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TITOLO **Sustainability evaluation for local bioenergy supply chain**

Abstract

In the Biomass Action Plan, European Commission claims "Energy is key in helping Europe achieve its objectives for growth, jobs and sustainability.", and forests could play a key role in Energy Policy, because forests and other wooded land cover 178 Mha in Europe (42% of the European land), and their growing stock is estimated in 23 Mmc in 2005, moreover 60% of the net annual increment in forestry biomass is available for wood supply. However, a sustainable management of forests is crucial for maintaining their potential and their ecosystem services. The importance of the development of supply chains in the forestry sector is confirmed by a number of local and national reference regulations to promote energy efficiency and energy saving, to develop renewable sources, to develop the energy market, and to implement regulations and administrative measures to achieve the objectives.
The sustainability of bioenergy chain is not guaranteed by the use of a renewable resource as wood and the need for a multidimensional approach to Sustainable Forest Management has been paid over the years. So, the development and the implementation of tools to support the forest and energy planning is needed in order to ensure the forest ecosystem services and goods. Evaluation of the trade-off between the benefits coming from forest resources' use and the conservation of forest ecosystems is needed. Considering the use of biomass for energy purpose, on one hand the use of wood resources should be based on an evaluation of the "carrying capacity" of the forest ecosystem and site-specific characteristics (e.g. the local accessibility of raw material and the distance from the processing plant to the delivery point); on the other hand, the role of biomass valorisation has to be assessed considering the socio economic benefit or drawbacks due to the further development of the supply chain. E.g, positive effect related to an increase employment in less developed mountain areas and to a direct relation beetwen population and territory needs to be quantified.
The objective of this study is to identify the tools to support local energy planning. Specifically, the focus is on the assessment of resource availability and environmental impacts of the chain (forest resource management, timber processing and distribution, consumption). In particular, research's main interest is to identify the major components at several levels of supply chain organization and to assess the sustainable use and conservation of biodiversity through indicators based on Life Cycle approach.