



## France has a number of original governance structures:

- **The Associations syndicales autorisées (ASA)** or Associations of users which since the 19<sup>th</sup> century have encouraged participation by the irrigators in the choice of investments and in the routine management of the irrigation service;
- **The Sociétés d'aménagement régional (SAR)** are regional development societies, holding a state concession. They invest in the mobilisation of water resources for various uses on a contractual basis but with a public service objective.

## French know-how shared internationally

French stakeholders are involved in international cooperation projects involving research, design offices and NGOs:

- **development of conservation agriculture** (for example no-tillage direct seeding) and development of catchment basins;
- **rehabilitation of irrigated areas** and optimisation of water delivery from the scheme to the farm;
- **decentralisation and professionalisation** of development management;
- **strengthening the associations** of water users and professional agricultural organisations;
- **supporting the preparation of hydro-agricultural and land policies**;
- **producing agricultural and rural development models** (agriculture, fisheries, livestock) based on family-based food-production farming and fair management of land and water resources.

These actions are built around a national agricultural research system for development like no other in the world, comprising several thousand of researchers both in France and abroad, two research centres, Cirad and IRD, dedicated to development, in which two national centres, INRA and Cemagref, participate.



Improving surface irrigation in Kebili Oasis (Tunisia) - (Credit: Cemagref, A. Vidal)

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COMMITTED TO WATER FOR THE WORLD.

# A DOUBLE CHALLENGE FOR AGRICULTURE: FEED THE WORLD AND PROTECT WATER AND ECOSYSTEMS

## Two priorities:

- **To develop productive agriculture that saves water and respects the environment**
- **To boost investment and international aid in managing water for food**

By the year 2050, feeding 9 billion inhabitants will require a doubling of the world food production.

## Water also means water for food:

Cereals, vegetable, milk, meat, oils are all basic foodstuffs, the production of which requires water and to which a part of the planet has no access, be it in terms of quality or sufficient quantity.

Food riots caused by rocketing prices shook several African and Asian countries in early 2008.

In sub-Saharan Africa, 4% of agricultural land is irrigated and this area has not increased for ten years!

The current food crisis is aggravating a structural situation in which nearly 950 million human beings suffer from hunger.

Simply increasing the cultivated land area will not be enough to meet this food challenge: yields will have to be increased and to achieve this; the ways in which water is used will need to be improved as it is the factor limiting agricultural production.

# Food crisis: without water there's no hope!

Water for irrigation accounts for 70% of water resource consumption and remains also the main adjustment factor in the event of water scarcity. Furthermore, although 20% of agricultural land in the world is irrigated, it produces 40% of our food. The food crisis and growing water scarcity are therefore closely intertwined and their simultaneous management is a major issue for mankind in the 21<sup>st</sup> century.

## 2008, a greater structural crisis, and falling investment in water for agriculture over the past 20 years

In the past 20 years, investment in the agricultural sector and in water management in particular has shrunk: World Bank loans to the agricultural water sector have fallen from an average of 2 billion dollars/year for the period 1975 – 1985, to an average of barely 0.7 billion dollars/year since 1985.

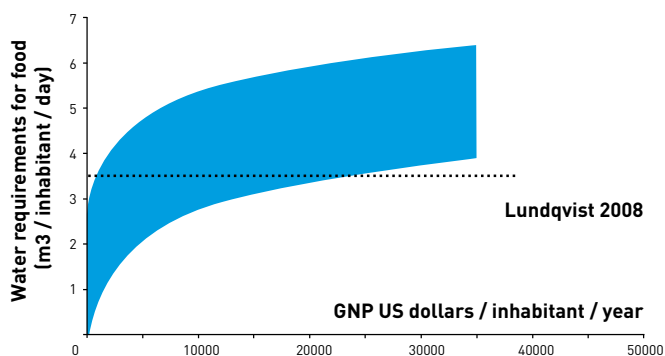
Investment is needed in water management, in the protection of biodiversity and in – while making sure any agricultural pollutions are avoided – the improvement of agricultural productivity

The “green revolution” must now be followed by a “blue revolution” with the aim of boosting productivity per unit of water, as well as ensuring better management of our catchment basins and alluvial plains. (Kofi Annan, Former Secretary General of the United Nations)

## Do we need to change how we eat?

On average, 3500 litres of water are needed to meet daily food needs. Yet, different diets place different demands on water resources. For example, a diet without meat only requires 2000 litres of water per day, whereas 5000 litres are needed for a diet in which meat is produced using grain

(Renault and Wallender, 2000)



Demographic growth and dietary changes (in particular more meat) which are closely linked to economic growth, therefore risk seriously taxing the world's water and soil resources. The question therefore arises of whether we should change how we eat.



## Solutions exist and are within reach for producing more food without using more water

It has been shown that more productive systems can also consume less water. The necessary investment and adaptation concern not only agriculture, be it with or without irrigation, but also livestock breeding, fisheries and freshwater aquaculture.

### Techniques and infrastructures:

- Develop **crop systems which optimise water and soil** to increase yield from both **irrigated and rainfed** farming, thanks to the use of techniques and varieties appropriate to each context;
- **Develop and rehabilitate irrigated areas** to make them more productive and save water: limit physical losses from irrigation networks, regulate canals, manage irrigation according to demand;
- Preserve ecosystems and biodiversity and **value fisheries and aquaculture products** as they represent a safety net against the variability of agricultural production as well as an additional source of income.

### Institutional organisation for long-term investments

- **Enable the producers to better value the water resources** by increasing their own capacity; better-organised access to local markets, access to new entrants and improved land tenure.
- **Set up financing systems infrastructure in order** to recover their operating and maintenance costs: direct payment for the water service by the user, taxation, and equalisation mechanisms.
- **Decentralise management of the irrigated areas** because this improves the sustainability of the water services and adapts to demand: distribution of roles between managers and users, transparent management of the resource, participation of agricultural producers in decision-making bodies.
- **Integrate water, agriculture and energy policies at a national level** and as part of basin development, to secure agricultural and energy production.
- **Boost research and development** to improve development of water resources for agriculture (uses and productivity of agricultural water, benefit of multiple uses at different scales) and anticipate adaptation to global changes (risk and vulnerability assessment, adaptation strategies).