

ACTION AnDeFM: Analysis and design of forest management options**Description**

Since the early 70s, management applied into public-owned forests, but also in a share of private ownership, shifted from the traditional production-driven goal (timber and fuelwood) to a less intensive practice, due both to the less profitable practice of forestry and to the emerging environmental forest functions. This trend made adult stands getting older, most of them being no more harvested at the ages of the former rotation or thinned regularly; many forests are therefore exploring, as a matter of fact, a post-cultivation life-cycle. Such a dynamics meets some basic requirements with reference to the pan-European quantitative indicators for SFM (MCPFE, 2002); i.e. a more prolonged stand lifespan, higher growing and carbon stocks in the standing trees and in the forest soil (1.2, 1.4), a less disturbed functioning of forest ecosystems and the triggering of semi-natural evolutive patterns as for structural-compositional diversities and deadwood enrichment (1.3, 4.1, 4.3, 4.5). In the medium run, it is to be ascertained if this pattern will get less sustainability, because this sole option will be widespread on large forest areas grouped together and aged likewise. At present, the monitored rates of regular mortality and inter-tree competition are often higher than in the past; the current mass growth could be therefore reduced and the amount of deadwood lying on the forest floor is getting thicker. The risk of forest fires is being increased into sensitive environments and the occurrence of severe stresses from pest outbreaks or storm damages may become, in a future perspective, the main pressure acting dramatically on over-mature stands. Furthermore, the regeneration patterns (e.g. will some of the stands collapse?) are not clear. Since the 90s, the protective (e.g. Natura 2000, Special Protection Zones, nature reserves) and carbon sequestration function of managed forests became more and more important. Hence, forest managers, forest owners, public authorities are requested to set up management plans that consider the multifunctional role of forests, taking into proper consideration the new emerging needs in medium- to long-term perspectives.

The awareness that new criteria of forest management are needed, is anyway far to be reached at technical and much more at stakeholders' and public opinion level. Furthermore, National and Regional forest regulations are generally rather conservative, it is not simple to change them in the short time without a targeted action and this shortcoming may limit the concrete fulfilment of all the basic Sustainable Forest Management (SFM) requirements.

This diffused condition and the current lack of new options besides the traditional management, now out-of-date as for the preferential criterion of wood production, call for the dissemination of targeted silvicultural systems and practices better fitting the balance between forest production, forest conservation, maintenance and enhancement of biological diversity and carbon stocking rate.

The preliminary analysis of criteria and techniques enforcing past and present practice will provide the basic knowledge to analyse: (i) driving forces and pressures acting/determining the current management or limiting the feasibility of optional choices; (ii) the possible gap between present and awaited benefits from the practice of forestry. In this way, strength/ weakness of traditional management are being assessed and new management options may be addressed. Each option results therefore from the state of art analysis coupled with the proposal and set up of technically feasible alternatives to be disseminated.

The Action: (i) will analyse the practice of management applied in the public-owned forest area managed by CFS (UTBs) and by regional authorities, such as Regione Veneto and Regione Abruzzo, selected by Action PA; (ii) will design management options tailored to the different species and situations, taking into account all the objectives of SFM with particular emphasis on the maintenance of "health and vitality" and related biodiversity and carbon stock ability, with a view of enhancing them in the medium- to long-term run.

The practice of forestry undertaken over the last decades into different forest districts managed by the National Forest Service (CFS-UTB) made the effort to adjust the already experienced, well-grounded methods of silviculture to the new scenario. On this basis, the set up of demonstrative/innovative trials addressing targeted practices of forest cultivation and their monitoring, will provide evidence of the chances available to reduce vulnerabilities, enhance opportunities and options assessments also in the perspective of adaptation of managed forests to climate change. Its implementation into representative forest areas and

diffused forest types, provides the rationale for later diffusion and enforcement at higher, regional scales. The rationale is here founded on the following assumptions: (i) the role played by forest cultivation is, at present, fairly different than in the past; a much more faceted scenario is on because manifold goods & services are being expected from natural renewable resources; (ii) the minimal or null management of formerly intensively cultivated forests is not sustainable in the long run; (iii) a careful monitoring of the dynamics and evolutive patterns in progress is needed; (iv) the traditional forestry provides a series of well-grounded rules and techniques, but they have now to be adaptively oriented to fulfil multiple benefits; (v) no more fixed parameters need to be established in the cultivation process; a more "open" silviculture is practicable; references have been experienced, compared and validated by the applied forest research; (vi) the planned practices need to be consistent with growth environment and specific bio-ecological requirements; (vii) any intervention calls for its economical feasibility in practice; sound reasons have otherwise to be addressed to get its funding and meet its political & social acknowledgement; (viii) "health and vitality" of forests are key features to the fulfilment of the whole set of criteria and indicators of SFM; they well summarize aims and goals of silviculture at present to maintain both types and spatial scales of diversity as well as an optimal rate of carbon sequestration; (ix) ongoing forest regulations enforced at regional/national level have to be flexible enough to incorporate the experienced feedbacks.

Action AnDeFM will last from month 7 to month 36 included

Methods employed

- Collection of detailed information on the already established (heritage) management criteria and techniques enforcing past and current management
- Analysis of currently applied silvicultural practices, of the driving forces and of the possible constraints acting/determining/limiting the technically feasible/available options
- Analysis of the gap between present and awaited benefits from the practice of forest management
- Definitions of forest management options to be applied in the areas selected by Action PA
- Selection of parameters to be assessed and monitored with a special care to the types and levels of biological diversity and to aboveground and belowground carbon stocks
- Definition of the dissemination procedures (targets, level/type and communication means)

Constraints and assumptions

The choice made to work into forests managed by a public body (UTB), technically qualified and responsible of forest policy at national level (CFS), is aimed at reducing possible constraints and driven by the assumption of the wide impact attributable to the experiments, as for their guidance and further dissemination capability. The former involvement of the UTBs and of the research institutions concerned within previous LIFE programmes, makes them already experienced in the statement, orientation, planning and fulfilment of the project.

Beneficiary responsible for implementation

CRA

Other involved Beneficiaries: CNR, UNIMOL, Regione Veneto

Expected results

- In-depth analysis of currently applied forest management practices
- Rationale for improved and better targeted management plans
- Design of multifunctional management options
- Enhanced information flow between stakeholders (managers, policy makers, public)
- Creation of a shared understanding among scientists, policy makers, managers
- Call the public opinion attention to this "way of doing".
- Make this "willing conformity" an acknowledged and rewarded societal value.

Indicators of progress

Annually submitted progress reports.

Information on traditional forest management gathered

Complementary/alternative management options types defined

Three steps: march 2012 (33% of exp. sites); january 2013 (66% of exp. sites); october 2013 (completion).

Action AnDeFM-SI. Analysis and design of forest management options Description (what, how, where, when)

The detail description of action AnDeFM-SI corresponds to the action AnDeFM.

Action AnDeFM will last from month 7 to month 36 included

Methods employed

see Action AnDeFM

Constraints and assumptions

The choice made to work into forests managed by SFS, is aimed at reducing possible constraints and driven by the assumption of the wide impact attributable to the experiments, as for their guidance and further dissemination capability.

Beneficiary responsible for implementation

SFI with external collaborator

Expected results

see Action AnDeFM

Indicators of progress

see Action AnDeFM