

## The Green Morocco Plan: An Innovative Strategy of Agricultural Development Environment and development AL-BIA WAL-TANMIA (Journal) Nov 2014

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Mohamed Badraoui

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In Morocco, agriculture is a strategic sector, economically and socially. It plays major roles in terms of food security and nutrition, supply for agro-industry, employment, integration into the international markets, stabilization of populations in rural areas, and sustainable development.

### **Main Features of Agriculture in Morocco**

Food supply in Morocco, which is a major component of food security, depends mainly on rainfall. Agricultural production is challenged by extreme large inter-annual variation in rainfall. Irrigation is provided only for 16 percent of croplands, leading to little flexibility for weather risk mitigation and crop improvement. Long term average rainfall in Morocco is around 365 mm, varying from a minimum of 198 mm recorded in 1994-1995, to a maximum of 610 mm recorded in the 2009-2010 season. Also, rainfall distribution between seasons is skewed, since most of the seasons display under average precipitation. Most of the rainfall in Morocco is received between the months of October and April, which is a short period for crop growth and development.

In Morocco, as in most of the Mediterranean countries, the cereal production system (cereals/food legumes) is predominant. In arid areas, the cereal/fallow sub-system is dominant, with very little room for spring crops. Olive tree plantations cover an area of about 980,000 ha, or nearly 65 percent of the national tree orchard.

The correlation between Gross Domestic Product (GDP) and agricultural GDP (AGDP) is very high. AGDP contributed to 18 percent of the GDP on average for the period of 1980-2010 (in current prices), with extremes of 23.3 percent in 1991 and 13.3 percent in 2000. However, contribution of AGDP to GDP has been declining since the early 1990s, from 16 percent on average over the period 2000-2010. Agriculture (including fisheries) is the first economic sector providing employment (38 percent of national employment and 75 percent of employment in rural areas). The agricultural sector also contributes to

reducing the rural exodus and to socio-political stability. Winter cereals (soft wheat, durum wheat and barley) contribute nearly half (47 percent on average) of agricultural added value since they cover most of agricultural lands (5.1 million hectares in average). Livestock is the second contributor to AGDP (31 percent), but is closely linked to the cereal system. During dry seasons, the contribution of livestock to AGDP increases compared to other activities (38 percent in 1981 and 39 percent in 1995 and 42 percent in 2000), attesting the role of livestock in the climate risk management system of farmers.

AGDP(excluding fisheries) is highly dependent on the weather. Due to the economic importance of the agricultural sector, any rainfall deficit or excess immediately affects the entire economy. Weather also impacts cereal imports, since the import/production ratio can range from 10 percent (in 1994-1995, following the good season of 1993-1994) to 244 percent (in 2000-2001, following the dry season of 1999-2000).

Productivity of major crops is improving in irrigated areas as a consequence of increasing the use of inputs. However, in rainfed areas productivity is still evolving erratically, concurrently with weather conditions. The ratio between yields of major crops and cumulated rainfall during the cropping season shows that, so far, efforts have had limited significant impacts on rainfed productivity in the medium term, despite significant yield improvement at the research level. In fact, improvement of rainfed crop productivity is difficult, and requires deep measures to adapt to irregular and dry climate, mainly through technological transfer of efficient technologies already available in Morocco, training of farmers, and development of agro-meteorological services.

### **Reducing Agricultural Weather Related Risks**

The provisions of preparedness and response to weather risks, taken by the Moroccan government, aimed at reducing vulnerability to drought and buffer crop productivity. These provisions are structural (dams, irrigation systems, land use planning, etc.), and non-structural (adaptation measures, drought insurance, solidarity funds). They can be summarized as:

- Development of water storage infrastructure and distribution of irrigation water ;
- Upstream protection of water resources ;
- Expansion of irrigated areas ;
- Improvement of the efficiency of irrigation water use ;
- Improvement of agricultural yields, through improvement of agricultural inputs (certified seeds and fertilizers) ;
- Optimization of land resources ;

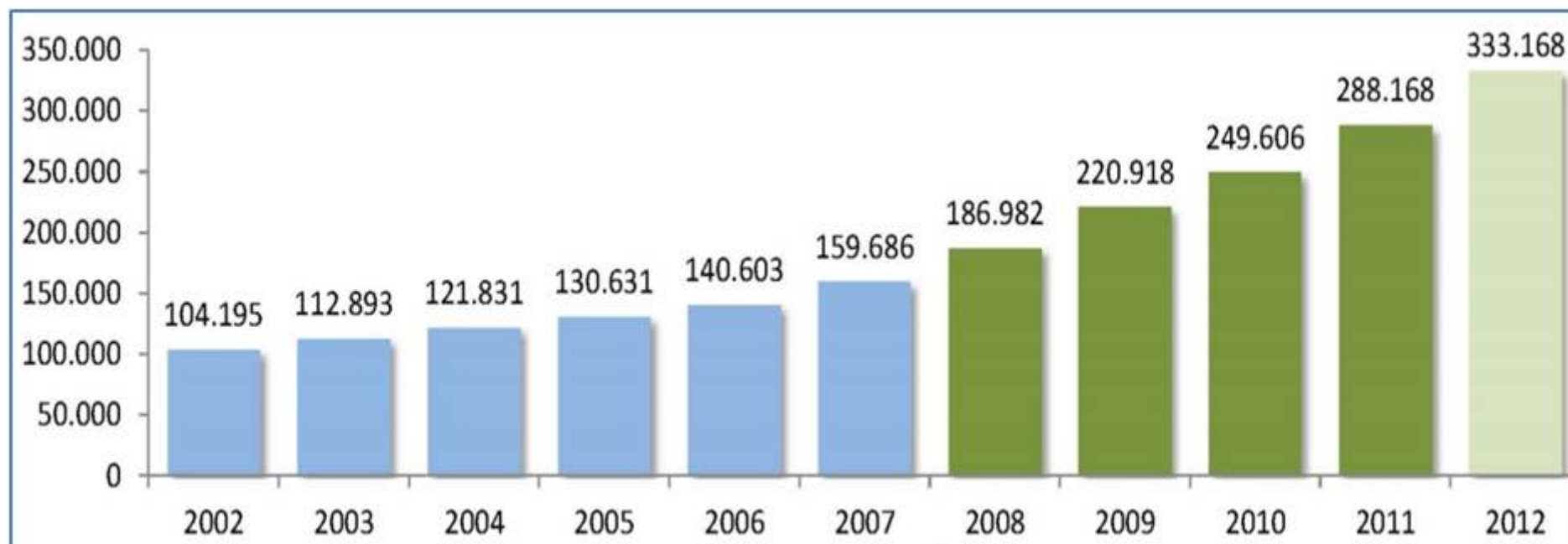
Mobilization of non-conventional water ;  
Adaptation to climate change through the use of water economy technologies;  
Agricultural insurance against climatic hazards.

The Green Moroccan Plan (GMP), launched in 2008, is the governmental strategy which aims to stimulate the agricultural sector. It intends to reform agriculture and promote its integration in the international market, and heighten sustainable growth. The implementation of the GMP is based on two pillars and several cross cutting programs. The first pillar concerns the highly productive, intensive and market connected agriculture, and the second pillar concerns the strengthening of small holder farmers by promoting intensification of crops where appropriate, and the reconversion to more adapted crops with respect to ecological conditions and markets demand. The cross-cutting programs deal with water economy, land tenure, farmers organization, market access, free trade agreements in which Morocco is involved, and investment mobilization. In total, the GMP is made of 1500 projects requiring more than 10 billion USD for implementation until 2020.

Selected programs implemented by the GMP to improve productivity and food security under climate change are presented below:

### **The National Irrigation Water Saving Program**

The National Irrigation Water Saving Program (PNEEI) is considered to be one of the main programs of the GMP, since still 77 percent of irrigated areas are surface irrigated (MAPM, 2012). The PNEEI aims at saving water irrigation through the conversion of surface irrigation to drip irrigation on nearly 550,000 ha towards 2020, with an investment of 4.5 billion USD. Up to 2012, 333,000 hectares have already been converted (MAPM, 2012) (Figure). It is expected that after completion of this program, Morocco will have 700,000 ha under the drip irrigation system. To promote water economy, the government is subsidizing the equipment of farms by drip irrigation and procurement of seeds and plants of adapted crops.



Trend of areas under drip irrigation in Morocco (MAPM, 2012)

### **Integration of Climate Change Measures to the GMP**

Climate change will lead to decreasing agricultural yields for major crops and increasing variability of agricultural production. The GMP has launched many projects for adaptation to climate change. The project “Integrating Climate Change in the implementation of the ‘Plan Maroc Vert’”(PICCPMV) is an ongoing project (2011-2015), aimed at promoting adaptation to climate change in five regions of Morocco. The main technologies being adopted at large scale are the conservation agriculture system based on no till, the use of certified seeds of productive varieties tolerant to drought, and the adoption of crop rotation by farmers using pulses and/or oil seed crops after cereals. This program concerns 900 small farmers in these regions and was presented as a success story at the Conference of the Parties (COP 18) in Doha.

### **Reconversion of Cereals to Fruit Tree Program**

The objective of this program is to convert 1.1 million ha of land cultivated by cereals in non-suitable areas to fruit trees, especially olive trees. Land suitability maps are used to select those areas to be reconverted. The program is implemented in

arid and sloppy land to promote more soil and water conservation. Under this program small holder farmers are being organized into cooperatives and groups of economic interest to promote their connection and entry to the market and get the maximum from the added value of their products.

### **Agricultural Insurance**

The "Climate casualty insurance" program, launched in 2011 by the Ministry of agriculture, came to replace the drought insurance program launched in 1996. It aims at protecting small farmers to climatic risks, in particular:

Reducing weather risks to agriculture ;

Promoting access to finance ;

Promoting investment and increasing crop productivity ;

Contributing to the development of modern agriculture with high added value ;

Promoting solidarity and smallholder agriculture.

*Prof. Mohamed Badraoui, is Director General of the Institut National de la Recherche Agronomique (INRA), Morocco.*