



INTERNATIONAL TROPICAL TIMBER ORGANIZATION

PP-A/55-334 BMEL-LSSC Activity 5:
*DEVELOPMENT OF TRAINING MODULES
ON LEGAL AND SUSTAINABLE SUPPLY CHAINS (LSSC)*

TRAINING MODULE 1 UNDERSTANDING THE ZERO- DEFORESTATION CONCEPT

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January 2021

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Module 1 overview

Forests provide a multitude of services, including production services (commercial products, food products and medicinal products), regulation services (climate regulation, water regulation and pollution regulation), sociocultural services (sources of inspiration, aesthetic values, heritage values, scientific and educational values, religious and spiritual values and recreational values), and infrastructural services and activity support (agricultural areas, recreational sites and natural areas) (Van de Weghe 2004 and De Wasseige et al. 2012). Despite the great importance of forests, deforestation and forest degradation continue to increase throughout the world.

The average rate of deforestation in the world increased from 0.3% between 2000 and 2010 to 0.4% between 2010 and 2020 (Global Forest Watch 2020). According to Ernest et al. (2013), deforestation in the Congo Basin increased from 0.13% between 1990 and 2000 to 0.26% between 2000 and 2005. In the tropics, deforestation represents 0.15% of the forest area of the Congo Basin, compared to 0.51% in tropical America and 0.58% in tropical Asia.

According to the FAO (2016), nearly 80% of global deforestation is caused by agriculture, followed by infrastructure construction (roads, dams), mining activities, urbanization and logging. Its consequences, among others, are biodiversity loss, contribution to carbon dioxide emissions (global warming) and soil degradation.

Today, the world is increasingly aware of the efforts that should be made to address deforestation and forest degradation. Several initiatives and strategies have been developed and implemented, including sustainable forest management, nature and biodiversity conservation programs, forest certification, promotion of sustainable agriculture, good forest governance, and, recently, the production and marketing of zero-deforestation forest products. The zero-deforestation concept is most often associated with supply chains of forest and agricultural products that have a very low footprint on the forest. However, to date, there is no consensual approach to defining the concept, either in consumer countries or in countries that produce timber and other forest products. It is important, therefore, to deepen the zero-deforestation concept and to understand its implications for climate change, sustainable forest management, international regulations and laws aimed at ensuring trade from legal and sustainable sources, and for the role of domestic markets in Central African countries and of intra-African trade.

Based on this vision, Training Module 1 will enable learners to understand the zero-deforestation concept with a view to implementing it in legal and sustainable supply chains in connection with international trade in timber products from African ITTO member countries. Training Module 1 is structured around themes (courses) detailed in the following table.

Module 1: courses, credits and number of hours

ID	Course title	Credits	Number of hours			
			Theory (Th)	Practical work (PW), tutorials (Ts)	Individual work (IW)	Total
1A	International developments in forests and climate change	2	18	16	16	50
1B	Role of production forests and timber forest products in addressing climate change (Intergovernmental Panel on Climate Change—IPCC, CoP-24, substitution, etc.)	2	13	21	16	50
1C	International regulations and laws for ensuring trade from legal and sustainable sources	1	8	9	8	25
1D	Role of domestic markets in Central African countries and intra-African trade for achieving Sustainable Development Goals (SDGs) and Nationally Determined Contributions (NDCs)	2	13	21	16	50
1E	Forest landscape restoration (FLR): initiative for achieving zero-deforestation and sustainable forest management (SFM)	2	10	24	16	50

Prerequisites

Climate change; environment management; international conventions on forests and climate change; general forestry; Congo Basin forests; basic knowledge of supply chains, timber trade laws and regulations; forest management; general forestry; integrated land use planning.

Course content by chapter

Course Chapter	1A International developments in forests and climate change	1B Role of production forests and timber forest products in addressing climate change (Intergovernmental Panel on Climate Change— IPCC, CoP-24, substitution, etc.)	1C International regulations and laws for ensuring trade from legal and sustainable sources	1D Role of domestic markets in Central African countries and of intra-African trade for achieving Sustainable Development Goals (SDGs) and Nationally Determined Contributions (NDCs)	1E Forest landscape restoration (FLR): An initiative for achieving zero-deforestation and sustainable forest management (SFM)
	Course introduction	Course introduction	Course introduction	Course introduction	Course introduction
1	Earth summits on environment and sustainable development	Basic knowledge of production forests and climate change	General information on tropical forest logging and associated timber trade	Timber trade, 2030 Agenda and African Union 2063 Agenda, and NDCs	Basic knowledge of FLR
2	International legal instruments on climate change	Role of forests in climate change mitigation and adaptation	Principles of the European Union Timber Regulation (EUTR), Revised Lacey Act, US, and Clean Timber Law, Japan	Timber trade in Central Africa	National and international policy frameworks for forest restoration
3	International legal instruments on forests and biodiversity	Monitoring, evaluation, policy and governance in sustainable forest management for addressing climate change	Tropical timber trade regulations	Opportunities and challenges (SDGs and NDCs) in connection with timber trade in Central Africa	Methods and procedures for FLR
4	Other relevant multilateral conventions on forests and climate change		Future challenges in terms of adapting treaties and laws on legal and sustainable timber trade to national circumstances		FLR impacts

COURSE 1A

International developments in forests and climate change

Trainer	: (name)
Contact	: (trainer's details)
Credits	: 2 credits
Number of hours	: (to be determined by trainer)

Course overview

The forestry sector continues to be the main source of greenhouse gas (GHG) emissions in tropical countries. GHG emissions contribute to global warming, with many impacts across all sectors. Governments endeavored to sign and ratify various regional and international conventions, protocols, treaties and agreements on sustainable forest management and climate change with a view to reducing GHG emissions and preserving the GHG sequestration capacity of forests, among other things.

However, these various instruments are difficult to implement, particularly because of their complexity and lack of dissemination among environmental management actors in general and those in the forestry sector in particular. For these instruments to be appropriated at both the national and regional levels, there was a need for awareness raising among the various actors. The course on International Developments in Forests and Climate Change was developed as part of Training Module 1 as a result. The course will introduce various international meetings and the legal instruments signed and ratified in connection with sustainable forest management, biological diversity and addressing climate change with a view to familiarize forest sector actors with some international mechanisms with a view to achieving zero-deforestation as a goal.

Prerequisites

Climate change; international conventions on climate change, forests, biological diversity; general forestry; environmental management and Congo Basin forests; sustainable forest management.

Course overall objective

To provide learners with basic knowledge of international developments in the fields of forests and climate change, and to make use of this knowledge to contribute to achieving the zero-deforestation objective and addressing poverty.

Course specific objectives (in terms of skills)

At course completion, learners will be able to:

1. Understand the different regional and international legal instruments on climate change, sustainable forest management and biological diversity.
2. Initiate projects related to resolutions on international developments in the fields of forests and climate change.
3. Understand the link between international developments in the area of forests, climate change and combating poverty.

Detailed course content

Course introduction

Chapter 1: Earth summits on environment and sustainable development

- 1.1. Stockholm Conference, 1972
- 1.2. Nairobi Conference, 1982
- 1.3. Rio de Janeiro Conference, 1992, and Agenda 21
- 1.4. Johannesburg Conference, 2002

1.5. Rio+20 Conference, 2012

Chapter 2: International legal instruments on climate change

2.1. United Nations Framework Convention on Climate Change

2.2. Conferences of Parties (CoPs)

2.3. Kyoto Protocol

2.3.1. Introduction

2.3.2. Background

2.3.3. Objectives and approach

2.3.4. Negotiations

2.3.5. Kyoto Protocol flexibility mechanisms

2.3.6. Compliance with Kyoto Protocol commitments

2.3.7. Montreal Protocol

2.4. Paris Agreement

2.4.1. Introduction

2.4.2. Background

2.4.3. Objectives and approach

2.4.4. Evolution and revision of objectives

2.4.5. Critical comments and concerns

2.4.6. Objectives credibility

2.4.7. Other critical comments

2.4.8. The United States and the Paris Agreement

Chapter 3: International legal instruments on forests and biodiversity

3.1. United Nations Convention on Biological Diversity

3.1.1. Introduction

3.1.2. Contents

3.1.3. National versions

3.1.4. Critical comments

3.2. Treaty on conservation and sustainable management

3.2.1. Introduction

3.2.2. Contents

3.2.3. National versions

3.2.4. Critical comments

3.3. International Tropical Timber Agreement (ITTA)

3.3.1. Introduction

3.3.2. Contents

3.3.3. National versions

3.3.4. Critical comments

3.4. United Nations Forest Forum

Chapter 4: Other relevant multilateral conventions on forests and climate change

4.1. International level

4.1.1. United Nations Convention to Combat Desertification in Those Countries Experiencing Serious Drought and/or Desertification, particularly in Africa

4.1.2. Convention on Wetlands of International Importance, especially as Waterfowl Habitat (Ramsar Convention)

4.1.3. Convention for the Protection of the World Cultural and Natural Heritage (World Heritage Convention)

4.1.4. Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)

- 4.1.5. Various agreements for enhancing international commitments towards sustainable development.
- 4.1.6. Vienna Convention for the Protection of the Ozone Layer (Vienna Convention)
- 4.1.7. Indigenous and Tribal People Convention (No. 169 Convention of the International Labour Organization)
- 4.1.8. Agreement establishing the World Trade Organization (WTO)
- 4.2. Regional level
 - 4.2.1. African Union Sustainable Forest Management Framework for African Union member states, derived from the Malabo Declaration
 - 4.2.2. Central Africa Forests Commission (COMIFAC) and Program on African Social Research (PASR/AC) Convergence Plan
 - 4.2.3. Yaounde Declaration on the Conservation and Sustainable Management of Tropical Forests in Central Africa
 - 4.2.4. Initiative through the New Partnership for Africa’s Development (NEPAD)
 - 4.2.5. Maputo Protocol

Teaching approach

The course will be delivered in the form of interactive lectures aimed to develop learners’ knowledge on key concepts related to international and regional legal instruments in the fields of forests and climate change. Trainers will use the flipped academic pedagogy approach to explain the importance of international agreements on forests and climate change.

Exchanges and group discussions with field professionals will be promoted during the course. Case studies will be carried out on a number of legal instruments, sustainable forest management, climate change and biological diversity.

Tutorials (T) and practical work (PW)

Tutorials

T1: Desktop literature review—Group work to compile a collection of literature on a number of signed and ratified regional and international legal instruments in the fields of sustainable forest management and climate change. Learners will then be required to develop a glossary of all basic terms and concepts on signed and ratified regional and international conventions, protocols and agreements related to sustainable forest management and climate change.

T2: Compare the various signed and ratified regional and international legal instruments on sustainable forest management and climate change.

T3: Identify other relevant multilateral instruments on forests and climate change.

Practical work

PW1: Assess the constraints for implementing signed and ratified regional and international legal instruments in terms of sustainable forest management and climate change.

PW2: Propose strategies for good implementation of these instruments.

Note: Learners will deliver presentations on each T/PW. Work completed by the various groups will be shared after each presentation.

Course schedule

Number of hours			Chapters	Teaching activities
Theory classes	Practical work /Tutorials	Total		
1	0	1	Course introduction	Interactive lecture
2	2	4	Chapter 1: Earth summits on environment and sustainable development	Interactive lecture Flipped classroom approach based-university teaching Tutorial (TD1)
7	5	12	Chapter 2: International legal instruments on climate change	Interactive lecture Flipped classroom approach based-university teaching Tutorial (TD2) Practical work (TP1)
5	5	10	Chapter 3: International legal instruments on forests and biodiversity	Interactive lecture Flipped classroom-based academic teaching approach Tutorial (T1) Practical work (PW1)
3	4	7	Chapter 4: Other relevant multilateral conventions on forests and climate change	Interactive lecture Practical work (PW2) Tutorial (T3)
18	16	34	Total	

Assessment method

Assessments will be carried out at the beginning (prior to course start) to gauge learners level, as well as during and at the end of the course based on a grid and as follows:

- Knowledge assessment before course start /0
- Two knowledge assessments during course /5
- General knowledge assessment at course completion /5
- Assessment and self-assessment of developed glossary and various reports and projects / 5
- Assessment of group presentations by trainer and peers /5

Other

Use of class notes will not be allowed during overall and ongoing assessments, but will be allowed during practical work and tutorials.

French language ability (written and spoken) will be taken into account during assessments and delays in submitting assignments will be penalized. Trainers will be free to select penalties to be applied to learners. Trainers will also discourage plagiarism to ensure that all assignments are original work.

Course equipment

- ✚ Video-projector;
- ✚ Computer hardware and accessories;
- ✚ Internet connection
- ✚ Documents, videos and links to various conferences on forests and climate change.

References and suggested reading material

List of mandatory reading material

To be detailed by trainers

List of recommended reading material

- Congo Basin Forest Partnership (CBFP), 2006. État des forêts du bassin du Congo. 256p.
- CBFP, 2008. État des forêts du bassin du Congo. 411p.
- CBFP, 2010. État des forêts du bassin du Congo. 278p.
- COMIFAC, 2005. Traité relatif à la conservation et à la gestion durable des écosystèmes forestiers d'Afrique Centrale et instituant la COMIFAC. Signed in Brazzaville by ten Central African states.
- Doumenge, C. 2015. Les forêts tropicales dans le monde: Géographie et distribution. In: Memento du forestier tropical. Quae, (ed), Versailles, France, 29-35pp.
- FAO, 2015. The State of the World's Forests. FAO, Rome.
- International Tropical Timber Council, 1991. Xth Session, Quito, Ecuador, Gen. Distr. Document ITTC (X)/19.
- IUCN, 2010. Sustainable forest management, biodiversity and livelihoods: A good practice guide, Gland, Switzerland.
- Maldague, M. 2010. Traité de Gestion de l'environnement tropical, École Régionale Post-Universitaire d'aménagement et de gestion intégrés des forêts et territoires tropicaux, Kinshasa, DRC.
- Nasi, R., Nguinguiri, J.P. et Ezzine de Blas, B. 2016. Exploitation et gestion durable des forêts en Afrique Centrale: la quête de la durabilité. Harmattan, Paris, 437 p. ISBN 2-296-01617-0.
- Putz, F.E., Zuidema, P.A., Pinard, M.A., Boot, R.G.A., and Sayer, J. A. 2008. Improved tropical forest management for carbon retention. PLoS Biol. 6(7):e166.doi:10.1371/journal.pbio.0060166.
- Some, Y. S. C., Akaffou, M. Y. F. and Kaguembega, F. 2011. Évaluation de la restauration de la biodiversité dans les écosystèmes fragiles: cas des mises en défense au Burkina Faso. Institut International d'Ingénierie de l'Eau et de l'Environnement, Burkina Faso.
- UN, 1972. United Nations Conference on Environment and Development. Final Conference Declaration, Stockholm, Sweden, archives.
- UN, 1982. United Nations Conference on Environment and Development. Final Conference Declaration, Nairobi, Kenya, archives.
- UN, 1992. United Nations Conference on Environment and Development. Final Conference Declaration, Rio de Janeiro, Brazil, Archives.
- UN, 2002. World Summit on Sustainable Development. Final Conference Declaration, Johannesburg, South Africa, archives.
- UN, 2008. Resolution 62/98 adopted by the UN General Assembly: Non-legally binding instrument of all types of forests. See: <http://www.un.org/french/ga/62/resolutions.shtml>.
- UN, 2012. World Summit on Sustainable Development. Final Conference Declaration, Rio de Janeiro, Brazil, archives.
- Zazy, N.G. 2010. Aménagement forestier: Notes de cours 1^{er} Grade. Natural Resource Management Department, Faculty of Agronomics, University of Kinshasa.

COURSE 1B

Role of production forests and forest timber products in addressing climate change (Intergovernmental Panel on Climate Change—IPCC, CoP-24, substitution, etc.)

Trainer	: (name)
Contact	: (trainer’s details)
Credits	: 2 credits
Number of hours	: (to be determined by trainer)

Course overview

The 24th Conference of the Parties to the United Nations Framework Convention on Climate Change held in Katowice in 2018 highlighted that productive forests, woodland landscapes and related value chains are likely to be one of the pillars of action to address climate change (UNFCCC COP-24 2018). Productive forests alone store 36% of soil carbon (Dupouey et al. 1999), contain nearly 81% of carbon stored in the living biomass of the biosphere and regulate climate change (Brown et al. 1989). Several studies recalled the need to limit emissions resulting from deforestation and forest degradation as a cause of climate change (Frieden et al. 2005; Lewiis et al. 2007; Gibbs et al. 2007; IPCC 2007; Stephens et al. 2007; Nasi 2008; IPCC 2013). However, the three forest lungs found in the tropics harbor production forests extending over 1.7 to 2.1 billion hectares (i.e., nearly 45 to 50% of the world’s forests) and whose importance for regulating climate change climate have been clearly demonstrated (FAO 2015; Doumenge 2015). Sixty percent of tropical forests are located in tropical moist, evergreen or semi-deciduous forest areas. The remainder are made of dry forests, with a few percent of swamp and floodplain forests (Doumenge 2015).

As deforestation and degradation constitute the key issues for tropical forests, it was essential to develop a course on “the role of production forests and timber forest products in addressing climate change.” The course will aim to promote zero-deforestation in connection with production forest sustainable management and legal supply chains of tropical timber forest products to promote climate change regulation. The course was developed as part of Training Module 1 with this aim.

Course overall objective

To provide learners with a basic knowledge of production forests and timber forest products as a tool for addressing climate change.

Course specific objectives (in terms of skills)

Upon course completion, learners will be able to:

1. Understand the role of production forests and timber forest products in addressing climate change.
2. Identify opportunities and challenges in the sustainable management of production forests and timber forest products with a view to addressing climate change.
3. Initiate projects for reducing greenhouse gas sources through the development and maintenance of carbon sinks with a view to addressing climate change.

Detailed course content

Course introduction

Chapter 1: Basic knowledge of production forests and climate change

- 1.1. Production forests
 - 1.1.1. Forests
 - 1.1.1.1. Definition
 - 1.1.1.2. Forest productive functions

- 1.1.2. Ecosystem services
 - 1.1.2.1. Definition
 - 1.1.2.2. Categories of ecosystem services
- 1.1.3. Deforestation and forest degradation
 - 1.1.3.1. Definition
 - 1.1.3.2. Causes and consequences
- 1.2. Climate change
 - 1.2.1. Definition
 - 1.2.2. Causes and consequences
 - 1.2.3. Greenhouse gas impact
 - 1.2.4. Mitigation and adaptation

Chapter 2: Role of forests in climate change mitigation and adaptation

- 2.1. Reducing greenhouse gas emission sources
 - 2.1.1. Measures for reducing current rates of deforestation in the tropics and their impacts on GHG emissions from forests
 - 2.1.2. Decreasing the frequency and extent of forest and savanna loss resulting from biomass burning
 - 2.1.3. Increasing the efficiency of burning firewood and other biofuels through reducing GHG emissions
 - 2.1.4. Using timber and other "biofuels" in substitution for fossile fuels for reducing greenhouse gas concentrations in atmosphere
 - 2.1.5. Efficient timber logging for reducing greenhouse gas emissions from forests
- 2.2. Preservation of existing carbon sinks
 - 2.2.1. Natural forest management and forest conservation for enhancing forest carbon sequestration and stocking capacity
 - 2.2.2. Sustainable utilization of forests and timber forest products for carbon-stocking
- 2.3. Carbon sink development
 - 2.3.1. Factors impacting fixed carbon rate in timber and soils per hectare of forest plantation
 - 2.3.2. Availability of land suited to reforestation
 - 2.3.3. Contribution of agroforestry and tree planting to climate change mitigation in urban areas
- 2.4. Tropical forest adaptation to climate change
 - 2.4.1. Tropical forest vulnerability to climate change
 - 2.4.2. Climate risks for tropical forests
 - 2.4.3. Climate change scenarios in the tropics
 - 2.4.4. Forest adaptation mechanisms to climate change
 - 2.4.5. Methodology for integrating climate change into national forestry policies
 - 2.4.6. Role of tropical forests in community adaptation
- 2.5. Forests and climate change in Central Africa: synergies between climate change mitigation and adaptation
 - 2.5.1. Opportunities for promoting synergies between climate change mitigation and adaptation in Central Africa
 - 2.5.2. Combined mitigation and adaptation mechanisms for forest development and sustainable management
 - 2.5.3. Challenges and ways forward for synergies between climate change mitigation and adaptation in Central Africa

Chapter 3: Monitoring, evaluation, policy and governance in sustainable forest management for addressing climate change

- 3.1. Forest monitoring and evaluation and climate change
 - 3.1.1. Present situation
 - 3.1.2. Actions by a number of actors (national, regional and international)
- 3.2. Policy and governance in addressing climate change
 - 3.2.1. Integrating climate change into national forestry policies
 - 3.2.1.1. Present situation
 - 3.2.1.2. Actions by a number of actors (national, regional and international)
 - 3.2.2. Forest systems, forest governance monitoring tools and evaluation
 - 3.2.2.1. Present situation
 - 3.2.2.2. Actions by a number of actors (national, regional and international)
 - 3.2.3. Forests, livelihoods and food security in the context of climate change
 - 3.2.3.1. Present situation
 - 3.2.3.2. Actions by a number of actors (national, regional and international)

Teaching approach

Teaching will be provided in the form of interactive lectures to develop learners' knowledge on the role of production forests and timber forest products in terms of addressing climate change. The trainer will use the flipped classroom-based academic teaching approach to explain the productive functions of forests and ecosystem services.

Exchanges and group discussions with field professionals will be promoted during the course. Field visits will be carried out to complete theoretical training.

Tutorials (T) and practical work (PW)

Tutorials

T1: Group work to build literature on the role of production forests and timber forest products in addressing climate change.

T2: Development of a glossary including all basic terms and concepts.

Practical work

PW1 (field visit): Analyze production forest functions and ecosystem services.

PW2 (field visit): Propose activities that can help reduce greenhouse gas emission sources, and develop and maintain carbon sinks.

PW3: Group work to assess opportunities and challenges in the sustainable management of production forests and timber forest products in connection with addressing climate change.

Note: Learners will deliver presentations for all tutorials and practical work. At the end of each presentation, work completed by the various groups will be shared.

Course schedule

Number of hours			Chapters	Teaching activities
Theory classes	Practical work /Tutorials	Total		
1	0	1	Course introduction	Interactive lecture
2	2	4	Chapter 1: Basic knowledge of production forests and climate change	Interactive lecture. Tutorials (T1, T2)
6	12	18	Chapter 2: Role of forests in climate change mitigation and adaptation	Interactive lecture University teaching based on flipped classroom approach Practical work (PW1, PW2)
4	7	11	Chapter 3: Monitoring, evaluation, policy and governance in sustainable forest management for addressing climate change	Interactive lecture University teaching based on flipped classroom approach Practical work (PW3)
13	21	34	Total	

Assessment method

Assessments will be carried out at the beginning (prior to course start) to gauge learners level, as well as during and at the end of the course based on a grid and as follows:

- Knowledge assessment before course start /0
- Two knowledge assessments during course /5
- Overall knowledge assessment at course completion /5
- Assessment and self-assessment of developed glossary and various reports and projects /5
- Assessment of group presentations by trainer and peers /5
- All above assessment will be followed by feedback sessions

Other

Use of class notes will not be allowed during the overall and ongoing assessments, but will be allowed during practical work and tutorials.

French language ability (written and spoken) will be taken into account during assessments and delays in submitting assignments will be penalized. Trainers will be free to select penalties to be applied to learners. Trainers will also discourage plagiarism to ensure that all assignments are original work.

Course and field visit equipment

- ✚ Video-projector;
- ✚ Computer hardware and accessories;
- ✚ Internet connection
- ✚ Boots, gloves, security helmet, raincoat, GPS, documents on forestry and climate change, etc.

References and suggested reading material

List of mandatory reading material

To be detailed by trainer

List of recommended reading material

- Aubréville, A., 1949. - Climats, forêts et désertification de l'Afrique tropicale. Sté Ed.Géogr, Maritime et Coloniales, Paris, 351 p.
- Badji, M., Sanogo, D., et Akpo, L. 2014. Dynamique de la végétation ligneuse des espaces sylvopastoraux villageois mise en défense dans le Sud du Bassin arachidier au Sénégal. Bois et Forêts des Tropiques, 319(1), 43–52. Downloaded from http://bft.cirad.fr/cd/BFT_319_43-52.pdf
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COURSE 1C

International regulations and laws for ensuring trade from legal and sustainable sources

Trainer	: (name)
Contact	: (trainer's details)
Credits	: 1 credit
Number of hours	: (to be determined by trainer)

Course overview

The course on international regulations and laws aimed to ensure that legal and sustainable trade will include general information on international regulations and laws on tropical timber trade; tropical timber logging and trade, tropical timber trade regulations; international treaties on tropical timber trade; and future challenges in terms of regulations and laws for international timber trade in the Congo Basin.

Prerequisites

Basic knowledge of forestry and environmental law.

Course overall objective

Familiarize learners with international regulations and laws aimed to ensure trade from legal and sustainable sources.

Course specific objectives (in terms of skills)

At course completion, learners will be able to:

1. Introduce the principles of the European Union Timber Regulation (EUTR), Revised Lacey Law, USA, and Clean Timber Law, Japan.
2. Appropriate international treaties and laws aimed to ensure legal and sustainable tropical timber trade.
3. Assess future challenges in terms of national adaptation of treaties and laws on legal and sustainable timber trade.

Detailed course content

Course introduction

Chapter 1: General information on tropical forest logging and associated timber trade

- 1.1. From zero-deforestation to tropical timber trade regulations and laws
- 1.2. Principles of timber logging and associated trade
- 1.3. Organization of tropical timber logging and associated trade
 - 1.3.1. In the Congo Basin
 - 1.3.2. In other tropical forests
- 1.4. Extent of illegal trade
- 1.5. Actors involved in illegal trade
- 1.6. Underlying factors in tropical timber logging and associated trade

Chapter 2: Principles of the European Union Timber regulation (EUTR), Revised Lacey Act, US, and Clean timber Law, Japan

- 2.1. Definitions of some concepts
 - 2.1.1. Regulations and laws
 - 2.1.2. Legal and sustainable trade
- 2.2. Description of legal and sustainable standards in timber trade
- 2.3. Description of three major timber trade regulations in connection with LSSCs
 - 2.3.1. European Union Timber Regulation (EUTR)
 - 2.3.2. Revised Lacey Act, US
 - 2.3.3. Clean Timber Law, Japan

Chapter 3: Tropical timber trade regulations

- 3.1. Background of regulations on tropical timber trade
- 3.2. Current regulations in the Congo Basin
 - 3.2.1. Strengths and weaknesses, opportunities and threats
 - 3.2.2. Harmonizing regulations across Central African countries
- 3.3. New approach for regulations
- 3.4. Initiative on legal trade
 - 3.4.1. Involved actors
 - 3.4.2. Involving actors in accordance with regulations
 - 3.4.3. Integrating major international regulations on tropical timber trade from the Congo Basin
 - 3.4.3.1. Rationale and principles
 - 3.4.3.2. National version
- 3.5. Regional and bilateral agreements and treaties on legal timber trade
- 3.6. International agreements and treaties on legal tropical timber trade
- 3.7. Involving actors in compliance with regulations
- 3.8. Other international law instruments

Chapter 4: Future challenges in terms of adapting treaties and laws on legal and sustainable timber trade to national circumstances

- 4.1. Challenges in terms of governance
- 4.2. Challenges in terms of country regulation frameworks
- 4.3. Challenges in terms of regulations and law documents appropriation by institutional and local actors
- 4.4. Local implementation mechanisms for treaties and laws on international timber trade

Teaching approach

The course will be delivered in the form of interactive lectures to build the capacity (knowledge and skills) of learners in legal tropical timber trade. Group discussions will also be held and supported by case studies on different forest laws and regulations.

Tutorials (T) and practical work (PW)

Tutorials

T1: Learners in groups of three in the classroom will identify the strengths and weaknesses of three international laws (American, European and Japanese).

T2: Learners in groups of four, will compare the national law aimed to ensure legal and sustainable timber trade in the Congo Basin countries.

Practical work

PW1: Compare international laws with laws in selected tropical African countries.

PW2: Identify constraints for implementing international law on timber trade from legal and sustainable sources in the Congo Basin countries.

PW3: Group work to propose possible solutions for strengthening national and international laws aimed to ensure legal and sustainable timber trade in the Congo Basin countries.

Note: Learners will deliver presentations for all tutorials and practical work. At the end of each presentation, work completed by the various groups will be shared.

Course schedule

Number of hours			Chapters	Learning activities
Theory classes	Practical work/ Tutorials	Total		
1	1	2	Course introduction	Interactive lecture Tutorial (T1)
1	1	2	Chapter 1: General information on tropical forest logging and associated timber trade	Interactive lecture Tutorial (T2)
2	2	4	Chapter 2: Principles of the European Union Timber Regulation (EUTR), Revised Lacey Act, US and Clean Timber Law, Japan	Interactive lecture Practical work (PW1)
3	3	6	Chapter 3: Tropical timber trade regulations	Interactive lecture Practical work (PW2, PW2, PW3)
1	2	3	Chapter 4: Future challenges in terms of adapting treaties and laws on legal and sustainable timber trade to national circumstances	Interactive lecture Practical work (PW1)
8	9	17	Total	

Note: Participation in group work and introduction days will be mandatory.

Assessment method

Assessments will be conducted at course start, on an ongoing basis, and at course end through a final overall assessment. All covered course content will be included in the final assessment. Assessments will be carried out at the beginning (prior to course start) to gauge learners level, as well as during and at the end of the course based on a grid and as follows:

- Knowledge assessment before course start /0
- Two knowledge assessments during course /5
- Overall knowledge assessment at course completion /5
- Assessment and self-assessment of various submitted and presented reports /5
- Assessment of group presentations by trainer and peers /5
- All assessments will be followed by feedback sessions

Other

Use of class notes will not be allowed during the overall and ongoing assessments, but will be allowed during practical work and tutorials.

French language ability (written and spoken) will be taken into account during assessments and delays in submitting assignments will be penalized. Trainers will be free to select penalties to be applied to learners. Trainers will also discourage plagiarism to ensure that all assignments are original work.

Course equipment

- ✚ Video-projector;
- ✚ Computer hardware and accessories (1 computer per participant);
- ✚ Internet connection
- ✚ Documents and links on various tropical timber trade regulations

References and suggested reading material

List of mandatory reading material

To be detailed by trainer

List of recommended reading material

Alison, H. 2015. Lutte contre l'exploitation illégale des forêts et le commerce de bois illégal: État des lieux et perspectives. Executive Summary and recommendations. Report by Chatham House, July 2015.

ATIBT and FFEM, 2014. Guide FSC®/WWF- Concevoir et mettre en œuvre une politique d'achat bois responsable.

AU, 2015. African Strategy on Combating Illegal Exploitation and Trade in Wild Fauna and Flora in Africa. www.greenpeace.fr

Beaumont, R., 2010. Rapport fait au nom de la commission des affaires étrangères, de la défense et des forces armées (1) sur le projet de loi, adopté par l'assemblée nationale, autorisant l'approbation de l'Accord international de 2006 sur les bois tropicaux.

Benneker C., Assumani D-M., Maindo A., Bola F., Kimbuani G., Lescuyer G., Esuka JC., Kasongo E. and S. Begaa (eds.), 2012. Le bois à l'ordre du jour. Exploitation artisanale de bois d'œuvre en RD Congo: Secteur porteur d'espoir pour le développement des petites et moyennes entreprises. Tropenbos International RD Congo, Wageningen, Netherlands. 278p.

Brown, D., Schreckenber, K., Bird, N., Cerutti, P., Del Gatto, F., Diaw, C., Fomété, T., Luttrell, C., Navarro, G., Oberndorf, R., Thiel, H. and Wells, A. (eds), 2009. Legal Timber: Verification and governance in the forest sector. CIFOR and ODI, Bogor, Indonesia.

Dupré J.-P., 2009. Rapport fait au nom de la commission des affaires étrangères sur le projet de loi N°1888, autorisant l'approbation de l'Accord international de 2006 sur les bois tropicaux.

Glastra R., 1999. Cut and run: Illegal logging and timber trade in the tropics. Friends of the Earth International 1999. International Development Research Centre. Ottawa • Cairo • Dakar Johannesburg • Montevideo • Nairobi • New Delhi Singapour. <http://agriculture.gouv.fr/le-reglement-sur-le-boisde-l-union-europeenne>

Lawson S., 2014. Illegal logging in the Democratic Republic of Congo. Energy, Environment and Resources EER PP 2014/03

Mahonghol, D., Ringuet, S., Nkoulou, J., Amougou, O. G., and Chen, H. K. 2016. Les flux et les circuits de commercialisation du bois: le cas du Cameroun. Édition TRAFFIC. Yaoundé, Cameroon, and Cambridge, United Kingdom.

Ratsimbazafy, C., Newton, D.J. and Ringuet, S., 2016. Timber Island: The Rosewood and Ebony Trade of Madagascar. TRAFFIC. Cambridge, UK.

UN, 1998. Kyoto Protocol, United Nations Framework Convention on Climate Change.

UN, 2006. United Nations Conference on Trade and Development. International Tropical Trade Agreement, 2006.

COURSE 1D

Role of domestic markets in Central African countries and of intra-African trade for achieving Sustainable Development Goals (SDGs) and Nationally Determined Contributions (NDCs)

Trainer	: (name)
Contact	: (trainer's details)
Credits	: 2 credits
Number of hours	: (to be determined by trainer)

Course overview

The training course will provide an overview of timber trade, domestic markets, intra-African trade, and the 2030 Agenda and Nationally Determined Contributions (NDCs). It will also cover the Congo Basin timber trade, which includes the situation of exports from Africa, within Africa, and domestic consumption and domestic markets in the Congo Basin countries, intra-African trade, Sustainable Development Goals (SDGs) and NDCs.

Prerequisites

Basic knowledge of sustainability, supply chains, timber trade laws and regulations, deforestation and forest degradation.

Course overall objective

To enable learners to understand the role of domestic markets in Central African countries and intra-African trade in achieving the SDGs and NDCs.

Course specific objectives (in terms of skills)

Upon course completion, learners will be able to:

1. Introduce basic information on timber trade, 2030 and 2063 Agendas and NDCs.
2. Take stock of the timber trade in Central Africa.
3. Analyze opportunities and challenges (SDGs and NDCs) in connection with timber trade in Central Africa.

Detailed course content

Course introduction

Chapter 1: Timber trade, 2030 Agenda and African Union 2063 Agenda, and NDCs

- 1.1. Concepts analysis
 - 1.1.1. Concepts definition
 - 1.1.1.1. Refresher on forest governance
 - 1.1.1.2. Refresher on addressing climate change
 - 1.1.1.3. Refresher on zero-deforestation concept
 - 1.1.1.4. Sustainable development
 - 1.1.1.5. Illegal logging
 - 1.1.1.6. Informal timber trade
 - 1.1.1.7. Associated trade
 - 1.1.2. Link across concepts
- 1.2. Timber trade
 - 1.2.1. Background
 - 1.2.2. Types of timber trade
 - 1.2.3. Timber production and consumption
 - 1.2.3.1. Timber origin
 - World
 - Tropics
 - Congo basin

- 1.2.3.2. Timber destinations and uses
 - World
 - Tropics
 - Africa
- 1.3. Domestic market
 - 1.3.1. Background
 - 1.3.2. Domestic market in the world
 - 1.3.3. Domestic market in the tropics
- 1.4. Inter-continental trade
 - 1.4.1. Background
 - 1.4.2. Inter-continental trade across the world
 - 1.4.3. Inter-continental trade in the tropics
- 1.5. 2030 and 2063 Agendas
 - 1.5.1. Background
 - 1.5.2. Member countries
 - 1.5.3. Sustainable Development Goals (SDGs)
- 1.6. Nationally-determined contributions (NDCs)
 - 1.6.1. Background
 - 1.6.2. NDCs in Congo Basin timber-producing countries
 - 1.6.3. Forest Reference Emissions Level (FREL) in Congo Basin timber producing countries

Chapter 2. Timber trade in Central Africa

- 2.1. Producer countries
 - 2.1.1. Forest distribution
 - 2.1.2. Timber trade organization and regulations
 - 2.1.2.1. At regional level
 - 2.1.2.2. At international level
- 2.2. Timber consumption in the Congo Basin
 - 2.2.1. Non-Africa
 - 2.2.2. In Africa
 - 2.2.3. Domestic consumption

Chapter 3. Opportunities and challenges (SDGs and NDCs) in connection with timber trade in Central Africa

- 3.1. Opportunities arising from domestic markets in the Congo Basin countries and from intra-African trade
 - 3.1.1. In connection with SDGs
 - 3.1.2. In connection with 2030 and 2063 Agendas
 - 3.1.3. In connection with climate change
- 3.2. Challenges arising from domestic markets in the Congo Basin countries and from intra-African trade
 - 3.2.1. In connection with SDGs
 - 3.2.2. In connection with 2030 and 2063 Agendas
 - 3.2.3. In connection with climate change

Teaching approach

The teaching approach will be based on both theory classes and practical work/tutorials. The course will be delivered in the form of interactive lectures in combination with Buzz groups to be held during each session (each chapter). The aim is to follow an approach allowing trainers to convey general information on the course background and concept, which will be followed

by a participatory analysis together with learners to identify issues in relation with domestic markets in the Congo Basin timber-producing countries and with intra-African trade, and explore solutions. Practical work will be based on the conduct of case studies on the most and least advanced countries in the sustainable forest management of the Congo Basin forests to complete the training course.

Tutorials (T) and practical work (PW)

Tutorials

T1: Desktop literature review on the concepts related to the timber trade and on the content of the 2030 Agenda and the NDCs. Learners in groups of five will develop a glossary of timber trade, including concepts associated to SDGs and NDCs.

T2: Learners in groups of three will carry out a case study on timber trade in each Congo Basin timber-producing country. An inventory report will then be drafted and presented to explain the link with SFM.

Practical work

PW1: A field visit to investigate the impacts of illegal logging and associated trade on each pillar of sustainable development, using the questionnaire developed by trainer. A report will be presented upon work completion.

PW2: A case study will be conducted highlighting opportunities provided by domestic and intra-African markets to address climate change (NDCs), and identify challenges to be addressed for implementing these market systems. Learners will be required to produce a report for each case study.

Note: Learners will deliver presentations for all tutorials and practical work. At the end of each presentation, work completed by the various groups will be shared.

Course schedule

Number of hours			Chapters	Teaching activities
Theory classes	Practical work/ tutorials	Total		
1	0	1	Course introduction	Interactive lecture
8	12	20	Chapter 1: Timber trade, 2030 Agenda and African Union 2063 Agenda, and NDCs	Interactive lecture Buzz groups Tutorials (T1) Practical work (PW1)
2	4	6	Chapter 2: Timber trade in Central Africa	Interactive lecture Case study (T2)
2	5	75	Chapter 3: Opportunities and challenges (SDGs and NDCs) in connection with timber trade in Central Africa	Interactive lecture Buzz groups Practical work (PW2)
13	21	34	Total	

Assessment method

Assessments will be carried out at the beginning (prior to course start) to gauge learners level, as well as during and at the end of the course based on a grid and as follows::

- Knowledge assessment before course /0
- Two knowledge assessments during course /5
- Overall knowledge assessment at course completion /5
- Assessment and self-assessment of various submitted and presented reports /5
- Assessment of group presentations by trainer and peers /5

- All above assessments will be followed by feedback sessions

Other

Use of class notes will not be allowed during the overall and ongoing assessments, but will be allowed during practical work and tutorials.

French language ability (written and spoken) will be taken into account during assessments and delays in submitting assignments will be penalized. Trainers will be free to select penalties to be applied to learners. Trainers will also discourage plagiarism to ensure that all assignments are original work.

Course equipment

- ✚ Video-projector;
- ✚ Computer hardware and accessories;
- ✚ Internet connection;
- ✚ Various documents and links on timber trade and NDCs in various Central African countries.

References and suggested reading material

List of mandatory reading material

To be detailed by trainers

List of recommended reading material

Bayol N., Anqueti F., Bile C., Bollen A., Bousquet M., Castadot B., Cerutti P., Kongape JA., Leblanc M., Lescuyer G., Meunier Q., Melet E., Penelon A., Robiglio V., Tsanga R., and Vautrin C. 2013. Filière Bois d'œuvre et gestion des forêts naturelles: Les bois tropicaux et les forêts d'Afrique Centrale face aux évolutions des marchés.

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Lescuyer, G., Cerutti, P.O., Manguingha, S.N. et bi Ndong, L.B., 2011. The domestic market for small-scale chainsaw milling in Libreville: Present situation, opportunities and challenges. Occasional Paper 65. CIFOR, Bogor, Indonesia.

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Sané M. 2017. Infrastructures, commerce intra-africain et développement économique en Afrique. *Interventions économiques* journal.

Trade and Development Board, 2013. Report of the United Nations Conference on Trade and Development: Economic Development in Africa Intra-African Trade: Unlocking Private Sector Dynamism. Trade and Development Board Sixtieth Session. Geneva.

Yembe Yembe R., Lescuyer G. and Cerutti P. 2011. Les marchés domestiques du bois: un enjeu majeur pour la gestion durable des forêts du Bassin du Congo. Racewood, Pointe-Noire.

COURSE 1E

Forest landscape restoration (FLR): An initiative for achieving zero-deforestation and sustainable forest management (SFM)

Trainer	: (name)
Contact	: (trainer's details)
Credits	: 2 credits
Number of hours	: (to be determined by teacher)

Course overview

The world has embraced Forest Landscape Restoration (FLR) to address deforestation and land degradation issues through various initiatives such as the Bonn Challenge and the New York Declaration on Forests.

In 2011, the Global Partnership on Forest and Landscape Restoration introduced the world map for FLR opportunities, whereby approximately 2 billion hectares ha can potentially be restored globally (GPFLR 2011). This is a huge opportunity for reducing poverty, increasing food security, mitigating the effects of climate change and protecting the environment (Laestadius et al. 2011).

According to a report by *Unique Forestry and Land Use—UFLU* (2016) on forest landscape restoration, the German Ministry of Economy and Development (BMZ) initiated FLR during the Global Landscapes Forum, a side event held during the COP-21, Paris, December 2015, to launch the AFR100 Initiative, which aims to restore 100 million hectares of forests in African countries by 2030. The initiative's strengths include the use of FLR to (i) restore ecological functionality and improve human well-being in deforested or degraded landscapes; (ii) increase the ecological, economic and social impact of forests and trees through a holistic approach as pressures on forests mainly result from land-use activities outside the forest sector; and (iii) help to mitigate the issue of forest resource degradation through public and private investments for increasing land and forest productivity and thus achieve zero deforestation and sustainable forest management (SFM), etc.

In addition, it is essential to provide a module on the zero-deforestation concept for training forestry sector stakeholders in legal and sustainable supply chains (LSSC) and ensure the appropriate understanding and sustainable management of legal and sustainable supply chains for tropical timber. Module 1 includes a course on scalable forest landscape restoration as an initiative to achieve zero deforestation and SFM.

Prerequisites

General forestry; general silviculture; agroforestry; integrated land management.

Course overall objective

To provide learners with fundamental knowledge of Forest Landscape Restoration as an initiative to achieve zero-deforestation and sustainable forest management.

Course specific objectives (in terms of skills)

Upon course completion, learners will be able to:

1. Explain basic terms and concepts related to forest landscape restoration (FLR).
2. Analyze national and international policy frameworks for FLR.
3. Explain the FLR process (approach and tools).
4. Explain FLR impacts on sustainable forest management and ecosystem services preservation.
5. Interact with other actors (learners, natural resource managers, decision makers, lay people, etc.) on FLR.

Detailed course content

Course introduction

Chapter 1: Basic knowledge of forest landscape restoration (FLR)

- 1.1. Definitions of key words
 - 1.1.1. Forest
 - 1.1.2. Deforestation and zero-deforestation
 - 1.1.3. Forest degradation
 - 1.1.4. Sustainable forest management
 - 1.1.5. Landscape
- 1.2. Concepts of forest restoration, forest landscape, forest landscape restoration and green infrastructure
 - 1.2.1. Concepts
 - 1.2.2. Technical implementation framework

Chapter 2: National and international policy frameworks for forest restoration

- 2.1. Global Landscapes Forum
- 2.2. AFR100 Initiative
- 2.3. National FLR strategies
- 2.4. Methodology for FLR monitoring and evaluation

Chapter 3: Methods and procedures for FLR

- 3.1. Reforestation
 - 3.1.1. Definition
 - 3.1.2. Planning
 - 3.1.2.1. Selecting appropriate species
 - 3.1.2.2. Promoting the use of indigenous species
 - 3.1.2.3. Using appropriate genetical material
 - 3.1.2.4. Promoting diversity, connexity and fonctionnal diversity
 - 3.1.2.5. Producing high quality planting material
 - 3.1.2.6. Selecting planting period and density, and preparing planting
 - 3.1.2.7. Management and protection of planted trees
- 3.2. Agroforestry system
 - 3.2.1. Definition
 - 3.2.2. Types of agroforestry systems
 - 3.2.2.1. Agri-sylvicultural systems
 - A. Systems with rotation cycles
 - Taungya method and crop-related techniques in forest plantations
 - Fallow land under management after slash-and-burn agriculture
 - B. Stable systems over time
 - Perennial woody plant-based systems
 - Intermediary systems: family gardens
 - Herbaceous plant-based systems
 - 3.2.2.2. Sylvopastoral systems
 - 3.2.2.3. Agro-sylvo-pastoral systems
 - 3.2.3. Establishing agroforestry plantations
 - 3.2.3.1. Plot fencing
 - 3.2.3.2. Soil preparation
 - 3.2.3.3. Establishing grass strips along tree lines
 - 3.2.3.4. Planting seedlings
 - 3.2.3.5. Mulching and individual protections

- 3.2.3.6. Protections
- 3.2.4. Maintenance and management
 - 3.2.4.1. Fill planting/replenishment of missing seedlings
 - 3.2.4.2. Tree shape pruning
 - A. For producing timber logs
 - B. For producing energy wood
 - C. For fruit production
- 3.3. Assisted natural regeneration (ANR)
 - 3.3.1. Definition
 - 3.3.2. Principle and basis of ANR
 - 3.3.3. Regrowth management
 - 3.3.4. Duration of ANR process
- 3.4. Prohibition of grazing
 - 3.4.1. Definition
 - 3.4.2. Identifying areas to be subjected to prohibition of grazing
 - 3.4.3. Characterization of target areas
 - 3.4.4. Actions to be implemented
 - 3.4.5. Participation of beneficiaries (needs/work force)
 - 3.4.6. Project support
 - 3.4.7. Signature of Agreement/start of operations
 - 3.4.8. Campaign monitoring and evaluation

Chapter 3: FLR impacts

- 4.1. In terms of achieving zero-deforestation and SFM
- 4.2. In terms of maintaining ecosystem services
- 4.3. In terms of combating desertification
- 4.4. In terms of climate change mitigation

Teaching approach

The course will be delivered in the form of interactive lectures, tutorials and practical work. The trainer will use the flipped teaching approach to explain FLR methods and procedures used for achieving zero-deforestation and SFM.

Exchanges and group discussions will be organized with field professionals during the course. Field visits will be carried out to experiment with FLR.

Tutorials (T) and practical work (PW)

Tutorials

T1: Individual work in connection with desktop literature review on FLR (reading and synthesis).

Practical work

PW1 (field work): Assess, evaluate and compare previously implemented FLR projects, and initiate an RPF project based on a well-identified issue.

PW2: Group presentation-based work on FLR impacts in connection with achieving zero-deforestation and SFM, climate change mitigation, ecosystem services preservation, and combating desertification. Discussions will be held between learners and natural resource managers on FLR.

PW3 (field visit): FLR policy, monitoring and evaluation work.

Note: Learners will deliver presentations for all tutorials and practical work. At the end of each presentation, work completed by the various groups will be shared.

Course schedule

Number of hours			Chapters	Teaching activities
Theory classes	Practical work/ Tutorials	Total		
1	0	1	Course introduction	Interactive lecture
2	2	4	Chapter 1: Basic knowledge of FLR	Interactive lecture Tutorial (T1)
2	4	6	Chapter 2: National and international policy frameworks for forest restoration forestière	Interactive lecture Practical work (PW1, PW3)
4	14	18	Chapter 3: Methods and procedures for FLR	Interactive lecture Flipped classroom-based academic teaching approach Practical work (PW2, PW3)
1	4	5	Chapter 4: FLR impacts	Interactive lecture Flipped classroom-based academic teaching approach Practical work (PW2)
10	24	34	Total	

Assessment method

Assessments will be carried out at the beginning (prior to course start) to gauge learners level, as well as during and at the end of the course based on a grid and as follows:

- Knowledge assessment before course start /0
- Two knowledge assessments during course /5
- Overall knowledge assessment at course completion /5
- Assessment and self-assessment of developed glossary and various reports and projects /5
- Assessment of group presentations by trainer and peers /5
- All above assessments will be followed by feedback sessions

Other

Use of class notes will not be allowed during the overall and ongoing assessments, but will be allowed during practical work and tutorials.

French language ability (written and spoken) will be taken into account during assessments and delays in submitting assignments will be penalized. Trainers will be free to select penalties to be applied to learners. Trainers will also discourage plagiarism to ensure that all assignments are original work.

Mandatory/recommended equipment

- Video-projector;
- Computer hardware and accessories;
- Internet connection
- Boots, gloves, security helmet, raincoat, GPS, forest mapping-related documents, etc.

References and suggested reading material

List of mandatory reading material

To be detailed by teachers

List of recommended reading material

Achour, A., Aroula, A., Defaa, C., El Mousadika, A. and Msanda, F. 2011. Effet de la mise en défense sur la richesse floristique et la densité dans deux arganeraies de plaine. *Proceedings of the first International Congress on Argan trees*, Agadir, Morocco: 60-69.

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