

## Identification and characterization of the main forest management systems

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### INTRODUCTION

A proficient forest management system aims to merge the sustainable use and exploitation of the forest with its conservation, through a set of rules oriented towards the certification of forest management (Basso et al., 2011; Cubbage et al., 2010). In addition, such a system should also cover all the activities related to forestry workers' safety and health due to their exposure to physical, chemical and biological agents as well as to ergonomic and psychosocial factors. The objective of this work is to identify and characterize the main forest management systems available at the international level.

### METHOD

Scientific literature review was conducted in 24 databases following a four steps methodological approach. First, a set of pertinent words and terms were used in the initial searches. Secondly, the research was repeated using synonyms of the words and terms previously considered. Subsequently, from the selected works found, it was investigated whether other terms could be included in the review process and new research in the databases was conducted. Finally, in the fourth step, the bibliography of the previously selected papers was investigated in order to identify extra relevant papers. In addition, the publications of the identified official organisms that developed the forest management systems were also consulted.

### RESULTS

Currently, at the international level, there are two competing forest management systems, proceeding toward forest management certification: The Forest Stewardship Council (FSC) and the Program for the Endorsement of Forest Certification (PEFC). However, it has been found that in some countries, for example in Brazil, other forest management systems, independent of the two previously mentioned, are frequently used (Rotherham, 2011). Data from the year 2016 show that the area certified by the PEFC is higher than that certified by the FSC system, 301,569,608 ha and 194,093,509 ha, respectively. However, the FSC system has a greater global representation and is being used in 83 countries, while the PEFC system is present in only 34 (FSC, 2016; PEFC, 2016). Concerning the distribution by continent, it was found that there are no references to areas certified by the PEFC management system in Africa. In Asia and Europe, the difference between the areas certified by the two systems is not significant. In Latin America and Oceania, the FSC system is the one with the largest certified area (Alves et al., 2011; Burns et al., 2016; Gamondès et al., 2016; Gale, 2014). In North America, areas certified through the PEFC system are significantly larger. At a national level, other forest management systems were also identified but none of them completely follow the scope of the international forest management certification standards (Johansson, 2009; Papila, 2013).

### CONCLUSIONS

At an international level, only two forest management systems were identified: the FSC and the PEFC. In terms of percentage, the PEFC system is currently responsible for 61% of international forest management certifications, while the FSC system accounts for only 39%. Other forest

management systems were also performed by some countries but their scope is strictly focused on the countries' characteristics.

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