FinalReport

EUROPEAN TERRITORIAL COOPERATION

Alpine SPACE

Project Short Title

NEWFOR

Priority 1 Competitiveness and Attractiveness

Priority 2 Accessibility and Connectivity

Priority 3 Environment and Risk Prevention

Project Long Title

NEW technologies for a better mountain FORest timber mobilization

Lead Partner

IRSTEA : Institut national de Recherche en Sciences et Technologies pour l'Environnement et l'Agriculture

Project Partners

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Project Website

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Abstract

The role play by mountain forests is extremely varied. Their contributions to the stability and overall development of life and economic factors in mountainous regions are highly significant. Due mainly to topographic conditions, managing mountain forests is significantly more cost intensive than in plain ones. A good knowledge of forest biomass location, characteristics, mobilization conditions and connectivity to wood industries is a prerequisite for the development of a sustainable timber supply chain in mountain territories. It is generally accepted that this knowledge is currently insufficient to provide, at reasonable costs, the required guarantees on the wood supply and on its sustainability. As building forest roads and other timber trasnportation infrastructures are often complex and expensive, the availability of financial resources is a key challenge. Based on the use of new technologies such as Aerial Laser Scanning, UAV, for forest and topography characterization, the Interreg Alpine Space project NEWFOR has been dedicated to enhance and develop tools and adapted policy recommendations proposals for decision making in the field of a sustainable and adaptive mountain forest resources management facing the sustainability of mountain forest ecosystems services. The results achieved within the project duration improve the efficiency and robustness of forest growing stock evaluation and the displaying of the accessibility to this renewable ressource.

Relevance

Forests fulfill multiple functions in mountainous areas and cover about 40% of the Alpine Space (14 million inhabitants). They have an ecological function as host of many habitats, animal (30000) and plant species (13000). They also are a leisure area for social activities such as hiking, skiing… (100 million tourists per year). From the economical perspective, the production of renewable resources like timber and fuelwood has positive effects both at global scale, with climate change mitigation, and at a local scale with rural employment and the development of a regional value chain. The objective of preserving and improving the development of mountain forests is so a point of public interest. However, managing forests in mountain territories is a difficult task as topography and climate set strong constraints inside a complex socio-economical framework. With the recent development of new remote sensing technologies and modeling tools based on the use of Digital Terrain Model and implemented in Geographical Information Systems, major improvements regarding the evaluation of the forest growing stock and accessibility are now possible. Upon this highly valuable information, harmonized decision-making tools must be built to optimize the investments required for a cost-effective wood supply while securing the sustainable management of forests, and to support the implementation of an efficient European policy for mountain forest management.

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Key Achievements

3 operational objectives have been achieved after the 3 years duration of the project NEWFOR:
1) Sharing of knowledge/development of tools regarding the use of an innovative remote sensing technology (aerial/terrestrial laser scanning) for forest growing stock location, characterization/evaluation of mobilization conditions.
Main results: achievement of the world first Alpine Space benchmark on single tree detection using ALS data, state of the arts on the use of UAV for forest information mapping, state of the art on forest roads network extraction using ALS data.
2) Sharing of knowledge/ development of tools for the optimization of timber harvesting/ transport from the technical/ economical points of view.
Main results : development/ test of 2 freewares for cable yarding & forest accessibility optimizations, 1 online forestry machinery costs database, 1 online tool for making a first economical evaluation of the wood chain, 1 summer school for handling the project's tools (29 students, 9 EU countries), 25 scientific articles & 40 oral presentations in most relevant world conferences on forestry.
3) Development of methodology, tools & requirements, in cooperation with political decision makers at regional level, dedicated to improve the connectivity between forest resources and wood industries.
Main results: publication of 1 digital handbook on FOREST LOGISTIC PLANNING STRATEGIES, 1 recommendation paper for adaptation of national/regional legislation, 1 WEBGIS.

Lessons Learnt

From the beginning of time, man has modified the environment he lived in & therefore the forest has been one of the key points of land management strategy for developing a sustainable liveable space. Their economic value, their functions & the management required for improving these functions state that forests have to be considered as a real heritage. They should then be considered not only as primary production units serving particular interests but as heritage & cultural assets for the human society. So, forests serve the interests of the community. The key baseline that decision/policy makers have to keep in mind for defining a sustainable mountain forest action plan is: People need the forest, and the forest needs our support. This support, for being efficient, has to be based on real participative governance shared by all the actors & on effective knowledge sharing tools. The researchers are also valuable actors of territories management, whose are too often forgotten. Newfor has proved that the involvement of researchers, policy makers, practitioners/civil society organizations is the baseline for developing an efficient & consensual mountain forest territories management. In the light of the experience gained in its pilot activities, Newfor has also pointed out that for sharing knowledge it's necessary to have: a platform for displaying/weighting the requirements of each actor, access to high resolution data for the entire territory, a harmonized analysis methodology.

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Replication / Roll out

The consortium of the project NEWFOR has provided in a recommendation paper10 baselines to be considered for defining an efficient AS mountain forests action plan. They have been based on the following principles 1) sustainable forest management & land use strategy have to be based on the definition of priority functions, 2) prioritization of mountain forest ecosystems services has to be based on the optimization of forests natural dynamics,3) monetisation of mountain forest ecosystems services can only be done if : all the actors are identified, an adapted economic context is settled, the public general interest is well defined & displayed, a global EU strategy for providing, producing & disseminating high resolution data consistent with the outcome of the foresters is set up. These baselines & project's tools are currently used by the forest actors of the 15 project's pilot areas for optimizing the investments in forest infrastructures required for a cost-effective wood supply while securing the sustainable management of forests. They can also be used not just in relation to the AS mountain territories but in all the other EU's mountainous region. These tools seek to support the implementation of an efficient EU policy for mountain forest management. For the AS regions, the medium/long-term impacts of Newfor mapping tools uses will be the improvement of the financial resource allocation strategy dedicated to a cost-effective mountain territories timber supply policy.

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