Assessment of the socio-economic value of goods and services provided by Mediterranean forests

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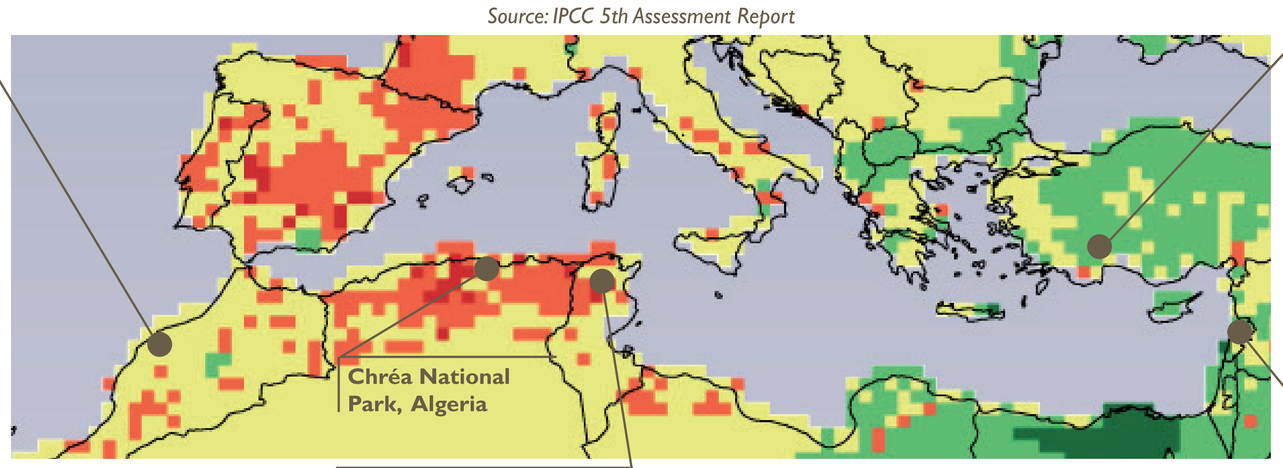
In the Middle East and North Africa region, Mediterranean forests are and will be increasingly subject to **anthropogenic pressures** (overgrazing, wood collection heaters, fires, agricultural conversion, land use change, overextraction of resources etc.) and **climate change effects** (rising temperatures, reduced rainfall, pest attacks, increased drought, increased fire frequency, shifts in phenology, etc.). In this region, forest administrations and managers have also to face significant technical and financial difficulties in sustainably managing Mediterranean forest ecosystems. Forest management strategies do not take the impact of climate change adequately into account as managers lack specific and operational knowledge. The value of the services provided by the ecosystems must be better recognized.

In this context, a regional cooperation project **"Optimizing the production of goods and services by Mediterranean forests in a context of global changes"** has been funded by the French Global Environment Facility and implemented by Plan Bleu and FAO (Secretariat of *Silva Mediterranea*) over the period 2011-2016. The main objectives are to **promote sustainable management** of forest ecosystems by optimizing the production of goods and services (including carbon sequestration) and to **explore funding opportunities** by REDD + mechanisms. The forests of the five partner countries cover a total surface area of almost 19 million hectares.

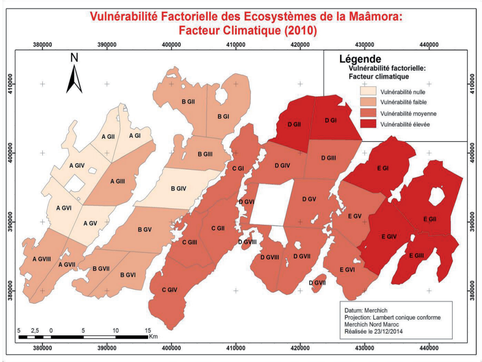
VULNERABILITY TO GLOBAL CHANGES IN THE STUDY AREA

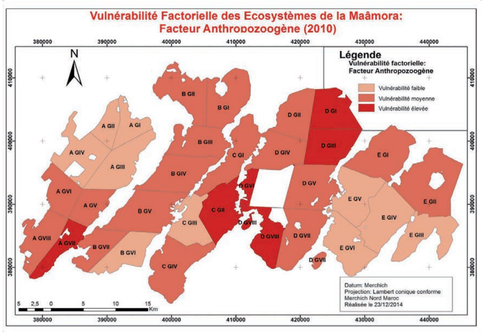
Vulnerability of ecosystems to biome shifts based on historical climate (1901-2002) and projected vegetation (2071-2100)

Source: IPCC 5th Assessment Report

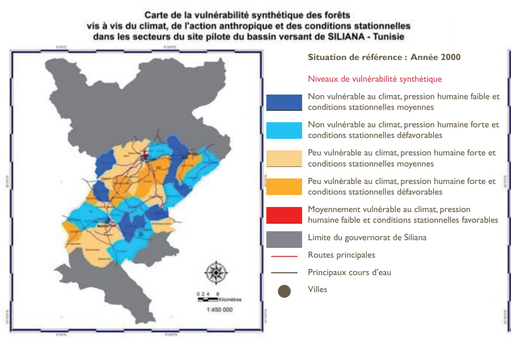


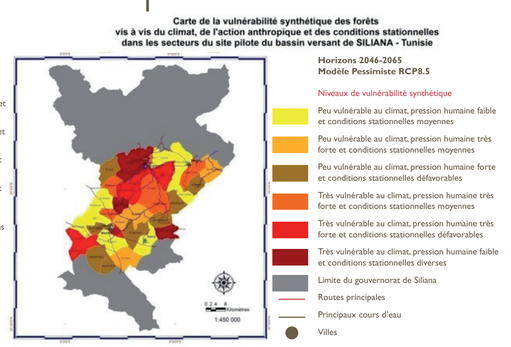
Maâmora Forest, Morocco



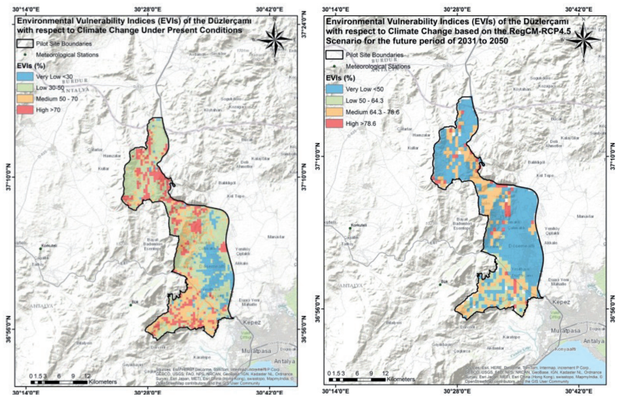


Siliana Watershed, Tunisia

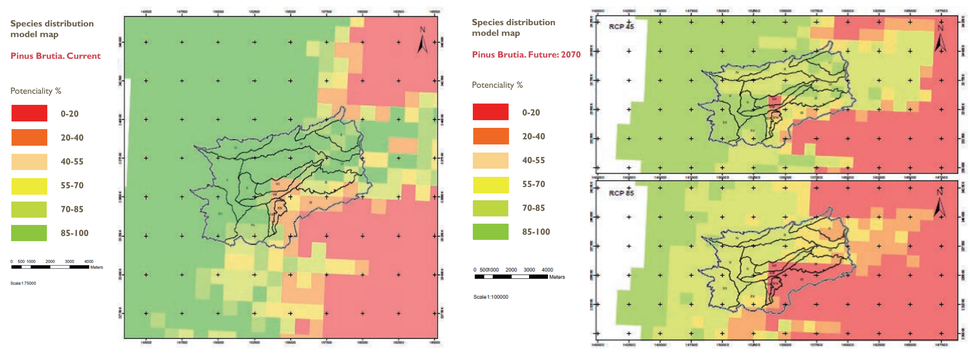




Düzlerçami Forest, Turkey



Jabal Moussa Biosphere, Lebanon



PROJECT COMPONENTS

C1: Produce data and tools regarding the vulnerability of forests and their ability to adapt

C2: Assess the socio-economic values of goods and services provided by Mediterranean forest ecosystems

C3: Improve modes of governance through participatory approach at territorial scale

C4: Optimize and value the role of Mediterranean forests in climate change mitigation (carbon sinks)

C5: Promote coordination and sharing of experience between Mediterranean stakeholders via the Collaborative Partnership on Mediterranean Forests

COMPONENT 2 METHODOLOGY

Mediterranean region state of the art methods and tools for the socio-economic assessment of the goods and services supplied by an ecosystem

- Regional report « Methods and tools for socio-economic assessment of goods and services provided by Mediterranean forest ecosystems »

- Methodological sheets

Assessment of the socio-economic value of goods and services supplied by forest ecosystems of the selected pilot sites

- Identification of the main goods and services (from maps produced with C1 and surveys conducted through C3)

- Identification of valuation methods

- Prospective analysis (climate change and management scenarios)

- Cost Benefits Analysis

Regional perspective to the issue and generalization of the approach to the whole region

- Regional restitution workshop of all pilot sites results (Oct. 26 to 31st 2015)

- Regional report to be produced (Dec. 2015)

PRELIMINARY RESULTS EXAMPLES

Methodology : Düzlerçami Forest - Turkey

1- Goods and services identification

	Priority level	Methods considered
Industrial wood	1	Market Price
Biodiversity protection	1	Cost of Maintenance
Food and forage	2	Market Price
Water regulation	4	Cost Based
Recreation and tourism	2	Travel Cost
Carbon sequestration	3	Market Price
Hunting and game products	3	Market Price
Historical and educational services	4	Choice Experiment
Air quality regulation	4	Cost Based

2- Scenarios identification

Drivers and levers	Expected impact on ecosystem goods and services (intensity: - -, -, 0, +, ++)				
	Industrial wood	Biodiversity protection	Recreation and tourism	Carbon sequestration	Hunting and game products
Impact of climate change	- -	- -	- -	- -	-
Increased allocation of forest sites to recreation activities	-	-	++	-	0

Base scenario: moderate recreation activities and moderate impacts of climate change.
Alternative scenario: increased allocation of the forest sites to recreation activities, and increase in fire risk, alterations of the growth rate of trees due to climate change.

3- Cost Benefits Analysis

Time Horizon : 40 years (chosen in coordination with the production plan and 2050 climate change projections available)

Sensitivity analysis with several discount rates

Preliminary results : Siliana Watershed – Tunisia

1- Total Economic Value (TEV) of Siliana pine forest with and without climate change

	TEV per ha of forest in 2010 - Dinars (DT)	TEV per ha of forest influenced by climate change - Dinars (DT)
Wood	9,9	4,9
Fodder	112,3	56,1
NTFP	11,8	5,9
Hunting	2,0	1,0
Soil conservation	51,2	51,2
Carbon sequestration	7,8	3,9
Biodiversity conservation	2,0	2,0
Total	**197**	**125**

2- Potential value losses due to climate change – 2 scenarios

Scenario	Optimistic Scenario (RCP4.5)				Pessimistic Scenario (RCP8.5)			
Period	2016-2035		2046-2065		2016-2035		2046-2065	
Type	Forest	Scrubland	Forest	Scrubland	Forest	Scrubland	Forest	Scrubland
Impacted area (ha)	0	17	1346	661	0	19	14112	10690
Total losses (Dinars)	0	0	86144	0	0	0	906168	0

Monetary value losses due to climate change would be felt only in the 2046-2065 period. They are estimated at a minimum of 86 144 DT/year and a maximum of 906 168 DT/year for all forests of Siliana watershed.

PERSPECTIVES

Final results will be available the 1st semester of 2016.

All 5 components have the goal of improving sustainable forest management while optimizing goods and services production. The beneficiaries are populations of rural forest land, ecosystem managers, and forest services in the countries concerned, and more broadly all Mediterranean countries that will benefit from lessons learned and valorisation of this project.

This project has already strengthened the regional cooperation through the collaborative partnership for Mediterranean forest, producing numerous results such as the State of Mediterranean Forests 2013, the Strategic Framework for Mediterranean Forests, the Tlemcen Declaration, and has allowed the organization of the Mediterranean Forest Weeks.

All the results (maps and tables) presented in this poster are some examples of preliminary results obtained from the project components.

FONDS FRANÇAIS POUR L'ENVIRONNEMENT MONDIAL