



# Pricing as a Tool to Reduce the Impact of Agriculture on Water Status

## Factors determining the impact of agriculture on water quantity: examples from Spain

### Water subsidies to the agricultural sector $\Rightarrow$ Insufficient incentives to use high-efficiency irrigation systems

80% of water in Spain, the country with the largest irrigated area in the EU (3,437,038 hectares), goes to agriculture.

AND YET

59 % of irrigated crops are watered using old and low-efficiency systems (30% irrigation infrastructure > 100 years-old) such as flood irrigation with water-use efficiencies of 40-45%



Flood irrigation in Monegros (Huesca)

### Inappropriate pricing policies $\Rightarrow$ No full cost recovery for water used in agriculture

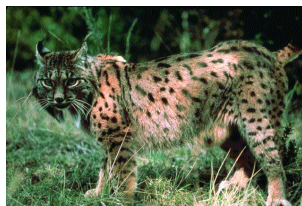
**INFRASTRUCTURE COSTS:** In Spain the price of water used in agriculture (max 1 pta/m<sup>3</sup> surface water) reflects only marginally (from 0.4 to 1%) the cost of building the relevant infrastructure for abstraction (e.g. wells), river regulation (e.g. dams) and distribution. Although the real cost for irrigation can run up to 3,600,000 ptas per hectare of new irrigated land (Biscaurres dam), a farmer will normally pay around 5,000 ptas per hectare per year.

**ENVIRONMENTAL AND RESOURCE COSTS:** Negative environmental impacts of river and wetland engineering works for irrigation are not included in the price of water used in agriculture.

### Impacts on habitats and species



The Matarra river (Ebro basin), a proposed Natura 2000 site for its great variety of endemic Iberian fish, is now threatened by the construction of a dam for flood irrigation of the very profitable late peaches.



New dams also threaten to destroy the habitats of the Iberian lynx, the world's most endangered feline.

### Impacts on soil condition

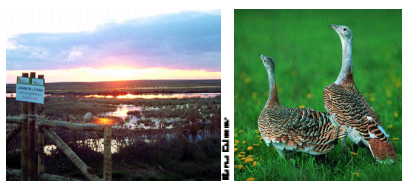


Increased soil salinisation is likely to take place as a result of plans (including dam building) to irrigate the semi-arid saline zones of the Iberian (Aragón) and the Bardenas (Aragón y Navarra).

### Poor national and EU policy integration $\Rightarrow$ Poor return on investment

Unsustainable water demand in Spain is driven by EU Common Agriculture Policy (CAP) subsidies favouring irrigated production and Structural Funds supporting dam building for irrigation purposes. Frequently, the resulting high-water-demand crops exceed EU-assigned quotas, forcing farmers to leave them unharvested or to plough them in. Water pricing alone will not solve these problems. Land and water use need to be integrated at the river basin level through catchment management. This is the only way to guarantee, for example, that regional development programmes do not undermine nature conservation objectives, or that agricultural subsidies do not jeopardise water resource conservation.

### The very high level of CAP support for irrigated crops is in direct conflict with cost-effective conservation



Agri-environment measures around the Laguna de la Nava wetland (Palencia) (far left) were designed to protect dry grassland birds (e.g. the great bustard, left) and the production of dryland alfalfa. This will be undermined by the transfer between the rivers Esla and Carrion (Duero basin), which will transform this area into irrigated farmland.

The Tablas de Daimiel National Park (La Mancha), one of the most important wetlands in the Iberian Peninsula, is now severely degraded owing to the destructive effects of irrigated agriculture in the surrounding area. CAP subsidies for irrigated crops such as maize and sugar beet have made massive demands on the aquifer upon which the wetlands depend. During the drought years of the 1990s, the wetland almost disappeared. An agri-environment scheme has been established to reduce the extraction of water and restore the natural water table. However, contrary to this objective farmers only need to meet the legal limit for abstraction set by the water authorities in order to receive the first level of agri-environment payments.



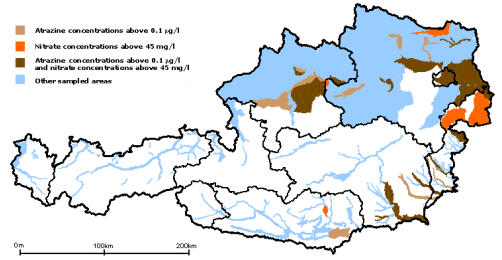
Examples provided by WWF - Spain/ADENA, Alberto Fernández-Lop and Blanca Gutiérrez-Monzonis, and from WWF's Natura 2000: opportunities and obstacles, 1999. Irrigation and cost recovery data from the Ebro Blanco del Agua en España Spanish Ministry for the Environment. Other data from Arrojo Aguado, P.; Bernal Cuenca, E.; Fernández Camarillo, J. and López, M., 1998. El análisis costo-beneficio y su vigencia relativa in the book El agua a debate en la Universidad. Hacia una nueva cultura del agua Arrojo Aguado, P.; Bernal Cuenca, E. (eds.), Institución Fernando el Católico. Diputación de Zaragoza, pp 291-312. Also from Arrojo Aguado, P.; Bernal Cuenca, E., 1997. El regadío en el Valle del Ebro, in La gestión del agua de riego Fundación Argentaria/Visor

## Impact of agriculture on water quality: costs of groundwater pollution in Austria

### Groundwater pollution

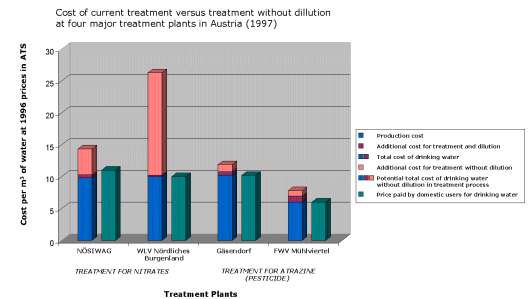
Austria is perceived as a "water paradise". However, standard agricultural practices have led to groundwater concentrations of nitrates and pesticides such as atrazine in excess of those allowed by the relevant legislation. This means that 73% of Austria's groundwater regions have been designated as "in need of restoration".

Austrian government designation of potential groundwater areas needing restoration (1993-1995)



### Who pays?

Water suppliers have to adhere to the statutory limit values for nitrates and atrazine. Technically, the most efficient way of addressing the pollution problem is for them to construct and operate water treatment plants. As this is very expensive, the overall treatment costs in the larger plants are reduced by diluting treated groundwater with "cleaner" waters from distant wells and mountain springs. Water suppliers are public service organisations and they do not make a profit by providing clean drinking water. In many cases they do not even break even given the cost of treating the polluted groundwater. This is not fully reflected in the price paid by domestic consumers.



### The Future

The continued pollution of groundwater by agriculture, and compensation for this practice by water suppliers through progressive exploitation of "clean" water resources, is clearly not sustainable - economically, socially or environmentally.

Economically: Water Suppliers	Socially: Domestic Users	Environmentally: Freshwater Resources
<ul style="list-style-type: none"> <li>Cover for the damage caused by other parties</li> <li>Do not recover initial investments in treatment plants</li> <li>Barely break even or operate at a loss (eating up their capital)</li> <li>Do not have financial security</li> <li>Need to raise water prices</li> </ul>	<ul style="list-style-type: none"> <li>Finance about 25% (taxes) of the total investment cost in treatment plants</li> <li>Are subject to water price increases</li> <li>Their money is spent contrary to the "polluter pays" principle</li> <li>Are not likely to accept further price increases</li> <li>Would refuse to pay the "true water price" (full cost recovery) if introduced</li> </ul>	<ul style="list-style-type: none"> <li>The ecological consequences of water transfers on the water sources (distant wells and mountain springs) are not considered</li> <li>Wells need to be deeper and deeper over time to reach clean water and this:</li> <li>disrupts aquifer recharge (the 1<sup>st</sup> and 2<sup>nd</sup> layers)</li> <li>depletes sources of non-renewable, "fossil" water</li> <li>can result in mixing (through pumping) of water layers, such that "fossil" water is polluted by the 1<sup>st</sup> and 2<sup>nd</sup> layers</li> </ul>

### How can clean groundwater be achieved in Austria?

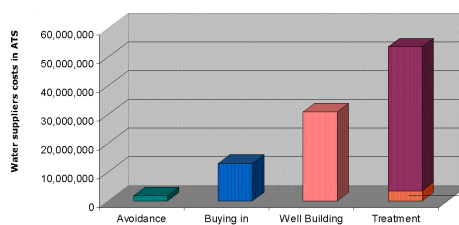
#### Increased policy integration promoting conservation

Agriculture is the main source of groundwater pollution in Austria as a result of inappropriate farm practices encouraged by EU CAP subsidies. The Austrian government should attach environmental conditions to all agricultural subsidies and withhold payments to farmers who pollute. Money saved in this way should be re-allocated to increase agri-environment programmes for the protection of groundwater resources.

#### Full cost recovery for water use

The introduction of full cost recovery for water use would halt and reverse the current trends attributable to the agricultural sector, which will have to bear the costs for groundwater pollution. There are good indicators that avoidance of pollution is more economic than having to treat polluted water (see below).

Water suppliers costs linked to strategies for reducing groundwater nitrate pollution, assessed in terms of the potential saved investment in water treatment



**Avoidance** - Co-operation between agriculture and the water sector. Cost of groundwater restoration assessed per year in terms of the yield losses in agriculture resulting from cultivation restrictions.

**Buying in** - Costs of buying in the required annual water volume (2 million m<sup>3</sup>) at the current price of AS 6.5 per m<sup>3</sup> for treated water.

**Well building** - Reference cost of building a well of 25 litres per second is AS 5 million. Estimated investment cost for a recently built well of 155 litres per second.

**Treatment** - Costs of building a treatment plant + annual operating costs (assumed as for the Obersiebenbrunn plant given similar size).

This information has been extracted from WWF's study The costs of groundwater pollution, 1997 WWF-Austria, Simone Luginhofer and Ruth Kratochvíl

## Conclusions

WWF supports a broadening of the debate on water pricing. It believes, as has been illustrated by the examples above, that binding full cost recovery for water services is an essential step towards sustainable use of water in Europe. This cost recovery should seek to include all costs in a phased manner. So far, at the EU level, there has been little transparency and few opportunities for discussion of crucial aspects of water pricing, such as the methodologies for the calculation of costs and the mechanisms for sharing these costs between the different users. This has led to some misunderstanding, speculation and controversy.

WWF trusts that the Communication on "water pricing" currently prepared by the European Commission will increase awareness and open the debate on the subject. It considers discussions on the socio-economic dimension of water pricing to be legitimate and necessary to reach agreements based on principles of equity.

The introduction of water pricing measures has been proposed within an EU framework for the protection of water resources. These measures are aimed at contributing towards a more sustainable water use. However, excessive water demand and 'polluting' water use by the agricultural sector in the EU will only

be stopped by effective policy integration and management of water resources through river basin planning.

The impacts of agriculture on water and wetland status will be addressed at the "Water and Agriculture" seminar, the first of a series of seminars on water in the context of the implementation of the EU Water Framework Directive, jointly organised by WWF and the Environment Directorate General of the European Commission - in February 2000.