

## MULTISILVA

A tool for assessing the environmental and economic performance of multifunctional silviculture and ecosystem services oriented forest management



### INSPIRATION

In the last decades, researches and policy makers addressed the importance of ecosystem services (ES) for the society's wellbeing. Forests are an important component of the natural capital and provide a large variety of ES. The provision of these important services depends on the structure and evolution of forest ecosystems, which are eventually influenced by forest management.

Efficiently providing ecosystem services is a challenging task due to the high level of complexity involved in forest ecosystems which translates in knowledge, technical and information barriers. Consequently, the increasing society's need for ecosystem services, nowadays supported by forest policy, demands for a more sophisticated approach to forest management and planning that integrates ecological and socio-economic dynamics.

### INNOVATION

MULTISILVA research objective is to develop a Decision Support System (DSS) that responds to the challenge to integrate the financial interests of forest owners with the ES provision, in spatially and temporally explicit way, identifying and focussing on the services that are demanded at a local level. LIST project team will use the local demand of ecosystem services as an important driver to shape the management objectives with a view to set the route towards new ways to design forest management.

By developing this tool, LIST researchers intend to provide a spatial analysis tool to identify the ES potential and needs around the targeted forest property. This information will firstly support the forest consultant in understanding "where" and "which" ecosystem services should be enhanced; secondly, it will help the forest owner in identifying potential buyers of ecosystem services. Multisilva DSS will also help the forest consultant with "how" to address this ecosystem services demand by providing a repository of forest management best practices to promote ecosystem services. Finally, Multisilva DSS will integrate a forest growth simulator able to quantify ecosystem services outcomes and compute the economic trade-offs of alternative management scenarios. In other words, the tool will quantify the direct costs and the opportunity cost for the simulated management alternatives with reference to the business as usual scenario.

### IMPACT

This project will add an unprecedented solution to the state-of-the-art of DSS by integrating ecosystem services' provision using a system dynamic approach and estimating the related direct costs and opportunity cost. Multisilva DSS will then be of great value for the project partners, by providing a solution to identify ecosystem services' needs, quantify the ecosystem services provided and estimate the costs generated by alternative forest management regimes based on scientific knowledge.

The DSS will be delivered as a web-based application to the project partners. In a first stage, the tool will support public forest managers in addressing the demand of ecosystem services and better communicate the management strategy and the expected outcomes. In the long run, the DSS will also help forest owners to identify potential buyers of ecosystem services and hence set the road toward the implementation of payment of ecosystem services.

### Partners

Luxplan S.A. , Administration de la nature et des forêts (LU)

### Financial Support

Fonds National de la Recherche

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