



Timber Flow Control: Log Tracking Systems and Technology

Overview

SGS has designed its Timber Flow Control service to assist governments **enforce legal compliance of timber producers and traders**. Timber products are tracked from production or import through the value chain to final sale using reliable log tracking systems and technologies. The service allows governments to address the problems of deforestation and loss of revenue that result from illegal logging and falsely declared timber processing and trade.

A coordinated approach to Timber Flow Control is embedded in **SGS's Independent Validation of Legal Timber (IVLT) programme**. IVLT allows timber-producing countries to meet the environmental demands of importers by ensuring that exported timber has been independently validated as legally produced and traded.

The Timber Flow Control service is designed to:

- Establish the actual origin and destination of timber product flows, and thereby detect illegal production and trade;
- Check species, dimensions and quality of timber products for compliance with relevant regulations;
- Reconcile timber volumes produced against harvesting plans and processing or export quotas;
- Verify company data to ensure effective and fair collection of duties, taxes and fees, and improve the management of foreign exchange; and
- Provide documented and verified "chain-of-custody" enabling eco-labelled timber to be traced back to certified sources, or to prove e.g. Convention on International Trade in Endangered Species (CITES) compliance.

The Timber Flow Control service combines advanced tracking technology and targeted field intervention in a modular programme to identify and possibly track all the country's flows of forest products, whether produced locally, imported for local use or in transit, and destined for domestic or for international markets.

Forest products may include logs, bundles of primary or secondary processed wood products, such as sawnwood, plywood, veneer or mouldings, non-timber forest products and even pulpwood or firewood if required. The tracking function may apply to the products individually, their containers or transport vehicles, or more simply on the documents that permit the transport of forest products within the country.

Bar-coding of logs and timber products is used to ensure their unique identification, and to allow inspection and tallying to be carried out reliably and cost-effectively using handheld computers and barcode readers. The bar-coded tags also provide a reliable numbering system for company declarations of log production and transport, and for companies' internal stock control systems.

Individual segments of the Timber Flow Control service

Export Monitoring	Import and Transit Monitoring	Domestic Flow Monitoring
<p>A programme to inspect and monitor all log and timber exports from a country and determine the amount of tax payable by exporters.</p> <p>All relevant shipping and commercial documentation is checked and the declared market value is validated. The process also includes tallying the contents of each shipment, and physical checks on the logs/ wood products such as species identification, measurement and grading. Vessel cargo details are reported independently to the government. Information is stored and analysed in a database from which reports are generated for the relevant authorities.</p>	<p>Documentary checks on imported or transiting shipments, backed up by tallies and physical checks on the products themselves. Similar in concept to Export Monitoring, this programme is particularly useful in countries where logging is banned or restricted, or where domestic production tends to be diluted by foreign imports.</p> <p>The focus is on distinguishing legitimate from illegitimate imports or goods in transit, and tracking them from the port or border through to processing mills or re-export.</p>	<p>Designed to track domestic logs and wood products from source to final destination within the country, more securely and efficiently than a conventional 'paper-based' system. Bar-coded tags are allocated to legitimate producers according to the volume of timber they are authorised to cut. Programme officers use hand-held computers with scanners to record the results of log/timber inspections. State-of-the-art communication devices transfer data to the central database for processing and immediate analysis.</p>

Detailed analysis of legislative and regulatory requirements is a pre-requisite for the successful design and implementation of these services in any country. There are no off-the-shelf log/timber tracking systems that can be readily implemented. The details of the system deployed will depend on the local physical, economic and administrative environment and the current regulations and in force for the control of the forest sector.

Log Tracking Systems

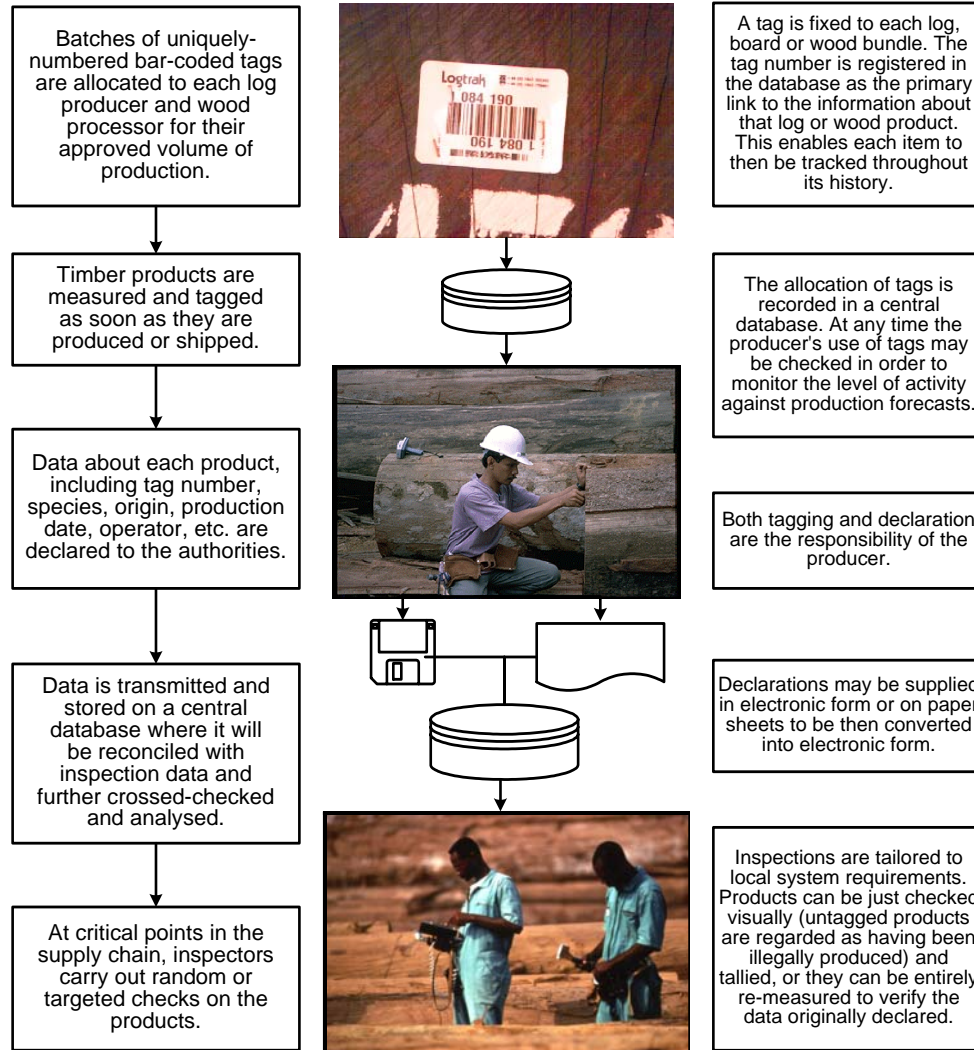
Log tracking systems are designed to gather, store and report information about the flow of timber products. Timber products (whether logs or processed wood) are measured and tagged as soon as they are produced. Data about each product, including tag number, measurements, species, origin, production date, operator, etc. are declared by the producer to the authorities. The system is designed to facilitate rapid and accurate data collection and reduces the need for multiple data entry and copying, reducing the likelihood of transcription errors.

These systems trace logs or processed wood products at the points of origin, processing and destination, as well as at other critical control points along the route such as road checkpoints and stockpiles. As the bar-code number uniquely identifies the product, product tallies may be declared or inspected simply as a list of bar-coded tag numbers. In this way a picture is built up of all product flows and the related activities of a country's forest sector, while unexpected or suspicious results can be pinpointed and investigated.

Inspection and re-measurement of around 10-30% of the products is generally sufficient to provide a reliable estimate of the accuracy of the original declaration. This can be done at any critical control point in the chain, with consequent savings of time and resources. Producers with a history of poor declarations can be targeted for extra checks. Data from these inspections are added into the database.

Independence is maintained by the inspectors not knowing what data was originally declared about each product.

Elements of a log tracking system



The details of the database system design must reflect its relationship with the rest of the regulating authority's data holdings and strategy. SGS can also work within existing systems and cooperate with other partners and stakeholders in the programme, including civil society.

The use of a log tracking system can significantly reduce the number of compulsory log checks in the forest, and the need for routine paperwork. Each load of logs or timber need only undergo a single detailed inspection, performed anywhere in the chain on a random basis. This allows more efficient use of staff and resources.

Analyses within the database indicate whether the producer's declarations are accurate and consistently reliable. Action may then be taken against those who make false declarations. Likewise the illegal forging or re-use of bar-coded tags can be identified in the database.

Log tracking may be extended to labelling standing trees and cut stumps in the forest, thus facilitating pre-harvest inventories and post-harvest checks of logging operations. Similar systems can also be used to track individual bundles of processed wood products, from the mill to destination.

Monitoring of the timber as it passes through the mill: by querying the database it should be possible to relate a batch of e.g. sawn wood products back to the log (or group of logs) from which they were cut and to analyse processing yields, after reconciling input and output data over short time periods or work orders.

Log Tracking Technology

The **Log Tracking Systems** used in the **Timber Flow Control** Service make use of robust information technology hardware, which can be used in the forest or in log yards. Use of this technology enables products to be tracked more securely than by a document-based system.

Elements of technology used

Bar-coded tags

Bar-coded tags are made of highly durable material. The bar-code contains a number that is unique and is encrypted so that it is readable only with a configured scanner. Misuse of tags can be detected in the course of routine periodic reporting and inspection.



To prevent forgery, tags have a number of intrinsic security features. Any misuse, re-use or forgery of tags is usually evident in the field, but is also detected when the database is queried to show the history of all transactions associated with a tag number.

Tags may be pre-printed to identify the concession or operator to which they have been assigned. If required, more sophisticated labelling methods can be used, such as 2-D barcodes or memory chips that carry detailed information about the product to which they are attached, or radio tags that are detected by a receiver as they pass a checkpoint.



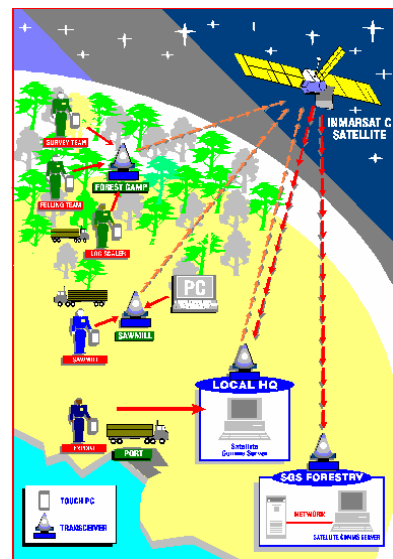
Hand-held computers and scanners

Palm-top portable computers are used to collect data in the forest, on log and timber yards and at checkpoints. Particular attention is paid to requirements in terms of the machine's functionality and ability to withstand difficult environmental conditions.

The units are usually programmed individually for each application, according to the specific type of data to be collected and the level of validation required at the time of data entry. Scanners for reading the bar-coded tags may either be incorporated into the computer unit itself or attached separately. Other options include built-in GPS receivers, phones, printers or data transmitters.

Data transmission systems

Once saved onto the hand-held computer, data is transmitted to a central database. Transmission is completed via modem, email or the Internet using telephone lines or satellite communications or by diskette, memory card or direct data transfer from a cradle.



Database systems

Once loaded into the database, data may be queried and analysed to obtain a range of reports that summarises the data over any required region and/or timespan, report the activities of particular operators and meet a range of management information needs.

SGS has extensive experience with log tracking systems and technologies and is well placed to offer services that successfully meet the objectives of monitoring and verifying the flow of timber products across the supply chain.

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See our website http://www.sgs.com/forestry_monitoring for further information.