Mainstreaming climate change into a national investment program targeting small scale farmers: Application to Azilal region in Morocco

Agriculture and climate change: a dual challenge for Morocco

As for much of North Africa, Morocco is particularly vulnerable to climate change, portending profound changes in the Moroccan agricultural landscape. The country is already facing climate variations and has experienced several episodes of drought, but climate change induced predictions are even more pessimistic.

Climate model analyses for Morocco forecast, with some degree of consensus, unfavorable climate projections that include rising average temperatures, lower rainfall, and higher climate variability and water resources. Morocco is now aware of these threats and that they must be dealt with sooner rather than later; the challenge being now to mobilize energies at all levels to have the means to respond and make decisions at both macro and micro levels.

Morocco is facing a second challenge: a huge under-performing traditional agricultural sector. Modern agriculture producing high added value products is only practiced on a small portion of total agricultural land. In contrast, low yield traditional agriculture, subject to weather variability occupies a large share of the country's agricultural area, where the rural population, subject to much worse economic conditions than elsewhere, is concentrated.

Since 2008, Morocco has launched a national agricultural investment program (the Green Morocco Plan - PMV) to modernize the agricultural sector and increase the most promising sectors' added value. Acknowledging the dual structure of Morocco's agriculture, the PMV is separated into two pillars: Pillar I focusing on so-called "modern" agriculture and Pillar II supporting traditional agriculture.

Expected effects of climate change on small-scale agriculture

This double challenge of mobilizing everyone to deal with climate change and developing small-scale agriculture is over layered by the fact that small farmers, targeted by Pillar II, are also the most vulnerable to climate change impacts. It is therefore imperative to identify and deploy sustainable measures and solutions that can mitigate the effects of climate change on small farmers and strengthen their adaptation capacity and resilience.

FAO's project

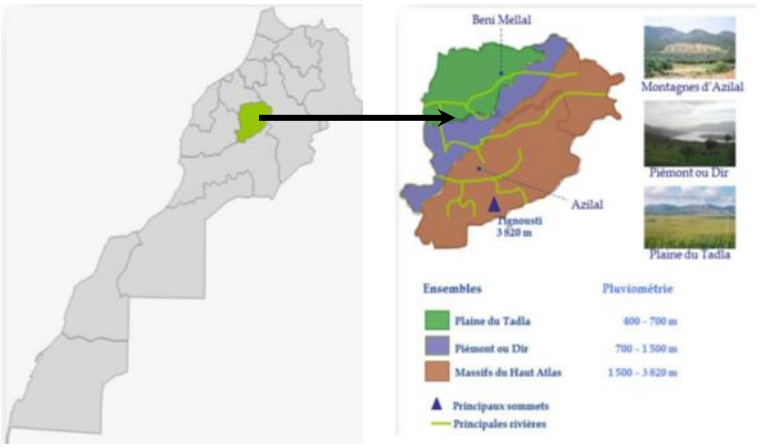
FAO's pilot project has been developed to assist national partners to meet these challenges. The project has adopted a participatory, analytical and practical approach to meet its main objective which is to support small farmers' adaptation to climate change in the region of Tadla Azilal under Pillar II of the Green Morocco Plan, and thereby, strengthen the capacity of all stakeholders to collaborate. The project's specific objectives are to:

- Develop a multidisciplinary analysis of the impact of climate change on agricultural production systems in the project area, both in terms of biophysical and socio-economic dimensions;
- Identify small farmers' weaknesses and capacity to adapt and make recommendations for appropriate action under Pillar II of the PMV; and
- Strengthen national capacity to analyze, plan and implement appropriate adaptation solutions incorporating criteria that take climate change into account.

Project intervention area

The Tadla Azilal, one of the country's major agricultural areas with contrasting natural, social and behavioral dynamics, and also highly vulnerable to climate change, was the region chosen for the project. The choice to work within a specific zone makes it possible to implement a very pragmatic project including a detailed climate change impact analysis that brings about tailor-made adaptation solutions that are adoptable and selected by final beneficiaries themselves, namely farmers, with the support of ministerial agencies. These public services counterparts are the ones responsible for promoting and better implementing agricultural development policies with regional and local actors.

Project intervention area



An innovative approach

The nature of the problem that links climate change and small farmers' adaptation requires an approach that is as flexible as it is innovative. It also requires the need to address the problem from several angles in terms of knowledge (what the actors know about the effects of climate change and possible solutions), attitudes (how they perceive these) and practices (what they do).

Project inception workshop
(Beni Mellal, September 2011)

Project formulation in response to national needs and local potential and expectations

The project inception workshop was held in Beni Mellal with the participation of FAO, ADA, Azilal and Beni Mellal DPAs, Tadla Azilal DRA, IAV, INRA as well as representatives from other ministries, researchers and local organizations. Overall, participants addressed the issue of climate change through the lens of drought related past experiences. A clear lack of knowledge and analytical tools that may support effective decision making at all levels emerged when participants examined how complex and multiple the expected effects of climate change just are.

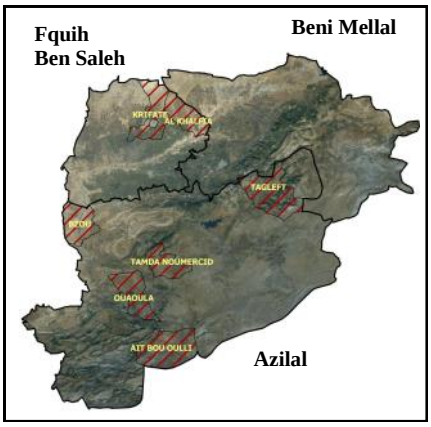
Multidisciplinary approach to the analysis of climate change impacts

Round table with national experts: impact assessments analysis

Following the start-up workshop, the project has mobilized necessary national expertise by putting together a team of top researchers that will conduct multidisciplinary thematic studies on climate change impacts in the project area examining:

- **changes in optimal cropping areas** under different climate scenarios (mapping crop ability compared to climate- soil- temperatures factors);
- **water supply and demand** according to the main water availability in the area (water balance analysis);
- **added value and profitability** depending on water availability and the implications of climate change on productivity (economic analysis of main cropping systems); and
- **vulnerability and ownership capacity** of farmers to adapt to new climate-proof technologies (socio-institutional evaluation of smallholders in Tadla Azilal).

Sites selected for socio-institutional surveys



Progressive engagement with small farmers in the project

The project has ensured that small farmers have been gradually involved by covering the following topics:

- **farmers' perceptions of the changing climate**, their level of vulnerability and their capacity to adapt (socio-economic surveys);
- **their appreciation of PMV Pillar II projects** and their implementation status (regular field visits to farmers);
- **support to women** practicing weaving to organize, improve marketing of their products and added value derived from this activity (surveys in the Bzou rural district); and
- **mobilizing farmers in three pilot sites** during Phase II of the project to test a participatory approach (GAIN) to better integrate adaptation options to climate change in the PMV Pillar II projects (see box).

GAIN workshops (Azilal, March 2013)

GAIN participatory approach: To better integrate small farmers

GAIN (**G**overnance, **A**utonomy, **I**ntegration, **N**eeds-based) is a participatory approach developed by FAO with the aim to identify, elaborate and implement development and adaptation projects within the PMV Pillar II framework. The GAIN methodology starts with an internal diagnosis of small farmers' groups, identify their needs and formulate adaptation solutions that are available to them; this is followed in a second stage by a feasibility study with economic and institutional partners (including state agents such as DRA, ADA, NGOs and other organizations).

Project deliverables

The project deliverables are:

(i) **An integrated and multidisciplinary evaluation methodology** of the impact of climate change on agricultural production systems that includes technical / scientific, economic and socio-institutional dimensions as well as tools and training materials to assist with decision-making in planning agricultural investment programs;

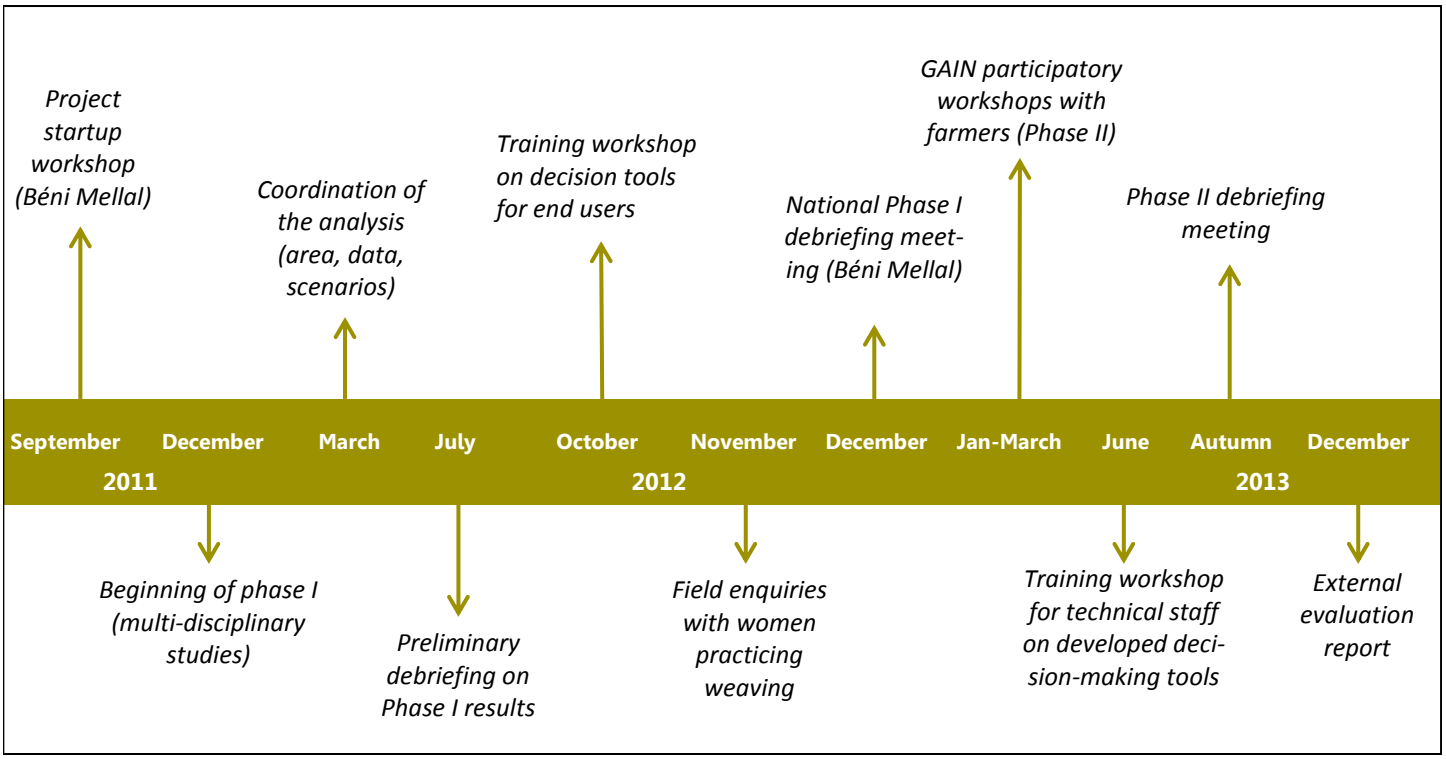
(ii) **Decision-making tools** for the biophysical analysis of the impact of climate change used by the technical staff of ministries working at the local level;

(iii) **A participatory approach** to implement climate change adaption solutions that has been effective in the field and that is replicable; and

(iv) **Strengthened national capacities** in research, planning and implementation of projects that are adapted to local conditions.

Training workshop on decision tools for Ministry personnel, Rabat, October 2012

Project roadmap



For more information on this project, please visit the FAO website at the following page:
http://www.fao.org/economic/est/issues/est-climatechange/en/

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