

# Capacity Development for Forest Ecosystem-based Adaptation to Climate Change

## Summary

Mediterranean forests provide important goods and services for the well-being of urban and rural populations, and they deliver valuable services – often unaccounted for – to other sectors. Due to the vast biodiversity and richness in endemic species, the ecosystems of the Mediterranean basin figure among the world’s biodiversity hotspots. As the Mediterranean region will very likely be badly affected by climate change, there is a need to secure livelihoods, and forest ecosystems can provide important adaptation solutions. However, this ‘adaptation through forests’ also requires ‘adaptation of forests’. Consequently, valorising the potential of forest resources for sustainable development requires capacity development for cross-sectoral approaches to adaptation. The GIZ regional project ‘Capacity Development for Forest Ecosystem-based Adaptation to Climate Change (FEbA) is dealing with these issues. It works within the framework of the Collaborative Partnership on Mediterranean Forests with the countries Algeria, Lebanon, Morocco, Tunisia, Turkey (and Syria) (Fig. 1). Its activities strive to (a) strengthen the capacity for systematically assessing adaptation needs and opportunities for action across sectors; and at the same time (b) promote forest ecosystem-based adaptation solutions as part of comprehensive adaptation strategies.

## Challenge

Mediterranean forests **provide a wide range of goods and services**, such as watershed protection, erosion control, pasture, biodiversity shelter, carbon storage, wood energy and multiple non-timber forest products (aromatic and medicinal plants, honey, etc.). A large part of the population in the Middle East and North Africa (MENA) countries lives in rural areas and their livelihoods are built mainly on agriculture, livestock husbandry and the use and commercialisation of natural resources. Thus, forest landscapes contribute to poverty alleviation, the socio-economic development of rural areas and the food security of local people. In addition, various other sectors, in particular water, agriculture, tourism and energy, depend strongly on the goods and services provided by forests. Consequently, tapping the potential of forest resources for sustainable development **requires a cross-sectoral approach**.

With respect to the **projected impacts of climate change**, the Mediterranean basin, in particular its Southern and Eastern rims, is considered **as one of the most affected regions worldwide**. Climate projections indicate a continuous rise in average temperatures, frequency and intensity of extreme weather events with an overall decrease in annual precipitation. Subsequently the risk of droughts, floods, landslides and forest fires (Fig. 2) are expected to increase – effects that particularly relate to alterations in the water cycle, the degradation of agricultural land and the erosion of biological diversity. The overexploitation of forests in the region, overgrazing, forest fires, rapid urbanisation, etc., are already endangering forest functions. At the bottom of those human-induced pressures are frequently insufficient legal frameworks and policies that result in participation, access and



Fig. 1: Selected regions for the development of FEbA activities

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Fig. 2: Forest Fire

tenure issues, adding to insufficient financial and human capacities. Stress factors attributed to climate change exacerbate those existing anthropogenic pressures on forests, thereby putting the provision of forest goods and services at risk and increasing the vulnerability of ecosystems and society. There is no doubt that forest ecosystems can provide important adaptation solutions. However, this 'adaptation through forests' also requires 'adaptation of forests'.

## Setup

The GIZ regional Capacity Development for Forest Ecosystem-based Adaptation to Climate Change (FEbA) project works within the framework of the Collaborative Partnership on Mediterranean Forests with the countries Algeria, Lebanon, Morocco, Tunisia, Turkey (and Syria). It collaborates in those countries with the respective ministries, but also with stakeholders in other sectors outside of forestry.

### Some facts on three of the five pilot regions:

**Lebanon:** The Tannourine Cedar Forest Nature Reserve in the Lebanese Mountains is 625 hectares, including its buffer zone, and is famous for hosting the largest cedar forest complex in Lebanon. Weather data shows a trend of increasing mean temperatures and extended summer droughts. IPCC forecasts a shift from the present humid climate to a semi-arid bioclimate, severely affecting the forest ecosystems.

**Morocco:** The Souss-Massa-Drâa Region covers 10% of Morocco and stretches from the Atlantic coast to the Sahara. Its ecosystems are fragile and the forests are already suffering from climate change impacts. On the other hand, their economic and ecosystem values are higher than in many other parts of the MENA region (Fig. 3).

**Turkey:** The Seyhan Watershed is located in the east of the Mediterranean region of southern Turkey. The total area of the watershed is 21,741 km<sup>2</sup> and the total population is 2.4 million. The vegetation in the southern part of the basin is dominated by maquis formation, the mountainous part by coniferous forests, and the northern parts are mainly dry steppe. According to climate projections for Seyhan watershed for the year 2070 the air temperature is expected to rise by 2–3.5 °C, and precipitation is expected to decrease by 25–35%.

At all those sites, there are many open questions regarding (1) the utilisation and protection of forest resources and (2) 'adaptation through forests' and 'adaptation of forests' to climate change and other changes.

## Opportunities

While the forest management institutions are key players, efficiency and effectiveness are limited in cases where the management is carried out without participation of those benefitting from ecosystem services or bearing the consequences of the loss of ecosystem services. Likewise, planners in other sectors do not necessarily recognise the potential role of forests in reducing societal vulnerability and the benefits drawn from forest ecosystem goods and services.



Fig. 3 (l): The bark of the cork oak is a valuable product of the Souss-Massa-Drâa region

Fig. 4 (r): Forest reserve 'De Bentaël' in the Lebanese Mountains, still intact due to highly motivated and well trained rangers



Fig. 5 (l): Awareness raising In Barouk Cedar Park, Lebanon

Fig. 6 (r): Forest remnants in the Souss-Massa-Drâa region in Morocco

**Partner sector FGS**

<b>Tourism</b>	Leisure and potential for Ecotourism; Biodiversity: emblematic species	
<b>Agriculture</b>	Pasture; Erosion prevention; Reduction in dams sedimentation	
<b>Economy and Trade</b>	Biodiversity: Non-timber Forest Products, AMP, Construction wood, paper	
<b>Energy</b>	Reduction in dams sedimentation; Energy biomass	
<b>Environment, Water &amp; Climate</b>	Adaptation to climate change; Climate regulation; Carbon storage; Water purification; Watershed protection	

**Adaptation planning** thus has to link non-forest actors with those engaged in forest management. Action is needed on a local, regional, national and MENA level to promote and enhance the valorisation of forest ecosystems goods and services for reducing vulnerability to climate change.

**Capacity development:** In order to mainstream the FEbA-concept in the policies and strategies of the forest administrations and their partner sectors and strengthen the inter-sectoral cooperation, the project is supporting a capacity development process **targeting decision makers** from the forest administrations and their partner sectors with **several steps**:

1. assessment of training needs;
2. field missions in selected regions;
3. training workshops (4-day workshops at regional and national level) and
4. promotion of FEbA by:
  - a) developing a brochure on FEbA opportunities;
  - b) implementing measures in some regions; and
  - c) establishing a 'community of practice' at MENA level for the exchange of lessons learned.

The trainings are based on the Integrating Climate Change Adaptation into Development Planning practitioner's training measure, developed in 2011 by GIZ in cooperation with the Organisation for Economic Co-operation and Development with funding from the German Federal Ministry for Economic Cooperation and Development.

← Forest ecosystems goods and services for partner sectors



Fig. 7: Forest worker in a protected forest in Souss-Massa-Drâa region in Morocco

Reinhard Alexander Kastl,  
reinhard.kastl@giz.de



## Outlook

**Lessons learned:** With regard to climate change, forests provide important services, such as climate regulation, carbon storage and watershed protection. However, the constant threats to the existing forest areas in the MENA region will not diminish; they will intensify in future. It will be a hard and not always successful fight to preserve the forests and their biodiversity. Capacity development and cross-sectoral approaches are the keys to valorise the potential of forest resources for sustainable development. The capacity development activities have to strive to

- a) strengthen the climate change adaptation capacities in general and
- b) promote forest ecosystem-based adaptation solutions. Both elements should be part of a comprehensive climate change adaptation strategy.

**For decision makers,** capacity development for forest-related adaptation to climate change will remain an obligation for many decades to come.

**Transferability:** The general concept of forest ecosystem-based adaptation can be applied in all MENA countries, but the specific regional socio-economic, natural (including the impacts of climate change) and governmental conditions have to be taken into account.

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Registered offices Bonn and Eschborn, Germany  
Adaptation to Climate Change in the Water Sector in the MENA Region  
Office Eschborn  
Room 22084  
T +49 6196 7924 87  
matthias.bartels@giz.de  
www.giz.de

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Addresses of the BMZ offices

BMZ Bonn  
Dahlmannstraße 4  
53113 Bonn, Germany  
T +49 228 99 535 - 0  
F +49 228 99 535 - 3500

BMZ Berlin  
Stresemannstraße 94  
10963 Berlin, Germany  
T +49 30 18 535 - 0  
F +49 30 18 535 - 2501

poststelle@bmz.bund.de  
www.bmz.de