



## Maximize the production of goods and services of Mediterranean forest ecosystems in the context of global changes



Pilot sites of the project

### CONTEXT AND CHALLENGES

Forests of countries involved in the project “Maximize the production of goods and services of Mediterranean forest ecosystems in the context of global changes” (Algeria, Lebanon, Morocco, Tunisia, Turkey) cover an area of approximately 20 million hectares in 2015 (FAO, 2015).

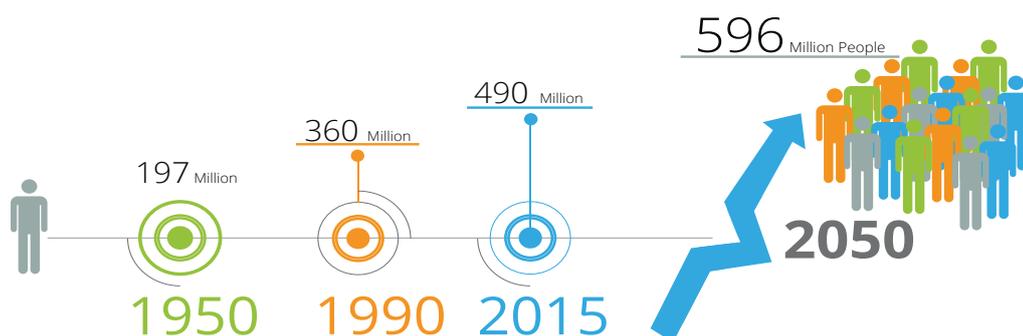
For millennia, Mediterranean populations have used multiple economic, environmental and social goods and services provided by forest ecosystems, which has directly contributed to the fight against poverty, to social and economic development in rural areas and to food security for habitants living the Mediterranean region.

Forests also play a role in regulating global phenomena, particularly regarding climate through CO<sub>2</sub> sequestration, and have a major impact on the water cycle, soils, biologic diversity, and landscapes. In terms of biodiversity, forests represent an exceptional hotspot and a unique global heritage of forest genetic resources.

Thus, Mediterranean landscapes nowadays are the result of a long interaction between an ever-growing population and increasingly weakened forest ecosystems.

### MEDITERRANEAN POPULATION

Mediterranean forests are threatened by demographic changes



### EFFECTS OF CLIMATE CHANGE

- ▷ Increase in the number of extreme events
- ▷ Increase in temperatures
- ▷ Decrease in rainfall
- ▷ Dieback
  - Insect pests

### ANTHROPOGENIC STRESS FACTORS

- ▷ Conversion to agricultural land
- ▷ Natural resources degradation/anarchic harvesting
- ▷ Woodfuel harvesting
- ▷ Overgrazing
- ▷ Deforestation
- ▷ Wildfires

Forests are increasingly affected by anthropogenic pressure and by the effects of climate change. As a result, degradation and deforestation phenomena occur.

Forest administrators have to cope with financial and technical difficulties to manage forests sustainably because of the challenges forests face. Therefore, forest management strategies do not take sufficiently into account:

- The impacts of climate change;
- The importance of goods and services provided by forests to local populations as well as their economic value in other sectors that take advantage of goods and services provided by forests (tourism, livestock, etc.), at local, national or international level;
- The opportunity for a better acknowledgement of goods and services provided by forests as a leverage in the fight against the effects of climate change, by taking them into account in forest strategies and public policies as well as in the development and implementation of forest management plans;
- Rural population associations and all the users combined in participatory initiatives to optimize governance and sustainable forest management.

The regional project “Maximize the production of goods and services of Mediterranean forest ecosystems in the context of global changes” (2012-2016) financed by the French Global Environment Facility together with the German Cooperation (GIZ), the French Ministry of Agriculture, Agrifood, and Forestry, and the European Union was set up in this context.

The goal of the project is to encourage actors to manage and/or restore Mediterranean forests with a sustainable perspective for environmental goods and services provided by forests in a context of global changes.

Project activities are organized into five components and are coordinated by FAO’s Committee on Mediterranean Forestry Questions - *Silva Mediterranea* and the Plan Bleu (UNEP).

**Component 1:** Production of data and 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;

**Component 2:** Evaluation of the economic and social value of goods and services provided by Mediterranean forest ecosystems in particular through the study of multiple issues related to environmental changes and their potential effects on the socio-economic development of Mediterranean territories;

**Component 3:** Development of participatory and territorial approaches for forest governance in these Mediterranean forest ecosystems;

**Component 4:** Optimization of environmental goods and services provided by the Mediterranean forests and valorisation of these efforts of optimization (including carbon sequestration);

**Component 5:** Support to the coordination and communication activities of the Collaborative Partnership on Mediterranean Forests (CPMF).

## RESULTS

### COMPONENT 1

- ▷ Vulnerability assessment of forest cover to climate change on the pilot sites
- ▷ Maps showing changes in forest cover on the pilot sites
- ▷ Regional maps showing the distribution of 24 key Mediterranean species

### COMPONENT 2

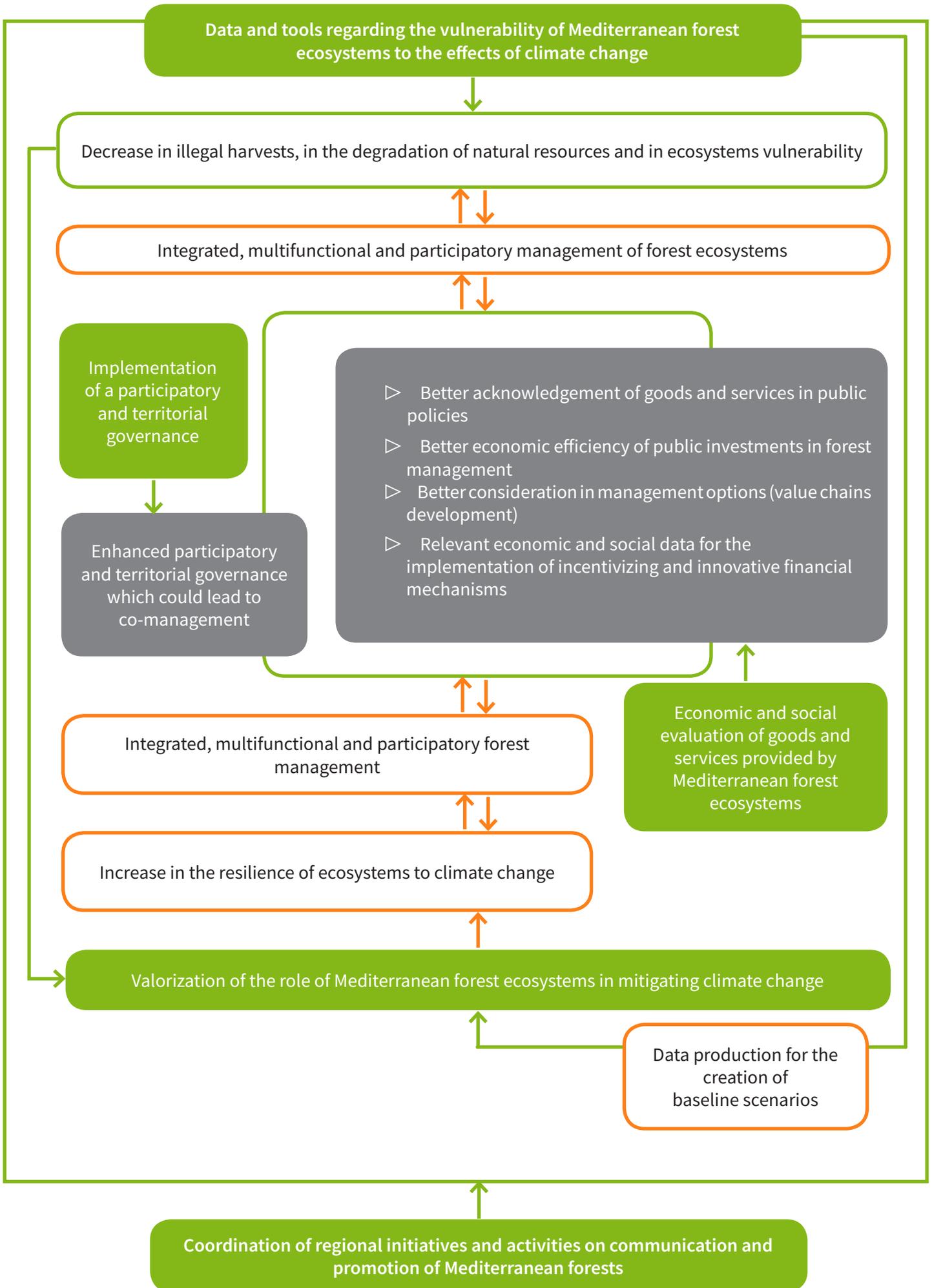
- ▷ Methodological guide for the economic and social evaluation of goods and services
- ▷ Economic and social evaluation of goods and services in the pilots sites in Algeria, Lebanon, Morocco and Turkey
- ▷ Regional synthesis of results of the economic and social evaluation of goods and services

### COMPONENT 3

- ▷ Methodological guide presenting potential participative and territorial governance options
- ▷ National reports presenting the implementation of participative initiatives for an improved governance in each pilot site in Algeria, Lebanon, Morocco, Tunisia, and Turkey
- ▷ Synthetic regional report and comparative methods of participative and territorial governance of the five pilot sites
- ▷ Elaboration of two practical guides for the implementation of participative management and win-win contracts between administrators and local populations for a sustainable forest management in the Maâmora forest and in Maghreb countries

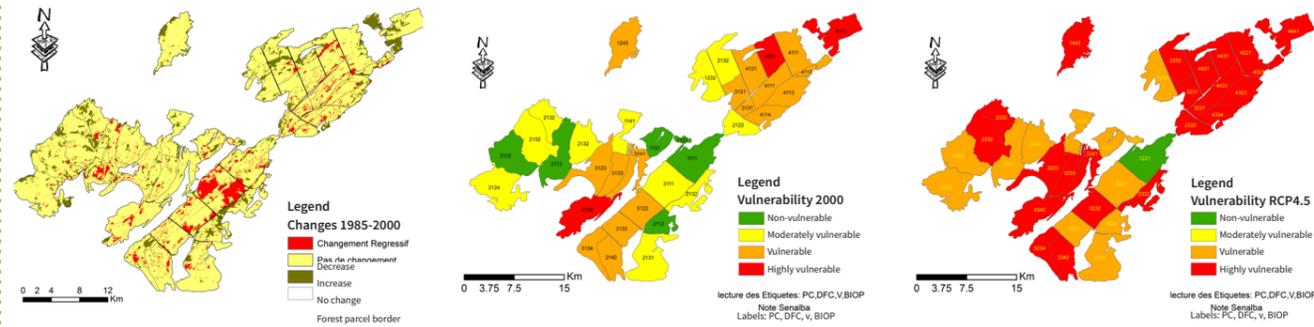
### COMPONENT 4

- ▷ Analysis of drivers and causes for deforestations and degradation in the pilot sites
- ▷ Proposal for a NAMA (Nationally Appropriate Mitigation Action) to valorise the Lebanese reforestation program
- ▷ Project Idea Notes (PIN) for a project on the mitigation of climate change in Morocco, Tunisia, and Turkey



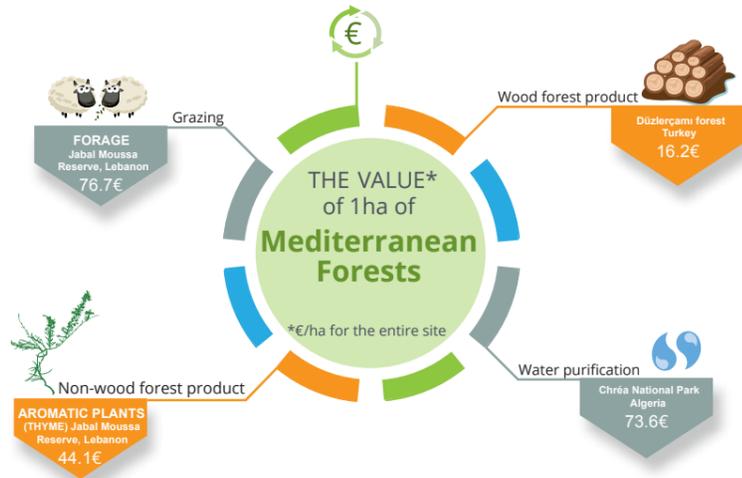
### COMPONENT 1: changes in forest cover and vulnerability assessment to climate change

According to free satellite pictures and data available on-site, maps showing changes in forest cover have been produced. For each of the pilot sites, vulnerability assessment to climate change, based on factors influencing forest cover distribution (e.g., livestock pressure, water deficit, aging, biophysical factors) have enabled the production of present and future vulnerability maps. Future forest cover vulnerability has been estimated based on climate projections suggested by the Intergovernmental Panel on Climate Change (IPCC). Maps below show, as an example, forest cover vulnerability of the Senalba forest pilot site in Algeria in 2000 (on the left) and in 2050 (on the right). The four figures included in each forest series correspond to livestock pressure, water deficit, aging, and biophysical factors, respectively. A score between 1 and 4 is assigned for each factor: 1 (non-vulnerable), 2 (moderately vulnerable), 3 (vulnerable), 4 (highly vulnerable).



**COMPONENT 2:** For each pilot site, economic evaluations showing the importance of different goods and services have been carried out. Different management scenarios have also been tested thus showing the best management options in economic and social terms.

#### Economic value of forest goods and services



#### Comparison between management options

**Example of the Chrèa National Park (CNP) in Algeria:** an extremely popular site (2 million of visitors every year) mainly because of the presence of Magot monkeys. The cost/benefits analysis of different scenarios in terms of visitors' reception (recreation service) has enabled the testing of the economic and social of interest of two management options compared to the current situation, which is characterized by limited and sporadic CNP officers interventions:

**Scenario 1: accompanying and assisting visitors with nature guides** (guided visits, marked trails, signposts, etc.)

**Scenario 2: using a new recreation area**

**RESULT - Scenario 1 is the most interesting** and provides benefits both to visitors (by providing services) and to the administrator (decrease in surveillance costs)

**COMPONENT 3:** Participatory governance models have been evaluated and have been suggested for each pilot site in order to implement effective and adapted territorial participatory governance involving local populations in a rational and sustainable management of forest resources (refer to national and regional synthesis). Once government organs are established, the example presented here shows how it is possible to go further by providing solutions to the issue of management by the implementation of "win-win" partnerships between local populations and managers. **Two practical guides have been elaborated in order to facilitate the implementation of "win-win" partnerships in forested areas in Maghreb countries and especially in the Maâmora region.** Context: The Maâmora forest (Morocco) is the largest cork oak forest held by a single owner in the world. Nonetheless, between the beginning of the XIX century and today, forest surface has decreased from 132 000 ha to 55 000 ha.

The main identified causes are forest degradation and deforestation caused by strong anthropogenic pressure (grazing, pruning, irrational resource withdrawal by local populations depending on those resources and by all kind of the users) and forest management not adapted to global changes (climate change and anthropogenic pressure). Actions shown on the right offer a leverage for cork oak conversion and regeneration by involving local populations in responsible and sustainable resources management.

#### Before

- ▷ Illicit acorn collection, not adequate harvesting methods
- ▷ Degradation, regeneration of threatened cork oaks
- ▷ Necessity of importing seeds from outside

#### Actions implemented with users

- ▷ Forming cooperatives and associations
- ▷ Raising awareness and education
- ▷ Win-win contracts between managers and populations: 60% of acorns to users/ 20% to plant nurseries/ 20% for natural regeneration

#### After

- ▷ Partnership between managers and users for the benefit of the general interest
- ▷ Improving revenues of local populations
- ▷ Value chain control
- ▷ Accountability of users adopting good management practices in a legal context
- ▷ Seeds traceability (nurseries) and availability
- ▷ Decrease in pressure on forest resources



### COMPONENT 4: valorising the mitigation potential of Mediterranean forests at international, national and local scale

- Identification of drivers and causes of deforestation and forest degradation to elaborate reference scenarios for REDD+ mitigation projects scenarios
- Supporting Tunisia in joining the UN-REDD programme and in complying with REDD+ non-carbon benefits at the 40<sup>th</sup> Session of the Subsidiary Body for Scientific and Technological Advice (SBSTA) of the UNCCD in Bonn in 2014.
- **The Lebanese National Afforestation and Reforestation Programme (NARP)** aims at increasing forest cover by 13 to 20% between 2013 and 2030 through the plantation of 40 million of trees on a surface of approximately 70 000 ha. The sequestration potential of the program for a period of 30 years (2014 to 2043) can be estimated between 11.4 and 13.6 million of tCO<sub>2</sub> with several co-benefits. The NAMA represents an opportunity to attract additional investments for the NARP program, in order to reinforce national capacities and to ensure that efforts in terms of emission reduction are recognized at international level

### COMPONENT 5: support coordination between regional activities and CPMF communication activities

Project results have been presented during pan-Mediterranean events (the IV Mediterranean Forest Week held in Barcelona in 2015; the Foresterra final conference held in Lisbon in November 2015) and international events (the XIV World Forestry Congress held in Durban in September 2015; the COP21 held in Paris in September 2015). Regional workshops and field trips have allowed national experts from various countries to meet, exchange experiences, and discuss results in order to improve Mediterranean forest management sustainability.

## CONCLUSIONS AND MAIN RECOMMENDATIONS

The future of Mediterranean forests is threatened by both human factors and the effects of climate change. Forests will need to be managed sustainably in order to be preserved, by involving local populations who will continue to benefit from forest goods and services, especially in a context of global changes and increasing pressures.

The future of actions undertaken in this project will strongly depend on result capitalisation and on the integration of analysis and evaluations conducted in public policies and in the territories operational development process. To this effect, the following will be necessary:

### ▷ Reinforce systematic collection of data on Mediterranean forest ecosystems:

- Socio-economical, silvicultural, genetic, environmental, and social data, etc.;
- Data on adaptation and mitigation of global changes;
- Mediterranean forest experts and institutions able to provide support;

▷ Using data to estimate Mediterranean forests vulnerability to climate change and to factors influencing species distribution;

▷ Sharing results with forest administrators and policy-makers to promote the production of decision tools and tools related to the ability of forests to adapt to climate change adaptation potential of forests to climate change;

▷ Reinforcing the capacity of forest administrations to collaborate with research institutions;

### ▷ Adapting institution and legal framework in order to facilitate:

- Intersectoral approaches based on ecosystems: forests, agriculture, social, habitat, tourism, etc.
- Reinforcing cooperation and communication between ministries and sectors in terms of forest and territorial planning, cooperation and synergies between decentred technical services, authorities, elected officials, and local management structures;
- Prioritizing the fulfilment of primary needs (food, health, transportation infrastructures, education, etc.) of the local population to facilitate co-management and resources preservation;

▷ Integrating participatory approaches and socio-economic analysis in a systematic way in forest development plans:

- By reinforcing the skills of managers and administrators during their initial training and further on in terms of participatory management and socio-economic analysis;

- By redefining the terms of reference of forest development plans in order to reinforce an integrated, multifunctional and participatory approach;

- By facilitating the development of co-management based on reliable socio-economic analysis with bilateral or multilateral “win-win” partnerships that benefit the local population and users while reacting to challenges faced by administrators;

### ▷ Reinforcing the organisation of local actors and value chains:

- By facilitating collective dynamics for dialogue and management, and by promoting the sector approach (associations, cooperatives, etc.)

- By having as a goal to distribute benefits and added value all along the value chain (with a significant return for co-managing populations that thus play of forest keepers);

### ▷ Reinforcing the financial capacity of the forest sector:

- By working on the mobilisation of national and international funding by facilitating countries’ access to climate finance opportunities;

- By developing innovative mechanisms with partnerships between the public and the private sector (green economy, ecotourism), payment mechanisms for environmental services with users including beneficiaries outside the site;

- By elaborating contracts leading to a compromise between local users and local populations through win-win contracts

- By starting a regional technical cooperation project on the National Forest Funds (NFFs) to conduct a study on the feasibility for each country and by reinforcing communication on NFFs and their interest for target audiences: intersectoral, private sector;

- By relating funding to objective, means, and results indicators allowing the evaluation of efficiency and effectiveness of projects and actions.

▷ Facilitating synergies between adaptation and mitigation of climate change, especially by valorising the co-benefits of REDD+ approaches;

- ▷ Promoting collaboration between Mediterranean countries sharing common issues;
- ▷ Promoting regional approaches in the Mediterranean in order to facilitate the sharing of experiences improve knowledge and raise awareness on Mediterranean forests while taking into account the diversity of the needs of Mediterranean countries.

For more information: [www.fao.org](http://www.fao.org) and <http://planbleu.org>



FONDS FRANÇAIS POUR  
L'ENVIRONNEMENT MONDIAL