



Session 3.0

Describing Sustainable Forest Management (SFM)

Overview

This session defines sustainable forest management (SFM) as the second part of understanding the business context in forestry audit. It starts with the concept of SFM, including its definition, its seven characteristics, the benefits, and its six major key players. Following the concept of SFM, there will also be explanation about unsustainable forest management (Un-SFM), while the last topic will discuss how to evaluate the SFM, in which specific tools and ecological process will be discussed.

Learning Objective

By the end of this session, participants will be able to explain the Sustainable Forest Management and its factors, evaluate sustainability in forestry in accordance to the relevant criteria and indicators and recognize the unsustainable forest management practice.

The Concept of SFM

Definitions

Sustainable Forest Management (SFM) is the process of managing forests to achieve one or more clearly specified objectives of management, with regard to the production of a continuous flow of desired forest products and services, without undue reduction of its inherent values and future

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productivity and without undue desirable effects on physical and social environment.

SFM aims at ensuring goods and services derived from forests meet current needs while at the same time securing their continuous availability and contribution to the long-term development. In a broader sense, forest management encompasses the administrative, legal, technical, economic, social, and environmental aspects of the conservation and use of forests. It implies various degrees of deliberate human intervention, ranging from actions aimed at safeguarding and maintaining the forest ecosystem and its functions, to assist specific social or economic valuable species or groups of species for the increasing production number of goods and services.

Characteristics of SFM

SFM is difficult to define precisely because many aspects and or components need to be considered. Experts from the International Tropical Timber Organization (ITTO) and the FAO have come up with a number of components to consider when facilitating international communication on forest-related issues. These components centre around seven globally agreed “themes”. The following is an overview of these themes:

1) Extent of forest resources

This theme expresses an overall desire to have enough forest coverage and reserves, including trees outside forests, to support social, economic, and environmental aspects of forestry. It recognizes that the existence and extent of specific forest types are important as a basis for conservation efforts. This theme also aims to reduce deforestation and rehabilitate degraded forest landscapes, and includes



how forests and trees outside forests contribute to moderating the global climate. In 2010, deforestation, including uncontrolled conversion of forests to agricultural land, continues at an alarmingly high rate in many countries. Around 13 million hectares of forest were converted to other uses – largely agriculture – or lost through natural causes each year in the last decade (FAO, 2010).

2) Biological diversity

Biological diversity is concerned with conserving and managing biological diversity at ecosystem (landscape), species, and genetic levels. Conservation efforts include protecting areas with fragile ecosystems, and ensuring diversity of life is maintained. Maintaining diversity also gives rise to opportunities for developing new commercial products (e.g., medicines), or for enhancing forest productivity, for example, through the use of genetics.

3) Forest health and vitality

Forests need to be managed to mitigate the risks and minimize the impacts of unwanted disturbances, including wildfires, airborne pollution, storm felling, invasive species, pests, diseases, and insects. Such disturbances may affect social, economic, as well as environmental dimensions of forestry. Climate change is expected to affect forests' susceptibility of disturbances, as well as the frequency, intensity, duration and timing of such disturbances. For example, the increase of fuel loads, longer fire seasons and the occurrence of more extreme weather conditions as a consequence of a changing

climate are resulting more forest fire activity.

4) Productive functions of forest resources

This theme is about maintaining a high and valuable supply of primary forest products, while also ensuring that production and harvesting are sustainable. This is important because thirty percent of the world's forests are primarily used for production of wood and non-wood forest products.

5) Protective functions of forest resources

Forests and trees outside forests help moderate soil, hydrological, and aquatic systems. These moderating functions include maintaining clean water (including healthy fish populations), and minimizing the risks and impacts associated with floods, avalanches, erosion, and droughts. Protective functions of forests also contribute to ecosystem conservation efforts. These functions have strong cross-sector aspects, as the benefits to agriculture and rural livelihoods are high. Around 330 million hectares of forest are designated for soil and water conservation, avalanche control, sand dune stabilization, desertification control or coastal protection. The forest area designated for protective functions increased by 59 million hectares between 1990 and 2010, primarily because of large-scale planting in China aimed at desertification control, conservation of soil and water resources and other protective purposes.

6) Socio-economic functions

Forest resources contribute to the overall economy, for example, through employment, processing, and marketing of



forest products and energy, and trade and investments in the forest sector. This theme also addresses the important functions of forest to host and protect sites and landscapes that have high cultural, spiritual, or recreational values. Thus, it includes aspects of land tenure, indigenous and community management systems, and traditional knowledge.

7) Legal, policy and institutional framework

Legal, policy and institutional arrangements are necessary to support the previous six themes. These arrangements include participatory decision making, governance and law enforcement, and monitoring and assessment of progress. It also embraces broader societal aspects, including fair and equitable use of forest resources, science research and education, infrastructure arrangements to support the forest sector, transfer of technology and capacity building, and public information and communication.

SFM lies at the junction of a range of economic, social, and environment concerns that underpin how forests are used by people. As mentioned above, forests help meet people's daily needs and improving their quality of life. Rural communities living in or around forests often have a very close relationship with the forest. They may rely on the forest for a range of goods and services, such as timber for housing, livestock enclosures and fencing, fruit for their nutritional needs, sap for brewing beer and wine, bark for making ropes and weaving, and herbs and leaves for medicinal purposes.

Forests also support human life in a more explicit way in economic sense by providing

wood for construction, and by supplying wood for wood-based industries such as processed timber and pulp and paper production. Furthermore, forest-related industries are an important source of employment, especially in many developing countries.

Forests also serve a vital social and cultural role. For many rural communities living around forests around the world, the forests have significant cultural spiritual or religious values.

Forests have been a major theme in international environmental discussions for many years, but perhaps never in the dominant way they feature today. Discussions surrounding forests are now mainly focused on global efforts to combat climate change. According the British Government's Stern Review on the Economics of Climate Change, the "loss of natural forests around the world contributes more to global emissions each year than the transport sector" (Stern, 2006).

Putting climate change aside, there are increasing international environmental concerns centre over the threat that deforestation poses to the world's ecological resources. This is especially in the light of the important eco-services forests provided to maintain human wellbeing, such as genetic resources that can be used in industry and medicine.

The Benefits

There seems to be general agreement that forest sustainability comprises three elements: ecological sustainability, social sustainability, and economic sustainability. Ecological sustainability is the role of forest in maintaining biological diversity and the integrity of ecological processes and systems.



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Social sustainability relates to the forest's role in maintaining the human community that depends upon the forest. Economic sustainability will maintain companies, communities, and families that are economically dependent on forests. Each of these elements can contribute a range of benefits. The following paragraphs illustrate some of these benefits (this is by no means an exclusive list).

Some forest products are valuable export commodities. They include gums and resin, plywood, sawn wood, bamboos, various oils, turpentine, tanning materials, honey, spices, bark and leaves, and medical plants. Rattan, the long thin stem of a climbing palm (mainly *Calamus* sp.), has become an important export commodity for Indonesia, Malaysia, and the Philippines. Portugal, Morocco, and other Mediterranean countries export large quantities of cork derived from the cork oak, *Quercus suber*. The Republic of Korea has built up an export trade in edible forest fungi, while gum Arabic from *Acacia* Senegal tree has been an important export product from Sudan (FAO, 1993).

Forests and woodlands have an important role in protecting the environment at a local and even regional level. This is particularly true of steeply sloping watersheds where the tree roots are important in binding the soil and protecting it against erosion and landslides (FAO, 2005).

Uncontrollable forests clearing from such upland areas, in addition to its local effects, can also have major repercussions further downstream. The eroded soil carried by streams and rivers is mainly deposited in reservoirs for irrigation and hydroelectricity; this reduces the capacity and shortens the life of these costly investments.

Locally, trees can provide protection against wind erosion and increase the rate at which rainwater filters into and recharges the groundwater. Used judiciously in farming systems they help maintain soil fertility of the soil, by recycling (by leaf fall) nutrients drawn up by their roots into the top layers of the soil. They provide shade for animals and humans; the microclimate under trees may be several degrees cooler and more humid than in the open sun. In coastal areas, mangroves protect the land against erosion by the sea and are breeding grounds for fish and shrimps.

Forests also have an increasingly important role as havens for wildlife and as sites for protecting endangered species of plants and animals. Often allied to this is their role in recreation, tourism, and what has come to be known as "ecotourism". Hiking, camping, nature study, and simply getting out of the city are increasingly important for urban people as a way relieving stress from a polluted world.

The Key Players

SFM is complex in nature. It involves a wide range of disciplines and ideologies. This complexity and diversity of perspectives have major implications for those parties with an interest in the quality of forest management and the roles they play. Some of these parties include:

1) National/Federal Governments

In many countries the future of State-owned forest industries is likely to be determined by government policies to do with public enterprises. It is probable that the role of federal or national governments will be increasingly one of regulating and establishing frameworks



and procedures, including policies. This role is to ensure that all parties can make sustainable use of forests.

2) Provincial/State Governments

Provincial/State governments have a very strong interest in ensuring forests are well managed. Forests are integral to many provincial economic, agricultural, natural resource development, and conservation strategies. The role of provincial/state governments will continue to evolve as more central governments devolve responsibility for implementing national or federal policies and regulations down to provincial/state governments.

3) Local Governments

In many countries, local authorities are responsible for providing services in their areas (e.g., for economic and infrastructure development). National/federal governments will need to work with primary local authorities, to ensure forestry programs fit into local development plans. Even now, local governments in most developing countries have significant input into forest management; they are at the “front line” of government in ensuring the implementation of policies and regulations.

4) The Private Sector

Through their use of forest resources, corporations and small-to-medium enterprises (SMEs) generate employment, profits for further investment, human resource development, and many other economic and commercial benefits. The strong linkages between forestry and its processing industries offer good opportunities for creating and maintaining

rural employment opportunities. Private sector firms need to adapt and innovate in order to remain competitive while meeting environmental standards. Improved efficiency will also be required in order to meet any costs of environmental management (although environmental standards often bring efficiencies as well).

In some countries (e.g., Brazil) the private sector plays an important role in developing research and technology, as well as contributing to country’s economy and employment. This can happen through a bidding process on forest concessions, where the successful company has the right to carry out sustainable exploration of forests products and services in lands under public management.

The private sector in Malaysia helps transforming the country’s economy as they rebuild value-added downstream timber processing capabilities to compliment their timber harvesting activities. Whilst investing, the sector contributes to government revenues through log duties, royalties, and other business tax payments.

However, it is important to note that profitable industry development may not necessarily sit comfortably with sustainable forest management. In fact, private companies can completely destroy forests (through, for example, illegal logging). Sometimes the parties with a duty to protect forests – the police, military, and government, can become corrupted and act against the interests of sustainability.

5) Non Government Organizations (NGOs)



NGOs can have several roles in forest sector, for example, as researchers, public opinion setters, and educators (raising public awareness about importance of forest and problems in forestry).

6) Communities In or Near Forests

In Indonesia, communities situated within or close to forests are a major influence on forest management. As noted earlier, the wellbeing of these communities is often closely linked to a range of forest products and services. Such communities are in a unique position to conserve, maintain, damage, or destroy forests and their habitats and ecosystems. For example, local residents can choose to protect the forest from encroachment and illegal logging. This has happened in some areas of Indonesia where NGOs have worked with people from local communities (World Resources, 2005). Community forest management is an increasing trend that may prove beneficial for long term forest management. However, the reality in many developing countries is that illegal logging is a major source of income for people living near forest areas.

7) The General Public

Members of the public may participate in forest management via public hearings carried out during the process of licensing of potentially polluting activities, and during the process of forest concessions. Public hearings are an instrument foreseen in legal rulings favoring transparency and social control in activities with environmental impacts. And, ultimately, the public does have the opportunity to influence events by exercising their voting rights.

Each of these players will vary between countries in their make-up, presence, roles and degree of influence. This, in turn, will depend on the political, governance, policy, and regulatory environment in different countries.

The role of each party involved in forest management will also vary depending on the level being considered. For example, at the international level, the national government's role is bigger than that of other parties, but at the management level the role of private sector dominates.

Unsustainable Forest Management

Unsustainable management in forest unfortunately is very common in many countries. This includes practices in utilizing forests without considering the sustainability of the economic, social and environmental values. While SFM would ensure goods and services derived from forest meet current needs while at the same time secure their continuous availability and contribution to long-term development, un-SFM would not consider all those factors.

Un-SFM can cause risks that need to be anticipated. Generally, risk is a probability or threat of damage, injury, liability, loss or other negative occurrence, caused by external or internal vulnerabilities and which might be eliminated through pre-mediated actions. In auditing forests the auditors need to consider those risks.

Following are major risks to forests:

1) Logging risk

Commercial clear-cutting and selective logging for timber is, directly or indirectly, responsible for much of this deforestation,



especially in Asia. Many countries try to mitigate the effects of logging through regulation and programs designed to advance sustainable forest management. However, enforcement is often poor, and illegal logging predominates in some regions. In addition to its direct impacts, logging also exposes forest to encroachment and settlement, and other damaging disturbances like hunting and fire.

Illegal logging may occur because of a difference between demand and production, weak law enforcement, and socio-economic problems in the human forest communities.

Some examples of Illegal logging and associated activities:

- Logging protected species;
- Duplication of felling licenses;
- Girdling or ring-barking, to kill trees so that they can be legally logged;
- Contracting with local entrepreneurs to buy logs from protected areas;
- Logging in protected areas;
- Logging outside concession boundaries;
- Logging in prohibited areas such as steep slopes, riverbanks and water catchments;
- Removing under-/over-sized trees from public forests;
- Extracting more timber than authorized. Logging without authorization; and
- Obtaining logging concessions through bribes.

2) Industrial growth risk

Industries which materials are taken from forest products usually expand its capacity without considering the availability of sustainable resources. For example, the pulp and paper industry has expanded in Asia, with several huge mills under construction in several countries. Some of those industries are not well prepared in providing resources to feed their large capacity. This large capacity could increase the demand of forest products and speed up deforestation, due to exploitation of resources from natural forests.

The increasing demand on land for plantation for bio-energy and food supply can also lead to land conversion from forest to plantation and finally causing deforestation.

3) Biodiversity lost risk

Logging can be selective and well-managed, but often it is not. Even selectively logged forests contribute in reducing certain species. Those species that do persist often become rare. Many of them are under-storey insectivores and unable to survive in the open forest.

The recent and accelerating loss of forest has led to a significant number of species being moved to higher threat categories on the IUCN Red List (IUCN Standards and Petitions Working Group, 2008).

In Indonesia, the uncontrolled use of land for settlement and plantation may cause species like Sumatran Tiger become extinct.



The example of some risks that arise from un-SFM practices are as follows:

1) Biodiversity and ecosystem lost

Human activities are the main cause of biodiversity loss (for example: change in land use and transformation caused by forestry become threats to biodiversity and as consequences, there is a decline in distribution, size, and genetic diversity of species).

2) Forest fires

Forest fires may be caused by human activities (such as land clearing using slashing and burning). It is becoming a serious problem for many countries. For example, in Indonesia, forests fires are often the unintended result of small-scale farmers and companies using fire to clear land for agriculture.

3) Illegal logging

Illegal logging risk described as forestry practices or activities connected with wood harvesting, processing and trade that do not conform to law.

4) Illegal use of land

One example of this is a company or group of people occupying an area of forest without a license or permission from the relevant authority.

5) Disasters

Natural disaster can exhaust goods and chattels and in a specific scale are harmful to a specific community function.

6) Conflict

As with competition for a finite resource anywhere, there is always a risk of conflicting interests between different

stakeholders over how the forest is managed. Common examples of this include conflict involving groups claiming traditional ownership of land where a company is operating with a legal permit or landowner hostility over regulations telling them what they can or cannot do on their land.

7) Revenue loss

Government revenues from forest can be reduced or even loss caused by the poor forest management. For example: The un-SFM practice can lead to unsustainable revenues. The risk of revenue loss also can arise from impropriety in the way taxes are collected and the amounts paid from forest activities. This may be particularly occur in developing countries still seeking to establish good governance practices.

8) Livelihood loss

Loss of livelihood is faced by communities surrounding forests that are economically dependent on those forests.

9) Social problems

Unsustainable management in forestry could profoundly affect many people and communities who rely on forests. If communities are no longer involved in forest management activities, their livelihoods could suffer, as well as their cultural and spiritual values. Much traditional knowledge could be lost as well.

10) Decreased carbon storage

As a consequence of photosynthetic activity, forests absorb the ambient carbon in the air, store that carbon inside the trees, and release oxygen back to the



air. Unsustainable forest management would significantly reduce the number of trees. This would cause decrease the amount of carbon dioxide (CO₂) converted into oxygen (O₂). Finally, this would influence the temperature on the earth's surface.

11) Reduced water quality

Reduced water quality encompasses aspects like flood protection, erosion control, preventing seawater intrusion, and maintaining soil fertility.

12) Shortage of raw materials for industry

A shortage of raw materials could lead to a decrease in forestry industry downstream.

How to evaluate sustainability in forestry

Development in forestry during the past two decades has focused on progress towards sustainable forest management (SFM), an approach that encompasses environmental, economic, and socio-cultural objectives of management in line with the "Forest Principles" adopted at the United Nations Conference on Environment and Development (UNCED) in 1992. The proposals for action were adopted by the Intergovernmental Panel on Forests (IPF) and the Intergovernmental Forum on Forests (IFF).

Criteria and Indicators of SFM

The specific toolset developed to describe and help monitor progress (or lack of it) towards SFM, in particular at the national/federal level, is called Criteria and Indicators (C&I). The development of this tool

within regional country-driven initiatives started before UNCED, by the International Tropical Timber Organization (ITTO). It has since spread world-wide.

Since 1992 several eco-regional forestry processes have been established for developing and putting in place the C&I. Temperate and boreal forests are covered by the Pan-European and the Montreal Processes. Arid-zone forests are covered by the Dry Zone Africa Process, the Near East Process, and the Regional Initiative for Dry Forests in Asia. Tropical moist forests are covered by the Lepaterique Process of Central America, the Tarapoto Proposal, the ITTO, and the African Timber Organization (ATO).

Some of the regionally based processes also cover other forest types in the region. Several countries are members of more than one process. Most of these processes involve regular meetings to refine the concept of SFM through the development of C&I and to follow up progress through country reporting.

All these regionally based processes have their own set of Criteria and Indicators (C&I). Even some criteria and indicators can be different, the basic idea is similar – to describe/measure:

- Policy and Legislation,
- Forest Management ,and
- Socio-Economic, Financial and Cultural Aspects.

All governments of member countries must regularly prepare reports about fulfilling the C&I. Even though there are different C&I among the country, it doesn't mean that one C&I is better than others.

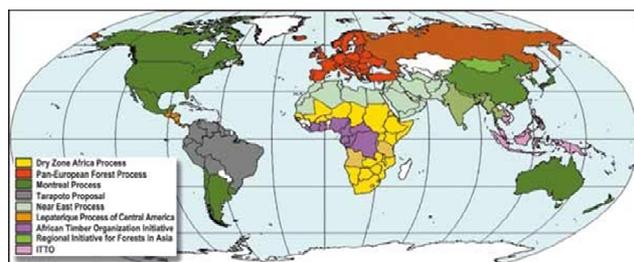
And even there is only one process, where country is a member there is no important



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and unimportant criteria. It depends on country's present situation, which criteria are more relevant.

Below is the map of C & I which followed by countries and regions.



Key Topics for Evaluating Sustainability in Forestry

The C&I will have implications to forestry audits. These audits should, in particular, focus on governmental activities around the establishment of legal and institutional frameworks (including existence and implementation of forest policies); and how management practices alter the actual forests.

The C&I may be used as topics in auditing forest. When we use topics derived from C&I, each of those topics can be classified into several detailed measurement, such as policy and legislation, forest management for multiple uses, and socio-economic, financial and cultural aspects. It is suggested that the auditors select a smaller and more focused topic. Different countries may focus on different issues, because each country faces its own unique situation.

1) Policy and legislation

The success, or otherwise, of sustainable forest management, depends on having an appropriate framework of policies and legislation at national and regional levels. Considerations in deciding a forest policy



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include: the present proportion of land under forest; the need to protect and conserve biological diversity; recognizing the needs and aspirations of present and future generations of the population; the place of forestry in national economic planning; the various objectives of forest policies (and the relative importance of these); and the land area covered by public and private forests.

This topic can be narrowed down into smaller topics and subtopics, such as Forest Policy, National Forest Inventory (NFI), Permanent Forest Estate, Protection of Biological Diversity, Soil and Water Protection, Forest Ownership, and National Forest Service.

2) Forest management for multiple uses

Forests earmarked for timber production are able to fulfill a number of important objectives and forest functions, such as environmental protection and, to a varying extent, species and ecosystem conservation. These multiple uses should be safeguarded by applying sound management practices that maintain the potential of the forest to yield its full range of benefits to society.

Smaller topics in this area are planning, harvesting, forest protection, legal arrangement, and monitoring and research.

3) Socio-economic, financial and cultural aspects

A well-managed forest is a self-renewing resource producing a host of economic and social benefits. If sustainably managed, a forest has the potential to make an important contribution to the overall sustainable development of the



country. Sustainable timber production depends on an equitable distribution of incentives, costs and benefits, associated with forest management, between the principal participants, namely the forest authority, forest owners, concessionaires, and local communities. The success of forest management for sustained timber production depends to a considerable degree on its compatibility with the interests of local population.

Management for timber production can only be sustained in the long term if it is economically viable – that is, taking full account in the economic value of all relevant costs and benefits derived from properly conserving the forest.

Smaller topics in this area are relations with local populations and economics, incentives, and taxation.

If the topic chosen is still too broad, the auditors may select part of the topic.

Auditors can use same C&I from the relevant process to evaluate present situation (and therefore governments estimations). Also auditors can compare governments reports from different years to describe changes in forestry and based in that to evaluate sustainability.

All topics above refer to particular associated set of criteria. These criteria are used to make an initial pre-audit assessment of the forestry resource, and to help identify the key points the audit needs to focus on. The criteria can also be used during the audit itself (as other relevant criteria from other applicable processes and standards can).

Summary

We have discussed main topics regarding the SFM which are very important for auditors in understanding the business context. The topics are the concept of SFM (definitions, characteristics, benefits, key players), and how to evaluate SFM using specifics tools called Criteria and Indicators.

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