


## Round Rable Discussion

# What place for irrigation in France and in Europe in the future?

In these exchanges, experts from different professional agricultural institutions and from the French and European administrations address the future of irrigated agriculture in Europe in a context where it is often decried by society and where the issue of climate change is becoming increasingly significant. Each actor's inputs are focused around three questions: What are the needs and under what conditions should irrigation be developed in France and in Europe? What policy, what projects for irrigated agriculture? Can irrigation performance be improved?

### AUTHORS' NOTE

These exchanges are the result of the final roundtable of the “Water Savings in Irrigation” conference held on 13 and 14 November 2019, in Montpellier (Photo ). We have included in this article the main messages of the speakers and thank them for taking part in this exercise.

**Alexandra CATALAO**, European Commission, DG AGRI.

Manager of the Provence-Alpes-Côte d'Azur development programme within the AGRI.E1 Directorate General.

**André BERNARD**, Irrigators' Association of the French Mediterranean Regions (AIRMF).

President of the Provence-Alpes-Côte d'Azur Regional Chamber of Agriculture.

**Bruno GRAWITZ**, President of the French Association for Water, Irrigation and Drainage (AFEID).

**Marco ARCIERI**, International Commission on Irrigation and Drainage (ICID).

Vice-President of the International Commission on Irrigation and Drainage).

**Adriano BATTILANI**, Irrigators of Europe. Secretary General of Irrigators of Europe.

**Franck SOLACROUP**, Adour-Garonne Water Agency.

Director of the Department of Water Resources, Aquatic Environments and Agriculture of the Adour-Garonne Water Agency.

**Dominique COLIN**, Rhone-Mediterranean-Corsica Water Agency.

Director of the Montpellier delegation of the Rhone-Mediterranean-Corsica Water Agency.

**Denis CARRETIER**, Regional Chamber of Agriculture of Occitania. President of the Regional Chamber of Agriculture of Occitania.

 The “Water Savings in Irrigation” conference (Montpellier, November 2019), a necessary initiative to create debate and share experiences around the future of irrigated agriculture in France and in Europe.



## What are the needs and under what conditions should irrigation be developed in France and in Europe?

### Irrigators of Europe

Today, there is a lot of societal pressure around irrigation, leading some people to consider that it is no longer possible to irrigate in some parts of southern Europe. This is the case in Spain and France, two countries from which the European Commission receives the most criticism against irrigators' associations. However, this is most often due to a lack of information on the subject and confusion between the problems of agriculture in general and irrigation practices in particular. Indeed, the problem is not about ceasing all irrigation but irrigating better. It is a question of developing a multifunctional use of water resources, which can, among other things, meet the irrigation water needs of plants, keep soils moist, enhance fertilisation... and finding a balance with the different pressure groups (drinking water, irrigation water, water from aquatic environments, etc.).

### Irrigators' Association of the French Mediterranean Regions

I would like to pick up on the case of France, which is one of the countries under ever greater pressure. However, the figures are rather reassuring. According to the General Commission for Sustainable Development (Ministry of Ecological Transition), French agriculture consumes 2.73% of rainfall water, which represents a small share of the resource compared to other uses. Over the past ten years, France has taken major steps to optimise water use in agriculture. These measures include, for example, the end of national funding for agricultural hydraulics in 2008, the new Common Agricultural Policy (CAP) 2014-2020, the regionalisation of rural development programmes (RDPs), changes in the methods of support from Water Agencies (e.g. territorial projects, calls for projects for the development of sectors, territorial contracts and technical and economic diagnostics of irrigation), etc.<sup>1</sup>

### French Association for Water, Irrigation and Drainage

When we talk about irrigation we are only talking about one link in a chain that goes from the small drop that is taken from its natural environment, either from surface water or from underground water, to agricultural production. In the field, the situations are very diverse. It, therefore, becomes difficult to focus only on irrigation.

In the field, different irrigation systems (gravity-fed irrigation systems, sprinkler irrigation, localised or drip irrigation) are more or less water efficient. Water needs also vary according to the type of crops (perennial or not) and soil conditions. So how can we generalise a negative view on the use of irrigation when faced with such a diversity of situations?

It is therefore necessary to consider the whole production chain and to place the subject of irrigation in its social and economic context in order to provide a relevant answer to the question.

### Adour-Garonne Water Agency

In the Adour-Garonne basin, the social and economic questions raised by the AFEID are of prime concern to us. Our basin is among the most vulnerable to irrigation-related criticism. However, abolishing irrigation is an option that has not been nor ever can be envisaged. We have a very rural and agricultural basin where agricultural production and food-processing account for a turnover higher than that of aeronautics or even tourism. It is a matter of finding a balance which reconciles the good state of the aquatic environments and the maintenance of economic development, bearing in mind that there will be an increase of 1.5 million inhabitants in our basin by 2050.

### Regional Chamber of Agriculture of Occitania

In order to develop irrigation, the first message to be conveyed to the various users is that water must be shared for human consumption, agriculture, industry and aquatic environments. Indeed, there is always opposition where water use is concerned, and irrigation is strongly criticised.

Another subject of debate is the unequal distribution of rainfall over time. While episodes of water deficits occur, there are also very rainy periods of the year. We need to think together about the possibilities of storing water in periods of massive rainfall, which will make it possible to secure water resources in the basins.

### Adour-Garonne Water Agency

Considering the socio-economic context of the Adour-Garonne basin mentioned above, water security is more than ever a priority. The basin is regularly subject to very severe droughts which lead to tensions for the environments, drinking water and other uses. In a context of climate change, these droughts will result in half as much water in the rivers in summer by 2050. However, unlike the Rhone-Mediterranean-Corsica agency, we do not have the facilities to store and transport water (Lake Serre-Ponçon, Canal de Provence, etc.). There is therefore a real challenge in our basin to save water on the one hand, and to secure the resource on the other hand, particularly via multi-use substitution reservoirs.

### Rhone-Mediterranean-Corsica Water Agency

In the delegation of the Rhone-Mediterranean-Corsica Water Agency, the four departments bordering the Mediterranean coast are almost all in water deficit. This situation has prompted the agency over the past ten years or so to carry out studies of the withdrawable volumes<sup>2</sup> and to see how these volumes are shared between the different uses. We have therefore committed the territory to share the water, knowing that it is not an easy question,

1. Ministry of Agriculture and Food, 2018.

2. Volume that the environment is able to provide under satisfactory ecological conditions, i.e. in compatibility with the fundamental orientations set by the Master Plan for Water Development and Management and, where applicable, with the general objectives and regulations of the water development and management plan.



▶ and that, coupled with increasingly frequent periods of shortage, there will be tensions around the resource. In its action plan, the Agency prioritises water savings over substitution. Indeed, water saved represents the resource that can be mobilised at the lowest cost. Hence, the Water Agency finances sustainable irrigation projects only when all the savings actions have been tried and/or exhausted.

### Irrigators of Europe

The issue of irrigation in southern countries is much discussed. Recently, however, it has become clear that irrigation needs are shifting northwards. Two years ago, there were crises in the agri-food sector in England, Germany, Sweden and some Eastern European countries. Irrigation is one of the solutions to cope with drought, but for this to happen, it is necessary to think about irrigation that is beneficial to the environment and compatible with agroecology to help maintain organic matter in the soil by preventing it from drying out.

It should also be mentioned that in the Mediterranean basin countries like Italy, Spain, Greece, Portugal, France, etc., many irrigation infrastructures are crucial for managing the environment in the face of extreme events linked to climate change. Without irrigated agriculture, we will lose the means to fight climate change. We must therefore support irrigation that is efficient knowing that there are limits to the resource because it is not infinite.

### French Association for Water, Irrigation and Drainage

If food is no longer produced in some parts of Europe, it will have to be imported. However, it should be noted that the water balance is not the same for a crop produced in Europe as for the same crop imported into Europe. In general, only local water consumption is taken into account, but the entire global system needs to be analysed. There is a very interesting approach called "life cycle analysis" (LCA), which considers the whole production chain, from the consumption of raw materials to delivery to the beneficiary. In policy terms, this LCA should be very present in order to judge the relevance of irrigating this or that crop in this or that part of the planet and to objectively assess the overall environmental impact of production.

### Can irrigation practices be improved?

#### Irrigators' Association of the French Mediterranean Regions

There is room for improvement in the field of irrigation optimisation aimed at reducing the volumes of water withdrawn by relying in particular on digital technologies, aerial mapping tools, etc. The objective is to bring the right amount of water to the right place at the right time. In addition, action must be taken to secure water around territorial projects with a multi-use vocation. Among priority uses, it is necessary to allocate part of the resources to crops whose marketing or quality objectives require a water supply. For such crops, the priority for irrigation projects must be to improve water management by adopting increasingly specific technologies and approaches (water balance, soil and plant).

### French Association for Water, Irrigation and Drainage

The situations are very different in each country. In France, for example, one can afford high technology because behind it there are not only financial resources, but also a whole range of communication and advisory services to ensure that the new technologies are disseminated and correctly applied on farms.

However, this is not the case in many other countries where there is sometimes a crucial lack of basic technical know-how to carry out an irrigation project, such as the maintenance of pumping stations and water networks. A minimum level of technical expertise is necessary to achieve a certain optimisation of irrigation.

### Regional Chamber of Agriculture of Occitania

To agree with what has just been said, I would like to emphasise that in France, in the territories, technical development is progressing as well as the training that goes with it, particularly with the support of the various advisory bodies. It is conceivable that in the not-too-distant future, all farmers will be able to turn on the irrigation of their plots of land remotely, after first checking a whole set of information relating to the soil, the climate and the crops.

### Adour-Garonne Water Agency

While it is important to be water-efficient through irrigation management, high-performance equipment or the choice of more adapted varieties or crops, I would like to mention that when we talk about irrigation, we must also follow an agronomic approach in maintaining awareness of what is happening in the soil. The soil is actually a water reservoir that can be increased with organic matter inputs. By improving the useful water reserve of the soil, we can space out the water turns, for example. Soil is an agricultural heritage that must always be taken into account when discussing water savings.

### What policy, what projects for irrigated agriculture?

#### European Commission

In a context of global changes that affect the resources of territories and first and foremost water resources (climate change, but also population growth and increased demand for agricultural products), water management for irrigation has become a major concern for the European Commission.

Since the early 2000s, the Commission has been addressing the issue of water resources by implementing a set of directives for the quantitative and qualitative management of water: the Water Framework Directive, the Pesticides Directive, the Nitrates Directive and the Drinking Water Directive. Even within the CAP (Common Agriculture Policy), there have always been measures to encourage sustainable investments in water. This is the case, for example, of Article 46 of R.1305/2013 which, for the 2014-2020 period, stipulates that irrigation aid can only be granted in situations that generate water savings and do not affect good water status.

Concerning the link between irrigation and the future CAP 2020, a proposal from the Commission (more res-

trictive in comparison with the current programming tuned between agriculture and the environment) has been drawn up and sent to the European Parliament and the Council of the EU for discussion. The positions of the European Parliament and the Council are not yet known. However, the Council has already made a proposal for amendments aimed at making investments more conditional on the results of ex-ante environmental studies on the pressure of water bodies to demonstrate the absence of negative effects. This will feed into the new CAP, which will have more restrictive environmental conditionalities in favour of more sustainable agriculture.

As regards rural development aid (EAFRD), France is the sixth member state behind Spain, Greece, Italy, Romania and Portugal in terms of support received.

France uses the investment support measure mainly for the efficient use of water, a total of € 182 million EAFRD is planned in model form, of which € 28.5 million is paid to convert more than 73,000 hectares to a more efficient irrigation system. This measure concerns mainly the three southern regions (New Aquitaine, Occitania and PACA). By comparison, for the same period, Spain has used more than € 37 million of the € 358 million planned for the renewal of irrigation installations on 235,000 hectares.

### Irrigators' Association of the French Mediterranean Regions

With regard to the Water Framework Directive (WFD), a first assessment was carried out in 2019. Contrary to the objectives set by the directive in 2000, more than half of the water bodies in Europe are not in good ecological status. It was announced that this would have consequences for the post-2020 CAP. This subject was raised at the meeting of the French Water Circle. However, it seems to us that one factor was not taken into account when the WFD was drawn up: it relates to the adaptation to climate change. So indeed there is work to be done to better integrate the WFD into the new CAP, but also to take into account the issue of adaptation when harmonising regulations.

### French Association for Water, Irrigation and Drainage

For the countries of the south (Tunisia, Jordan) where tensions over access to water are even greater than in Europe, the reuse of water for irrigation is essential to ensure the future of crops. In France, we are not yet at this stage. However, projects are emerging around the reuse of treated wastewater, in particular, to irrigate vines. From a technological point of view, regarding both water treatment and the dimensioning of field distribution systems, research is progressing. Nonetheless, there is still a major problem of social perception among producers and especially consumers. Not forgetting the regulatory aspects, which in France and in Europe are currently at an impasse. However, the issue of water reuse will become even more important in the future.

### Rhone-Mediterranean-Corsica Water Agency

In France, in the Rhone-Mediterranean-Corsica basin, the Canal de la Robine project (2016-2019) is a good example of irrigation water savings, with a target of 25 million m<sup>3</sup> of water saved out of the 100 million m<sup>3</sup> withdrawn each year. This project is supported by the Water

Agency in terms of collective management and water metering, as well as the definition of savings missions.

Actions under this contract concern the Association Syndicale Autorisée (ASA) of Raonel in the Aude department, which manages 900 hectares mainly planted with vines, with an annual water withdrawal of 10 million m<sup>3</sup> of water, whereas the authorisation is for 7.8 million m<sup>3</sup>. The objective was therefore to achieve a water-saving of 3 million m<sup>3</sup> per year, including 1.3 at low-water levels. To achieve this, 27 km of networks and a 1,500 m<sup>3</sup>/h pumping station were built to supply under pressure 900 hectares of vineyards and large market-gardening crops. The Water Agency financed this project to the tune of 1.3 million euros. In this context, 3.3 million m<sup>3</sup> of savings per year were finally achieved.

This project is interesting because it made it possible to save water, secure the resource and ensure economic development while sharing the resource with other uses.

### Conclusion of the European Commission

Firstly, the most encouraging conclusion of this conference is that several innovative measures, technologies and agronomic practices are already available to significantly improve irrigation efficiency. Secondly, we cannot continue to ignore the consequences for agriculture of the impact of global warming. Therefore, there is a growing need to intensify the discussion on water efficiency at different levels, especially between farmers and scientists.

To conclude, I wanted to stress that this type of conference is a necessary initiative to stimulate thinking and share experiences around this topic of great importance for the future, water efficiency for sustainable and environmentally-friendly agriculture. And you can always count on the Commission. ■

### The authors

**Juan David DOMINGUEZ BOHORQUEZ and Sami BOUARFA**

G-EAU, INRAE, AgroParisTech, Cirad, IRD, Montpellier SupAgro, Univ Montpellier, 361 Rue Jean-François Breton, BP 5095, F-34196 Montpellier Cedex 5, France.

✉ [juan-david.dominguez-bohorquez@inrae.fr](mailto:juan-david.dominguez-bohorquez@inrae.fr)

✉ [sami.bouarfa@inrae.fr](mailto:sami.bouarfa@inrae.fr)