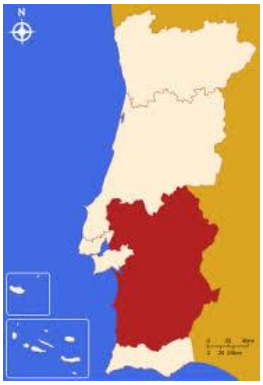
Focus on Alentejo

Background

The Alentejo region is located in the south of Portugal with a total area of 3 160 500 ha (34% of the total land area of Portugal).



Map of Portugal with the Alentejo region marked in red

With the exception of some small mountains Alentejo is a flat region predominantly covered with forest and agriculture (45% and 42% cover, respectively). Broadleaved evergreen forest makes up around 72% of the forest area. The main forest tree species in the region are: cork oak (*Quercus suber*-45%); holm oak (*Q. ilex*-27%); eucalypt (*Eucalyptus* spp.-16%), umbrella pine (*Pinus pinea*-6%) and maritime pine (*P. pinaster*-4%).

The northern part of the region is characterised by fragmented ownership, whereas the southern part of the region is characterised by large holdings mainly managed as cork and/or holm oak agroforestry systems. Wood harvesting and extraction take place on a small scale and professional forest management is rare. During the last century, cork oak forests have been directed towards the production of cork. Oak and umbrella pine wood resulting from thinning and pruning have been used as fuelwood by local populations and for charcoal.

Present state and management issues with respect to mobilisation

Although forests are abundant in the region, forest mobilisation has been restricted to eucalypt industrial plantations and maritime pine stands. However, the potential of cork oak for production of high value wood products and the future availability of considerable amounts of thinning material from areas planted during the last two decades led us to investigate: (i) cork oak wood growth and properties; (ii) collaborative forest management between small/medium forest landowners and the forest products industry; and (iii) optimisation of extraction and recovery of wood and biomass (for bioenergy). According to the Portuguese National Strategy for Forests, forests in Alentejo are mainly categorised as 'multifunctional systems' in which non-wood forest products (NWFPs), especially cork and pine nuts, as well as ecosystem services (biodiversity conservation, game, soil and water protection) are important.

Cork oak stand, Alentejo

SIMWOOD's work in Alentejo

Gathering data for an updated characterisation of the forest resources in the Alentejo region was difficult. The data from the Portuguese National Forest Inventory (NFI) is from 2005/2006, and it does not provide the necessary data for all forest types and variables; there is also no data available at the regional level. Therefore, some information is based on the expert opinion of the ISA and ForestFin teams.

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Focus Studies

To help address the lack of data, two focus studies were carried out. The first focus study aimed to: (i) quantify the amount of wood available by species; and (ii) understand the level of wood utilisation by the forest-based industry in the region. The quantification was made using commonly used management models. The majority of available wood is from eucalypt plantations; eucalypts occupy 16% of the forest area but account for 76% of the total wood produced per year, most of which is used outside of the region. From the survey of local industry, it was found that 67% of the wood consumed locally comes from outside the region. There is no direct relation between the forest area and the wood availability because most of the forest area is used to produce NWFPs; it is actually legally forbidden to harvest the wood from species like cork and holm oak. Without the legal restriction on felling of these species, new models of forestry could be developed and implemented to allow the production and use of wood by local industry.

The other focus study quantified the annual economic impact of NWFPs and services (hunting and ecotourism) to understand their importance in the region and the possible impact of an intensification of wood mobilisation on those activities. Production of cork and umbrella pine nuts are the most economically important NWFPs, with resin from maritime pine (used in the manufacture of a variety of products, including soap, paint, varnish, shoe polish, lubricants, linoleum and roofing materials) and mushrooms of less importance. Over the last decades, resin production has declined as the value of the resin has also declined. More recently (since 2010), the price (and production) of resin has increased; this trend is expected to continue. Ecotourism is an important source of income, bringing in about €26 million per year to the region. The importance of hunting was difficult to quantify due to the diversity of existing situations, but it is an important source of income in some areas. Most stakeholders associated with provision of these products and services considered that an increase in the area of intensively planted areas with species like eucalypt and maritime pine would disturb the existing equilibrium and decrease the profitability of the NWFPs and services.

Pilot project: Increasing the availability of eucalypt and maritime pine wood through management and afforestation in the Alentejo region

The demand for wood from eucalypts and maritime pine is expected to continue increasing. However, the high costs for site establishment and other silvicultural operations also discourage private landowners from: investing in new areas; improving forest management approaches (FMAs); and replacing non-productive stands (e.g. eucalypt stands that have been maintained for four or more consecutive rotations and in which yields of wood are declining). Many private landowners lack knowledge of the best management practices. Therefore, the aim of the Alentejo pilot project is to increase availability of wood from eucalypts and maritime pine through afforestation and forest management using a 'sustainable intensification' concept, which requires forest managers to have a high degree of knowledge and skill.

Pruning in an umbrella pine stand

To achieve this, the ISA and ForestFin teams invited stakeholders (forest owner associations; private forest owners; forest industry, non-

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governmental organisations; research; public administration; small- and medium-sized enterprises) to participate in a meeting (Regional Learning Lab – RLL1) on 14 October 2014. The first step consisted of identifying the main barriers and opportunities to increase wood availability and mobilisation. Three potential ways to increase wood mobilisation were identified: (i) improve management in existing maritime pine an eucalyptus stands; (ii) increase the forest area; (iii) use of wood from species not traditionally used for wood production (such as cork and holm oaks and umbrella pine). The ISA team are using the management driven stand simulator *StandsSIM.MD* implemented in a user-friendly interface *sIMfLOR* to run simulations comparing the different levels of wood harvested when efficient and inefficient FMAs are used.

A second stakeholder meeting (RLL2) took place on 12 October 2015. The work plan was presented to stakeholders and the simulator *StandsSIM* was described. *StandsSIM* outputs comprise a cost–benefit analysis of alternative FMAs and a set of sustainability indicators, which will help promote the adoption of new improved management or the plantation of new stands. During the workshop stakeholders were asked to describe the FMAs currently used in Portugal using the *sIMfLOR* platform so that comparative runs could be made using the tool and be presented at a third stakeholder meeting, on 25 October 2016 (RLL3), to promote the discussion on FMAs.

Second Regional Learning Lab (RLL) with stakeholders

The feedback from the meetings was not sufficiently detailed concerning the definition of currently practiced FMAs. Consequently an extra workshop (RLL4) will be held to understand the reasons behind the lack of feedback from stakeholders, and to propose a simpler FMA description approach. Any change in attitudes towards adoption of more efficient FMAs will be evaluated through a questionnaire that will be distributed at the fourth stakeholder meeting (RLL4). This information will be used to define the alternative scenarios (set of future values for a series of drivers such as: demand for wood and non-wood products; afforestation rates and other land use changes; anticipated fire occurrence; forest policy measures; etc.), which will be used in the *StandsSIM* model to assess the potential wood availability in the Alentejo region under a more efficient forest management.

The results of the SIMWOOD project will be disseminated through agro-related web portals, and articles in national magazines.

Reference

Barreiro S., Rua J., Tomé M. 2016. StandsSIM-MD: a Management Driven forest SIMulator. *Forest Systems* 25(2): eRC07. http://dx.doi.org/10.5424/fs/2016252-08916

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