.tu-darmstadt.de

Table 2. Technologies and selected technological applications to increase transparency in supply chains

Application	To be used by	Tested	What it is	Scope	Contacts
Technologies					
Isotope analysis	Forest managers Manufacturers Importers Retailers	Africa	Stable isotopes are used to confirm and verify the origin of timber species. Stable isotopes are chemical elements (e.g. oxygen, carbon, nitrogen and sulfur) that occur in materials with different atomic mass and with different chemical and kinetic behavior. Databases of stable isotopes can be used to map the distribution of timber species and identify and verify origin of the wood even in finished products.	Solid wood	TÜV Rheinland, Agrolsolab www.agroisolab.de Phone: +49 (0) 2461 93134010
Applications to collect, analyze and share information about the supply chain					
SmartSource360 (featured in the Guide to the Guides)	Retailers Importers Manufacturers	North America Europe	A web-based supply chain management resource that can be used to trace the supply chain and collect sourcing details about a company's products. With SmartSource360, suppliers down the supply chain are able to directly enter information and provide supporting documentation about the wood and/or fiber-based materials used in the products, including supplier declared risk assessment categorization, species, certification status and forest origin.	Solid wood and paper-based products	SmartSource Phone: +1 (302) 541 4664; +1 (802) 434 8731 www.rainforest-alliance.org
String	Forest managers Manufacturers Importers Retailers	Global	String is an online, data recording, tool that allows users at all phases in the supply chain to request information about products from their suppliers. Users can generate reports from the data to get a complete picture of the flow of products throughout the supply chain, and all the available data. String is flexible, and it can be customized to record any data about any type of product (see below). The system has been piloted in a number of industries including timber, textiles and minerals.	Solid wood and paper-based products	Historic Futures Phone: +44 (0) 1993 886420 www.historicfutures.com
FSC's Online Claims Platform	Forest managers Manufacturers Importers Retailers	Global	The Online Claims Platform (OCP) is an online traceability platform customized to work with FSC's Forest Management (FM) and Chain of Custody (CoC) certification systems to streamline the process in order to validate FSC certified products. Currently buyers and sellers of FSC certified products are required to maintain paper records of the volumes of the products traded. Under the OCP, the information and claims about certified products will be kept in an electronic format and all entities along the supply chain will be able to access the data and document the phases of the product in the supply chain. The OCP build on the String platform (above).	Solid wood and paper-based products	FSC Phone: +49 (0) 228 367 660 E-mail: fsc@fsc.org www.ic.fsc.org
PEFC's Global Information Registry	Forest managers Manufacturers Importers Retailers	Global	An online platform to track and trace the flow of certified material information via the Internet. PEFC is currently using a well proven system which requires certified entities to keep detailed records on procured and sold quantities of PEFC certified material. The PEFC Global Information Registry will allow participating certificate holders to receive and to pass on relevant data in electronic format along the entire supply chain, allowing for comprehensive traceability of certified material. The registry is expected to be fully implemented in 2013.	Solid wood and paper-based products	PEFC Phone: +41 (22) 799 4540 E-mail: info@pefc.org www.pefc.org
PREPS (featured in the Guide to the Guides)	Retailers Importers Manufacturers	Europe North America	The PREPS database includes information about paper products, including origin of raw materials. To add a new paper grade to the database, PREEP members nominate the product and the PREEPS secretariat contacts the mills and requests the information.	Paper-based products	PREPS Phone: +44 (0) 207 839 1084 E-mail: info@prepsgroup.com http://prepsgroup.com/home.php

Factors to consider regarding traceability

- Purchase contracts can be useful to trace the origin of the wood. They can also be used as safeguards to ensure that raw materials are harvested and products are manufactured in compliance with the law, where laws are properly enforced.

- Tracing wood through the supply chain back to the regions of origin is becoming common in many parts of the world, and new technologies are emerging to aid this practice.

- Forest certification schemes are often able to track certified and recycled content as well as uncertified content, in the product line. For the uncertified content certification schemes are increasingly placing requirements and safeguards to avoid supply from unwanted/controversial sources.

- Different levels of detail may be needed, depending on the risk of encountering unacceptable practices. For instance, in areas where illegal activity may be occurring, detailed information on the specific location of harvesting may be needed while for other areas knowing the general origin of the wood may suffice.

- Risk should be assessed for every purchase as conditions in the country of origin might change at any time.

- Chain of custody systems have been established by different stakeholders to document the wood flow between various steps of the supply chain. Most forest certification schemes include a chain of custody standard that reaches from the forests up to certain processes in manufacturing. Not all chain of custody systems cover 100% of the certified product, and all systems allow mixing of certified and non-certified materials. In some cases it may be pragmatic for the end user to ensure that its suppliers maintain proper records and make them available upon request, subject to appropriate confidentiality agreements.

Box 1. The wood supply chain

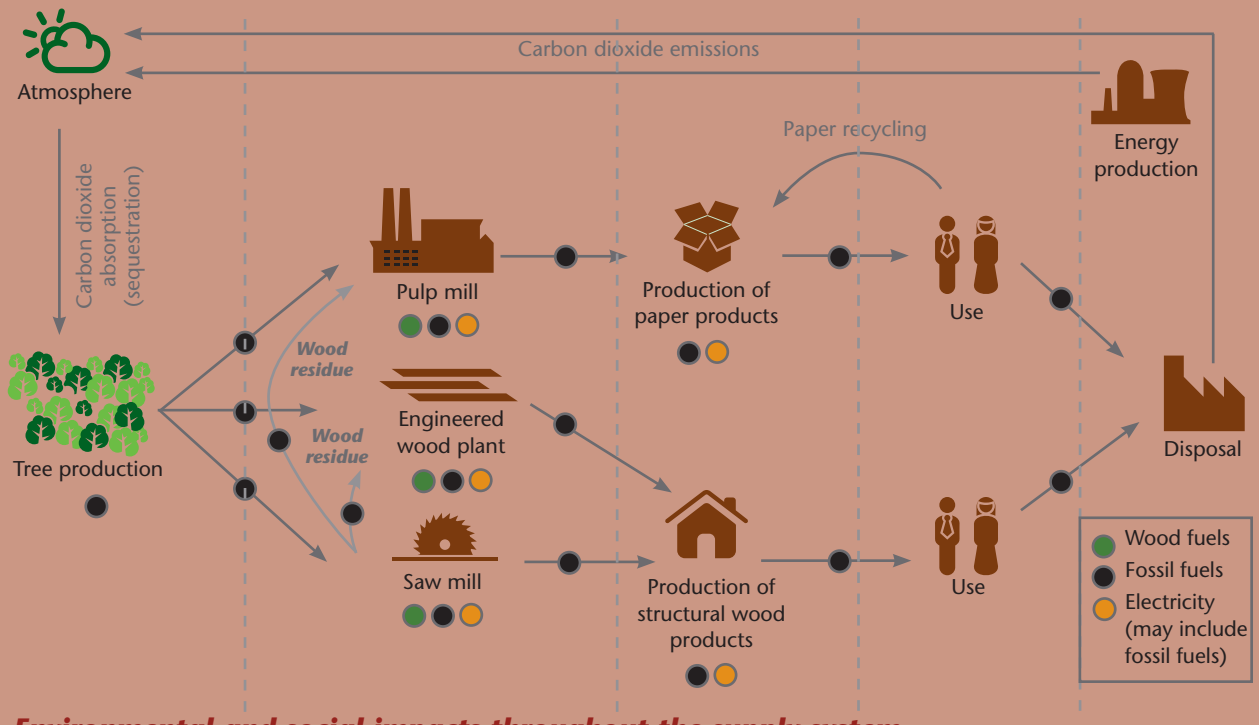
There is no single standard supply chain for wood and paper-based products and all supply chains are different. There are, however, common elements that can help clarify the connections among various manufacturing points, the product flows, and the environmental and social impacts associated (figure below).

Solid wood, engineered wood, and paper-based products are manufactured using different technologies, but they may all come from the same forest or even the same tree. Some forest-based industries often use all parts of the tree for different products in a system of integrated processing facilities. In other instances, only the most valuable portions of the best trees are used. Raw tropical hardwoods are often produced under these circumstances.

There is great variability in supply chains depending on the country, region, or local circumstances. In the most complicated cases, a sawmill, pulp mill and engineered wood plant are fed by a network of product flows and business relationships. Mills frequently incorporate wood from various sources involving a large number of actors. For instance, a pulp mill in the Eastern United States that produces 860,000 tons (Mt) of paperboard per year uses 2,720,000 tons of wood chips. The mill procures these chips directly from 60-70 landowners, some 600 suppliers, 120 sawmills and 10 shipping operations (MeadWestvaco estimates for 2006).

Tracking these wood flows can be challenging, but it is possible to do it to a degree that is satisfactory for sustainable procurement (e.g., district level; see traceability discussion).

Generic supply chain and related environmental and social impacts



Environmental and social impacts throughout the supply system

Primary Sector	Secondary Sector	Tertiary Sector	Use	Disposal
• SFM; Unique forest values, conversion • Climate effects • Harvesting in traditional and community lands without proper permission • Logging in sites important for traditional & local populations • Worker's health & safety • Fair wages	• Efficiency • Pollution • Climate effects • Source reduction • Worker's health & safety • Fair wages	• Efficiency • Pollution • Climate effects • Recycling • Worker's health & safety • Fair wages	• Recycling • Climate effects • Efficiency • Source reduction	• Efficiency • Pollution • Climate effects • Recycling • Worker's health & safety • Fair wages

Dots representing energy inputs do not quantify amounts of energy used in processing or transportation.

SELECTED RESOURCES: TRACEABILITY

See "Guide to the Guides" chapter for more information on each resource.

Procurement requirements

Belgian Government Procurement Policy

CEPI Legal Logging Code of Conduct

Danish Government Procurement Policy for Tropical Forests (under review)

Dutch Government Procurement Criteria for Timber

European Community Green Purchasing Policy

FLEGT & VPAs

French Policy on Public Procurement of Timber and Wood Products

FSC Controlled-Wood Standard

German Government Procurement Policy

Green Globes

Japanese Government Procurement Policy

LEED

Mexican Federal Government Procurement Policy

PEFC Due Diligence System

SFI Procurement Objective

Swiss Declaration Duty for Timber

UK Timber Trade Federation Responsible Purchasing Policy

Resources to assess requirements

CPET

Consumer Goods Forum Guidelines for Pulp, Paper and Packaging

Enhancing the Trade of Legally Produced Timber, a Guide to Initiatives

Environmental Paper Network

EPAT®

FCAG

FICAT

Carbon Disclosure Project

FPAC: A Buyers' Guide to Canada's Sustainable Forest Products (the report)

GFTN

Global Timber Tracking Network

Good Wood, Good Business Guide

Illegal-logging.info

IWPA's Wood Trade Compliance Training and Due Diligence Tools Course

Madera Legal - Asociación Española del Comercio e Industria de la Madera (AEIM)

NEPCon LegalSource Programme

New Zealand Government Paper Buyers' Guide

Paper Profile

PREPS

Project LEAF

SmartSource

Standard Practice for Categorizing Wood and Wood-based Products According to their Fiber Sources String

Sustainable Forest Finance Toolkit

Timber Tracking Technologies Review

Timber Trade Action Plan

The Forest Trust

Two Sides

WWF Certification Assessment Tool (CAT)

WWF Guide to Buying Paper

WWF Paper Scorecard

WWF Tissue Scoring