
RESEARCH OF SUSTAINABLE FOREST MANAGEMENT IN MEDITERRANEAN AREA

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ABSTRACT

Sustainable Forest Management (SFM) has become an increasingly discussed topic in forestry. It looks at aspects, apart from productive ones, like quality of life of the population, local economic development, and biodiversity. The concept first appeared at the Rio Conference in 1992 with a first attempt to define SFM principles. Then, forest certification systems led the application of SFM (forest certification is the voluntary process to label forest products coming from SFM). But SFM should be implemented in every management unit, promoted by governments through forest legislation and instruments. The objective of this research is to check the current promotion of SFM from governments. The revision of laws and instruments is made in Spain. It is also intended to define ways so that current forest management becomes more sustainable.

Key words: sustainable forest management, mediterranean forest

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INTRODUCTION

In last decades, concerns around natural ecosystems ability to cope with the growing demands of the society led to a new concept of development. In this context, sustainable development was first talked about in Brundtland Report (1987), which is defined as development that *meets the needs of present generations without compromising the ability of the future generations to meet their own needs*. The report was central for the development of the Earth Summit (1992), where it was made a first attempt to define sustainable forest management (SFM).

SFM implies a widening of traditional forest management objectives: maintenance of the forest cover, profitability and best use of different products and services. SFM considers other aspects such as the local population, soil conservation, water resources and biodiversity (CIM, 2002).

The research aims to get an assessment of the introduction of SFM in current forest planning and to see ways to improve the situation. The revision is made in Spain. To meet the aim, the work has the following objectives: to get the requirements of SFM in order to define the concept and establish where it is intended to go; to check how forest planning instruments and rules fit into SFM requirements; to define proposals to achieve a more sustainable forest planning.

Most of the Spanish forests respond to a Mediterranean species association pattern due to Mediterranean climatic conditions. Mediterranean forest ecosystems have special characteristics that make them differ in their composition and management from other types of forests. The productivity of Mediterranean forests is generally low and properties are generally small, so that profitability of forests is normally low. But they provide multiple goods and services (especially noteworthy is the importance of non-market values) including being exceptional rich in terms of biodiversity. All these goods and services are crucial for the socio-economic development of rural areas as well as for the welfare of the urban populations of the Mediterranean region. (EUROPEAN FOREST INSTITUTE, 2009)

METHODOLOGY

The research starts with a review of the standards of forest certification systems established in Spain (PEFC¹, FSC²), and the rules and instruments that regulate the development of forest activity. Through these certification systems the Spanish forest management is being regulated.

¹ Pan-European Forest Certification (PEFC): It is a framework for the mutual recognition of credible national or regional sustainable forest management schemes. Program participants are granted the use of a common ecolabel.

² Forest Stewardship Council (FSC): According to the FSC, its mission is to support environmentally appropriate, socially beneficial, and economically viable management of the world's forests.

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A set of hypotheses about the main requirements of SFM and the main difficulties and chances of the Spanish forest management to achieve sustainability are derived from the revision. A SWOT Analysis is completed to assess sustainability of forest management. From the analysis are derived proposals for improvement.

Consultation with experts through questionnaires is developed in order to check these hypotheses and answer the key questions. The questionnaire is structured in five questions: SFM requirements, forest management difficulties to achieve sustainability, forest management chances for sustainability, real consideration of the requirements in forest management, and proposals for improvement. In each question, experts have to assess sustainability of a set of elements related to the topic of the question. The experts are selected from: universities, central and regional governments, forest management enterprises, research institutes and forest certification systems.

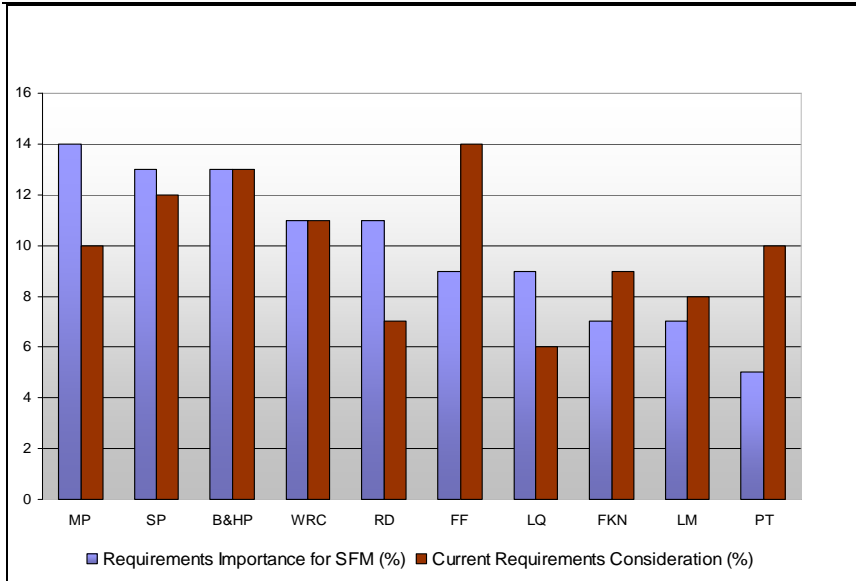
Data is analysed according to a multicriteria decision method that gives a weight to each of the elements considered by comparison (GÓMEZ OREA, 2002).

RESULTS

The most important requirements of SFM is *management planning (graph)*. *Planning is the key of the management*, according to the experts' answers, *by means of planning all of the other requirements are considered*. Secondly, it is important to consider *natural resources protection*, and in the third place *rural development*. The less important requirements of SFM are *landscape management* and *pest treatments* (see Fig. 1).

The requirement of SFM that is currently most introduced in forest planning are *forest fires prevention and extinction measures*, followed by *biodiversity and habitat protection* and *soil protection*. The requirements that are introduced less often are: *landscape management*, *rural development* and *quality of life improvement* (see Fig. 1).

Apart from the requirements proposed, experts consider that SFM has to take care of the adaptation of forest ecosystems and their management to climate change. It should also promote educational and cultural aspects of forests such as traditional uses or human landscapes. Concerning *rural development*, it is a policy covered by several sectors (not just forestry) which have to act together. Besides, rural development must be sustainable and based on the local resources.



MP: Management Planning; **SP:** Soil Protection; **B&HP:** Biodiversity&Habitats Protection; **WRC:** Water Resources Conservation; **RD:** Rural Development; **FF:** Forest Fires; **LQ:** Life Quality Improvement; **FKN:** Forest Knowledge Improvement; **LM:** Landscape Management; **PT:** Pests Treatments

Fig. 1. *SFM Requirements and their current consideration*

The difficulties of the Spanish forest planning system to achieve sustainability are mainly the lack of economic compensation for the positive externalities, the small size of forest private property and low general productivity of Mediterranean forests. Referring to the difficulty *lack of guidelines of SFM*, some experts suggested that the problem is not the existing information but the available resources. Other difficulties considered by the experts are: lack of social awareness; the economic context: market characteristics, low added value of products; and the amount of legislation which is not always well connected.

On the other hand, the chances of the Spanish system to develop SFM are the basic criteria for the development of conventional forestry management plans: maintenance of the forest cover, profitability and best use of different products and functions. It also helps the existing guidelines for forestry management plans towards the prevention of forest fires and forest pests, and towards the conservation of landscape and biodiversity. For the development of sustainable forest management also help the forest strategies and plans coming from Europe and the Spanish Central government, and all the rules for the protection of the natural resources in general.

Except application of EIA process, all the proposals are considered to be relevant. Concerning government paper reinforcement, it is central to consider that much intervention could happen

against willingness to manage. Many experts suggest economic incentives as means to encourage forest management and for the externalities. There should be developed marketing strategies which focus on all forest goods and new markets (bioenergy). More research to renew management is important. Finally, a forest policy that is steady and flexible has to be developed.

SFM has to consider firstly the natural resources conservation. Secondly, it is important that forest management contributes to rural development. Multifunctional use of forests is also an important aspect to be promoted by forest management in order to be sustainable.

DISCUSSION

The results demonstrate that SFM has to consider not just the production of forests and the maintenance of the cover, but all of the other natural resources that are in the forests. It has also to encourage the social and economic aspects of the forest and the area around. It has to be taken into account that rural development is not a matter that only concerns forestry so that interaction among different land planning sectors is required. Rural development has to be based on the local resources in order to be sustainable, construction or golf also promotes development, but it is not sustainable because it does not increase the value of the local characteristics.

CONCLUSION

Sustainable forest management is an opportunity for the Mediterranean forest. The article shows that Mediterranean forest has many good properties but also suffers from certain deficiencies. To make forest management more sustainable it is necessary to make it profitable and be preserved over time.

Sustainable forest management should be an objective to achieve in every forest and encourage by forest laws. Mainly forest certification systems established in Spain (PEFC; FSC) and another rules and instruments that regulate the development of forest activity should encourage sustainability. The focus has been on assessing the level of sustainability of forest management in Spain.

Mediterranean forest ecosystem presents natural resources and land use forms with high biodiversity and good condition requiring economic, social and environmental support. Requirement for careful handling of natural resources are essential prerequisites for truly sustainability. These goods and externalities they provide, such as, soil protection, water conservation and ecosystem protection are one of the most important requirements of SFM. That is why the current forest management has been more concerned about *natural resources protection*. The document also alleges that Mediterranean forest is by their natural conditions destined to frequent fires and much attention is currently being paid to *fire prevention*. Sustainable management of forest ecosystems should prevent dangerous wildfires which are in that area a main problem. Each year in the Mediterranean basin, more than 50,000 fires burn between 600,000 and 800,000 ha (ORNAT, L. AND CORREAS E., 2003). However on the other side, the current forest management are not paying as much attention as it should to *management planning* and *rural developments* which are an important component of SFM.

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That's probably because the Mediterranean area has to first resolve different kind of problems. A main problem of adaptation of the Spanish forest has its roots in their low productivity and in the generally small size of the forest private properties. The low productivity has caused a lack of management, so that most of the Spanish forest area does not have a forestry management plan. Lack of the legislation invokes negatives responses, such as demanding of economic compensation for the positive externalities or not very good work legislation which causes low value added products. Forest management requires long-term objectives, improve monitoring and assessment of forests and economic support to be sustainable. (TOLOSANA ET AL, 2004).

The trend in sustainable forest management appears to be a clearly positive opportunity for the Mediterranean forests. If the forest management improves then the management planning would become more sustainable and conclude environmental and rural requirements. Respondents consider that is necessary to focus on multifunctional use of forests to improve forest profitability. This is a new concept of sustainable development. Forest management should contribute to improve social and economic local conditions through creation of job opportunities, public participation processes, and so on.

In conclusion, forest management requires constant funding, and steady and flexible policies to build a new forest management models. Significant chances for SFM in the Mediterranean will come if forest planning chances change through the implementation of new strategies which focus in all forest goods and policies together with new guidelines. It is also suggested that the existence of the forest certification systems, are a chance for SFM since they define and promote it. Long-term studies are needed to establish the basis for the future development of an information system associated to the situation of the forest planning and the forest itself.



PHOTO: MEDITERRANEAN FOREST ECOSYSTEM

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