



Federal Ministry
of Food
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INTERNATIONAL TROPICAL TIMBER ORGANIZATION

AGREEMENT No. (F) F19/10

*DEVELOPMENT OF TRAINING MODULES
ON LEGAL AND SUSTAINABLE SUPPLY CHAINS (LSSC)*

TRAINING MODULE 2

ASSESSING LEGALITY AND ACHIEVING ACCOUNTABILITY

Final Report

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INTRODUCTION

Activity 5 (N° PP-A/55-334 (D1902) BMEL-ITTO) is part of the Biennial Work Plan of the International Tropical Timber Organization (ITTO) in relation to the Training Program for Legal and Sustainable Supply Chains (LSSC). The Activity will contribute to strengthening the capacity of forest management stakeholders in the Congo Basin to ensure compliance with the main requirements of the LSSCs, in connection with the international trade of timber products from Central Africa ITTO member countries, namely: Cameroon, the Central African Republic (CAR), the Democratic Republic of Congo (DRC), Gabon and the Republic of Congo. These countries harbor the largest forest cover in Central Africa and are also the main timber producers in the region.

These five countries cover three quarters of the total land area of the Congo Basin countries, and represent approximately 97 percent of the total land area of the Congo Basin forests. The Congo Basin forests are a natural resource of global importance, due to their multiple impacts on the environment, including climate change.

In addition, the Activity aims to promote the broader implementation of current SFM guidelines and regulations among the Congo Basin countries with a view to their integration into the legal and sustainable supply chain processes and ensuring compliance with the aforementioned international trade regulations, in connection with the most widely used relevant tracking systems.

The operation plan of the training program on sustainable and legal supply chains will include four main training modules, as follows:

- Module 1: Understanding the zero-deforestation concept;
- Module 2: Assessing legality and achieving accountability;
- Module 3: From legality to sustainability;
- Module 4: Markets and market access.

This report details the training program developed for Module 2 titled “Assessing legality and achieving accountability”, which includes the following courses:

- Monitoring and tracking product flows from trees in forests to end users in markets;
- Trade regulation under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES);
- Use of innovative technologies for chain of custody certification (handheld devices, GPS, satellite technology, Star Dust, genotyping, etc.);
- Role of new technology in modern information systems from planning to accounting;
- Importance of coding for trade and market transparency.

The report structure follows the approach detailed in the terms of reference for consulting services, as follows:

- Review all available literature on the various components of Module 4 content, including the world, the tropics, and the Congo Basin;
- Carry out an assessment of training needs among target beneficiaries in terms of knowledge, know-how and interpersonal skills based on the various components of Module 2 content;

- Define Module 2 overall objective and specific objectives (learning outcomes);
- Describe in detail the content of courses (chapters and respective contents);
- Describe the teaching approach to be used for each part, chapter, practical work (PW), and tutorials (Ts) included in Module 2;
- Determine the number of hours assigned to each chapter/part, PW and Ts of Module 2;
- Describe the knowledge assessment methods;
- Develop a simplified guide for training Module 2; and
- Prepare a presentation and serve as a resource person for the project inception workshop and the training module validation workshops.

Expected deliverables from above terms of reference are as follows:

- Master plan of training module and simplified guide for informing the public at large, for presentation during the inception workshop;
- Draft training module and a simplified guide for the general public;
- First draft report on module development;
- Presentation and active participation during the module validation workshop;
- Training module finalized based on comments from validation workshop and ITTO Secretariat, and simplified guide for informing the public at large;
- Exhaustive and final report on module development, including an article for publication in ITTO's quarterly newsletter *Tropical Forest Update* (TFU).

1- LITERATURE REVIEW FOR MODULE 2 CONTENT

Module 2 titled “Assessing legality and achieving accountability” focuses on monitoring and tracking, CITES-related trade regulations, the use of innovative technologies in chain of custody certification, the role of new technology in modern information systems and the importance of coding to ensure trade and market transparency.

1.1. Development of traceability concept in tropical timber producer countries

The United Nations Food and Agriculture Organization (FAO 2016) defines traceability as “the capability to trace the history, application or location of an item or activity, by means of documented recorded identification”. This involves two key aspects: identifying products by marking and recording product data throughout the production, processing and distribution chain.

The concept of traceability gained importance in the management of tropical forests in the early 1980s, with the global awareness of environmental issues. At the time, tropical timber and logging were almost consistently associated with deforestation (Amazon), the financing of armed conflicts (Liberia) and the eradication of flagship animal species (the Democratic Republic of Congo, Indonesia), involving illegal and unsustainable practices.

At the same time, financial losses for producer countries were deemed to be colossal. This image of illegal logging in tropical forests gradually drove consumers to consider the origin of timber products. As a result, most Congo Basin countries embarked on a vast reform of their Forest Codes in the 1990s and 2000s, and added components related to forest management

and compliance with good logging practices. In many cases, good practices already included measures for monitoring timber flows from forests to processing units.

At the end of the 2000s, the Northern countries introduced new rules to curb illegal timber imports in their markets. In the United States of America (Lacey Act 6) and in Europe (European Union Timber Regulation—EUTR7), importers are now required to establish mechanisms for certifying the legality of supplies or to demonstrate “due diligence”, namely proactively preventing any risk of marketing illegal timber. In practice, procuring timber products from exporters with certified traceability will facilitate due diligence implementation. Alongside these measures taken by importing countries, national tracking systems are gradually being established by several timber-exporting countries. They are usually integrated into Legality Assurance Systems (LAS) developed under Voluntary Partnership Agreements (VPAs) of the FLEGT (Forest Law Enforcement, Governance and Trade) Action Plan of the European Union (EU).

Over time, traceability became a key sustainable management tool for companies and governments in tropical timber producer countries.

1.2. Integrating the traceability concept into international, regional and national legal frameworks

In general, the legal framework made up of current legislative and regulatory instruments (Laws, Decrees, Orders, Circulars and memoranda) forms the reference material throughout the world, the tropics and the Congo Basin. All countries across the world, including in the tropics and the Congo Basin, establish rules for forest management and, consequently, accountability standards and legal components for timber monitoring, tracking and trade in national and international markets. As a result, forest areas are organized into state-owned forest estate called “permanent forest estate (PFE)” and non-permanent forest estate, into local community forest estate and private forest estate.

In the case of state-owned forests, use and management conditions apply and applications for accessing and logging forest resources should be submitted to governments for approval. Depending on countries, authorization can take the form of logging titles (agreements and special permits), logging permits or logging contracts.

In general, the system based on the transfer of management was selected by countries in their forestry law. Countries concede part of forest management to private entities while retaining government property rights and prerogatives for controlling and monitoring the forest resource utilization activities.

The legal frameworks in various countries, the prerogatives of control and monitoring by governments and third parties through audits govern accountability. Accountability is the foundation for the legality and sustainability assurance of supply chains.

Accountability implies a number of public and voluntary commitments on the part of governments and other legal entities, and in particular the requirement for forest management and the incentive to certification of legality or sustainable forest management.

The monitoring and tracking of product flows from trees in forests to end uses in markets are organized on the basis of timber legality as defined by each country across the world, in the tropics and the Congo Basin. Regional and international standards support the tracking and tracing systems of forest product flows. Thus, in the tropics, and in the Congo Basin in particular, countries have established partnership agreements combining compliance with current national legal frameworks and with international market requirements, such as the voluntary partnership agreements involved in Forest Law Enforcement, Governance and Trade (FLEGT-VPA).

Irrespective of countries located in the tropics/Congo Basin, tree tracking in forests is based on land law or government ownership law and access rights established by governments, which include the methods and procedures for allocating logging titles. Depending on governments, the procedures for logging title issuance vary according to systems in place for tenders, forest commissions, mutual agreements or sale of trees which result in the signing of conventions, permits or contracts. In addition, requirements for compliance with established standards for tree selection (pre-logging inventory/prospection; maps of AAC plots); tree extraction (felling, marking); tree transport (rolling or circulation); tree storage (timber yard); tree registration in regulatory documents (felling, skidding sheets, logging worksite site documents, waybills or consignment notes) and tree export (Export Verification Certificate (EVC), Certificate of Origin, Phytosanitary Certificate, Export Declaration, Release Warrant for Export).

Following technological developments, in particular digital technology, the various components involved in the establishment of tracking systems are translated into computer language. Nowadays, all forest countries across the world, including in the tropics and the Congo Basin, are using innovative technologies for supply chain certification and tree tracking. Computer systems are developed in countries of the tropics and the Congo Basin for certain components of the chain of custody or the entire tree tracking and traceability chain, such as the Computerized Legality Assurance System (CLAS) developed in the Republic of Congo as part of implementing its FLEGT-VPA.

Unlike document-based traceability, the use of new technology for product flow tracking starting from trees allows for the efficient planning of forest logging and ensures monitoring, thereby reducing potential errors. Coding involved in this new technology ensures reliability and the transparency of trade and markets.

Timber trade is governed by national and supranational regulations. With regard to international timber trade regulations, governments around the world signed agreements/conventions that establish trade rules for timber and timber products. Among those features the CITES trade regulation, which aims to preserve species threatened with extinction by establishing rules for limiting their utilization and marketing. CITES member states commit to implementing and enforcing the logging and trade quotas or the logging and trade ban of CITES-listed tree species, failing which they face international sanctions.

1.3. Forest traceability

Timber tracking systems are used to provide information on the circulation of timber from forests to consumers, including storage and transport. They are used in particular to verify that the raw material used in timber products comes from legal, responsible or otherwise

acceptable sources (FAO 2016). Each tropical timber producer country has developed its own tracking system and their operation is based on the same logic.

1.3.1. Operation

Methods are developed to ensure timber product tracking at each stage of the logging and processing operations. The framework is defined by the national legislation in many countries. Tracking operations take into account all components included in Module 2, namely trade regulation through CITES; use of new technologies through tracking tools; and importance of coding for forest traceability.

1.3.2. Pre-logging inventory

The logging inventory is carried out upstream of production activities. It consists, at a minimum, in establishing the list of all trees that will be logged in a given area. In most countries, such lists indicate the unique tree identification number; tree location coordinates in inventory plots; and tree diameter and species. Recorded data is usually supported by maps.

Logging inventories are the starting point for traceability—therefore, the key to successful forest traceability lies with localizing individual trees to be logged by assigning a unique identification number to each tree.

1.3.3. Logging operations

Systems for linking the trees to be harvested, cut, skidded, cut again and then rolled with the unique identification numbers assigned to inventoried trees should be established. As a general rule, all stages of the operation should be documented through some medium (paper, tablet, smartphone or other digital device) then entered into a central tracking database. All new products produced from harvested trees should be labeled with a unique identification number linking it to the previous product. Harvested trees will thus be linked to standing trees, logs to harvested trees, blocks to logs produced by cross-cutting harvested trees, etc.

1.3.4. Processing operations

Perfect tracking allowing tracing back to the original tree is generally not sought during processing, given the complexity of the operational chains. Different options are available to operators of processing units and can be combined.

- “Per tree” tracking, which consists of establishing an explicit link between the tree in the forest and the processed product. This method makes it possible to establish the link between specific product volumes and a number of original standing trees. This type of tracking is of particular relevance for primary processing plants with relatively simple production chains. Two main types of tracking are possible:
 - 1) Temporal tracking: each bundle produced during a given time duration is linked to blocks that entered the sawmill during that same period;
 - 2) Contract-based tracking: blocks that entered the sawmill are linked to the timber products produced during the execution of a specific contract.

- Tracking guaranteeing that timber products entering the plant are of acceptable origin, without, however, consistently establishing the link with the individual origin of trees. This type of tracking is especially appropriate for secondary or tertiary processing and wood pulp production.

1.3.5. Tracking tools

Various tools were developed to ensure tracking in the field. During the pre-logging inventory, trees are georeferenced, either manually or using global positioning systems (GPS). With the manual method, the most common, standing trees are recorded by plotting their relative position on a map within a plot whose outlines have been precisely recorded by GPS. For the GPS method, the coordinates of each standing tree listed in the inventory plot are recorded. Assigning a unique identification number to standing trees and logs and blocks can take various forms. Some countries simply require the marking of identification numbers with paint, according to a codification defined by law or freely determined by companies. Some certified companies go further and affix plastic labels to trees and entire logs or logs divided into several blocks, each showing the original tree identification number. In the latter case, the first part is left on the harvested tree to ensure its tracking, and the other parts are taken by the logging operator, or even by the successive operators working on timber, in order to be able to monitor daily logging activities. Other countries require the use of unique barcodes provided by the Forestry Administration. Other countries (Brazil, Scandinavian countries) are considering the possibility of establishing tracking tools such as RFID chips (radio frequency identification technology) to track certain timber products at determined transport points (cities, ports). Finally, other new technologies use the intrinsic properties of wood (DNA markers and stable isotopes) to determine their geographical origin and thus establish their traceability. The DNA profiles of several timber species are under study, and many applications are already attracting a lot of interest under the EUTR, the Lacey Act and the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). Support for monitoring forest traceability remains largely left to the free choice of companies, provided it complies with legal requirements. It is based on hard copy documents in most tropical countries. However, various national tracking projects are emerging and are aimed at the uptake of digital media such as tablets by companies or administrations as part of the implementation of the VPAs and the EUTR. These tablets should facilitate and streamline data entry and submission to the Forestry Administration.

2. CHANGE IN TRAINING NEEDS AMONG TARGET BENEFICIARIES

Introducing new concepts and practices to ensure sustainable forest management requires skill enhancement through the training of government executive officials, decision makers at the legislative level and various private structures that will use them.

Based on this, tracking is a management tool for use by both companies and administrations and requires updating the knowledge officers that will use it; users should become familiar with the different stages of tracking and duties should be clearly established at various levels of tracking operations. In consequence, continuous training should be provided to decision makers, manager-level administration officers and employees of various relevant companies, and young people should receive initial training.

In the context of sustainable forest management, legal and sustainable supply chains (LSSC) require tracking from trees in forests to end users in markets. From logging worksites to internal (domestic market) or external (external or export market) users, several technical officers from companies and administrations are involved in the supply chain and are the key training targets.

Targeted training beneficiaries under Module 2 are:

- Students through initial training curricula as part of master's degrees. Module 2 "Assessing legality and achieving accountability" could be part of consolidated learning under a specialty of a master's degree on "forest governance".
- Institutions, in particular parliamentarians and administrations in charge of Forests, Customs and Trade.

3. DEVELOPMENT OF MODULE 2 THROUGH INITIAL TRAINING

3.1. Module 2 overview

Assessing legality, in this case the legality of supply chains, involves implementation of and compliance with relevant legal frameworks on the part of actors, namely the government administrations and private timber industry. The concept of legality specifies the definitions and matters covered by legality and mutually interacting actors. It shows the transversal and multidisciplinary character of legality. Accountability is based on the extent of legality and its establishment implies scrupulous respect for current legal frameworks. The concept of accountability specifies its definition and its attributes. It sheds light on the rigorous and meticulous preparation and organization that are required. Establishing effective accountability contributes to sustainable supply chains. Module 2 focuses on these concepts: the introduction of "legal instruments compliant with law and regulations" and technological resources; the use of these innovative and new technologies and their role and importance in planning, accounting and trade and market transparency. The experience of the sub-region in tracking and tracing the flow of products from supply sources to final consumers in markets will be introduced as a practical example to illustrate Module 2 overview.

3.2. Module 2 schedule

Course ID	Course title	Credits	Number of hours			
			Theory classes (Th)	Practical work/Tutorials (PW, T)	Individual work (IW)	Total
2A	Concepts of legality and accountability: definitions, scope, attributes, legal and sustainable supply chains	6	10	4	5	18
2B	Monitoring and tracking of product flows from trees in forests to end users in markets	14	23	10	9	42
2C	Use of innovative technologies for chain of custody certification (hand-held equipment, GPS, satellite technology, Star Dust, genotypes, etc.): Computerized Legality Assurance System (CLAS)	9	8	13	6	27
2D	Role of new technology in modern information systems: From planning to accounting	4	3	6	3	12
2E	Trade regulations under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)	2	4	0	2	6
2F	Importance of coding for trade and market transparency	6	7	6	5	18

(WP and Ts are considered as practical work)

Prerequisites

Learners should have a basic knowledge of **forestry** and **forest policy and law** deemed satisfactory by the officer in charge of course.

Module 2 courses in detail

Courses Chapters	Session 2A Concepts of legality and accountability: definitions, scope, attributes, legal and sustainable supply chains	Session 2B Monitoring and tracking of product flows from trees in forests to end users in markets	Session 2 C Use of innovative technologies for chain of custody certification	Session 2 D Role of new technology in modern information systems: from planning to accounting	Session 2 E Trade regulation under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)	Session 2F Importance of coding for trade and market transparency
0	Course introduction	Course introduction	Course introduction	Course introduction	Course introduction	Course introduction
1	Concept of legality	Various sources of legal timber in Central Africa (cases of different logging permits found in Central Africa)	Various tools and respective roles in timber tracking	Content of innovative technology used for the Computerized Legality Assurance System (CLAS)	General information on CITES	General information on the principle of coding in logging operations
2	Accountability	Tracking operation based on various logging permits	Use of innovative technologies	Accounts management	CITES trade regulations	Timber coding for markets
3	Definition of and various stages of forest product tracking	Case study, Case of the Congo: Monitoring and tracking of timber harvested based on various logging permits		Legality	CITES-related litigation	
4	Legal and sustainable supply chains	Monitoring and tracking of timber harvested based on logging agreements		Bar-codes		
5		Monitoring and tracking of timber harvested in forest plantations		Pre-logging		
6		Monitoring and tracking of timber harvested based on Special Permits		Forest logging		

7				Transportation		
8				Storing		
9				Processing		
10				Output		
11				Taxation		
12				FLEGT licenses		
13				Track records		
14				Statistic data production		

MODULE 2- Course 2A

Concepts of legality and accountability: definitions, scope, attributes, legal and sustainable supply chains

Trainer: (name and position)

Contact: (trainer's e-mail address)

Credits: 6 credits

Number of hours: 18 hours

Course overview

Following findings establishing the extent of illegal tropical timber logging and trade in international and national markets, and the lack of forest governance observed in countries harboring tropical forests, compounded by a lack of forest policies and very poor forest legal frameworks for forest management, the European Union, through the VPA-FLEGT, and the United States of America, through the Lacey Act in particular, took the initiative to launch political processes aimed at promoting the legal logging and trade of timber and timber products for export to their markets, and the improvement of forest governance. Thus, they followed in the footsteps of environmental NGOs following the Rio Summit which, through calls for a boycott of tropical timber, led to the development and promotion of forest certification systems based on compliance with the requirements of legality, traceability and sustainability of timber and timber product supply sources. The various forest certification frameworks updated, enriched and reinforced the concept of accountability and sustainability.

The national legal frameworks, constitutive of legality in countries and pillars of the implementation of any government or private certification system, were further changed towards the sustainable management of tropical forests. After detailing the concepts of legality and accountability, Course 2A will address topics on the various subjects of legality; and the attributes of accountability. The concept of legal and sustainable supply chains will also be reviewed.

Prerequisites

Basic knowledge of:

- forestry;
- forestry law; and
- forest governance.

Overall objectives

1. Familiarize learners with the concepts of legality and accountability in forest logging;
2. Provide learners with useful background and theoretical knowledge of the international timber trade and legal and sustainable supply chains.

Course specific objectives (in terms of skills)

At course completion, learners will be able to:

- Explain the concepts of legality, accountability (principles, definitions and attributes) and timber traceability.
- Identify the components of legal and sustainable supply chains.

Course contents (knowledge)

Course introduction

Chapter 1: Concept of timber legality

- 1.1. Definition of legality
 - 1.1.1. General definition
 - 1.1.2. Legal definition (agreements, treaties)
 - 1.1.3. Basic principles of timber legality
- 1.2. Timber legality components
- 1.3. Basic principles of timber legality
- 1.4. Timber legal supply chains

Chapter 2: Accountability in timber supply chains

- 2.1. Concept of accountability
- 2.2. Accountability attributes
 - 2.2.1. Forest management
 - 2.2.2. Forest certification

Chapter 3: Concept of timber tracking

- 3.1. Operation of timber tracking
 - 3.1.1. Pre-logging inventory
 - 3.1.2. Logging operations
 - 3.1.3. Processing operations
 - 3.1.4. Tools for monitoring tracking
 - 3.1.5. Digital monitoring (data processing)
- 3.2. Timber tracking goals
 - 3.2.1. Management tool for governance and businesses
 - 3.2.2. Access to forest certification
 - 3.2.3. Improved monitoring of national forestry statistics
 - 3.2.4. Answer to FLEGT requirements

Chapter 4: Concept of legal and sustainable supply chains

- 4.1 Legal and sustainable supply chains
- 4.2. Accountability generates sustainability in forest management operations
- 4.3. Sustainability principles in legal and sustainable supply chains

Teaching approach

The course will be delivered in the form of lectures for introducing the concepts of legality and accountability (principles, definitions and attributes). It will be important to promote discussions on the concept of accountability throughout the various stages of case studies. For instance, accountability across the various stages of pre-logging inventories.

Number of hours			Chapters	Teaching activities
Theory classes	Practical work/Tutorials	Total		
1	0	1	Course introduction	Lecture
1	1	2	Chapter 1: Concept of timber legality	Lecture
2	1	3	Chapter 2: Accountability in timber supply chains	Interactive lecture, reading, T No. 1
6	3	9	Chapter 3: Concept of timber tracking	Interactive lecture, reading, T No. 2
3	0	3	Chapter 4: Concept of legal and sustainable supply chain	Interactive lecture, reading, T No. 3
10	4	13	Total	




(Tutorials are considered as practical work)

Note: Attendance to classes as well as tutorials and practical work will be mandatory for all learners.

Assessment method

Knowledge assessment will be carried out on a continuous basis during the session

Grade distribution

-  Continuous assessment (quiz): A/20
-  Final assessment: B/20
-  General average: (A+B)/2

Other

Use of class notes will not be allowed during assessments.

French language ability and work presentation, for both assessments and laboratory work, will be taken into account during assessments (10% of each grade).

References and recommended reading material

FAO, 2016: Traceability: a management tool for business and governments. 68 p.

Vendehaute M. and Heuse E., 2006. Aménagement forestier, traçabilité du bois et certification: état des lieux des progrès engendrés au Cameroun. GIZ, 70p

MODULE 2- Course 2B

Monitoring and tracking of product flows from trees in forests to final users in markets

Trainer: (name and position)

Contact: (trainer's e-mail address)

Credits: 14 credits

Number of hours: 42 hours

Course overview

In the aftermath of the Rio Summit, the awareness of government authorities responsible for forest management, of the private sector made up of professionals involved in logging and of environmental NGOs advocating for the sustainability of forest ecosystems, and the full documentation of all timber channels became over time requirements to ensure transparent, responsible and sustainable forest management. The link between monitoring, timber tracking and forest legality and governance has now become a criterion for good forest management. Course 2B will review the different stages involved in timber monitoring and tracking from trees in forests to end users in markets.

Prerequisites

Session 2 A- concept of legality: legality and legal supply chain-related topics.

Overall objective

Provide learners with useful contextual and theoretical knowledge in terms of monitoring and tracking of product flows from harvesting sources to end users in markets.

Course specific objectives (skills)

Upon course completion, learners will be able to:

- describe the different stages of monitoring and tracking for legal supply chains from trees in forests to end users in markets;
- understand and explain the concept of legality in connection with timber and timber product tracking.

Detailed course content (knowledge)

Course introduction

Chapter 1: Various sources of legal timber in Central Africa (cases of different logging permits found in Central Africa)

- 1.1. Timber logging permits in Cameroon
- 1.2. Timber logging permits in the Republic of the Congo
- 1.3. Timber logging permits in the Democratic Republic of the Congo
- 1.4. Timber logging permits in Gabon
- 1.5. Timber logging permits in the Central African Republic

Chapter 2: Case study 1: Monitoring and tracking of timber harvested based on management and processing agreements

- 2.1. From establishing allowable annual cuts (AAC) to applying for logging authorizations
 - 2.1.1. Conducting pre-logging inventories: producing inventory reports and thematic maps for allowable annual cuts
 - 2.1.2. Tree marking using inventory numbers
 - 2.1.3. Geolocalizing inventoried trees
 - 2.1.4. Preparing and submitting applications for allowable annual cuts
- 2.2. Verification by the forest administration and allowable annual cut approval
 - 2.2.1. Verification of consistent countings
 - 2.2.2. Verification of forest logging operator production capacity
 - 2.2.3. Production of expert report on AAC
- 2.3. Timber harvesting in accordance with forest logging and management standards
 - 2.3.1. Conducting pre-logging sorting/counting operations
 - 2.3.2. Timber production (felling, topping/butt trimming, log skidding, hauling and cross-cutting)
 - 2.3.3. Marking of boles, stumps and logs with felling ID numbers using bar-code tags and company stamp)
 - 2.3.4. Recording boles and logs in logging worksite document
 - 2.3.5. Marking logging years and AAC numbers
- 2.4. Log storage
 - 2.4.1. Log cross-cutting and allocation (logs for local sawmills/logs for export)
 - 2.4.2. Preparing Specification Sheets
 - 2.4.3. Preparing Pre-Export Verifications of Conformity (PVoC)
 - 2.4.4. Log marking using bar codes on boles
 - 2.4.5. Log storage based on log allocation (local sawmill/export)
- 2.5. Product transport (logs and post-processing)
 - 2.5.1. Preparing waybills
 - 2.5.2. Log transport
 - 2.5.3. Lumber transport (boards, basting and other square-edged products)
- 2.6. Local processing (primary, secondary, etc.)
 - 2.6.1. Measuring volumes at the following four stages: (1) sawmill log yard incoming; (2) processing unit incoming; (3) processing unit outgoing; and (4) sawmill outgoing
 - 2.6.2. Timber processing operations
 - 2.6.3. Marking products/bundles
- 2.7. Exporting products
 - 2.7.1. Preparing timber export documentation: (1) Waybill; (2) Specification sheet; (3) Export Verification Certificate (EVC), EX1 (former D6), EX8 (former D15); (4) Certificate of origin; (5) Packing slips; (6) Phytosanitary certificates; (7) Shipping orders; (8) Manifests/Bills of lading; (9) Pro-forma invoice of Commercial bill; (10) Customs declarations; and (11) Delivery slips

2.8. Marketing channels for local products

2.8.1. Local sales of processed products (boards, bastaing, rafters and other square-edge products)

Chapter 3: Case study 2—Monitoring and tracking of timber from forest plantations

3.1. Application for and issuance of operation licenses: establishment and submission of plantation timber license applications to forest administration

3.1.1. Number of AAC plots and land area involved

3.1.2. Number of trees to be logged

3.1.3. ID numbers of AAC plots

3.1.4. Geolocalization of production area

3.2. Logging

3.2.1. Timber production (felling, topping/butt trimming, log yarding, hauling and cross-cutting)

3.2.2. Registering boles and logs in logging work site documents

3.3. Log storage

3.3.1. Log cross-cutting and allocation (logs for local sawmills/logs for export)

3.3.2. Preparing Specification Sheets

3.3.3. Preparing Pre-Export Verifications of Conformity (EVC)

3.3.4. Marking bundles or products (posts, roundwood) with bar-codes showing destination

3.4. Product transport

3.4.1. Preparing waybills

3.4.2. Transporting plantation products (roundwood, posts, etc.)

3.5. Local product processing (roundwood)

3.5.1. Measuring volumes at following four stages: (1) sawmill log yard incoming; (2) processing unit incoming; (3) processing unit outgoing; (4) sawmill outgoing volumes; (5) determination of sawmill productivity rate

3.5.2. Timber processing operations

3.5.3. Marking products/bundles

3.6. Exporting products

3.6.1. Preparing timber export documentation: 1. Waybills; 2. Specification sheets; 3. Export Verification Certificate (EVC), EX1 (ex-D6), EX8 (ex-D15); 4. Certificates of origin; Packing slips; 5. Phytosanitary certificates; 6. Shipping orders; 7. Manifests/Bills of lading; 9. Pro-forma invoice of Commercial bill; 10. Customs declarations; and 11. Delivery slips

3.7. Local Marketing channels for by-products

3.7.1. Local sales of by-products (fuel wood, charcoal)

Chapter 4: Case study 3—Monitoring and tracking of timber harvested based on Special Permits

4.1. Application for Special Licenses and issuance by forest administration

4.1.1. Marking standing trees using stamping ID numbers

4.1.2. Georelocalizing stamped trees

4.1.3. Conducting stamping operation of trees to be logged

4.1.4. Production of tree stamping operation report

4.2. Timber logging

4.2.1. Timber production (felling, topping, butt trimming)

4.2.2. Marking boles, stumps and logs with felling ID numbers

4.2.3. Recording boles in logging worksite documents

4.2.4. Marking of felling number and annual cut ID number

4.3. Forest on-site log processing

4.3.1. Carrying timber processing operations

4.3.2. Marking products

Teaching approach

The course will be delivered as lectures for introducing various logging permits in use in the tropical timber producer countries of Central Africa. Group discussions will be promoted through thematic workshops case studies of timber tracking based on relevant logging permits.

Practical work

Practical work will be based on case studies of relevance to respective chapters.

Chapter 1: Learners will be divided into groups based on tropical timber producer countries in Central Africa. Following the lecture, each group will present on the various existing logging permits in each country. Following discussions, learners will identify similitudes and differences between the various logging permits studied for relevant countries.

Chapter 2, Chapter 3 and Chapter 4 will be dedicated to case studies. The various stages of forest logging from inventories to processing will be reviewed while identifying duties at each level.

Practical work 2—Case study: Structural flow of the chain of custody for timber harvested based on forest logging agreements

Stages	Operations	Operational duties	Data to be coded	Coding-related duties /Existing documents	Verification (physical and document-based control) and frequency	Data reconciliation
1. Preparation and application for AAC	Execution of pre-logging inventory - Production of inventory report and thematic maps for annual cut - Preparation and submission of annual cut application documentation - Marking of trees with inventory ID numbers - Georeferencing of inventoried trees	Systematic tallying and marking with white paint of harvestable trees by forest companies	- AAC land area - Number of harvestable trees (average volume based on volume tables, and species) - ID numbers of AAC plots - Coordinates of harvestable trees - Average volume based on volume tables (indicative volume)	Data required for monitoring and tracking harvestable trees is coded and transferred to CLAS database via internet - Key documents required for this stage: tree tally reports, expert reports on annual allowable cut and maps of AAC plots	Water & Forest Brigade through annual cut expert mission/forest companies and updated CLAS data. - IGEF (CLFT) based on control/mission reports, CLAS database and tracking system.	Data consistency test with management inventory is conducted upon closing the final AAC plot in Forest Production Units (FPU). FPUs are a subdivision of the management plan and include five AAC plots
2. Verification and issuance of AAC approval	Verification of systematic tallies - Verification of logging company production capacity - Production of expert report on annual cut	DDEF/Brigade checks tally results are exact by conducting a recount in 5% of plots where tallying was performed	- Recount results (numbers and species) of harvestable trees - Location coordinates of trees	Results are submitted to IGEF (CLFT) by DDEFs/Brigades in expert reports - Key documents required for this stage: annual cut permits and maps of annual logging plots	DDEF through missions/field mission reports and updated CLAS database - IGEF through mission reports, CLAS database and tracking system	Data consistency test based on comparing number of trees in counting operation and number of trees in recount operation
3. Timber harvesting	- Pre-felling sorting/tallying operations - Timber production (felling, topping, butt-trimming, log yarding, hauling and cross-cutting) - Marking of boles, stumps and logs with felling numbers on bar-codes and company stamp - Recording of boles	Measurement and bar-coding of all logs by logging companies Bar-code ID numbers are different from inventory ID numbers	- Species - Lengths - Diameters - Volumes - Harvesting area - Tree felling ID numbers/bar-codes Bar-codes are linked to following information: AAC number; name of logging company; year of logging; AAC land area; N° of relevant plots, required	- Encoding of data required for monitoring and tracking of harvestable trees and data transfer into SIGEF database by company via internet - Key documents required for this stage: SIGEF-related, AAC maps and production/control/mission reports	- Brigade/DDEF through production reports/control reports/field missions and SIGEF database - IGEF through mission reports, SIGEF database and tracking system	Data consistency test based on comparing number of logged trees by species category with the number of trees recorded at AAC approval stage Annual maximum volumes (AMV) (m ³) are not considered as relevant indicators since AACs are approved based on an indicative volume determined based on volume tables

	and logs in logging worksite documents - Marking of felling year and AAC number		for consistency test in particular			i
4. Log storage	Log cross-cutting and allocation (logs for local sawmills/logs for export) -Log marking with bar-codes linked to bar-codes on boles - Preparation of specification sheets - Preparation of Export verification Certificate - Storage of logs according to destination (local sawmills or export)	Scanning of all bar-codes by logging company	- Log ID numbers/bar-codes	- Encoding of data required for monitoring of harvestable tree tracking and data transfer into SIGEF database by company via internet - Key documents required for this stage: CLAS-related and production/control/mission reports	- Brigade/DDEF through field missions and updated CLAS database - IGEF (CLFT) through mission reports, CLAS database and tracking system - SCPFE branches through reports on control of log dimensions and volumes	Data consistency test based on comparing tree ID numbers/bar-codes of Stage 3 (Harvesting) with tree ID numbers/bar-codes of Stage 4 (Storage)
5. Transport of products (logs and products after processing, Stage 6)	- Preparation of waybill - Transport of logs - Transport of boards, bastaing and other square-edge products	All bar-codes scanned by logging companies	- ID numbers/bar-codes of logs (identical) No need for re-coding - Vehicle registration plate number - Place of departure - Destination	- Data required for monitoring and tracking processed products is transferred to CLAS database by brigade/company (forest, transport...) via internet - Key documents required for this stage: CLAS-related and production/control/mission reports	- Brigade/Checkpoints/SCPFE branches through production/control reports and updated CLAS database - IGEF (CLFT) through mission reports, CLAS database and tracking system	
6. Local processing (primary, secondary, etc.)	- Volume measurement at the four following stages: (1) plant incoming; (2) processing unit incoming; (3) processing unit outgoing; (4) volumes at plant outgoing; - Timber processing	Recording of volumes and scanning of all bar-codes by company upon arrival at company plant yards - Production of daily production reports by company - Mandatory monitoring/control of	- Log ID numbers/bar-codes (same numbers) re-coding unnecessary - Volume at plant incoming - Volume at processing line incoming - Volume at processing line outgoing - Dimensions and volume/bar-code numbers	- Data required for monitoring and tracking processed products is transferred to CLAS database by company via internet - Key documents required for this stage: CLAS-related and production/control/mission reports	- Brigade/DDEF through control reports, production reports and updated CLAS database - IGEF (CLFT) through mission reports, CLAS database and tracking system Control of timber recovery rates based on daily reports	Data consistency test based on comparing data as follows: - tree ID numbers/bar-codes of stage 6 (Processing) with tree ID numbers/bar-codes of stage 5 (Transport) for timber used for processing Data consistency test between the three

	operations - Marking of products /bundles	logs and finished product stocks by company	of finished products/bundles at plant outgoing			following stages: - timber recovery rates (volumes at processing line incoming and outgoing) - inventories of processed products - volume of delivered goods (plant outgoing)
7. Product export	Preparation of timber export documents: waybills; specification sheets; Export verification Certificate EX1 (former D6), EX8 (former D15), certificate of origin; packing slips; phytosanitary certificate; shipping order; manifest/ bill of lading; proforma invoice of commercial bill; customs declaration; and delivery slips	- Scanning of all bar-codes by export company - Data consistency check between declarations and physical controls by SCPFE - In addition, based on validation by IGEF (CLFT), SCPFE checks consistency of declarations with date recorded in CLAS and issues FLEGT authorization	Bar-code numbers (logs/finished product bundles)	- Data required for monitoring and tracking of processed products is transferred to CLAS database by SCPFE via internet - Key documents required for this stage: CLAS-related and production/control/mission reports	- SCPFE/Customs through control reports, production reports and updated CLAS database - IGEF (CLAS) through mission reports, CLAS database and tracking system	Data consistency test based on comparing data as follows: - a) For exported logs: tree numbers/bar-codes of stages 3 (Harvesting), 4 (Storage), and 5 (Transport) with tree numbers/bar-codes of stage 7 (Export) - b.) For processed products: - with volumes of stage 6 - with SIGEF progress reports - with SCPFE information
8. Local marketing channels for processed products	Local sales of processed products (boards, bastaing, rafters and other square-edge products)	Companies maintain bookkeeping records of local sales	Number/ID numbers of bundles	- Data required for monitoring and tracking processed products is transferred to CLAS database by company via internet - Key documents required for this stage: CLAS-related and production/control/mission reports	- SCPFE/Customs through control reports, production reports and updated CLAS database - IGEF (CLAS) through mission reports, CLAS database and tracking system	Data consistency test based on comparing production reports of stages 6 (Processing) and 8 (Local marketing)

Practical work 3—Case study: Structural flow of the chain of custody for timber harvested based on special permits

Stages	Operations	Operational duties	Data to be coded	Coding-related duties /Existing documents	Verification (physical and document-based control) and frequency	Data reconciliation
1. Special permit application and issuance	<ul style="list-style-type: none"> - Marking of trees to be harvested - Production of tree marking report - Marking of standing trees with ID numbers - Georeferencing of marked trees 	Marking of applied for trees by DDEF and special permit applicant	<ul style="list-style-type: none"> - Number of trees to be harvested - Location coordinated of trees to be harvested - Tree marking numbers 	<ul style="list-style-type: none"> - Data required for monitoring and tracking of trees to be harvested is coded and transferred to CLAS database via internet - Key documents required for this stage: tree marking reports and map of logging area 	<ul style="list-style-type: none"> - Brigade through tree marking mission and updated CLAS database - IGEF based on control/mission reports, CLAS database and tracking system 	
2. Timber harvesting	<ul style="list-style-type: none"> - Timber production (felling, topping, butt-trimming) - Marking of boles, stumps and logs with felling numbers - Recording of boles and logs in logging worksite documents - Marking of felling year and AAC number 	Measurement, volume determination and ID number marking for all logs by special permit holder	<ul style="list-style-type: none"> - Species - Lengths - Diameters - Volume - Harvesting area - Tree logging ID numbers 	<ul style="list-style-type: none"> - Encoding of data required for monitoring and tracking of harvested trees and data transfer by special permit holder to DDEF, which is responsible for entering data into CLAS database via internet - Key documents required for this stage: CLAS-related, AAC maps and production reports 	<ul style="list-style-type: none"> - Special permit holder through production reports - DDEF through production reports and CLAS database - IGEF (CLFT) through production/mission reports, CLAS database and tracking system 	Data consistency test based on comparing number of logged trees by species category with the number of trees recorded in tree marking report
3. On-site (forest) log processing	<ul style="list-style-type: none"> - Execution of timber processing operations - Marking of products 	Measurement of volume of processed products by special permit holder	<ul style="list-style-type: none"> - Volume of processed products - Types of processed products 	<ul style="list-style-type: none"> - Submission of production report by special permit holder to DDEF for compilation of data required for monitoring and tracking of processed products into CLAS database via internet - Key documents required for this stage: CLAS-related and production reports 	<ul style="list-style-type: none"> - DDEF through data reports from updated CLAS - IGEF (CLAS) through tree marking reports and CLAS database 	Data consistency test by comparing product quantities in stage 3-tree equivalent (Processing) with tree volume of stage 2 (Harvesting)
4. Transport of processed timber	<ul style="list-style-type: none"> - Preparation of waybill - Transport of logs - Transport of boards, bastaing and other square-edge products 	Recording of all products processed from harvested trees by special permit holder	<ul style="list-style-type: none"> - Volume of processed products - Types of transported products - Vehicle registration plate number - Departure location 	<ul style="list-style-type: none"> - Transfer of data required for monitoring and tracking of processed products by DDEF into CLAS database via internet - Key documents required for this stage: CLAS-related and production reports 	<ul style="list-style-type: none"> - DDEF through production reports and updated CLAS database - IGEF (CLAS) through tree marking reports, CLAS database and tracking system 	Data consistency test by comparing product quantities in stage 3-tree equivalent (Processing) with tree number/ID numbers of trees at stage 2 (Harvesting)

			- Destination			
5. Local marketing channels for processed timber	Local marketing of processed products (boards, bastaing, rafters and other square-edge)	Special permit holder keep accounting records of local sales	Number of produced products by category (boards, bastaing, rafters, strips)	<ul style="list-style-type: none"> - Transfer of data required for monitoring and tracking of processed products by DDEF into CLAS database via internet. - Key documents required for this stage: CLAS-related and production reports 	<ul style="list-style-type: none"> - DDEF through production reports and updated CLAS database - IGEF through mission reports, CLAS database and tracking system 	Data consistency test by comparing product quantities in stage 3-tree equivalent (Processing) with tree number/ID numbers of trees at stage 2 (Harvesting)

Practical work 4—Case study: Structural framework of the chain of custody for timber from forest plantations

Stages	Operations	Party in charge	Data to be coded	Coding-related duties /Existing documents	Verification (physical and document-based control) and frequency	Data reconciliation
1. Logging title application and issuance	Preparation and submission of plantation timber harvesting application documents	Company	<ul style="list-style-type: none"> - Number and land areas of logging plots - Number of trees to be harvested - ID numbers of logging plots -Location coordinated of production area 	<ul style="list-style-type: none"> - Encoding of data required for monitoring and tracking of harvested trees and data transfer by logging company via internet - Key documents required for this stage: plantation timber harvesting application documents 	<ul style="list-style-type: none"> - DDEF based on plantation timber harvesting application documents and updated SIGEF database - IGEF based on control/mission reports, SIGEF database and tracking system 	Production of full report on trees unsuitable for marketing (numbers of trees and causes)
2. Timber harvesting	<ul style="list-style-type: none"> - Timber production (felling, topping, butt-trimming, log yarding, hauling and cross-cutting) - Recording of boles and logs in logging worksite documents 	Measurement of all roundwood by company	<ul style="list-style-type: none"> - Species - Lengths - Volumes - Harvesting area - ID numbers of timber/bundles 	<ul style="list-style-type: none"> - Encoding of data required for monitoring and tracking of harvested trees and data transfer into SIGEF database by logging company via internet - Key documents required for this stage: SIGEF-related, AAC maps and production reports 	<ul style="list-style-type: none"> - DDEF through production reports/control reports/field missions and SIGEF database - IGEF through mission reports, SIGEF database and tracking system 	Data consistency test by comparing number of logged trees by species category with the number of trees recorded in AAC approval
3. Log storage	<ul style="list-style-type: none"> - Log cross-cutting and allocation (logs for local sawmills/logs for export) - Preparation of specification sheets - Preparation of Export Verification Certificate - Marking of bundles/products (posts, roundwood) with bar-code indicating destination 	Scanning of all bar-codes by logging company	- ID numbers/bar-codes of products/bundles	<ul style="list-style-type: none"> - Encoding of data required for monitoring and tracking of logs and data transfer into SIGEF database by company via internet. - Key documents required for this stage: SIGEF-related and production/control/mission reports 	<ul style="list-style-type: none"> - DDEF through field missions, production reports and updated SIGEF database - IGEF through mission reports, SIGEF database and tracking system 	Data consistency test by comparing number of trees at stage 2 (Harvesting) with number of trees at stage 3 (Storage): <i>reconciliation based on volumes</i>
4. Transport of	- Preparation of	All bar-codes scanned by	- ID numbers/bar-codes of	- Transfer of data required for	- Brigade through control	

products	waybill - Transport of plantation timber products (roundwood, posts, etc.)	transport company	products/bundles - Vehicle registration plate number - Place of departure - Destination	monitoring and tracking processed products into SIGEF database by Brigade/company (logging, transport...) via internet. - Key documents required for this stage: SIGEF-related and production/control/mission reports	reports, production reports and SIGF updated database - IGEF through mission reports, SIGEF database and tracking system At level of checkpoints for verification of transported timber	
5. Local processing of products (roundwood)	- Volume measurement at the four following stages: (1) plant yard incoming; (2) processing unit incoming; (3) processing unit outgoing; (4) volumes at plant outgoing; - Timber processing operations - Marking of products/bundles	Volume measurement by company at the three following stages: (1) plant yard incoming; (2) processing line incoming; (3) processing line outgoing; Production of daily production reports	- Volume at plant incoming - Volume at production line incoming - Volume at production line outgoing	- Data required for monitoring and tracking of processed product is transferred to SIGEF database by company via internet - Key documents required for this stage: SIGEF-related and production/control/mission reports	- DDEF through control reports, production reports and updated SIGEF database - IGEF through mission reports, SIGEF database and tracking system Control of timber recovery rates based on daily reports	Data consistency test by comparing: - number of trees at stage 5 (Processing) with number of trees at stage 4 (Transport) for timber used for processing Consistency test between the three following stages: - timber recovery rates (processing line incoming and outgoing volumes) - inventories of processed products - volume of delivered goods (plant outgoing)

6. Product export	Preparation of timber export documents: waybills; specification sheets; Export verification (former D6), EX8 (former D15), certificate of origin; packing slips; phytosanitary certificate; shipping order; manifest/ bill of lading	<ul style="list-style-type: none"> - Scanning of all bar-codes by export company - Consistency check of exported products data and issuance of Export Verification Certificate by SCPFE 	Bar-code numbers (logs/ finished products)	<ul style="list-style-type: none"> - Data required for monitoring and tracking of processed products is transferred to SIGEF database by SCPFE via internet - Key documents required for this stage: SIGEF-related and production/control/mission reports 	<ul style="list-style-type: none"> - SCPFE/Customs through control reports, production reports and updated SIGEF database - IGEF through mission reports, SIGEF database and tracking system 	<p>Data consistency test by comparing (for logs):</p> <ul style="list-style-type: none"> - number of trees at stages 2 (Harvesting), 3 (Storage) and 4 (Transport) with number of trees at stage 6 (Export) - with SIGEF progress reports <p>Data consistency test by comparing (for processed products: plant outgoing volumes and export volumes</p>
7. Local marketing channels for byproducts	Local sales of byproducts (fuel wood, charcoal)	Companies keep bookkeeping records of local sales	Number of bundles produced by category (fuel wood cubic meters, bags of charcoal)	<ul style="list-style-type: none"> - Data required for monitoring and tracking of byproducts is transferred to SIGEF database by company via internet - Key documents required for this stage: SIGEF-related and production reports 	<ul style="list-style-type: none"> - DDEF through production reports and SIGEF updated database - IGEF through mission reports, SIGEF database and tracking system 	<p>Data consistency test by comparing production reports of stages 5 (Processing) 6 (Export) and 8 (Local marketing)</p>

COURSE SCHEDULE




Number of hours			Chapters	Teaching activities
Theory classes	Practical work/Tutorials	Total		
2	0	2	Course introduction	Lecture
4	2	6	Chapter 1: Various sources of legal timber in Central Africa (cases of different logging permits found in Central Africa)	Interactive lecture, reading, Practical Work 1
8	5	13	Chapter 2: Case study 1: Monitoring and tracking of timber harvested based on logging and forest management agreements	Interactive lecture, reading, Practical Work 2
8	5	13	Chapter 3: Case study 2: Monitoring and tracking of timber harvested based on forest plantations	Interactive lecture, reading, Practical Work 3
6	2	8	Chapter 4: Case study 3: Monitoring and tracking of timber harvested based on Special Permits	Interactive lecture, reading, Practical Work 4
28	14	42	Total	

Note: Attendance to classes as well as tutorials and practical work will be mandatory for all learners.

Assessment method

Knowledge assessment will be carried out on a continuous basis throughout the session, as follows:

Grade distribution

-  Continuous assessment: A/20
-  Final examination: B/20
-  Overall average: $(A+B)/2$

Other

Use of class notes will not be allowed during assessments.

Language ability (French/English) and presentation, both for examinations and presentations/tutorials and PW reporting, will be taken into account for assessment (10% of marks).

Any delay in submitting laboratory reports/sawmill visit reports will incur a 10% penalty per each day's delay.

References and suggested reading material

- 1- FAO, 2016. Traceability: a management tool for business and governments. FAO FLEGT Programme, Technical Paper N°1. 55p.
- 2- Kapa F., Malélé S., & Torambe B. 2006. La gestion des concessions forestières en République Démocratique du Congo. Le géant endormi In Exploitation et gestion durable des forêts en Afrique Centrale. Nazi R, Nguinguiri JC.& Ezzine de Blaz D. Ed. Harmathan, Paris, pp : 217-240.
- 3- Mahonghol D., Ringuet S., Amougou Ondoua G. & Chen H. K., 2016. Manuel de formation en législation forestière et contrôle: vers une lutte concertée contre l'exploitation forestière, formation des formateurs. Traffic, 59p.
- 4- Ministry of Forest Economy, 2018. Système informatique de vérification de la légalité. Cellule FLEGT et traçabilité, Brazzaville, Congo.
- 5- Vendenhaute M. & Heuse E., 2006. Aménagement forestier, traçabilité de bois et certification: état des lieux des progrès enregistrés au Cameroun. GIZ, 70p.

MODULE 2 - Course 2C

Use of innovative technologies for chain of custody certification (handheld devices, GPS, satellite technology, Star Dust, genotypes, etc.) :

Trainer: (name and position)

Contact: (trainer's e-mail)

Credits: 9 credits

Number of hours: 27 hours

Description générale de la Session

The development of new and innovative specific technologies facilitated the tracking process of forest products and enabled the certification of the chain of custody for timber legality.

Course 2C will review the use of new tools and technologies for monitoring product tracking from trees in forests to final users in markets.

Prerequisites

Course 2 B: Various stages of monitoring and tracking. Computer technology, satellite technology, GPS, Star Dust, genotypes.

Overall objective

1. Familiarize learners with the use of new tools and technologies for timber monitoring and tracking
2. Familiarize learners with the use of all digital tools necessary for establishing and developing a digital monitoring and tracking system for trees.

Specific objectives (in terms of skills)

Upon course completion, learners will be able to:

1. Describe the components and tools of the tracking system for legal supply chains from trees in forests to final users in markets;
2. Understand the technology and coding required for operating a computerized legality assurance system in connection with the legality and tracking of timber and timber products supply chains.

Course detailed content (knowledge)

Course introduction

Chapter 1: Various tools and respective roles in timber tracking

- 1.1. Internet
- 1.2. Hand-held devices
- 1.3. GPS

Chapter 2: Use of innovating technology

- 2.1. Satellite, star Dust technology
- 2.2. Related technologies

- 2.2.1 Principles
- 2.2.2 Methods for analyzing isotope/oligo-element ratio
- 2.2.3 DNA analysis and synthetic DNA analysis

2.3. Related technologies

- 2.3.1. Principle
- 2.3.2. Nanoparticles
- 2.3.3. Magnetism
- 2.3.4. Matrix code

Teaching approach

The course will be delivered in the form of lectures for introducing the contribution of tools and new technologies to the monitoring of timber product tracking. Group discussions will be promoted through thematic workshops on the use of innovative technologies.

Practical work

Practical work 1: Theory of innovating technology—Principles and operation

Practical work 1: Visit to a logging concession in operation. Surveying will be carried out on a stock of logs in a forest log yard and the tracking link between forest ID numbers and tree stumps in the tree logging area will be checked, while using the innovating tools and technology used to established those links. A practical work report will be submitted to trainer.

Practical work 2: Groups of learners will be requested to enter logging survey data sheets into a GIS software and to produce a georeferencing map of trees inventoried for an annual allowable cut.

COURSE SCHEDULE

Number of hours			Chapters	Teaching activities
Theory classes	Tutorials/Practical work	Total		
1	0	1	Course introduction	Interactive lecture, reading, Practical Work 1
5	9	15	Chapter 1: Various tools and respective roles in timber tracking	Interactive lecture, reading, Practical Work 2
3	9	15	Chapter 2: Use of innovative technologies	Interactive lecture, reading, Practical Work 3
9	18	27	Total	Interactive lecture

Note: Attendance to classes as well as tutorials and will be mandatory for all learners.

Assessment method

Knowledge assessment will be carried out on a continuous basis throughout the session, as follows:

Mark distribution



Continuous assessment:

- Assignment mark: A/20
- Practical work mark: B/20
- Final mark of continuous assessment: $C = (A+B)/2$



Final examination: D/20



Overall average: $(C+D)/2$

Other

Use of class notes/references will not be allowed during assessments.

Language ability (French) and presentation, both for examinations and presentations/tutorials and PW reporting, will be taken into account for assessment (10% of marks).

Any delay in submitting laboratory reports/plant visit report will incur a 10% penalty per each day's delay.

References and suggested reading material

1- FAO, 2016. Traceability, a management tool for enterprises and governments. FAO-FLEGT Program, Technical Paper No 1. 55p.

2- Kapa F., Malélé S., & Torambe B. 2006. La gestion des concessions forestières en République Démocratique du Congo. Le géant endormi In Exploitation et gestion durable des forêts en Afrique Centrale. Nazi R, Nguingiri JC.& Ezzine de Blaz D. Ed. Harmattan, Paris, pp: 217-240.

3- Mahonghol D., Ringuet S., Amougou Ondoua G. & Chen H. K., 2016. Manuel de formation en législation forestière et contrôle: vers une lutte concertée contre l'exploitation forestière, formation des formateurs. Traffic, 59p.

4- Ministry of Forest Economy, 2018. Système informatique de vérification de la légalité. Cellule FLEGT et traçabilité, Brazzaville, Congo.

5- Sikouk T. and Spalanzani A, 2012: L'évaluation des technologies de traçabilité utilisées dans une chaîne d'approvisionnement forestière en France. Cahier de recherche 2012-05 E5.

MODULE 2- Session 2D

Role of new technology in modern information systems: From planning to accounting

Trainer: (name and position)

Contact: (trainer's e-mail)

Credits: 4 credits

Number of hours: 12 hours

Course overview

The development of new and innovative technologies based on information digitalization facilitated the development and establishment of computerized systems used for the monitoring and tracking of timber and timber product flows, and for planning and accounting.

Course 2D will review all components of the computerized legality assurance system in connection with timber tracking.

Prerequisites

Session 2 B: Various stages of monitoring and tracking. Computer technology, satellite technology, GPS, Star Dust, genotypes.

Overall objectives

1. Familiarize learners with computer languages used for timber monitoring and tracking
2. Familiarize learners with the use of all digital tools necessary for establishing and developing a digital monitoring and tracking system for trees.

Specific objectives (in terms of skills)

Upon course completion, learners will be able to:

1. Use software required for the computerized legality assurance system;
2. Create a company/individual user account;
3. Monitor the legality of forest products using the computerized legality assurance system;

Course content (knowledge)

Chapter 0: Introduction to the contribution of new technologies to the development of Computerized Legality Assurance Systems (CLAS)

Chapter 1: Innovative technology used for Computerized Legality Assurance Systems (CLAS)

- 1.1. Browsing principle
 - 1.1.1. Accessing government website top page
 - 1.1.2. Connecting to application
 - 1.1.3. Accessing private account top page
 - 1.1.4. Browsing CLAS template screen

- 1.1.5. Using Excel forms
- 1.1.6. Template form description

Chapitre 2: Account management

- 2.1.Registrating and validating companies
- 2.2.Registrating and authorizing users
- 2.3.Allocating roles/access rights to users

Chapter 3: Legality

- 3.1. Entering data in legality matrix verifiers
- 3.2.Verifying and validating legality grids verifiers and indicators compliance
- 3.3.Managing legality audits
- 3.4.Managing violations
- 3.5.Applying for, issuing, printing or suspending legality certificates

Chapter 4: Bar-codes

- 3.1.Registering applications, and printing and allocating bar-code labels
- 3.2.Canceling series of lost, damaged or surplus bar-code labels
- 3.3.Replacing bar-code labels

Chapter 5: Pre-logging

- 5.1.Registering and approving logging permits
- 5.2.Registering and approving annual allowable cuts
- 5.3.Registering inventories
- 5.4.Carrying out inventory verifications prior to inventory approval
- 5.5.Registering Special Permits

Chapter 6: Logging

- 6.1. Registering and declaring felling operations
- 6.2. Registering and declaring volumes
- 6.3. Registering and declaring cross-cutting operations
- 6.4. Carrying out post-felling inspections
- 6.5. Registering and declaring special felling operations
- 6.6. Registering and approving special entries

Chapter 7: Transport

- 7.1. Registering waybills for logs
- 7.2. Registering waybills for sawn wood products
- 7.3. Registering waybills for forest plantation roundwood
- 7.4. Carrying out controls on timber trucks at checkpoints

Chapter 8: Storage

- 8.1. Registering and approving storage areas
- 8.2. Carrying out inspections in timberyards

Chapter 9: Processing

- 9.1. Registering processing units and lines

- 9.2. Registering incoming consignments in processing lines
- 9.3. Registering outgoing consignments in processing lines

Chapter 10: Outgoing

- 10.1. Registering owner loads (trade)
- 10.2. Registering sales on domestic market
- 10.3. Registering timber loss, abandonment or theft
- 10.4. Registering and validating logging permit applications
- 10.5. Carrying out inspections on products included in logging permits

Chapter 11: Tax

- 11.1. Distinguishing between various types of tax
- 11.2. Managing tax payment notifications
- 11.3. Settling tax notifications

Chapter 12: FLEGT authorizations

- 12.1. Uploading and registering FLEGT authorization applications
- 12.2. Issuing, duplicating, invalidating and authenticating FLEGT authorizations

Chapter 13: Product track records

- 13.1. Displaying product track record data

Chapter 14: Statistic data generation

- 14.1. Generating statistic reports

Teaching approach

The course will be delivered in the form of interactive lectures for introducing how information recorded and coded through innovative technologies give shape to a structured and computerized system. Interactive lectures will be followed by practical work for exploring the interface of the Computerized Legality Assurance System.

Practical work

A single practical work is planned and its aim will be to describe how entered and coded data become a computerized legality assurance system.

Learners will work in groups and each group will work on a particular theme in connection with the functions of computerized legality assurance systems.

COURSE SCHEDULE




Number of hours			Chapters	Teaching activities
Theory classes	Practical work/tutorials	Total		
1	3	4	Chapter 0: Introduction to course on the contribution of new technologies to the development of Computerized Legality Assurance Systems (CLAS)	Interactive lecture, reading, Practical Work 1
1	3	4	Chapter 1: Content of innovative technology used for the Computerized Legality Assurance System (CLAS)	Interactive lecture, reading, Practical Work 1
3	6	9	Chapter 2: Accounts management; Chapter 3: Legality; and Chapter 4: Bar-codes	Interactive lecture, reading
3	6	9	Chapter 5: Pre-logging, and Chapter 6: Logging	Interactive lecture, reading
3	6	9	Chapter 7: Transport; Chapter 8: Storing; and Chapter 9: Processing	Interactive lecture, reading
3	6	9	Chapter 10: Output; Chapter 11: Taxation; and Chapter 12: FLEGT licenses	Interactive lecture, reading
1	3	4	Chapter 13: Product track records; and Chapter 14: Statistic data production	Interactive lecture, reading
15	33	40	Total	

Note: Attendance to classes as well as tutorials and practical work will be mandatory for all learners.

Assessment method

Knowledge assessment will be carried out on a continuous basis throughout the session, as follows:

Mark distribution:

-  **Continuous assessment:**
 - Assignment mark: A/20
 - Practical work mark: B/20
 - Final continuous assessment mark: $C = (A+B)/2$
-  Final examination: D/20
-  Overall average: $(C+D)/2$

Other

Use of class notes/references will not be allowed during assessments.

Language ability (French/English) and presentation, both for examinations and laboratory work, will be taken into account for assessment (10% of each mark).

Any delay in submitting laboratory work reports/plant visit reports will incur a 10% penalty per each day's delay.

References and suggested reading material

- 1- FAO, 2016. Traceability, a management tool for enterprises and governments. FAO-FLEGT Program, Technical Paper No 1. 55p.
- 2- Kapa F., Malélé S., & Torambe B. 2006. La gestion des concessions forestières en République Démocratique du Congo. Le géant endormi In Exploitation et gestion durable des forêts en Afrique Centrale. Nazi R, Nguingiri JC.& Ezzine de Blaz D. Ed. Harmathan, Paris, pp: 217-240.
- 3- Mahonghol D., Ringuet S., Amougou Ondoua G. & Chen H. K., 2016. Manuel de formation en législation forestière et contrôle : vers une lutte concertée contre l'exploitation forestière, formation des formateurs. Traffic, 59p.
- 4- Ministry of Forest Economy, 2018. Système informatique de vérification de la légalité. Cellule FLEGT et traçabilité, Brazzaville, Congo.
- 5- Vendenhaute M. & Heuse E., 2006. Aménagement forestier, traçabilité de bois et certification: état des lieux des progrès enregistrés au Cameroun. GIZ, 70p.

MODULE 2- Course 2E

Forest product trade under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)

Trainer: (name and position)

Contact: (trainer's e-mail)

Credits: 4 credits

Number of hours: 12 hours

Course overview

Course 2E will review CITES-related requirements for wild plant species, and timber species in particular.

Prerequisites

Forestry law and Course 2 A: Legal and sustainable supply chains.

Overall objective

1. Provide learners with knowledge of CITES-related requirements for timber product trade.

Specific objectives (in terms of skills)

Upon course completion, learners will be able to:

- 1- Describe the CITES
- 2- Explain the timber trade regulations in connection with CITES and its impacts on sustainable timber supply;
- 3- Understand and explain mechanisms for identifying and classifying plant species in connection with CITES

Course content (knowledge)

Course introduction

Chapter 1: General information on CITES

- 1.1. Genesis
- 1.2. Development/description and structure of CITES
- 1.3. CITES adoption/signature process
- 1.4. Monitoring mechanism for CITES implementation

Chapter 2: Trade regulation based on CITES

- 1.1. Applicability
- 1.2. Identification and classification criteria for timber species
- 1.3. CITES-listed endangered timber species
- 1.4. Requirements for timber species international trade

Chapter 3: CITES-related litigation

- 3.1. Institutional framework
- 3.2. Sanctions (civil, penal, administrative)

Teaching approach

The course will be delivered as lectures and reading material will also be used.

COURSE SCHEDULE




Number of hours			Chapters	Teaching activities
Theory classes	Practical Work/Readings/Summary reports	Total		
1	0	1	Chapter 0: Course introduction	Interactive lecture
2	0	2	Chapter 1: General information on CITES	Interactive lecture
2	1	3	Chapter 2: CITES trade regulations	Interactive lecture
1	1	2	Chapter 3: CITES-related litigation	Interactive lecture
4	0	4	Total	

Note: Attendance to classes as well as tutorials will be mandatory for all learners.

Assessment method

Knowledge assessment will be carried out on a continuous basis throughout the session, as follows:

Mark distribution:

-  Continuous assessment: A/20
-  Final examination: B/20
-  Overall average: (A+B)/2

Other

Use of class notes/references will not be allowed during assessments.

Language ability (French) and presentation, both for examinations and laboratory work/tutorials and PW reporting, will (10% of each mark).

Any delay in submitting reading summary reports will incur a 10% penalty per each day's delay.

References and suggested reading material

1- CITES document

List of mandatory documents.

List of recommended reading material

Ngoya-Kessy A.M. 2019. État des lieux des acteurs du secteur privé de la filière bois au Congo.

MODULE 2- Course 2F

Importance of coding for trade and market transparency

Trainer: (name and position)

Contact: (trainer's e-mail)

Credits: 6 credits

Number of hours: 18 hours

Course overview

Course 2F will review the entire data coding process required to ensure timber tracking from forests to final users in markets.

Prerequisites

None

Overall objective

1. Demonstrate to learners the importance of data coding to ensure transparency in trade and markets.

Specific objectives (in terms of skills)

Upon course completion, learners will be able to:

1. Explain the data coding process;
2. Identify various types of data coding;
3. Explain the importance of data coding for trade and market transparency.

Course content (knowledge)

Course introduction

Chapter 1: General information on the principle of coding in logging operations

- 1.1. Data coding during forest inventory
- 1.2. Data coding during felling, yarding and skidding operations
- 1.3. Data coding during cross-cutting operations
- 1.4. Data coding in processing units

Chapter 2: Coding Timber data for markets

- 3.1. Coding forest product data for local market
- 3.2. Coding forest product data for international market

Chapter 3: Importance of data coding and impacts on timber trade

Teaching approach

The course will be delivered in the form of lectures, summary readings and tutorials (field outing) to demonstrate the importance of coding for timber tracking from forests to local and international markets.

Practical work

Thematic practical work will be conducted to illustrate the importance of data coding at each stage of timber tracking.

COURSE SCHEDULE




Number of hours			Chapters	Teaching activities
Theory classes	Tutorials/Practical Work	Total		
1	0	1	Course introduction	Lecture
3	3	6	Chapter 1: General information on the principle of coding in logging operations	Interactive lecture, reading practical work 1, field visit
3	3	6	Chapter 2: Coding timber data for markets	Interactive lecture, reading, practical work 2
3	2	5	Chapter 3: Importance of coding and impacts on timber trade	Interactive lecture, reading, practical work 2
10	8	18	Total	

Note: Attendance to classes as well as tutorials will be mandatory for all learners.

Assessment method

Knowledge assessment will be carried out on a continuous basis throughout the session, as follows:

Mark distribution:

-  Continuous assessment: A/20
-  Final examination: B/20
-  Overall average: (A+B)/2

Other

Use of class notes/references will not be allowed during assessments.

Language ability (French) and presentation, both for examinations and laboratory work, will be taken into account for assessment (10% of each mark).

Any delay in submitting field outing reports will incur a 10% penalty per each day's delay.

4. DEVELOPING MODULE 2 FOR PROFESSIONAL DEVELOPMENT

Professional development is of interest to members of parliament as well as administrations involved in the timber trade, namely officers of the financial administration, in particular the customs department, and officers of the ministry in charge of trade. Training can be delivered in the form of workshops through illustrated PowerPoint presentations or in the form of lectures on the themes outlined in table below and supported by tutorials and practical work, in particular for the officers of the administrations working on timber trade.

Various themes were selected according to target audiences, as shown in the following table:

Institution/Administration	Training targets: Members of Parliament – Customs Administration – Trade Administration			
	Powerpoint 1: Basic concept of legality and accountability	Powerpoint 2: Roles, duties and control in connection with legality	Powerpoint 3: Computerized Legality Assurance System (CLAS)	Documents/References
Members of Parliament	Slide 0: Introduction Slide 1: Concept of legality <ul style="list-style-type: none"> - Definitions - Legality-related topics - Legal supply chains Slide 2: Concept of accountability <ul style="list-style-type: none"> - Accountability attributes - Sustainable supply chains - Content of sustainability Slide 3: Conclusion	Slide 0 Introduction Slide 1: Role of MPs in connection with timber legality <ul style="list-style-type: none"> - Initiating bills in support of forestry policy - Approving/Adopting bills Slide 2: MPs responsibility in connection with timber legality <ul style="list-style-type: none"> - Carrying out parliamentary inquiries on legality enforceability (laws, Agreements, conventions) - Generating synergies for sharing information with decentralized institutions (Councils of Prefectures) Slide 3: Conclusion	Slide 0 Introduction Slide 1: Brief background and genesis of CLAS Slide 2: Introduction to CLAS <ul style="list-style-type: none"> - What is CLAS - CLAS Structure (18 components and contents) - CLAS servicing and maintenance Slide 3: Importance of CLAS <ul style="list-style-type: none"> - For timber trade (information traceability and transparency) - For economy (transparency of forest tax data: taxes and fees) - For strategy (compliance standardization for all - automatic flagging for non-compliance) Slide 3: Conclusion	Voluntary Partnership Agreement between the European Union and the Republic of Congo in connection with Forest Law Enforcement, Governance and Trade (FLEGT) and the Congo Forest Code and subsequent instruments (current decrees and orders)
Customs	Slide 0: Introduction Slide 1: Concept of legality <ul style="list-style-type: none"> - Definitions - Legality-related topics - Legal supply chains Slide 2: Concept of accountability <ul style="list-style-type: none"> - Accountability attributes - Sustainable supply chains - Content of sustainability Slide 3: Conclusion	Diapositif 0 Introduction Diapositif 1: Role of Customs in timber legality <ul style="list-style-type: none"> - Administration in charge of implementing the Computerized Legality Assurance System (CLAS) Slide 2: Duties of Customs <ul style="list-style-type: none"> - Organizing border control of timber and timber products export authorization issuance Slide 3: Legality control <ul style="list-style-type: none"> - Cases subject to customs control - Tariffs on timber and timber products for export Slide 4: Conclusion	Slide 0 Introduction Slide 1: Brief background and genesis of CLAS Slide 2: Introduction to CLAS <ul style="list-style-type: none"> - What is CLAS - CLAS Structure (18 components and contents) - CLAS servicing and maintenance Slide 3: Importance of CLAS <ul style="list-style-type: none"> - For timber trade (information traceability and transparency) - For economy (transparency of forest tax data: taxes and fees) - For strategy (compliance standardization for all - automatic flagging for non-compliance) 	Voluntary Partnership Agreement between the European Union and the Republic of Congo in connection with Forest Law Enforcement, Governance and Trade (FLEGT), the Congo Forest Code and subsequent instruments (current decrees and orders)

			Slide 4: Conclusion	
Trade	<p>Slide 0: Introduction</p> <p>Slide 1: Concept of legality</p> <ul style="list-style-type: none"> - Definitions - Legality-related topics - Legal supply chains <p>Slide 2: Concept of accountability</p> <ul style="list-style-type: none"> - Accountability attributes - Sustainable supply chains - Content of sustainability <p>Slide 3: Conclusion</p>	<p>Slide 0 Introduction</p> <p>Slide 1: Role of trade in connection with timber legality</p> <ul style="list-style-type: none"> - Administration in charge of implementing the Legality Assurance System (LAS) <p>Slide 2: Duties of trade</p> <ul style="list-style-type: none"> - Organizing border control of timber and timber products - Issuing export declarations <p>Slide 3: Legality control</p> <ul style="list-style-type: none"> - Cases subjected to trade control - Taxes on timber and timber products for export <p>Slide 4 Conclusion</p>	<p>Slide 0 Introduction</p> <p>Slide 1: Brief background and genesis of CLAS</p> <p>Slide 2: Introduction to CLAS</p> <ul style="list-style-type: none"> - What is CLAS - CLAS Structure (18 components and contents) - CLAS servicing and maintenance <p>Slide 3: Importance of CLAS</p> <ul style="list-style-type: none"> - For timber trade (information traceability and transparency) - For economy (transparency of forest tax data: taxes and fees) - For strategy (compliance standardization for all - automatic flagging for non-compliance) <p>Slide 4: Conclusion</p>	<p>Voluntary Partnership Agreement between the European Union and the Republic of Congo in connection with Forest Law Enforcement, Governance and Trade (FLEGT), the Congo Forest Code and subsequent instruments (current decrees and orders)</p>