WATER AND RENEWABLE ENERGY CONCLUSIONS

PRESENTATION: THE FUTURE OF AGRICULTURE ON A POSITIVE NOTE

CONCLUSIONS TO THE PRESENTATION.
Rafael Escanero Arruego

An interesting seminar entitled "Agriculture with Expo 2008" took place in the Conference Centre of the Smagua Fair in Zaragoza with the aim of informing farmers and stockbreeders as well as all the agents from the rural world of Aragon, Spain and the E.U. about the measures that the CAP will develop with respect to the sustainability of agriculture, water, energy crops and organic agriculture.

The conclusions of this presentation cannot be more encouraging. For the first time and in many years in the history of agriculture, we are talking on a positive note. The young people from the Farming Schools, from the Cooperatives and children of the actual farmers, saw a completely different vision of agriculture, of sustainable development and of water exploitation.

The economic world is marked by a lack of food, caused mainly by the increase in the world's population, the increase of the economies of the Asiatic continent, above all China and India, and the new environmental expectations. The reactions of the climate change, the reductions of CO2 emissions into the atmosphere and consequently, food production with a higher quality and greater security, have played an essential role in the development of this magnificent seminar.

Transferring our postulates into this presentation and into the others of the seminar, we will manage to reduce poverty and procure the well-being of the inhabitants of the world in general. Agriculture and the environment are in the centre of our present and future challenges, the food challenge, the environmental challenge and the energy challenge are the three challenges of mankind. Sufficient reason to guarantee the future of agriculture, of food quality and of well-being.

In these conclusions, we must highlight how hopeful the Aragonese farmers are faced with the new challenges of water, which is getting more and more scarce and more needed for the new populations and for food guarantees. Agriculture and stockbreeding together need more production and more well-being and thus we will improve nature and the environment.

The formulas presented for the use of water in this seminar, must act as an example to save water, to reduce costs through renewable energies and to use the resources that nature gives the territory better in order to maintain a rural world with optimism faced with the future of the CAP, biodiversity, natural heritage and sustainable development.

The initiatives laid down and the experiences of all those who have participated in preparing the 21st Century Aragon Book, represent a positive effort for the farmers' prosperity, leaving defeatist postures that only contribute to hindering the execution of

both the community projects and those of the actual Aragonese farmers, on one side . Farmers and stockbreeders must get involved and collaborate with the citizens in the use of water, of renewable energies and of the environmental environment.

Aragon must become the model for the use and recycling of water. It must favour the Kyoto protocol and it must achieve the cost-efficiency of the farmers and stockbreeders and the well-being of consumers and of society in general.

This seminar that has offered a global vision of agriculture on a positive note; that has proposed different practices for farmers, irrigators' communities, for the Aragonese and Spanish Administrations and for the European Commission, must act as an example to reach a more aware and committed agriculture with the European society, with the sustainability of water, of nature, of the environment, of the territory and of all the citizens that make up this magnificent European territory.

Conclusions
Contribution "Agriculture and Renewable Energies".
Speaker: Julien Mousnier. Member of the Cabinet of Ms. Fischer Boel, Commissioner of Agriculture.

· Agriculture and forestry can make an important contribution in providing the feed stocks for bio-energy, in carbon sequestration and in further reducing greenhouse gases emissions

· Renewable energies are a chance for agriculture, both in the sense of providing for new opportunities and limiting agriculture's carbon footprint. For biofuels, the 10% target is a reasonable approach, ambitious but still sufficiently cautious. The Commission is confident, but also not oblivious to ongoing discussions, and whilst we want to provide farmers and operators with a clear and reliable perspective, we are also committed to monitor and to adjust if necessary our proposed approach.

· The Commission is well aware of the challenges ahead and will propose solutions in the framework of the rural development policy in the upcoming legislative proposals in the CAP health check. This will not just cover the issue of renewable energy, but also the broader question of adaptation to the consequences of climate changes, which will be a key challenge, especially for the farmers of Southern Europe.

Jose Mª Faci González
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Conclusions to the conference on "handling irrigation in integrated production".
- There is currently a need to efficiently handle water in irrigation due to the limitation of the existing resources and to the high demand for the resource.

- The modernisations of the traditional surface irrigation systems and the new transformations in irrigated agriculture with pressure systems are giving rise to an important improvement in the use of water in irrigation.
- The use of localised irrigation is very advisable to irrigate fruit trees using systems that permit the addition of fertilisers to the irrigation water.
- The use of controlled deficit irrigation techniques in fruit plantations can improve the quality of the fruit, avoid undesired plant growth and reduce the needs for irrigation water.
- The efficient use of irrigation water requires an optimal irrigation programme, choosing the appropriate irrigation doses and intervals.
- The information on crop irrigation needs provided by the Irrigators' Office of Aragon on its website "www.oficina regante.aragon.es" is very useful for programming the irrigation of the main crops in the different regions of Aragon. The Irrigators' Office provides and uses the meteorological data from 46 agrometeorological stations installed in the different irrigatable areas of Aragon.
- The use of soil moisture sensors is a great help in the irrigation programming tasks.
- The results of a controlled deficit irrigation test in an adult olive grove of the Arbequina variety showed that small inflows of irrigation water produced important increases in the production of olive and oil without affecting the oil quality, which was always classified as "Virgin extra" oil.

Zaragoza, 31 March 2008

Students from the "El salto" EFA (Agricultural Training School) in Zuera, studying the intermediate vocational training module in the Farm cycle.

Students from the "El salto" EFA in Zuera, studying the intermediate vocational training module in the Farm cycle participated in the "Water and Renewables" seminar organised by ARAGA-GEA, which took place at the Trade Fair from 11 to 13 March within SMAGUA.
We can highlight the high quality of the speakers during the whole cycle of conferences, who offered a very up-to-date and novel perspective about such current issues as water saving, clean energies and biofuels as an alternative to fossil fuels, which was of great interest for these students and for professionals from the farming sector.
The seminar was very well coordinated with presentations whose content and duration adapted to the programme. The lunch offered by the organisation to all those attending these conferences must also be highlighted.
One of the activities proposed during the seminar was the visit to the Universal Exposition site, which the students were very interested in. We believe that this has been a very positive experience for our students, as they were able to mix with farmers and professionals from both the agricultural and the energy sector (biodiesel, photovoltaic energy, thermosolar energy, hydroelectric energy). Back at school, this seminar is complemented with pooling sessions to comment and clarify many of the contents that have stood out and get the students to draw their own conclusions with respect to what they can apply within their farms.

It is important to point out that, thanks to the information provided during this conference cycle on alternative energies, the students saw the great possibilities of the electric market, more specifically, of photovoltaic energy. They obtained a general perspective about the organic production market situation, answering questions about the existing production, total hectares within organic cultivation, emerging markets. We must highlight how surprised the students were about the considerable increase in organic production and in surface area devoted to organic agriculture. They also saw how organic stockbreeding presents a much slower growth.
The students were also surprised about the existing problem in the city of Barcelona due to the drought and as a result they will be much more careful when they open the tap, fostering a water saving habit in them.
The students were already familiar with the term, biodiesel, but what was important for them was to know the considerable impacts that this new crop orientation will have for farming income within a few years. As well as the importance that new crops will have in the general context of final farming productions.
The seminar is a good starting point for the school to make study visits to a series of places related to the solar energy plants that are being constructed, as well as to the wind farms located in our community.

Javier Calvete
President MontesNegros Irrigators' Community

SMAGUA CONCLUSIONS

We, at the MontesNegros irrigators' community are grateful for having been given the chance to explain to such an important forum as the seminar organised by ARAGA-GEA, what we have done in the past, what we are doing now and what we want to do in the future as farmers and irrigators.

From the professional perspective of a farmer, we can say that one can always learn from this type of seminars, as they give the chance to observe the real state of the new technologies that can be applied. At this seminar we were also able to observe the degree of commitment of the different administrations to the farmers and to agriculture.

If we had to highlight something, that would be the inclusion in the seminar of Renewable Energies and the efficient use of water, which is so important for farmers in the times ahead, both in individual use or common use, as well as the possible benefit that we can obtain from them.

Finally, I would like to launch a message of hope to farmers and to agriculture, as if something has been made clear to us, that is that there are new times ahead when we farmers have a lot to say, because we are the owners of the territory and the greatest water users, which is something that is going to count for more and more in this society from now on.

Many thanks to all those present at the seminar for having made our presentation the most voted by you.

Ignacio Laviña

Seminar on water and renewable energies.
It started on 11 March, in the morning, with an enormous traffic jam to access the facilities of Zaragoza Trade Fair. Some bewildered drivers trapped in the endless tailback must have wondered what was happening there. The answer is that WATER and FUTURE in the rural medium were going to be put to debate and these issues are strong words in Aragon.
At ARAGA-GEA, we have organised a seminar with an extremely high technical level and important regional, national and European representation.
Rafael asks us for a little patience to start as reception is saturated, the more than 700 people registered start to fill up the conference hall, in an incessant trickle, slowly but surely.
First of all the speakers were introduced and then the conferences began. Straightway the media appeared, with their cameras, flashes, interviews…, showing the great media interest that this meeting has aroused.
The dense programme continues throughout the morning, alternating interventions on legal frameworks and institutional tasks with the practical experiences of irrigators who are very close to us.
By way of a personal impression, I wish to point out two situations that drew my attention. Firstly, the attitude of the collaborator from the European Commissioner who said at the start that she was here to learn and honestly, she was taking endless notes of what her colleagues at the seminar were saying. On the other hand, the comments that could be heard among those present, comparing the theoretic interventions and good intentions of the administrative representatives with the practical experiences of our irrigator companions, and here there was unanimity: slowly but surely.
To conclude, we have set very high goals and we hope to continue along the same line in future meetings called.

David Coll Batllori
Technical Agriculturist
Member of the Board of Directors of ACA (Catalan Water Agency) on behalf of JARC (Young Farmers and Stockbreeders of Catalonia).
President of the Official Association of Technical Agriculturists of Catalonia.

The Catalan Water Agency has the following competences within the field of intercommunity basins:

- The administration and control of power stations.
- The execution of the hydraulic public domain policy.

Processing the actions that are required in this domain, except for granting water agreements.

Belonging to the board of directors of the Catalan Water Agency permits viewing the current problems from a more global perspective and not just on a sector level.
Several issues will be dealt with in this presentation, including the current perspective on the problems related to the existing drought in Catalonia and its effects according to the drought decree in force at this time.
The need to be efficient in the use of irrigation water, giving priority to pressure irrigation, using drip systems, controlling the water used with respect to the agricultural production and a very cautious and efficient management in the livestock sector. The latter holds a key factor for its development, an environmental limitation on having to plan the production of liquid manure, manure and wastewater very well .
The agricultural sector must, at all times, seek a better use of irrigation water per plant sown or tree planted. Today we must accept the proposals of areas such as Israel, or have a vision of how to win over the civil society of our country, as it is difficult for us to be able to defend a use that consumes 80% of the resources for agriculture and then when there are drinking water problems, complain of the limitation that is imposed on us.

The livestock sector is another key sector for the development of the rural world and we must provide good drinking water for the animals in all the existing farms and others that may develop in the national territory. Thus, we must use it efficiently, as we cannot continue using hoses to wash down the farms today, using much more water than what is really necessary.
The ever increasing price of water, the obligation to manage and store liquid manure and manure, how these are applied in the fields, represent a high cost and therefore an operating cost that is difficult to support at times when we breeders must be competitive and when the production costs are limited.
Obtaining rainwater by harnessing it in ponds, as occurred years ago, is an alternative that must never have been abandoned and which must be imposed once again, due to common sense and to maintain the wealth of the territory.

Apart from these reflections as well as some detail tables that will be offered in the presentation, we will also present our contribution to the general consideration that exists in the day to day water management in Catalonia.

José Pablo Enseñat Schulte

Firstly, I would like to thank ARAG—GEA for giving me the chance to express my opinion as a young farmer and as a son of a farmer, about the Water and Renewable Energies seminar that took place at Zaragoza Trade Fair on 11 and 12 March 2008.
I was personally concerned about the situation of agriculture in Spain and above all in Aragon due to different well-known factors, including the drop in prices of our products, the continuous increase of fuel prices and the lack of rainfall, which make rainfed crop production quite difficult. These factors have progressively led to the abandonment of many farms, considerably decreasing the number of full-time farmers meaning that the few farmers that remain have lost specific weight in society as a whole with everything that this entails.

The fact that the aforementioned factors were addressed during the Seminar has reassured me personally, in the knowledge that work is being carried out in this regard both by the competent authorities and by trade unions, business associations and universities. The appearance and marketing of products with great future expectations such as biofuels as well as the new technologies and the improvement in the efficiency of both wind and photovoltaic installations, gives us farmers a slight possibility for the future or an escape channel, although this does not fully solve our problems. Namely, both the wind and photovoltaic installations require a very high initial capital, which many of us farmers do not have, and with respect to the feedstock required to produce biofuels we still need water, which is becoming scarcer and scarcer.

I believe that the authorities and lobbyists should place more emphasis on improving the already existing irrigation systems, making it easier for farmers to create new irrigations without administrative obstacles or dictatorial bureaucracies, making the ecologists and supposedly environment defence groups see that without a water infrastructure, like the reservoirs, irrigation is not possible and if it is not possible to irrigate, the Aragonese and Spanish agriculture will not be cost-efficient and will disappear making the farmers, who are the real guarantors of the ecosystem as we all know it, disappear, too.

Jesús Nogués Navarro
Department of Agriculture and Food
Government of Aragon

APPROACHES TO THE SUSTAINABLE AGRICULTURE CONCEPT.
Agriculture as a strategic activity in State policies.

- Food: an essential resource on a global market. Reasons for the increase in cereal prices:
  - Increase in demand from countries such as China and India;
  - Reduction of worldwide stocks
  - Increase in transport costs and sea freight (oil price)
  - Increase of corn demand in the US to produce bioethanol.
  - Activities of financial investors on the world's futures markets
- Natural resources of agricultural production systems.
  - Soil. A non-renewable natural resource in the short term. Moreover, the factors and processes that intervene in its edaphogeneis, require geological time scales.
  - Water. Investments have been required for centuries and are still required today, in dry areas such as Aragon, to permit its minimum availability and guarantee minimum population sustainability. Basis for any spatial planning.
  - Solar radiation. Energy source for agricultural systems.
  - Genetic biodiversity.
  - Human knowledge.
- Natural resources of agricultural production systems.
  - Soil. Non-renewable natural resource in the short term. Moreover, the factors and processes that intervene in its edaphogeneis, require geological time scales.
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  - Solar radiation. Energy source for agricultural systems.
  - Genetic biodiversity.

– Human knowledge.
– Assessment of impacts on investments in production agrosystems:
– Economic assessment (financial + social)
– Environmental assessment.
– Problems to be solved:
– Guarantee human food supply.
– Non-point pollution of ecosystems.
– Point pollution.
– What does society demand of the agricultural system?
– Rational use of consumables. Economic optimum.
– Minimise environmental effects. Environmental optimum.

Irrigation

COMPULSORY PRACTICES

a) Have analytical data on irrigation water, taken at integrated production plot level;
b) In pressure irrigation, establish the annual volumes required by calculating the crop needs, based on local evapotranspiration needs;
c) To programme the irrigation, the indications given by the Irrigators' Office and technically accept methods will be followed.
d) Irrigation techniques must be used that guarantee the greatest efficiency in the use of water and an optimisation of water resources.
e) The irrigation water applied must be recorded in the farm logbook.

Irrigation

FORBIDDEN PRACTICES

a) Use of waste water without prior treatment.
b) Use of water characterised by intolerable quality parameters for the crop, for the soil or for public health.
c) Abstract water in quantities that do not permit the sustainability of the source.

The future.

.- Redefinition, based on the new global agrofood scenario, of what the European society demands from the agrofood grower: Food product grower versus rural gardener. towards a new neo-agrarian reform movement?

.- Impact of this scenario on the proposals of the Medical Check-up of the CAP of 2008 or of the financial reform beyond the 2013 horizon.
.- The agricultural sector and climate change.
• Bioenergy products. First and second generation of biofuels.
• Crops as CO2 sinks.

Efficient use of water. Dissemination of the concept of "consumed fraction" in agriculture.

Javier Escanilla Bordonaba.
Representatives of the irrigation sectors of ARAGA-GEA.

WHO USES THE WATER?

We must all share the responsibilities; our part of the responsibility is being efficient by applying all the technologies, both present and future, available to us. Society must be made to bear in mind that all the rubbish that is generated contains an important component in its preparation and creation, and that component is water. There is a large hole through which we lose the water and we must bear in mind that there are currently 880 million people who cannot eat mainly because they do not have water to produce food.

After saying this, we believe that our community is an active and restless one, looking at new challenges. From the community we are working on different projects such as the following:

1./ New community headquarters (already in project) which can be used by us as a training and information centre, which will enable us to control the new technologies applied to the irrigation systems to achieve greater efficiency and provide the necessary information, becoming an essential tool in water management..

It will also house a training centre for farmers and a pedagogic activity centre whose aim will be to explain modern agriculture and the good use of water which is so fundamental for worldwide food. 2/ We are preparing an Agreement with the department of Agriculture of the DGA (General Council of Aragon) to execute an R&D&I section for water tests, designs, practical application of present and future technologies in the field.

The community is open to future collaborations with Foundations, Universities or Private Entities.

3/ We understand that irrigators' communities have to be self-sufficient energy-wise, using clean energies. We, as a community, back a combination of thermosolar and biomass energy (making the most of the energy sources controlled by our territory). With this combination we will create manageable energy 24 hours a day, 365 days a year. If we know how to achieve this we would have zero CO2 emissions into the atmosphere.

In November 2007, we presented a LIFE PLUS project to the European Community called “POWER” to start up this project.

4/ We demand greater regulation at the headwaters and in intermediate areas, but we also require reservoirs in the actual Irrigators’ Community. The community is preparing a feasibility study for a 2 Hm3 reservoir that would enable us to increase the water yield of the community and of the system. We would have water 365 days a year and improved management on allowing favourable irrigation conditions. (Not having to irrigate when it is very windy or it is raining).

We are convinced that this action would be a call for new companies to settle giving added value to the primary sector.

5/ We are totally committed to the Environment.

We develop actions with the Department of Agriculture and also with the Department of the Environment of the DGA, aimed at safeguarding the birds of the area. We help towards the nesting and shelter of the species, maintaining and improving the natural habitat. This is demonstrated by the flights of the great bustard towards the irrigated land and from the irrigated land to rainfed land.

We create green filters that will help us return the water from the runoff in an optimal state for its re-use.

We share the same aims as the ecologist groups but we disagree about how the environmental goals established should be obtained. We bear witness to this day by day as we have set out in this point. We do not have the same press, our work is in the fields, let us not forget what we walk on, what we see, what flies and what runs, we, the farmers and inhabitants of the rural environment (fewer every day) are the ones that have protected it. Let us not forget that we are people, a species to be protected, too, with our own reasoning and always willing to talk and to dialogue with anyone even though the methods are very different.

I believe that the day has come for society to know how to appreciate the work that agriculture and the farmers carry out in present-day society.

There are only a few of us, but that does not mean that we are wrong. We are quiet, well-mannered, but the time has come to remember what is ours and to our people, to remember the anxiety and expectations that all our people have had since 1915. We do not want to forget the suffering of the Monegros farmers, so from this forum, we claim all the outstanding irrigation systems and regulations and raise our voices so that all the speeches that we have heard about the start-up of irrigation systems in Monegros can become a reality. We have shown for a long time and today, too, that we know how to use water well, creating wealth. We can face up to the new technological challenges that the administrations place at our service. We know how to be business people, we work for things to happen, in the hope that everything will become a reality in the near future.

I do not want to finish without thanking all the technicians from the Department of Agriculture of the DGA for all the good work and support they have given to the farmers.

Suggestions

The need to have a centre to welcome anyone who visits us to be able to show them our work methodology and management first hand. This centre will be used as a meeting place to discuss issues related to water and its agricultural, environmental and landscape applications that have been carried out in this community in the irrigation transformation.

Mariano Sanagustín Sanz
Social irrigation. Balance of the first social irrigation in Aragon.
Department of Agriculture and Food
Government of Aragon

Irrigation "in execution"

These are irrigatable areas which, under different Acts or Decrees, the public administrations are involved in:
Ministry of the Environment, River Basin Authorities
MAPA (Ministry of Agriculture, Fisheries and Food) and Autonomous Communities, have been and are executing plans, projects and works.
They are regulated by the IRYDA of 1973

The following are areas "in execution" in Aragon:
Irrigation of the High Aragon, Bardenas, Calanda-Alcañiz and Civán

Irrigated land "of social interest": concept
It is a question of transforming small surface areas:
in areas that are underprivileged, in decline or undergoing depopulation processes, located outside the areas described above and whose aim is to fix population, create and sustain agricultural employment and balance the territory.

Irrigated land "of social interest": delimitation criteria

Concept

Background and applications that appeared in the Department reviewed and updated

Coherence with Hydrological Planning
(Hydrological Plan of the Ebro River Basin)

Need for regulation

CRITERIA

Initiative and prominence of future irrigators
Procedure conditional upon the concession of flows and Assessment of Environmental Impact
Technical and economic support from the Administration
Forecast of plot re-structuring
The question of energy efficiency

Integration of social irrigated land into the studies conducted by the Irrigators' Office (Sirasa) on consumption and energy efficiencies in pressure irrigation areas:

Start of controls in Quinto and Ainzón.

Energy Audits will be carried out in a second phase in agreement with an "Energy Audit Protocol in irrigators' communities" prepared by the Institute for Energy Diversification and Saving (IDAE) with the participation of Sirasa.

Conclusions

Characteristics:
Limited surface areas
Demands foreseen in hydrological planning and/or self-regulation in the actual system
Outside environmentally sensitive areas
Design with optimisation of networks and energy
Only nation public subsidies, without EU co-financing
Linked to rural development

Eric DUFEIL
Sustainable Development, European Cohesion Policy and Water-related Policy Head of Unit
European Commission-DG REGIO-Spain
Agricultural Company Group

The European cohesion policy
• Reduce regional disparities by fostering sustainable regional development:
• Environment has its place in this procedure both in:
Regulatory policy, and in the contribution made by environmental initiatives to sustainable economic development.
Foster economic, social and environmental goals in an integrated fashion.
Strengthen synergies between these three pillars and achieve win-win situations between: growth, competitiveness, employment, social inclusion and environmental management.
Foster environmental technologies (eco-innovation)
Transport and sustainable energy systems

Other investments in the water, air and soil quality improvement areas.
Combat climate change.
• New programming period 2007-2013
• +/- 400 new Operating Programmes
• +/- 500 billion € (350 billion € from the European Union and 150 billion € from national co-financing)
• Priority goals:
Foster the growth of the regions, the creation of jobs and strengthen competitiveness of European companies.

The European cohesion policy

•« Rationale » of the cohesion policy
• The regions must play the role of «driving force of growth», to achieve greater growth and productivity for the entire Union.
• Earmarking: Investments in key issues of the renewed Lisbon Agenda: Research and Innovation
• “Convergence” Regions 61.00%
• “Competitiveness and Employment “ Regions 77.00%

In these assignments, Spain has been authorised to include investments in hydraulic infrastructures in the Convergence, Phasing Out and Phasing In Regions.

Today, the European Union is changing from an infrastructure investment based growth to an innovation based growth.

Conclusions

The Commission understands that the supply policy of such as scarce resource as water must be accompanied by an appropriate demand management policy, with the introduction of appropriate rates, and which, on fostering more water supply infrastructures as a first option, opposed to the logic of organising water into a hierarchy and the need to support water saving and efficiency measures in the first place, may be counterproductive for the competent authorities.

José Manuel Tornos y Cuairan
An eco-sustainable farm. Organic agriculture.
Good use of water and of natural resources.

ORGANIC AGRICULTURE AND ENVIRONMENT

The enrichment of soil organic matter contributes to fixing CO2.
The reduction in consumption of synthesis phytosanitary products leads to less pollution of the resource:
In the phytosanitary production process.
Due to the use of these.
A similar thing happens with synthesis fertilisers.
On the contrary, more mechanical work can be carried out, with greater CO2 emission due to combustion engines.

ELEMENTS TO CONSIDER

Location:

Separation from contaminating sources.
Distance with respect to traditional agriculture.
– Risks due to drift from traditional A.
– Risks of cross pollination with transgenic crops.
Possibility of irrigation or not. Water quality.
Availability of manpower (according to crops).

Distribution in the environment:
Orientation of the plots. Relief.
Existing wild flora.
Soil characteristics.
Crops of the area.

ORGANIC AGRICULTURE AND RENEWABLE ENERGIES

Use of biomass to produce energy if there is a critical mass.
Use of solar energy on the farms.
Possibility of producing methane in certain situations.

SOME OUTSTANDING TASKS

Acquire national market share (information and competitive prices).
Open up new market lines and group the highly fragmented supply together.
Reduce harvest losses due to pathogens and weeds.
Improve research into Organic Agriculture
Reflection: Why is all the rainfed hard wheat not cultivated in E.A.?

Esperanza Marcos Sanz
Answer to some concerns about organic agriculture.
The marketing and certification of products
Head of the Organic Agriculture Department. MAPA (Ministry of Agriculture, Fisheries and Food)

Applicable regulation on Organic Agriculture
Regulation (EEC)2092/91

Collection of agricultural techniques that normally exclude the use, in agriculture and stockbreeding, of chemical synthesis products, such as fertilisers, pesticides, drugs, etc., with the aim of preserving the environment, maintaining and increasing the fertility of the soil and providing food produce with all their natural properties.

Brief history of Organic Agriculture

In 1991, the European Economic Community (EEC) acknowledges Organic Agriculture as an alternate production method to traditional agriculture, published in Regulation

2092/91 (EEC), which harmonises the standards on production, preparation, labelling and control.

In Spain, the Generic Name Regulation related to Organic Agriculture is created via Order dated 4 October 1989, and the Regulation Council is also created, transferring its competences in 1995 to each one of the Autonomous Communities.

During the years following the creation of these bodies different steps were taken to help Organic Agriculture in its expansion process: establishment of a system of subsidies, included in Regulation no. 1257/1999 of the EU published in June 1999, via the agro-environmental measures, which abolishes Regulation no. 2078/92 developed in Spain by Royal Decree 51/1995.

Integral Plan of Actions to Foster Organic Agriculture

Pluri-annual duration (2007-2010), starting different actions in 2006 within the framework of the Plan of Actions:
– Consumer Information Campaign on Organic Production to clarify the mentions reserved for this production system
– Biennial promotion campaign of Organic Food Produce, co-financed by the EU; with a budget of 2.3 M € (Nov. 2006-June 2008)

Other Actions, Integral Action Plan, Objective 2: Information, Promotion, Consumption

- Framework agreement with entities of the sector: FEPECO among others.
- Dissemination campaigns aimed at consumers and groups on the organic production method and its products
- Specific studies on domestic market, consumption: Consumption and Food Distribution Observatory
- Supply concentration promotion
- Participation in national and international promotion fairs: Alimentaria, Biofach
- Improvement of retail marketing: “Best Practice Guide for the production and marketing of organic products”

Nowadays, Organic Agriculture is present in 120 countries all over the world and covers 30,358,183 hectares. 633,891 organic growers practice it and generate an estimated market of 25 billion euros (2005)

Manuel Omedas Magali
A perspective of Aragonese irrigation. Planning. Eco-sustainability.
Head of the Planning Office of the Ebro River Basin Authority.

Due to the title of the days “Water and renewable energies” and the appropriateness of this intervention, before addressing the aspects related to energies and the alternatives for agriculture in a monographic manner, I am going to dwell on the relationship that exists between water and energy production.

Now that we are preparing the 2009 Ebro Basin Hydrological Plan, I want to emphasise how very important energy production is in the management of the Ebro water for several reasons.

a) Modernising irrigation to achieve efficient management requires the use of energy and it is essential therefore to have energy savings to make these actions feasible.
b) The new irrigation developments in the Ebro basin mean making water raising feasible, in the majority of the cases. The paradigmatic case of water raising of the Ebro river for new irrigation transformations and consolidation of current irrigated land from Miranda de Ebro to the river mouth requires being able to achieve affordable water raising costs.
We must remember that the available water is in the Ebro, above all in the Mequinenza and Ribarroja reservoirs, and the great economic developments are located around the Ebro Axis.
c) Thirdly, the water regulations in the Ebro have a multi-fold objective and the coordination between the energy and agricultural uses causes important synergies in many cases.
d) But, perhaps, the most singular aspects stem from the fact that the new energy developments depend a great deal on water as is the case of the thermal-solar, combined cycle, coal or nuclear power plants. Furthermore, the hydroelectric exploitation of water becomes an essential energy vector to regulate the new renewable energy developments.

What is the aim of this presentation? The aim is to reflect, with the empiric data that will be shown, on the water – electricity interrelationship in the global area of the Ebro.

Approach to the environmental effect of electric production in the Ebro.

Pressures of hydroelectric installations.

The pressures of hydroelectric installations on the fluvial network can be summed up in agreement with the types of exploitation, as follows:

Exploitation by diversion: by weirs or small dams, that cause a rise in the water sheet, they divert the river flow, to a maximum concessional flow, which is taken by canals or pipes to the power station where the hydroelectricity is produced. Its environmental impact has to do both with the stretch of river between the discharge and the flow reversion, and with the sides of the valley through which the piping runs, whose impact will vary depending on whether they are open air or underground. A reduction in flow occurs in the stretch of river affected, and this may even be annulled. This affects the environment, and to a greater or lesser extent, the biological communities. If the station has a run-of-river regime, the downstream flows are not altered.

Exploitations with reservoir: these store the water and their mission is to produce energy at hours of maximum demand (hydroelectric regulation). There are also reversible exploitations with the possibility of pumping and turbining flows, between a lower reservoir and an upper reservoir, depending on the electric market demand. As the dam that gives rise to the reservoir, retains the flows, it alters the continuity of the river and occupies a stretch of it. The hydroelectric uses of the reservoir produce important

modifications in the time regime of the flows. In this sense, if the station is at the foot of the dam, the effect is limited to the withdrawal regime. If, to gain fall, the station is moved downstream, in the stretch of the river between the dam and the station, the impacts described for exploitations by diversion also occur. The alteration of the river flow, produced by this type of exploitations, can be seen in very short periods of time, even, with variations of less than one hour.

In multiple use exploitations, the hydropower station is responsible for channelling the inflows towards the diversion canal for other uses, or to the river, to maintain the required flows. In this case, the hydroelectric use is a secondary use that is not the cause of the effect.

In pure pumping stations, if the run-of-river inflows are not turbined, the impact is centred on the upper and lower reservoirs independently and on the piping that connects them.

The main effects on the river are analysed in agreement with the type of hydropower installations, with reservoir or by diversion.

Hydropower installations with reservoirs

The effects of the 84 hydropower use reservoirs built by electricity companies in the Ebro Basin are similar, even though their operating pattern differs from the rest of the reservoirs built for other uses, but they can differ in intensity: blocking up, eutrophication, thermal stratification, erosion. A summary of the flooded surface area and the longitudinal effect of the river stretches occupied appear in the following table. How will the demand for energy evolve in the 21st century?

To judge by the evolution of production and consumption of the last few years the increase of demanded energy will continue to grow intensely.

According to UNESA, over the last five years, the electricity demand has increased by more than 30%, way above all forecasts. This has been accompanied by an even greater peak demand (44%) which is the essential variable to determine the needs for electric infrastructures, both for generation and for transport and distribution.

Document: “Planning of the electricity and gas sectors. Development of transport networks 2002-2011” of the Ministry of Industry, Tourism and Trade is based on the powers in Ordinary Regime corresponding to the existing equipment. In general lines, the power of the nuclear and coal equipment existing in 2002 is maintained, and the power of 1060 MW is not incorporated into old existing fuel-gas installations with a view to the future. According to the planning proposed by the energy Administration, to attend to an increase in the demand peak in agreement with the scenarios set out and return an appropriate reserve margin to the electric system, it would be necessary to incorporate new power during the period 2002-2011. About 14 800 MW are planned corresponding to stations with a high guarantee and availability, which allows for an increase in reserve margin (10%), operating in competence regime and reaching at least 14 000 MW in new renewable energy installations. The first segment is foreseen to develop gradually by combined natural gas cycle groups with 400 rated MW each one.

In the second segment, the basic element of the new equipment would be to add about 7000 MW in wind farms to the already existing 6200 MW.

Questions for reflection and debate

With reference to the above, I would like to leave some questions on the table for reflection and subsequent debate.

Firstly, I would like to make it clear that there are many actions to be carried out to improve the environmental effect of hydroelectric production. There is much more sensitivity today related to the environment than there was half a century ago, which is when the majority of the hydroelectric installations were built. The underlying questions of this aspect are the following:

How to reduce the barrier effect of hydroelectric installations?

How to guarantee appropriate environmental flows in the rivers downstream from the power installations?

Can the hydroelectric concessions be reviewed?

Does the production of energy with biomass or biofuels justify a policy of irrigated land and consumptive use of water in the Ebro?

What is the future of energy integration?

José María Arco, Director of GreenFuel.
The value of Greenfuel.
From feedstock to the service station.

greenfuel corporation
industrial project | March 2008

Business group incorporated in January 2003 with the aim of becoming the reference company in the biodiesel sector.

Its shareholders include Endesa, Tecnicas Reunidas, Tepro and TSK.

It has incorporated subsidiary companies in Spain in: Extremadura, Andalusia, Castile and Leon, Catalonia, Aragon and Castile La Mancha.

Present in Argentina, Bulgaria, Philippines and Chile with subsidiary companies, and in the process of entering Portugal, Uruguay, Brazil and Romania.

The first plant enters into production at the end of 2008, in Los Santos de Maimona (Badajoz).

On 1 April 2008, the plants of Andalusia, Aragon and Castile and Leon will be being constructed at the same time, as well as the Extremadura plant.

Strength of the Group, with partners providing value in the areas that mark the difference: feedstock and technology.

Globalisation on leading feedstock markets.

Attracting local partners to the subsidiaries.

Vertically integrating the process.

Constructing uniform and standardised plants for all the subsidiaries.

Centralising the activities related to feedstock and marketing.

Developing research activities in the areas of efficiency improvement and search for alternatives for the by-products generated.

Drivers:

Technical requirements regulated by the European legislation (characteristics of biodiesel produced, fuel directive).
Need for the plants to have sufficient versatility to use different types of oilseeds as input feedstock, which will lead to a reduction in the price variability and in their quantity.
High process efficiency (impact on costs, environment).

They require having cutting-edge technology developed by companies with sufficient experience and knowledge.

Risks:
Technologies in an experimental phase, without industrially tested results.
What happens if a technologist supplier fails, in other words, breaches the contract?
Some small and inexperienced technologists.
New technologies often require supply of chemical products/catalysts. Is there sufficient supply? Costs?

Ángel Rico Escribano.
Energy Crops
ARAGA-GEA Coordinator/ Greenfuel

The community bureaucrats continue with the dynamics of confusing the problems, without reaching any efficient or reasonable conclusions. This has been the case in a series of questions that make it difficult to solve the problems that society has to face due to the new circumstances. In Brussels they argue and argue about the right time to make a decision, and when they finally reach an agreement, that moment has passed. This is also occurring with the biofuel use policy within the European Union.

The governing bodies of the European Union are so reticent to address the question seriously, that other confused (or ulterior) information is being used to confuse the public opinion so that society does not use biofuels, as the best of the energies in cars and transport in general.

Food for fuel? or Future for all?

We have read with respect the opinion signed by Hans-Werner Sinn, professor of Economics and Finances at Munich University and President of the Economic Research Institute of Germany, "IFO". And although we are aware that talking about "Climate Change" today usually gives distinction to university chairs, we believe that the distinction is not always in keeping with the reality on which the opinion is expressed.

Professor Sinn introduces the expression "ethically acceptable" into his disputable opinion and of course, as the classics used to say: "at times words are loaded by the devil", and this is where we, at GreenFuel, with our roots in the countryside, feel obliged to respectfully refute such a distinguished opinion.

Faced with the question of whether burning these resources (as biofuels) instead of using them as food is a smart and ethically acceptable strategy, other questions arise that are indisputably linked to "ethics and reality", namely: Is it ethically acceptable that in the last few years there are thousands (hundreds of thousands) of hectares of rainfed land that is not cultivated in the Iberian area ? Rainfed land, which was cultivated in the past, but which the policies of the community technocrats and theoreticians have now condemned to abandonment and underdevelopment. Is it ethically acceptable to permit an increase in price of oil, in just few months, going from 62 to almost 100 dollars a barrel? A price that the university professors can pay, for example, but not the citizens of Africa or Latin America, as the rise in price only benefits a handful of well-known petrodictators. Is it ethically acceptable for the urban society to forget that development (its development) is closely linked to the increase in energy consumption? And that the citizens of the rural areas of the Iberian area are also entitled to that social development under the same conditions as the most advanced areas in Europe?

The rational and far-removed answers from illustrated demagogy, to those questions, present us with the following economic and social scenario:

First.- Energy crops (mainly rapeseed, soy and sunflower) are the ones that will enable those hundreds of thousands of hectares of rainfed land to be cultivated again where traditional crops were not acceptable.

Second.- That return to the energy crops will have a positive effect on the rural areas of the Iberian area, which in truth are the most underprivileged and economically depressed, on guaranteeing a future for the areas that are more needy of support and consideration in this particularly unfair Europe.

Third.- The most elementary economic bases indicate that "the greater the supply the lower the price", therefore, if we are all able to put more fuel (biological or not) on the market at the disposal of a society that wishes to continue advancing, the monopolistic price of oil will have to drop and therefore we will be helping the areas of the planet that have problems in paying 100 dollars for the fossil oil.

Fourth.- If, moreover, that fuel is obtained from agricultural products, we will in fact be helping comply with the Kyoto Protocol. In two ways: one by promoting more hectares of crops that help eliminate CO2 from the atmosphere and on the other by not producing CO2 in its combustion. That is, with our actions, biodiesel producing companies, in general, and GreenFuel in particular, go from muses to the theatre.

Fifth.- The reality that is most detrimental to the poor is not the production of biofuels; what is detrimental to the poor in general and those who, in Mexico, consume the corn tortillas that so concern professor Sinn, is a high inflation, oil at 100 dollars, together with the melancholy represented by the belief that nothing can be done to prevent it..

Sixth.- This is an error that no university professor should commit, linking the rise in food prices to the production of biofuels. Forgetting that areas such as India and China have entered the logical "emergence process". Emerging into consumption they want to reach those 3000 calories per person and day that on average we in the western world consume. They hardly reach 1200 calories. They are entitled to it and they are going to reach it (Vicente Sanchez-Valdepeñas says so and he is right).

These emerging countries are not only consuming food products, they are also sweeping the board with any type of energy.

Seven.- If it has been demonstrated that transgenic crops can increase the production of vital crops (energy crops or not), why is Europe losing out on transgenics compared with the United States? Why are wrong, restrictive policies defended which could provide the world with food? Why can Europe not cultivate products, which imported from the United States, we can eat?.

That is the reality of Europe, where the citizens of the Iberian area have to act for ourselves, providing real solutions faced with the distinguished opinions of Economic Studies Institutes or important Nobel prize-winners. The daily reality is what makes society continue to advance, paying low prices for having food security. Achieving, in fact, clean, environmentally friendly energies, at the same time as we give life and future to the rural areas, aged and poor, where the alternative of energy crops has given back the hope that that society "sick of well-being", paraphrasing Vicente Sanchez-Valdepeñas, traditionally maintains in oblivion.

José Olmos de Bonilla.
Chairman of the Engineering company, SUNING SL.
Board Member of Solar Total, SL

Photovoltaic projects:
Private investor and project manager perspective

•Solar Global Invest
– Dutch company, founded in 2007, engaged in promoting solar orchards
- Attract capital and investors
- Fields in process in Aragon
•SGI Pedrola I, 3.7 MW
•SGI Azanuy I , 1 MW (Connection point refused)
•SolarTotal
–Multinational Dutch company, founded in 2006, engaged in the sale and construction of photovoltaic solar façades and roofs
–Offices in Holland, Belgium, Germany, Italy and Spain
•Installed capacity of 20 MWp in medium installations of 4 KW.
•Suning Engineering
–Spanish company, founded in 2007, with headquarters in Zaragoza
•Channel SGI investments in Spain
•Locate land and opportunities
•Compilation of applicable regulation
•Legal and administrative management
•Suning Engineering
•Promotion, engineering and administrative management
•Cost study
•Financial study
•Economic feasibility
•Environmental impact
•Field construction
•etc
Photovoltaic Energy

•The bad news first
–OIL IS RUNNING OUT
•In our ignorance or arrogance we talk about oil production, as if it is something we know how to manufacture
•In 100 years, man will have exhausted what it took millions of years for nature to create
•Collin Campbell,
–Geologist of Texaco, BP, Aramco
–Consultant of de Statoil, Mobil, Shell
–Founder, together with Jean Laherrère, geologist of Total for 37 years, of the ASPO, Association for the Study of Peak Oil
•"46% of the resources declared by the OPEP are doubtful or simply false"
•"There has been no great discovery since the sixties"
•The good news is that
–SOLAR ENERGY IS INFINITE
•It requires a radical change in mindset
•By the governments
• By the population
•"A surface area with 400 km on each side, covered with solar panels, would cover the worldwide energy demand"
•Possibilities of use in the countryside
–Supply electricity to isolated areas
–Water pumping installations

–Installations connected to the grid
•Roofs of existing installations
•Unused or low-efficiency land

Conclusions

•Administrative aspect
–Large number of steps to take
•There is no guarantee of success
–Administrative obstacles
–Political changes, changes in energy policy
–Concession by the electricity company of the connection point
–Lobbies or economic interests of the electricity companies
–Doubts about whether the state will maintain its commitments
•Freezing of Royal Decree 436 in July 2006 regarding its pricing aspect
•Final conclusion: Apart from the uncertainty, the photovoltaic energy sector has an annual increase of 30%, giving an idea of its great job and business opportunity.

Sergio Breto
The energy plan of Aragon 2005-2012
Directorate General of Energy and Mines.

Energy and Territory (1/1)
Energy and development are closely linked.

The energy infrastructures, mainly the electric and gas ones, are just as important for socio-economic development as other infrastructures such as roads and railways.

The energy policies of the EU and Spain must be addressed based on a bi-univocal relationship with the regional policy:
•From a general viewpoint, the goals of the single market, the provisioning and supply security, must also respond to the social and economic development of the regions and the territorial cohesion.
•From a regional viewpoint, Aragon is not blind to the development of the international and national infrastructures, it is clear that agreement and coordination of all the actors involved are required (including the Local Administration).

II. Energy: strategic factor in Aragon.

Aragon is a region that has traditionally known how to exploit its abundant renewable and indigenous resources: water and coal, and even in a recent past, natural gas. More recently, other renewable energies add an excellent potential, such as wind energy that is already a reality and the recent boom of photovoltaic solar energy and forecast on biomass energy.

Aragon also has a privileged geographical location in the Spanish and European context.

These energy resources and geographic enclave, among other factors, position Aragon as a compulsory reference in renewable energies and electricity generation, significantly contributing to help both Spain and the European Union reach the energy and environmental goals.

General goals:

To promote and develop renewable energies.
To optimise and develop energy infrastructures.
To save, diversify and efficiently use energy
To guarantee the supply and cover the demand.
To improve the supply quality
To minimise the environmental impact
To research, develop and innovate in energy technologies.

Infrastructures 2005-2012: strategic principles

The planning of the electric and gas infrastructures include transport and distribution, regardless of the competences, given that they complement each other.

•Increase the electricity generation pool, mainly with:
–Use of renewable energies
–High energy efficient plants (cogeneration)
•Increase the supply of natural gas.
•Increase the supply of electricity
•Guarantee the continuity and quality of electricity supply in the areas with greatest foreseen demand

Miguel Valls Ortiz
Directorate General for Rural Development. Department of Agriculture and Food of the Government of Aragon.

Water is a natural and essential resource for the survival of all living beings and necessary for their development which is why we are more and more aware of the need to exploit it better and care for its environment.
In 2000 (23-10-2000) the European Union announced the Water Framework Directive that establishes community standards for the protection and management of water. It establishes some specific goals, quality and balanced use of water, reduction of risks of chemical products, reduction of soil degradation, preservation of the landscape and of biodiversity, among others. It gives member states 15 years to start up the entire WFD, until 2015.
Irrigation is essential in Spain due to the climate and the scarcity of rainfall that exists in the majority of our territory. Irrigated land provides more than 50% of the final agricultural production with only 18.3% of the working crop surface. One irrigated hectare produces 6 times more than one rainfed hectare of land. We currently have

about 3,800,000 hectares in Spain, and in Aragon we have 450,000 hectares, which represents 7% of our territory and 13% the working agricultural surface area.
We, Spanish farmers, who consume 60% of the water resources, are the first to be interested in spending as little as possible and that is why modernisation processes are being carried out to change the flood irrigation to sprinkler, drip, etc. and repairing infrastructures with a very high cost for the farms, so that less water is thus consumed.
But the majority of people are unaware of the fact that to produce a kilo of meat 20 000 litres of water are necessary, and for 1 kilo of cheese 1000 litres, and for a glass of milk, 200 litres of water.
With these improvements that we are carrying out on our farms we manage to:
-Rationalise the consumption of water on using new technologies.
-We reduce non-point pollution produced by fertilisers and phytosanitary products drawn by the irrigation water.
-Over-exploitation of aquifers is avoided.
-We maintain the fertility of the irrigated soils, thus avoiding their degradation.
-By consuming less water the aquifers and wetlands are recuperated.
-With irrigation, we are acting against desertification and erosion of the territory.
-We preserve the biodiversity of the flora and fauna.
-We provide the atmosphere with oxygen through the evapotranspiration of the plant cover of the irrigated land; they are CO2 sinks.
-We can produce feedstock to manufacture biofuels – corn, sunflower, rapeseed, etc.

With the irrigation and improvements of our farms, we achieve.
-Consolidation of the agrofood system.
-We diversify products.
-We increase the agricultural productivity

Consequently:
-We improve the quality of life of the depressed rural areas, by transforming rainfed into irrigated land.
-We settle the population in our municipalities by creating direct and indirect employment.
- Better quality of life on applying automation and remote management in irrigation.
- Current and future agriculture must be based on two essential principles: firstly it has to be competitive, namely, we have to have production costs that enable us to sell our products at competitive prices; otherwise, there is no sustainable agriculture. Secondly, which is more important than the first principle, we have to use production means that enable us to preserve natural resources like soil and water.

To be able to do all of this, both the State and Autonomous Community Administration have to be fully involved and be quick in their actions.
Here in Aragon, the Water Agreement was unanimously approved in 1992, which decided on waterworks that had to be carried out, to start up new irrigated lands (some outstanding since 1915) and guarantee the water to already existing ones. Today, in 2008, nothing has been done.
Over the last few days I have heard a group of ecologist asking why we need more reservoirs if they would be empty, too.
The community through which I irrigate belongs to the General Community of Irrigation of High Aragon. The campaign began yesterday with a water endowment of 2400 m3/Hect. just for a barley harvest and last year we threw 650 Hm3 into the river

because there was no reservoir to store it. Ecologists, the reservoirs would not be empty and we would have water to develop a normal campaign. The same is also occurring in the other Irrigators' Communities.
Therefore, the use of irrigated land must be recognised for demographic maintenance, spatial planning and for the population to settle.
-We produce food that is basic for survival.
-We can produce biofuels.
-We are a CO2 sink.
And we are the ONLY ECOLOGISTS, who live in our villages, we work them and care for them.

Rafael Izquierdo Aviñó

Social participation processes in water policies in Aragon
Director of the Aragonese Water Institute
Government of Aragon

WHY ARE THE WATER POLICIES DIFFERENT?

Balance on the Aragonese experience and its regulation works

- Water has been a historical claim in Aragon. That is why the Water Agreement was reached in 1992, which stated that 139 works would be carried out, almost 2.5 billion euros, and today 35 % has been carried out.

THE SOCIAL PARTICIPATION INSTRUMENT

GOAL: To channel social debate and participation in water issues.

WATER COMMISSION GROUPS who must take part in the discussion of the model for water sustainability.

1-. ECOLOGIST ORGANISATIONS
2-. PEOPLE AFFECTED BY REGULATION WORKS
3-. LOCAL DEFENCE ASSOCIATIONS AFFECTED
4-. CONSUMERS AND USERS
5-. UNIVERSITY
6-. LOCAL ENTITIES
7-. PROVINCIAL CAPITALS
8-. RESIDENTS' ASSOCIATION
9-. REGIONS
10-. AGRICULTURAL USES
11-. INDUSTRIAL USES
12-. TOURIST AND RECREATIONAL USES
13-. EXPERTS IN THE MATTER
14-. PARLIAMENTARY GROUPS
15-. RIVER BASIN AUTHORITIES
16-. IRRIGATORS' COMMUNITIES
17-. REGIONAL ADMINISTRATION

AIM AND GOALS ASSOCIATED WITH THE MODEL
The priority goal is TO REACH AGREEMENTS that will act as a foundation to implement executable policies that will improve the quality of living of people in a sustainable fashion.

CONDITIONS OF THE CONSULTATIVE PARTICIPATION MODEL

INTRINSIC

1-. Type of **problem**
2-. Magnitude of the **goal**
3-. **History** of the problem
4-. Selection of a **plural instrument**
5-. **Personal positions** "a priori"
6-. **Willingness** to reach agreement
7-. **Capacity** to maintain them
8-. **Internal Strategy:** the phases and times

EXTRINSIC

1-. **Social importance** of the problem
2-. The **social momentum**
3-. The **maturity** of the problem
4-. The **time**
5-. The **availability** of the institutions to start up agreements
6-. **Social communication** of the problem

RESULT OBTAINED

Pass the COST-PROFIT analysis
Obtain credible and reachable results. They must be measurable results.
Difficult equilibrium between specificity and ambiguity
Commitment to obtain agreements
Pride of reaching agreements
Monitoring as a guarantee of compliance

CONCLUSIONS

SUSTAINABILITY OF THE WATER POLICIES

Sustainability must be environmental, economic and social.
There must be a social participation in the decision-making to guarantee the legitimacy and soundness of the agreements.