



Morocco in the face of climate change

If Morocco is a country with a low emission of greenhouse gases, it remains vulnerable to the effects of climate change due to the specificities of its geographical position and the diversity of its ecosystems.

Morocco was very early aware of this danger and complied with the measures taken at global level, within the framework of the United Nations Framework Convention on Climate Change (UNFCCC).

The Representation of FAO in Morocco, based on the vision of the country and in partnership with national institutions, made of the sustainable management of natural resources and the improvement of the standard of living of the fragile population in the country in the face of climate change one of its priorities.



MAKE THE LINK BETWEEN
INFORMATION AND
DECISION MAKING TO
IMPROVE FOOD SECURITY.

MOSAICC scenarios to anticipate climate change

Since 2014, FAO has developed an information system known as the MOSAICC “Modelling System for Agricultural Impacts of Climate Change” designed to model the future evolution of a country’s economy and the changes induced by variations in agricultural yields under different climate change scenarios. Collaborative and multidisciplinary, the MOSAICC system allows users to assess the potential impacts of climate change on agriculture under various scenarios, taking into account these four components: climate, agronomy, hydrology and economics.

These components combine models and tools to perform each step of the impact study.

They also correspond to the different user profiles that interact to design studies as well as to produce data and manage changes.

“*All of our initiatives must take into account climate change (...) Time presses and we cannot afford to wait.*”

MR. JOSE GRAZIANO DA SILVA,
DIRECTOR OF FAO,

AT ITS SPEECH AT THE INTERNATIONAL EXHIBITION
OF AGRICULTURE IN MOROCCO, 2014.

MOROCCO, FIRST PILOT COUNTRY

The pilot project in Morocco enabled the first complete country-level installation of the MOSAICC v.1.0 tool in the partner institutions, namely the National Institute of Agronomic Research (INRA), the Directorate of Strategy and Statistics of the Ministry of Agriculture and Maritime Fisheries, the Directorate of National Meteorology, the Water Research and Planning Directorate of the Ministry of Water, and the Office of the High Commissioner for Water and Forests and the Fight against Desertification.

THE FOUR MAJOR COMPONENTS OF THE MOSAICC SYSTEM :

1 CLIMATE

Preparation of scaled-down climate data for hydrological and agronomic models.

2 HYDROLOGY

Assessment of available water resources according to the different climate projections.

3 CROPS

Projection of future agricultural yields in relation to climate projections and scenarios on technological progress.

4 ECONOMY

Economic evaluation of the impacts of agricultural yield projections and water resources.

THE FIGURES OF CLIMATE CHANGE IN MOROCCO



TEMPERATURE INCREASE

- ▶ From 1.1 to 1.6 ° C in 2030
- ▶ From 2.3 to 2.9 ° C in 2050
- ▶ And from 3.2 to 4.1 ° C in 2080



DECREASE OF PRECIPITATION

- ▶ Of 14% in 2030
- ▶ From 13 to 30% in 2050
- ▶ From 21 to 36% in 2080

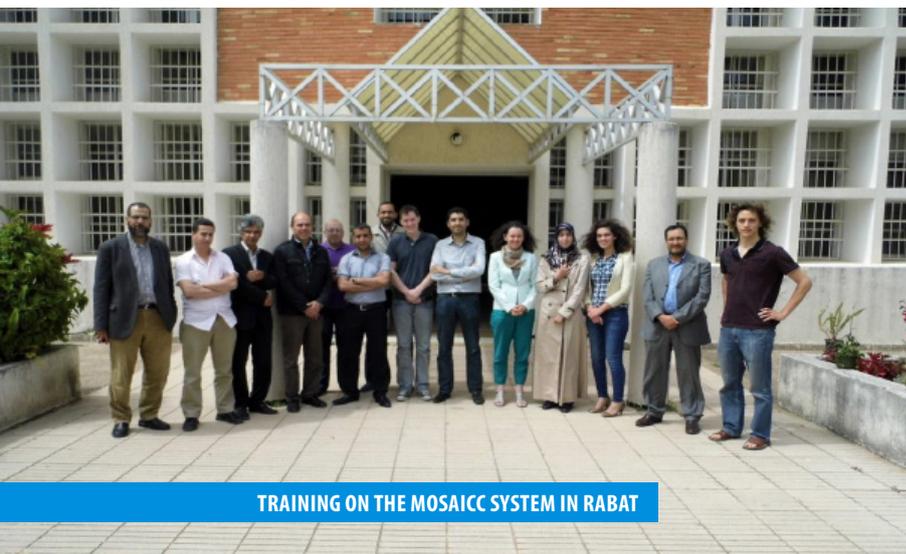
Currently, annual fluctuations in precipitation explain 75% of the interannual variability of the Gross Domestic Product.

The IPCC report estimated that in 2050 climate change will affect water shortages in the North African region by 22%, while 78% of the increase in water shortages will be attributed to socio- economic issues.



LOW IRRIGATION

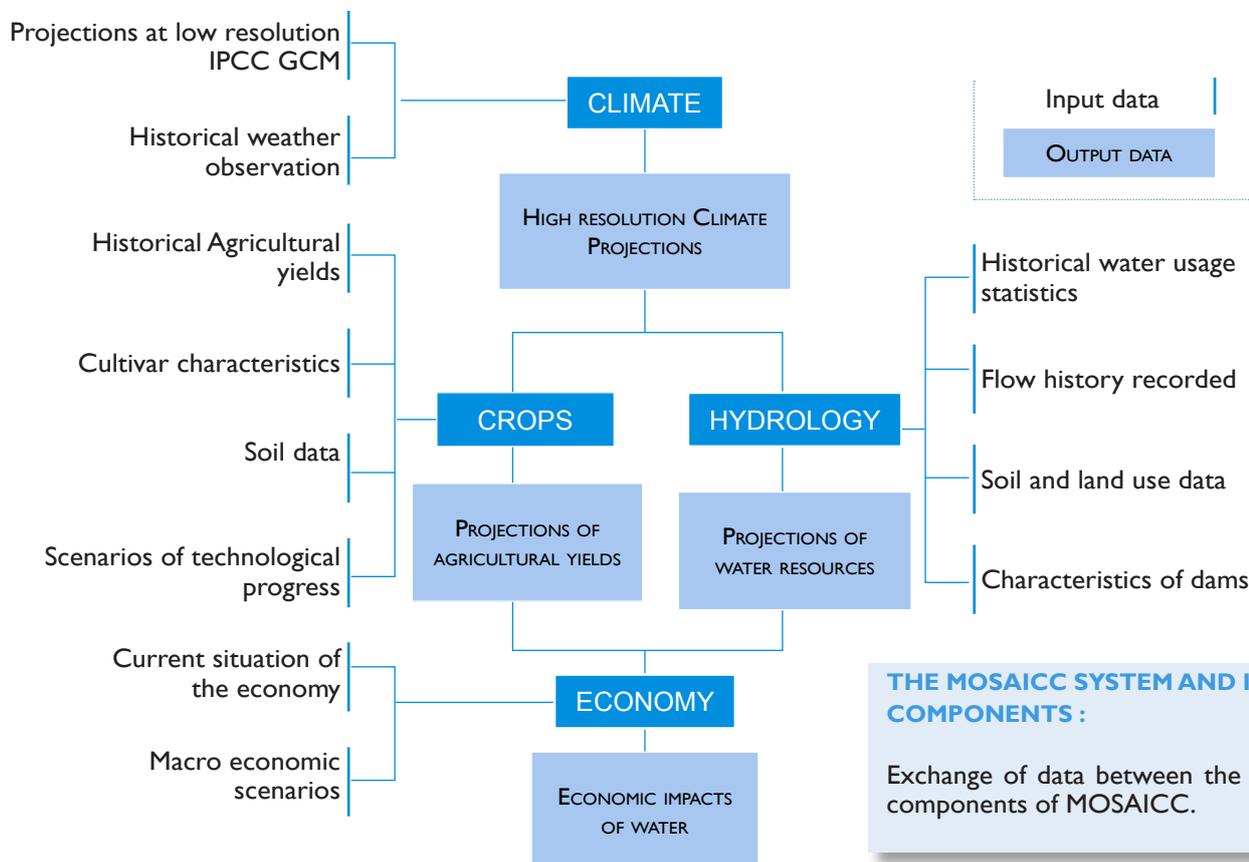
With 83% (7.2 million hectares) of agricultural land that is not irrigated, yields of major crops suffer very significant variations due to the high variability of rainfall and a high frequency of droughts.



TRAINING ON THE MOSAICC SYSTEM IN RABAT

MOSAICC represents the only multidisciplinary and verified source of climate data in Morocco and a case of great success. In addition to Morocco's Climate Change Competence Center (4C Morocco), MOSAICC has been included in the Nationally Determined Contribution under the United Nations Framework Convention on Climate Change as a driving force for the mobilization of Morocco to make its territory and civilization more resilient to climate change while ensuring a rapid transition to a low-carbon economy. MOSAICC is also one of the 4 components of the Triple A Initiative launched by Morocco in support of other African countries. ■

THE MOSAICC SYSTEM



THE MOSAICC SYSTEM AND ITS 4 COMPONENTS :

Exchange of data between the four main components of MOSAICC.



this project targeted the pilot watershed of Outat River.

The success of this project resided in the involvement of all partners and the rural population using natural potential of the environment. Given the success of the pilot project, of the dynamics initiated in the area and of the coherent and operational associative structure created, the FAO Representation in Morocco wished to extend the project until December 2017.

Thanks to funding from the Swiss Agency for Development Cooperation (SDC), the participatory approach of watershed co-management is being extended to the three neighboring watersheds: River Belahcen, River Adaghwal and River Ansagmir.

This second project aims at reforestation of 2,150 hectares of Aleppo pine, green oak and cypress trees and the distribution of 30,000 fruit plants for the benefit of farmers in the watershed of the Outat River. The six planned dams are supposed to increase the irrigated area from 1,000 to 2,300 hectares and to allow the retention of 1,400 tons of sediments.

FIGHT AGAINST DEFORESTATION

Participatory watershed management in the Midelt region

MOROCCO, A COUNTRY HIGHLY AFFECTED BY THE EROSION

Morocco is among the countries most affected by desertification with an arid and semi-arid climate covering more than 93% of its territory. Like most countries in the African continent, Morocco has been confronted for several decades with climate change.

Indeed, according to the High Commissioner for Water and Forests and the Fight against Desertification (HCEFLCD), the 8.7 million hectares of useful agricultural land available to Morocco would be affected by erosion, i.e. 500 tons of land per the square kilometer in the Middle Atlas and more than 5,000 tons in the Rif. The causes of erosion are manifold : a combination of natural and anthropogenic factors such as irregular rainfall, overgrazing, low vegetation cover, excessive wood harvesting or unsuitable cultivation techniques.

In an attempt to stem this phenomenon, a first pilot interregional project with the objective of combating poverty and desertification through the co-management of watersheds was set up in 2010 and extended to 2015.

Launched by the HCEFLCD with the support of the FAO Representation in Morocco and the financing of the Spanish Agency for International Development Cooperation (AECID),

COP 22



Morocco requested technical support from FAO for the preparation of the COP 22 held in Marrakech in November 2016.

The support role for the Moroccan Presidency of COP 22 which FAO was invited to play has been deployed throughout 2016 and in particular in the preparation of a roadmap for the Strengthened Action in Favor of Forests in the Mediterranean-Sahel Region in the Context of Climate Change (ARF Initiative) which Morocco presented to the COP 22 and in the accompaniment for the launching of the “Triple A”, “Durable Oasis” and “Blue Belt” Initiatives.

An FAO Technical Cooperation Program was approved for the technical capacity building of the Morocco Climate Change Competence Center (4C-Morocco), to which the Ministry of Environment delegated some of the preparatory activities for this global event and the responsibility of supporting other African countries in the preparation of their National Adaptation Plans (NAPs) and Nationally Determined Contributions (NDCs) under the United Nations Framework Convention on Climate Change (UNFCCC).

At COP 22, FAO launched a Global Framework to address water scarcity in agriculture and co-organized three high-level action-oriented events on forests, on oceans and on agriculture and food security. Its experts participated in events and round tables by promoting innovative solutions to reduce the impacts of climate change on forests, agriculture and fisheries.

FAO IN FIGURES

140 NATIONAL PROJECTS

65 REGIONAL PROJECTS

1982
OPENING OF FAO'S REPRESENTATION
IN RABAT.

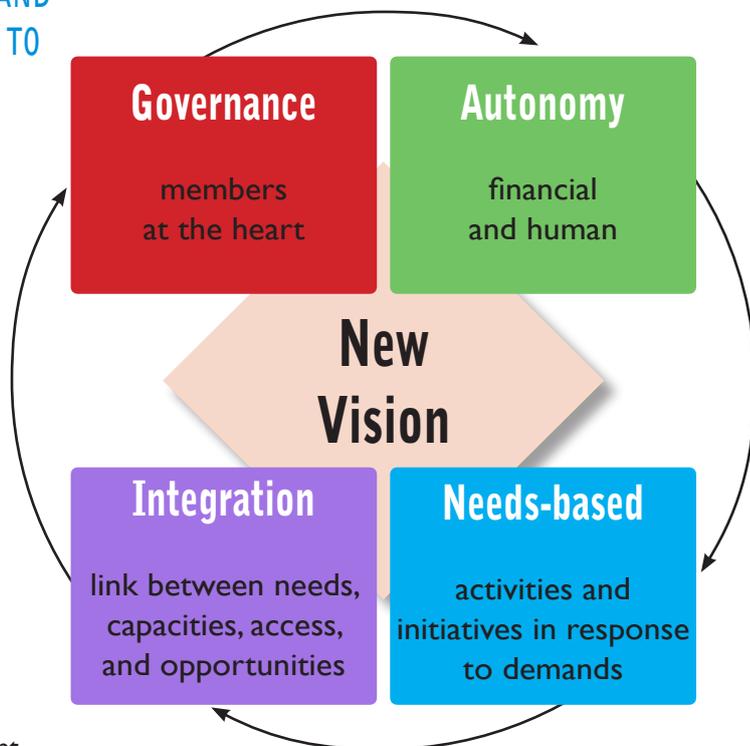
MORE THAN
60 YEARS
THAT FAO SUPPORTS THE
DEVELOPMENT OF MOROCCO IN THE
FOOD AND AGRICULTURE SECTOR.

DIAGNOSE THE NEEDS OF SMALL FARMERS AND THE ADAPTATION SOLUTIONS THAT APPLY TO THEM WHILE INCLUDING ECONOMIC AND INSTITUTIONAL PARTNERS TO ANALYZE THEIR FEASIBILITY.

The GAIN methodology

GAIN (Governance, Autonomy, Integration, Needs-based) is a participatory approach developed by FAO with the objective of identifying, formulating and implementing development and adaptation projects under Pillar II of the Green Morocco Plan.

The GAIN method combines an endogenous diagnosis of the needs of small farmers and the adaptation options available to them, followed by an analysis of feasibility among economic and institutional partners including agents of the Regional Directorates of Agriculture, of the Agency for Agricultural Development (ADA) and of NGOs. The GAIN methodology was applied in Morocco within the framework of a pilot project of FAO in support to small farmers to better adapt to climate change in Tadla-Azilal. This project was carried out by the Trade and



SCHEME OF THE GAIN METHODOLOGY

4 PRIORITIES FOR 2013-2016

FAO's assistance to Morocco is defined by the Country Programming Framework (CPF), which for the period 2013-2016 focused on four priority areas:

1. Development for all, including the involvement of vulnerable groups and women, in agriculture and marine fisheries as the engine of economic and social development ;
2. Sustainable management of natural resources and improved living standards for rural people, with an emphasis on vulnerable populations, in the context of adaptation to climate change ;
3. Food crises management;
4. Promotion of regional cooperation, including South-South Cooperation.

FORMULATION OF THE NEW CPF

The new CPF for 2017-2020 is under formulation, in consultation with all FAO counterparts.

Markets Division of FAO in collaboration with the national partners under the coordination of the Agency for Agricultural Development.

The project has set the objective of supporting the development of small-scale agriculture while developing effective tools to better adapt to climate change. The pilot project started in September 2011 with a national start-up workshop held in Beni Mellal and ended in June 2014. Following meetings with farmers, consultations with the identified partners were organized. Together, they were able to exchange elaborated proposals and assess the possibilities of partnerships based on joint projects, in particular those financed under Pillar II of the Green Morocco Plan. ■

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