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Sustainable Forest Management System

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Abstract

Sustainable forest management addresses forest degradation and deforestation while increasing direct benefits to people and the environment. At the social level, sustainable forest management contributes to livelihoods, income generation and employment. At the environmental level, it contributes to important services such as carbon sequestration and water, soil and biodiversity conservation. The forest ecosystem is highly complex, and influenced by numerous external factors. Similarly, different forest types in different regions of the world require different sustainable management strategies. Turkey has 21.678.134 ha forest area and all of the forests of Turkey (99.9%) are state-owned property. Sustainable forest management is an important issue and Turkish Standards Institute (TSE) and General Directorate of Forestry work together for this purpose. At the beginning, standard setting facilities of sustainable forest management and chain of custody (CoC) has been started. For national sustainable forest management certification “Programme for the Endorsement of Forest Certification (PEFC)” system is adopted. PEFC system include two types of certification. Forest management certification is a way to demonstrate the forestry operations are managed economically feasible, socially equitable/beneficial and environmentally reliable by forest owners/managers. Chain of Custody (CoC) certification is a process that verify the production chain of forest products. CoC certificate is issued to companies who wants to show that they use forest raw material produced from sustainable managed forests. Turkish Standards Institute has started to prepare PEFC requirements to be National Governing Body, PEFC Turkey. PEFC Turkey will be national system for forestry. Turkey Forest Certification Programme relies upon three separate functions: standard setting, certification and accreditation. PEFC membership has several steps: establishing the organization, developing the system, PEFC Council membership, PEFC Endorsement, running the system.

Keywords

sustainable forest management, forest management certification, chain of custody certification, national forest management

1. Sustainable forest management

Sustainable forest management is managing forests according to the sustainable development principles.

Sustainable forest management addresses forest degradation and deforestation while increasing direct benefits to people and the environment. At the social level, sustainable forest management contributes to livelihoods, income generation and employment. At the environmental level, it contributes to important services such as carbon sequestration and water, soil and biodiversity conservation. Managing forests sustainably means increasing their benefits, including timber and food, to meet society’s needs in a way that conserves and maintains forest ecosystems for the benefit of present and future generations [1].

On a global scale, forests store more carbon than the earth’s atmosphere. Since 2007, the role of forests as important carbon reservoirs has gained remarkable attention in the global climate change discussion. Reducing Emissions from Deforestation and Forest Degradation (REDD) is an effort to create a financial value for the carbon stored in forests, offering incentives for developing countries to reduce deforestation and invest in low-carbon paths to sustainable development[2].

Some key facts are listed by Food and Agriculture Organization of the United Nations [1]:

- a) In 2010, forests covered about 31 percent of the world’s total land area
- b) Forests contain most of the world’s terrestrial biodiversity and almost as much carbon as in the atmosphere.

- c) Forests provide livelihoods for more than a billion people and are vital for conservation of biodiversity, energy supply, and soil and water protection.
- d) Deforestation affected an estimated 13 million hectares per year between 2000 and 2010, but thanks to afforestation and natural expansion the net forest loss was 5.2 million hectares per year.
- e) Fire, forest pests and climate change are also contributing to loss of forests around the world.
- f) Forests play a crucial role in the hydrological cycle, influencing the availability of water, regulating surface and groundwater flows, and maintaining high water quality.
- g) Forests and trees reduce water-related risks such as landslides, local floods and droughts and help prevent desertification and salinization.

Many of the world's forests and woodlands, especially in the tropics and subtropics, are still not managed sustainably. Some countries lack appropriate forest policies, legislation, institutional frameworks and incentives to promote sustainable forest management, while others may have inadequate funding and lack of technical capacity. Where forest management plans exist, they are sometimes limited to ensuring the sustained production of wood, without paying attention to the many other products and services that forests offer. At the same time, other land uses such as agriculture can seem financially more attractive in the short term than forest management, motivating deforestation and land-use changes [1].

2. Forests in Turkey

Our country with its rich biodiversity of forest ecosystems is attracting attention at global level as well as its national importance. So sustainable management of Turkish forests has special importance.

Forests are generally located on mountainous areas and they are usually natural and semi-natural with high biodiversity value. The country has 9000 plant species of which 3000 is endemic. Most of these plants are located in forest areas. Deciduous forests are prevalent and relatively uninterrupted at moderate elevations along northern Turkey. Coniferous forests, depending on the species and locations, are found at varying altitudes from sea level to the timber line. Forest formations of the country include species belonging to different floristic regions, namely Irano-Turanian, Mediterranean and Euro-Siberian. Approximately 800 woody taxa occur in the country's forests. The forests in Turkey are also home to most of 120 mammals, 454 birds and 93 reptiles found in the country [3].

Turkey, with a surface area of approximately 80 million hectares, has a rich diversity of the mountainous and ecogeography. With parallel to ecologic richness, forests are rich as species and ecological composition. Forests, according to the determinations made by the year 2012, covers 27.6% of the country's surface area. This table does not include openings in the forest. The data except forest, water and other land (Table 1) belongs to the Turkish Statistical Institute [4].

Table 1. Distribution of surface area of the country land use classes in Turkey

Land use	Area (ha)	(%)
Forest	21,678,134	27.6
Meadow	14,617,000	18.6
Water areas	1,050,854	1.4
Agriculture	24,437,000	31.1
Other (*)	16,751,482	21.3
General area	78,534,470	100

(*) Other land uses include areas such as unwooded forest, land, plateau, steppe, stony-rocky terrain, sand, marsh, housing, cemetery, quarry, permitted facilities, etc.

Turkey has 21.678.134 ha forest area and all of the forests of Turkey (99.9%) are state-owned property. The Ministry of Forestry and Water Affairs is responsible for conservation, improvement, planning, management and utilization of all forests in Turkey. General Directorate of Forestry (GDF) manage state forests on behalf of public.

GDF develops forest management plans, monitors and evaluate the implementations for multi-purpose benefit, protection and improvement with considering ecological, economic and social functions of forests with an integrated approach for sustainable management of forest resource [4].

TSE and GDF work together on sustainable forest management and signed a protocol named "The Development of National Sustainable Forest Management Standards". In this context both organisation combine their knowledge and experiences together, so present sustainable forest management criteria and standards are being improved.

3. National sustainable forest management certification

General Directorate of Forestry has prepared "2013- 2017 Strategic Plan" for sustainable forest management. According to this plan, 394 million hectares of forest have certified in the world as of May 2012 and this corresponds to 9.6% of the world's forest area. In Europe, USA and Asia-Pacific region, the development of "Green Building" standards will create a new market opportunity in terms of certified forest products. The Strategic Plan accepts "Development of national forest management certification scheme" as fundamental strategy. GDF in parallel with international developments started certification work in 2010 and 867.500 hectares of forest have been certified as "Forest Management System" as of December 2012. Certification work continues on 557.500 hectares of forest. In this context, GDF aims at the end of 2015, 3.25 million hectares and at the end of 2017, 4 million hectares of forest to be certified as "Forest Management System". As a result of certification studies the forestry sector and our country will be integrated with the world market in this field [5].

Forest certification is supported by environmental non-governmental organizations (NGOs) to address consumer concerns related to deforestation and quality of forest management. There are two main objectives to improve forest management and enhance multiple values from forests and to link informed consumer with the products produced in an environmental and socially responsible manner. Certification simply requires the harvesting rate not exceed levels that make possible sustainable production. There is a sustainable production level for the industrial wood in Turkey, regarding the increment, cut and harvesting amounts. Certification also requires maintenance of biological diversity, soil and water resources, and global values of forests. Comprising high biological diversity, Turkish forests have invaluable importance at national, regional and global level. Monitoring of ecological values is particularly important to conserve related values in Turkish forests [6].

The reason for appearance of sustainable forest management certification is that NGOs campaigns against to rainforests destruction. The ways of managing the forests sustainably are system of determining the good managing forests and promotion of produced forest based products preventing nature and human by avoiding of illegal logging. Forest management certification is a voluntary based. Certified forest products claim to be produced from forests that fulfill the sustainable forest management requirements and carry labels given by independent third-party organizations.

Two certification programs exist:

- a) FSC (Forest Stewardship Council), 1993
- b) PEFC (Programme for the Endorsement of Forest Certification), 1999

FSC and PEFC are both non-governmental organizations that are non-profit. Here are some comparisons between them:

- a) FSC is more centralized and has more international control
- b) PEFC has more national initiative
- c) FSC has own standards and allows the adoption of international standards locally
PEFC has common international rules on Chain of Custody (CoC) certification and provide flexibility in national implementation on Sustainable Forest Management certification
- d) FSC allows international accreditation program
PEFC promotes the national accreditation system
- e) Independent certification organisations conduct the FSC audit
PEFC sustainable forest management certification needs to national membership for that country

PEFC is an umbrella organization centered in Geneva and endorses National Forest Certification Systems (43 countries). The world's largest program in terms of certified forest area. PEFC-certified forest area of 300 million hectares (191 million hectares of FSC). 18,600 companies have Chain of Custody (CoC) certificates (FSC 30,957 companies) [7].

For national sustainable forest management certification "Programme for the Endorsement of Forest Certification (PEFC)" system is adopted. PEFC system includes two types of certification. Forest

management certification is a way to demonstrate the forestry operations are managed economically feasible, socially equitable/beneficial and environmentally reliable by forest owners/managers. Chain of Custody (CoC) certification is a process that verify the production chain of forest products. CoC certificate is issued to companies who wants to show that they use forest raw material produced from sustainable managed forests [7].

The forest ecosystem is highly complex, and influenced by numerous external factors. Similarly, different forest types in different regions of the world require different sustainable management strategies. This means that criteria for sustainable forest management must be constantly adapted to new circumstances; they must reflect the national context and the specific ecological and environmental conditions, as well as social, economic, political, cultural and spiritual dimensions [7].

PEFC forest certification systems allow establishing forest certification schemes according to national circumstances. In this system, it is possible to manage national forests and plantations with input from all interested parties at local level. Applying this international forest certification system standards and criteria, nations have chance to reach global market.

3.1. PEFC system requirements

A certification system outlines the rules, procedures and management for carrying out certification. It establishes specific requirements for a product, process, system or body, and uses a third-party to ensure that the fulfillment of specified requirements has been demonstrated. A credible certification system relies upon three separate functions: standard setting, certification and accreditation (Figure 1). Standard setting is the process of defining certification requirements in collaboration with stakeholders and is coordinated by a standardising body. Certification is the process of checking whether an organization fulfills the certification requirements and is carried out by a Certification Body. Accreditation is the process of assessing the competence of the Certification Body and is carried out by an Accreditation Body. For PEFC, it is important that these three functions are all present and operate independently within a national forest certification system. For example, PEFC certification is not possible if a Certification Body independently develops a forest management standard and subsequently uses it as the basis for a field audit. PEFC is currently the only global forest certification system that has implemented internationally recognized mechanisms to ensure unambiguous separation of these activities [8].

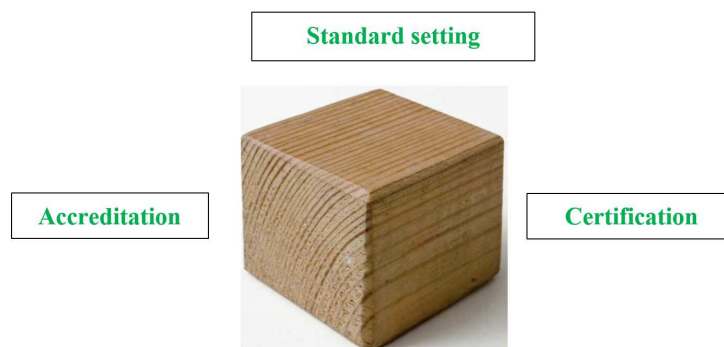


Fig. 1. Certification system showing the three separate functions: standard setting, certification and accreditation

Turkish Forest Certification Programme relies upon also three separate functions: standard setting, certification and accreditation. In Turkey, Standard setting, certification and accreditation are present independently. TSE Standard Preparation Center develops standards according to CEN/CENELEC rules, Certification Bodies have accreditation on product and system certification and Turkish Accreditation Body (TURKAK) is the member of International Accreditation Forum (IAF).

3.2. PEFC membership

Starting national forest certification needs to become a member of international “Programme for the Endorsement of Forest Certification (PEFC)” system. PEFC membership has several steps: establishing

the organization, developing the system, PEFC Council membership, PEFC Endorsement, running the system. To reinforce the importance of this engagement, PEFC sets a membership requirement for forest owners or national forestry organizations to endorse the role of the organization as PEFC National Governing Body (NGB). By having the support of the majority forest owner(s) in a country, it can also help to ensure that only one System is PEFC-endorsed per country [7, 8].

The national candidate organization for the PEFC National Governing Body shall [9]:

- a) Be a legal entity;
- b) Have its own statutes that do not conflict with the PEFC Council statutes;
- c) Include amongst its objectives the implementation of the PEFC System within its country;
- d) Have made a commitment to follow the PEFC Council rules and requirements;
- e) Have support of national forest owners or a national forestry organization(s);
- f) Provide participating interested parties with a fair, ongoing and appropriate possibility to influence the organization's decision making.

NGB should submit PEFC membership application form given PEFC GD 1002 and the required supporting documentation to PEFC International. NGB's application will be carefully reviewed by the PEFC Secretariat and submitted to the PEFC Board of Directors for consideration and recommendation. The application will then be put forward to the PEFC General Assembly for formal approval. The process (Figure 2) will take between three to six months [9].

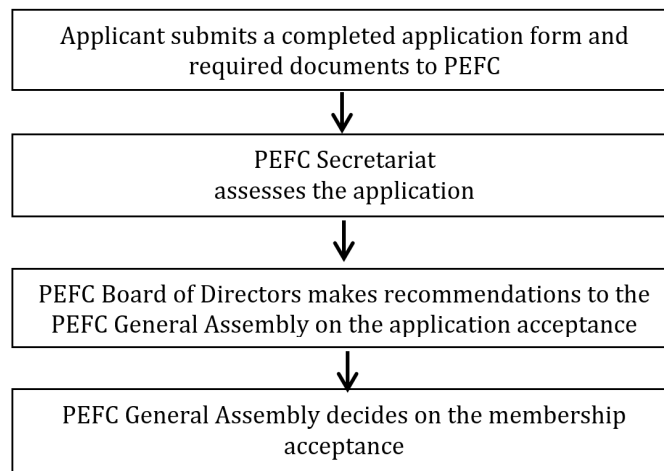


Fig. 2. PEFC membership application process

TSE has started to prepare PEFC requirements to be National Governing Body, PEFC Turkey. PEFC Turkey will be national Forest Certification Programme for sustainable forest management. For this, required procedures and standards are being developed. Stakeholder mapping is done and new structure is being studied to be meet the PEFC requirements participating the interested parties.

4. National sustainable forest management standardization

Sustainable forest management is an important issue and Turkish Standards Institute (TSE) and General Directorate of Forestry work together for this purpose. At the beginning, standard setting facilities of sustainable forest management and Chain of Custody (CoC) has been started.

By requiring that local stakeholders be involved in both standard-setting and decision-making on it before a system can be endorsed, PEFC ensures that standards are adapted to meet local cultural, socio-economic, physical, biological, climatic, and geopolitical realities while at the same time meeting internationally-recognised benchmarks for sustainable forest management [8].

At standard setting step standard setting procedures must be developed. Comprehensive and realistic procedures make it useful. The standard setting procedures must clearly explain the developing forest management standard(s) and adopting the PEFC's CoC standard. After national forest management standard(s) are developed and Forest Certification Programme procedures are put in to practice in compliance with PEFC's requirements, NGB can apply for PEFC endorsement.

In PEFC's view, standard setting procedures shall describe the following [10]:

- a) The standardising body status and structure;
- b) The standard setting process – outlines activities, timeline, roles and responsibilities, and how each PEFC requirement will be met within your national context;
- c) Procedures for record-keeping – describes your chosen approach, which will also needs to be compliant with PEFC criteria. Your records must be kept for a minimum of five years, made available on request, and they will be submitted as part of your eventual application for PEFC endorsement;
- d) Procedures for ensuring the balanced representation of stakeholders–approach for mapping and inviting all interested parties and allowing them to participate in the decision making in a balanced way;
- e) The mechanism for reaching consensus – outlines the bodies responsible and the process for consensus building;
- f) Complaint and dispute resolution – explains requirements for naming a point of contact for enquiries and complaints, as well as how complaints are to be.

Standard setting process (Figure 3) in line with PEFC requirements are as follows [8, 10]:

- a) The standardising body shall identify stakeholders relevant to the objectives and scope of the standard-setting work.
- b) The standardising body shall make a public announcement of the start of the standard-setting process.
- c) The standardising body shall review the standard-setting process based on comments received from the public announcement and establish a working group/committee.
- d) The standardising body shall organise a public consultation on the enquiry draft.
- e) The standardising body shall organise pilot testing of the new standards and the results of the pilot testing shall be considered by the working group/committee.
- f) The decision of the working group to recommend the final draft for formal approval shall be taken on the basis of a consensus.
- g) The standardising body shall formally approve the standards/normative documents and shall be published in a timely manner and made publicly available.

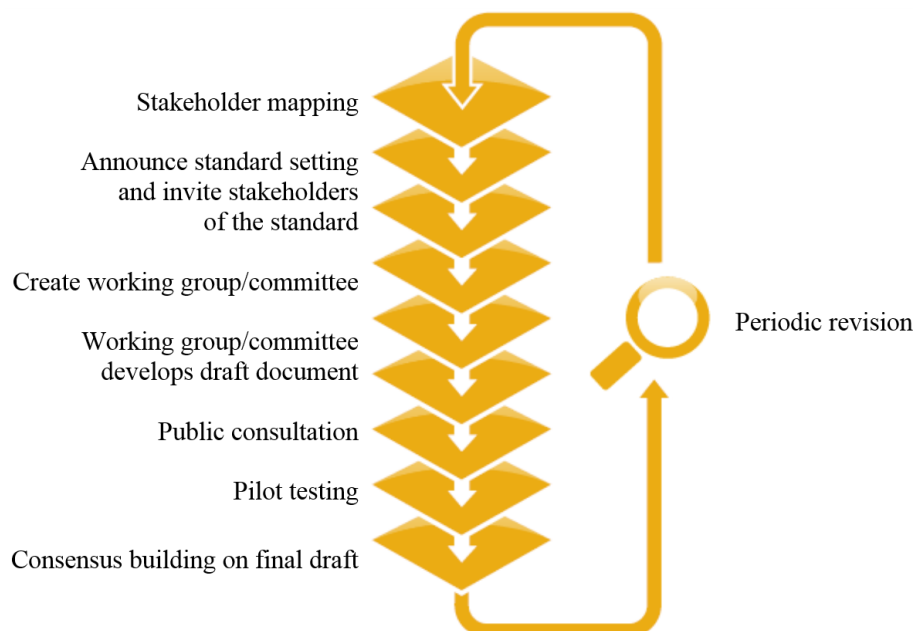


Fig. 3. PEFC standard setting process

5. PEFC endorsement

When the National Forest Certification System is developed, NGB member may apply for PEFC endorsement process (Figure 4).

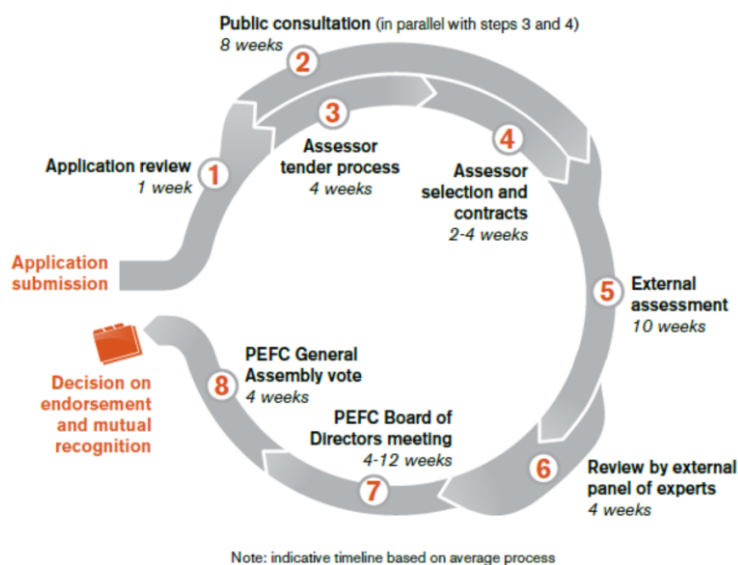


Fig. 4. PEFC endorsement process

NGB's application must be sent to the PEFC Secretariat in electronic format including the English translations of the following documents [11]:

- a) Written request for assessment from the PEFC National Governing Body;
- b) System description;
- c) Standard setting procedures and records on the standard setting process (Development Report);
- d) Certification criteria for forest certification (Forest Management Standard(s));
- e) Group certification model description (if applicable);
- f) Requirements for chain of custody certification (chain of custody standard);
- g) Administrative procedures concerning logo licence issuance and complaint procedures;
- h) Description of certification and accreditation procedures;
- i) Completed PEFC Standard and System Requirements Check-list.

TSE has started to prepare CoC standards by translating the PEFC ST 2002 and PEFC ST 2003, and started to study on Sustainable Forest Management standard [12, 13]. When Turkish Forest Certification Programme structure is established by participating the interested parties SFM standard would be improved.

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