A SYNTHESIS OF QUANTIFIED ALTERNATIVES FOR THE EBRO WATER TRANSFER

In 2001 the Spanish government approved the National Hydrological Plan (SNHP), which includes the description of the Ebro water transfer. Later on a Strategic Environment Assessment analysed four options (Ebro water transfer, water savings program, desalinisation and the "0" option) without any public consultation. Many organizations and people accused the Spanish government of ignoring the existence of reasonable alternatives with less costs and less social and environmental impacts. **WWF considers that a debate on these alternatives is necessary before taking a decision on the Ebro water transfer.**

To stimulate this debate WWF has made a compilation of alternatives mentioned in various expert reports. It does not pretend to be complete and exhaustive, but its aim is to demonstrate the existence of feasible alternatives and to facilitate a debate on alternatives to the Ebro water transfer.

Water down the drain

Spain has a very obsolete water distribution network with high water losses. In 2001 over 300 hm^3 of water was lost in only the urban distribution network of the southeast region of Spain[1]. This is equivalent to a third of the proposed Ebro water transfer. By reducing these water losses a large part of the water deficit could already be resolved.

Autonomous Region	Water losses in urban network
Valencia	25,6 %
Murcia	18,8 %
Andalusia	19,0 %

From offer management to demand management

WWF considers that the Spanish government focuses in the SNHP on managing the water offer whilst ignoring the possibility of water savings measures by controlling the water demand. At this moment the control on water use (in agriculture, tourist urbanizations and industry) is inexistent. A study elaborated by the Marcelino Botín Foundation[2] shows that in the Mediterranean area are over half a million to one and a half million illegal boreholes compared to 2500 legal boreholes. The number of pumps is growing every day to provide water to non-authorized irrigated fields or to sell the water on the black water market, where the high water price only can be paid by farmers with greenhouses or tourists in urbanizations with golf courses.

WWF considers as a first step that the water demand should be more controlled and realistically planned[3]. Without a tight control on the water use, a new water offer will only worsen the problems instead of solving them[4].

[1] Spanish National Statistics Institute INE (2001)

[2] 2001, Fundación Marcelo Botín and Mundi-Prensa. *Agua Subterránea: Retos y Oportunidades* Llamas, M.R.; Fornes, J.M.; Hernandez-Mora, N.; Martínez Cortina, L.

[3] August 2003, WWF. *The Real Cost of the Transfers; Analysis and socio-economic assessmen t of the Ebro transfers included in the Spanish National Hydrological Plan, SNHP* . Arrojo Agudo, P.; Míguelez Míguelez, E.; Barakat Atwi, M. www.panda.org/dams

[4] The WWF report "The Tagus-Segura water transfer- Lessons from the past" shows that the water demand has risen to 1000 hm^3 instead of decreased in the water receiving areas leading to water quantity and quality problems.

Alternatives to the Ebro water transfer exist

WWF considers that there are two types of alternatives for the Ebro water transfer. On one hand there are measures to influence the water demand by implementing water saving technologies or changing the way of using water (for example changing the crops). On the other hand the water can be obtained by alternative methods, like for example desalinisation. This report gives an overview of both types of alternatives, based on reports made by the following organizations and persons[5]:

- Pedro Arrojo, Spokesman of the New Water Culture Foundation and receiver of the Goldman Award in 2003. *The real cost of the transfers*: www.panda.org/dams
- Antonio Estevan, Member of the New Water Culture Foundation and consultant of GEA-21. *Una alternativa eficiente y viable al trasvase Júcar-Vinalopó*: www.xarxadelaiguaclara.org
- Professor Uri Shamir from Israel, Report elaborated for the Regional government of Aragon. *Estudio y evaluación de algunos aspectos del PHN* http://www.us.es/ciberico/articulosint.html
- The Spanish Socialist Party (PSOE). *Congreso 11 de abril de 2001- Serie A. Núm 31-5 Enmienda II pp 37-61* http://www.psoe.es/ambito/politicadelagua
- Ecologistas en Acción (EEA): environmental NGO. *Uso sostenible del agua en la cuenca del Mediterráneo* http://www.portal-agua.com
- Centro de Investigación de Recursos y Consumos Energéticos and Centro de Investigación y Tecnología Agroalimentaria de Aragón: Investigation institutes. *Alegaciones al proyecto de Transferencias Autorizadas por la Ley del Plan Hidrológico Nacional y Estudio de Impacto Ambiental*
- The Regional government of Valencia. *Análisis de los informes realizados por "Expertos internacionales" sobre el PHN, presentados por la diputación general de Aragon* http://www.xarxadelaiguaclara.org/INFORMEGENERALITAT.htm
- The Ministry of Environment (MMA). www.mma.es
- Enrique San Martín González and Amelia Pérez Zabaleta, http://www.us.es/ciberico/sevilla224.pdf

Alternatives for Catalonia

According to the Spanish government, **190 hm^3** of water should be transferred from the Ebro to the cities of Barcelona and Tarragona to satisfy the water needs. The main criticism against this proposal is that the water demand will not grow as the government considers. The water demand, as in other large cities, will decline due to improved water saving technologies. The following alternatives are proposed to solve the supposed water deficit.

ALTERNATIVES	ARROJO	PSOE	EEA	SHAMIR
Reuse wastewater	48 hm^3	50 hm^3	498-503 hm^3	
Desalinization		50 hm^3		
Water saving (urban)	217 hm^3	50 hm^3	47 hm^3	10%
Total	265 hm^3	150 hm^3	545-550 hm^3	

Alternatives for the Júcar river basin

Many experts have different opinions on the existence of a water deficit in the Júcar river basin. The Spanish government states that **315 hm^3** of water will be needed from the Ebro water transfer to meet the water demand in this area. Alternatives for the Ebro water transfer are stated in six different reports with a lot of emphasis on water savings technologies.

ALTERNATIVES	ARROJO	PSOE	EEA	SHAMIR	VALENCIA[6]
Improved use of groundwater	60-100 hm^3				
Reuse wastewater	65-100 hm^3	50 hm^3	164-232 hm^3		60%
Desalinization		50 hm^3			90 hm^3
Water saving (irrigation)	230 hm^3 (10%)		150 hm^3		200 hm^3
Water saving (urban)	169 hm^3	260 hm^3		10%	15%
Total	524-599 hm^3	360 hm^3	314-382 hm^3		290 hm^3 +

[5] The references to the reports are given in the last chapter.

[6] These data come from a report as a reaction on the reports presented by the Valencian government. It's not clear if these numbers are also used in the SNHP or should be added as alternatives.

Alternatives for the Segura river basin (the Murcia region)
The Segura river basin has changed much during the last 20 years. The recent high economic growth has resulted in three types of problems:

- The water resources are overexploited and polluted;
- The natural landscape disappears;
- The differences between poor and rich are increasing.

The Spanish government focuses their analysis only on the water problems, while the current and future growth of tourism and irrigated agriculture have resulted in a complex unsustainable situation. The SNHP proposes to solve the problems by transferring **450 hm^3** of water from the Ebro, additional to the water transferred via the existing Tagus-Segura water transfer (600 hm^3) and the planned Júcar-Vinalopó water transfer (80 hm^3).

Both *Arrojo* and *Ecologistas en Acción* propose to change resources policy radically and to implement a new "sustainable water management". This new resources management should start with a vision on the future for the Segura river basin and plans for the use of the resources. Furthermore, there should be more control on the water use.

Other experts have all referred to the need for a new water management in the Segura river basin. Furthermore, they have added some ideas on alternatives to solve the water deficit problems.

ALTERNATIVES	ARROJO	EEA	PSOE	SHAMIR	ESTEVAN[7]
Water bank			150 hm^3		
Reuse wastewater			20 hm^3		20 hm^3
Desalinization			130 hm^3		40 hm^3
Tagus Segura water transfer					20 hm^3
Water saving (urban)	65 hm^3			10%	
Total	New water management		300 hm^3		80 hm^3

Alternatives for the Sur river basin (the Almería region)
The unlimited growth of agriculture (greenhouses) and the development of the tourist sector have led to uncontrolled water use and illegal boreholes all over the region. The situation can be compared with the situation in the Segura river basin with one difference: the farmers with greenhouses can afford to pay a relatively high water price. The Spanish government plans to transfer **95 hm^3** from the Ebro river basin to Almería.

As in the Segura river basin, *Arrojo* proposes a new policy on the resources and more control on the use of water. Other experts give more details on possible alternatives.

ALTERNATIVES	ARROJO	PSOE	EEA	SHAMIR
Reuse wastewater		20 hm^3		
Desalinization		160 hm^3		
Change of crops			25 hm^3	
Water saving (irrigation)			70 hm^3	
Water saving (urban)				10%
Total	New water management	180 hm^3	95 hm^3	

[7] Antonio Estevan proposes alternatives only to the Júcar-Vinalopó water transfer.

Comparing prices of water offer alternatives

Many arguments against the Ebro water transfer are based on the idea that it will not be economically feasible:

- The real price of the transferred water will be at least the double of the by the government proposed price.
- Farmers will not be able to pay the proposed price, let alone the real price.
- Only the tourist sector and the greenhouse farmers will be able to pay a high price of water.

The experts have various opinions on the prices for the alternatives. WWF/Adena has compiled an overview of the most important alternatives.

€/M^3	ARROJO	ESTEVAN	EEA	VALENCIA	MARTÍN	CIRCE	MMA
Ebro water transfer	0,08-1,08 (0,72)[8]		0,60		0,59	0,54	0,31
Water savings	0,12-0,21						
Reuse wastewater[9]	0,21-0,24 (for drinking water)	0,10 (for irrigation)					
Desalinization	0,42	0,36		0,68-1,22			0,48-0,60

Comparing water quality of water offer alternatives

The different alternatives do not only differ in price, but also in quality. The Ebro water transfer will not reach the quality norms for pre-treatment prescribed for drinking water. This means that the water only can be used directly for agriculture and the irrigation of golf courses[10]. If it is to be used as drinking water, the transferred water has to undergo an extra treatment before it is ready to enter the drinking water treatment plant. The following table gives an overview of the different qualities of the alternatives.

	DRINKING WATER	IRRIGATION
Ebro water transfer	Needs extra treatment	Partly sufficient
Reuse wastewater	Needs extra treatment	Partly sufficient
Desalinization	Sufficient and easier reuse after treatment	Sufficient

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[8] The Spanish government proposes to ask the same price for the transferred water (postal tariff), regardless of the geographical location. Pedro Arrojo states that the real price will differ per trajectory and so he assumes a price ranging from 0,08 to 1,08 €/m^3, which results in an average price of 0,72 €/m^3.

[9] The price of the reuse of wastewater depends on the water quality needed. Drinking water needs a higher water quality.

[10] Which is not allowed, according to the SNHP law.