

# Three initiatives in terms of adaptation to climate change

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***The session “Tools and initiatives for forest development” organised during the 4<sup>th</sup> Mediterranean Forest Week in Barcelona, offered a synthesis of the projects and actions conducted in the past ten years, around three themes: governance, climate change and innovation for development. This article presents the focus on the adaptation to climate change, through three projects: For Climadapt, GIZ and FFEM component 1.***

Climate change, and adaptation to its effects, is among the key topics of the forestry sector, including in the territories of the Mediterranean. This is illustrated in particular by the rising number of articles, seminars and projects on this topic in recent years.

These recent initiatives are part of a broader reflection of planning and sustainable forest development, by providing methods, tools and recommendations to policy makers and managers of Mediterranean wooded lands.

In particular, three projects, ongoing or recently completed, addressed various aspects of this issue, from the perspective of field experimentation (For Climadapt), capacity development of local people (GIZ-CPMF) and data production (FFEM, component 1).

This article presents the approach, achievements and needs identified by these three initiatives.

1 - Project co-financed by the ERDF through the MED program (European Union), For Climadapt, « Adaptation of Mediterranean woodlands to climate changes », took place from 2010 to 2013. It brought together 8 partners from 11 pilot sites in 5 countries. More information on [www.aifm.org](http://www.aifm.org). AIFM, Amandier L., Veyrand R., For Climadapt project (French and English); Final capitalisation book; Marseille 2013, 64 p. and Amandier L. « For Climadapt, un projet de coopération européenne sur l'adaptation au changement climatique en forêt méditerranéenne » *Forêt Méditerranéenne* T. XXXV, n°4, déc. 2014.

2 - The details of the implementation of these recommendations are explained in the project's capitalisation book.

## For Climadapt, field experimentation and exchanges

### Objective and methodology

The objective sought by the For Climadapt project<sup>1</sup> was the development of new techniques to improve the adaptability of Mediterranean natural areas to climate change, based on the practice of the actors in the field.

The methodology used took advantage of other cooperation projects methodology and was based on knowledge transfer between stakeholders, through meetings, field visits, shared assessments. Thus, each of the eleven project pilot sites was the subject of a visit, accompanied by a rapid diagnosis, performed by all partners.

The critical analysis of actions was carried out by a peer group, which also supported the identification of major achievements and their capitalisation.

Specifically, the project took place in two phases in the field, with local diagnostics and appropriate experiments, and a third continuous phase to capitalise and disseminate the results through communication (internal and external).

## Conclusions and main technical recommendations

The For Climadapt project allowed for the strengthening of observation techniques and confirmation of the finding of an evolving Mediterranean climate, as well as for the development of tools or the implementation of methods for the adaptation of Mediterranean forests to this change.

By means of their respective experimental activities, the partners of the For Climadapt project, through the capitalisation body that the Peer group represents, have also identified a series of recommendations<sup>2</sup>, addressed to policy makers and managers of Mediterranean wooded lands, according to three major axes:

1) *Adaptive forestry*: adapt forest management to the expected changes, at the level of stands, at the level of massifs or at the regional scale. It is a question of improving the strength and resilience of the stands, seeking genetic adaptation of local species (or even to import non-native species) and adapting reforestation techniques.

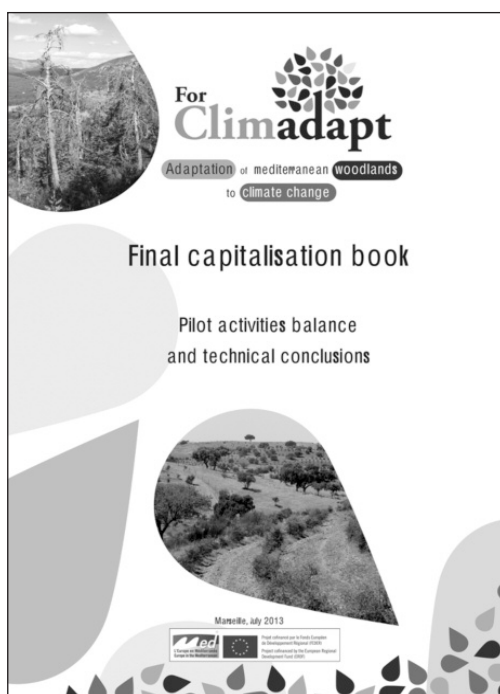
2) *Anticipation and restoration*: anticipate diebacks (through monitoring and observation), prevent fires, (particularly in a context of increased risk), fight erosion and restore degraded lands.

3) *Awareness raising and governance*: transfer knowledge, raise awareness in society and improve participatory governance in the territories. This axis aims to improve knowledge transfer from specialists to managers, to inform people in the territories more exposed to climate change impacts and make policy makers and political and institutional leaders aware of the issue.

## Declaration of Herculaneum

This declaration, signed by all the project partners, is aimed at international institutions, states, communities and parks in all countries of the Mediterranean rim, and urges them to take up the issue of climate change, particularly by engaging themselves in active policies, facilitating scientific research and partnering to develop and promote cooperation programs and actions, including outside the European Union.

It is part of a broader approach, to perpetuate the reflexion and work undertaken within the framework of the project and to



**Fig. 1:** One of the productions of the For Climadapt project: the Final Capitalisation Book of the pilot actions.

disseminate the results obtained both towards field actors and major sub-national, national and international decision-making bodies.

## GIZ regional project, nexus between « Climate change adaptation and forests »

### *A twofold approach*

The overall objective of the project<sup>3</sup> is to improve the framework conditions for the sustainable management of forest ecosystems, to preserve the supply of goods and services in the face of climate change. To reach this target, the project is divided in four components, from capacity building of the forest administrations to general public awareness raising via relations with partner sectors and the mobilisation of external support and partnerships.

In line with this strategy, the project activities focus on the development of the capacities of governmental and non-governmental players that influence policy decisions related to forests, in particular through training activities conducted at national and regional levels.

Among the areas of work of the project, the nexus between forests and adaptation to climate change was treated with a twofold approach. The first approach addresses the adaptation to climate change with a sectorial perspective, focusing on the adaptation of forests themselves to its effects. The second approach focuses on a different scale, the landscape's, and replaces the forest in a multi-sectorial context, seeking to assess the role of forests in the adaptation of the population and territories to climate change, called Forest Ecosystem-based Adaptation (FEbA).

### *Two series of actions*

This dual approach is concretely translated in the project by two lines of work.

The first one focuses on the adaptation of forests, particularly regarding forest fires and adaptive management practices, and is intended primarily for foresters, through workshops, training, meetings and exchanges.

The second one, concentrated on FEbA, is aimed at building the capacities of the staff of all relevant sectors (forestry, water, environment, finance, etc.) through theoretical and practical (case studies) training sessions. The methodology used is based on the one developed by OECD and GIZ, entitled « Integrating climate change adaptation into development planning ».

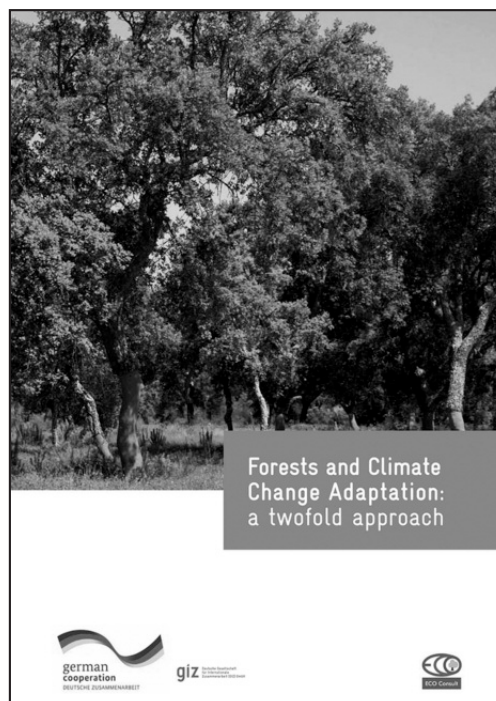
This dual approach has been covered by a GIZ publication in 2013, and the second line of work was reflected in the creation of practical guidelines for the development of FEbA projects in different countries.

### *Lessons learned and recommendations*

The work done within the GIZ regional project has highlighted several lessons and recommendations regarding adaptation to climate change.

Among the lessons learned, three can be cited. First, all sectors can benefit from the contributions of the forest sector in a discussion on adaptation to climate change. Then, this adaptation encourages reviewing and intensifying forest governance. Finally, Mediterranean forests have much to offer for

3 - Financed by GIZ (German cooperation agency for development), the regional project Silva Mediterranea - CPMF concerned from 2010 to 2014 six countries of the southern and eastern rims with important forest resources (Morocco, Algeria, Tunisia, Turkey, Lebanon and Syria). More information on [www.giz-cpmf.org](http://www.giz-cpmf.org)



**Fig. 2:** Forests and climate change adaptation: a twofold approach.

4 - Financed by FFEM (French Global Environment Facility), this project takes place over four years from 2011 to 2015 in the countries where the GIZ regional project takes place. More information on [www.fao.org/forestry/82782/en](http://www.fao.org/forestry/82782/en)

5 - Collaborative Partnership on Mediterranean Forests, launched in 2010 among institutions of the Mediterranean forest world [www.fao.org/forestry/silvamed/en](http://www.fao.org/forestry/silvamed/en)

6 - REDD+ : *Reducing emissions from deforestation and forest degradation* -

7 - [www.fao.org/forestry/89068/en](http://www.fao.org/forestry/89068/en)

the adaptation of landscapes and populations; this last lesson has been reflected in the developed project concepts.

Finally, in terms of future action, three main needs were identified. The first one addresses communication, with necessary work to be done on the part of the forestry sector towards partner sectors and the general public, including specific messages to develop on the nexus between « forests and adaptation to climate change » and « forests and green economy ». The second one prescribes to clarify information on the impacts of climate change through vulnerability analysis and to evaluate the goods and services provided by forests for territories development and adaptation to climate change. Finally, the third one recommends to implement FEbA measures in order to showcase the practical use of forests in the adaptation to climate change and the development of territories.

## Component 1 of the regional project funded by the French Global Environment Facility FFEM

### ***Presentation and objectives***

The regional project financed by the FFEM<sup>4</sup> intends to « *maximize the production of goods and services of Mediterranean forest ecosystems in the context of global changes* » in six countries in North Africa and the Near East, with a total forest cover of almost 19 million hectares. The project is built around five components, dedicated to the production of data, the evaluation of the economic and social value of goods and services, the development of participative and territorial governance modes, the maximisation of these goods and services, and the support for regional initiatives, including the Collaborative Partnership on Mediterranean Forests (CPMF)<sup>5</sup>.

The project aims to promote the sustainable management of forest ecosystems by optimizing their production of goods and services (including carbon sequestration); one of its objectives, rather innovative, is to explore funding opportunities by REDD+<sup>6</sup> mechanisms in the Mediterranean region.

The component 1 of this project is designed for the production of data and the development of tools to support decision and management of vulnerable Mediterranean forest ecosystems affected by climate change and the ability of these forest ecosystems to adapt to global change. The objective is to better know and evaluate the vulnerability of forests to climate change, the first step towards designing effective adaptation.

### ***Method and results***

The vulnerability assessment of forest ecosystems in Component 1 of the FFEM project took place in five steps, more or less simultaneous.

– Literature review and synthesis on the impacts of climate change on Mediterranean forest ecosystems and key genetic resources. They result in the establishment of a database, accessible online, including about 200 references to date<sup>7</sup>.

– Review and synthesis on implemented activities to adapt Mediterranean forests to climate change in the region.

– Analysis of vulnerability of forest ecosystems to climate change performed on the five pilot sites (one per country) using a common methodology.

– Capitalisation of outcomes and development of tools to support decision making in terms of adaptation to climate change for forest managers and policy makers.

– Exchanges of experiences between countries.

The vulnerability analysis, which formed the major part of the work on the pilot sites, was done mainly through a cartographic work and interpretation of satellite images, which led to the production of vulnerability maps and the production of maps of changes in forest and non-forest cover. The simulation of the evolution of climatic conditions (from the IPCC reports in particular) was then used to assess the impact of climate change in 2050 by projecting the new conditions on the maps. Experts and national teams played a central role by providing their knowledge throughout the process. The entire methodology is based on the use of free data, satellite images and software, and can be adapted to other study areas.



## Gap analysis and recommendations

One of the main challenges encountered in the implementation of component 1 was the access to data. While large amounts of information exist today, they are rarely accessible in a raw or electronic format, or are not yet published by the organizations owning them. The role of national institutions and experts was therefore strategic to access data and thus enhance existing information; the work done also allowed to revise the existing data in order to make them available to future users.

Among the recommendations made by the project stakeholders are collaboration and local expertise. For the first, it means to enhance cooperation between countries and between existing projects. As for the second, it recommends fostering local expertise in the case of cooperative projects, because of their increased knowledge of local settings.

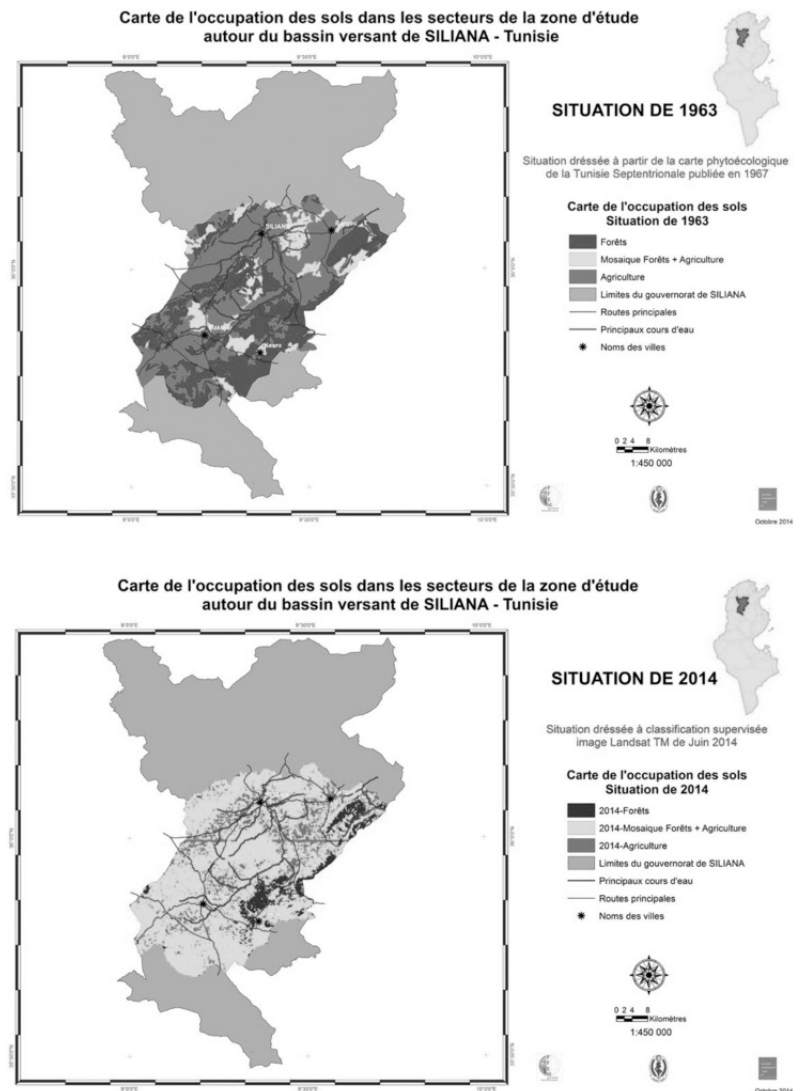
## Conclusion

The three projects presented at the session tools and initiatives are three examples of the multitude of initiatives conducted on the issue of climate change. They illustrate the variety of approaches and actions, and the importance of the problem in the discussions initiated around the Mediterranean basin.

Thus, the project For Climadapt focused on the actors in the field, in order to capitalise on their empirical and practical experience and knowledge to suggest specific methods and tools for the adaptation of forests to climate change.

The GIZ regional project was aimed at administrations staff on one hand to train them to adapted silvicultural practices, and on the other hand to showcase the role of forests in the adaptation of territories and populations, particularly towards non-forest sectors, unfamiliar with these issues.

Finally, the component 1 of the project funded by the FFEM allowed, through the production and analysis of local data, both to better understand the situation on the pilot sites (and its evolutions) and to foresee and anticipate some of the impacts of climate change, and thus to assess potentially vulnerable areas among forest ecosystems.



**Fig. 3 (above):** The component 1 of the FFEM project allowed for the production of land use evolution maps, like here in Tunisia.

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## Summary

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### Three initiatives in terms of adaptation to climate change

The article focuses on three initiatives that have addressed the issue of climate change and adaptation to its effects, through field experimentation, administrations training and data production.

The For Climadapt project (MED programme) has developed methods and tools for actors in the field, through field visits, exchange of information and sharing of experience.

The GIZ regional project has contributed to the capacity building of forest and non-forest administrations, in five Mediterranean countries, through two approaches to adaptation to climate change: a sectorial, on the adaptation of forests, and a multisectorial on the role of forests in the adaptation of territories and populations (Forest Ecosystem-based adaptation, FEbA).

The component 1 of the project financed by the FFEM has enabled the production of large amounts of data, in particular maps: vulnerability maps, evolution of forest cover and land use maps, future projections of climate conditions, database of the literature on the subject.

## Résumé

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### Trois initiatives en termes d'adaptation au changement climatique

L'article met l'accent sur trois initiatives qui se sont intéressées à la problématique du changement climatique et à l'adaptation à ses effets, au travers de l'expérimentation de terrain, de la formation des administrations et de la production de données.

Le projet For Climadapt (programme MED) a développé des méthodes et des outils à destination des acteurs de terrain, au travers de visites de terrain, d'échanges d'informations et de partage d'expérience.

Le projet régional GIZ a concouru à la montée en compétence des administrations, forestières et non forestières, de cinq pays méditerranéens, au travers de deux approches d'adaptation au changement climatique : une sectorielle, sur l'adaptation des forêts, et une multisectorielle, sur le rôle des forêts dans l'adaptation des territoires et des populations (adaptation fondée sur les écosystèmes forestiers).

La composante 1 du projet financé par le FFEM a permis la production d'une grande quantité de données, notamment cartographiques : cartes de vulnérabilité, cartes d'évolution du couvert, simulation des conditions climatiques, base de données de la littérature sur le sujet.

## Resumen

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### Tres iniciativas en términos de adaptación al cambio climático

El artículo se centra en tres iniciativas enfocadas a la problemática del cambio climático y la adaptación a sus efectos a través de la experimentación sobre el terreno, la formación de las administraciones y la producción de datos.

El proyecto ForClimadapt (programa MED) ha desarrollado métodos y herramientas destinados a los actores sobre el terreno a través de visitas de campo, intercambiar información y compartir experiencias.

El proyecto regional GIZ ha contribuido al crecimiento en competencia de las administraciones, forestales y no forestales, de cinco países mediterráneos a través de dos enfoques de adaptación al cambio climático: uno sectorial, sobre la adaptación de los bosques, y otro multisectorial, sobre el papel de los bosques en la adaptación de los territorios y la población (adaptación basada en los ecosistemas forestales).

La componente 1 del proyecto financiado por el FFEM ha permitido la producción de una gran cantidad de datos, especialmente cartográficos: mapas de vulnerabilidad, mapas de evolución de la cubierta forestal, simulación de las condiciones climáticas, base de datos de la literatura sobre el tema.