WWF POSITION PAPER

Seven reasons why WWF opposes the Spanish National Hydrological Plan, and suggested actions and alternatives

Photos this page: *The Ebro delta in the morning hours.* ***Credit****: Guido Schmidt / WWF-Spain/ADENA*

Cover photo*: Amposta, Ebro Delta, Spain.* ***Credit****: Guido Schmidt / WWF-Spain/ADENA*

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Figure 1. *Map of Spain showing the the Ebro River, the Catalonia region and the other regions that will receive water from the Ebro River transfer (Catalonia, Valencia, Murcia and Almería), which is one of two parts of the Spanish National Hydrological Plan.*

INTRODUCTION

The Spanish National Hydrological Plan (SNHP) law was adopted by the Spanish Parliament in July 2001 and entered into force in August 2001. It has two main parts: A new water transfer of 1,050 cubic hectometres per year from the Ebro river to another four basins in the east of the country and secondly, a "package" of 889 public works (occasionally very old projects that have been in the planning for quite a while), which are listed in Annex 2.

Each one of these two parts is being managed in a significantly different way by the Spanish government. For instance, while the Ebro river basin was subject to a Strategic Environmental Assessment (SEA) in January 2002 there was no evaluation made of the projects listed in Annex 2 as a whole or even at the individual level in some cases.

The Ebro water transfer to another four basins in the east of Spain is the main bulk of the SNHP. On top of the piping, it will require the undertaking of approximately 381 new water infrastructures and other works affecting all five river basins. The most negative of these works are six new dams in the high Pyrenees mountains. The impacts from this water transfer on the Ebro river basin could ultimately include the total disappearance of the Ebro Delta (an area for Natura 2000 designation, already a Ramsar site, the third most important wetland in Spain, and of high European significance), as shown by a recent report by the Ramsar Convention on Wetlands[1] and other studies[2].

The SNHP is the Spanish government's very outdated solution to the differences in water balance across its territory - by transferring water from river basins that have (so-called) water "in excess" to river basins with a (so-called) "water deficit". It is based on a "yesterday's" approach that considers water as an unlimited resource and is, therefore, against the objectives and requirements for sustainable water management included notably in the EU Treaty and in the EU Sustainable Development Strategy, and most precisely, in the EU Water Framework Directive.

NGOs and independent experts, both Spanish and European[3], have pointed out that what Spain really needs is not a "yesterday plan"- involving heavy water infrastructure (dams, reservoirs and large scale piping) - but rather a policy promoting sustainable water management with internalisation of costs, improvement in distribution networks, irrigation technologies, etc. They have also warned the Spanish government and the public that the Plan will never work (because planned infrastructures will be too expensive, water costs will be too high, there won't be enough water for the transfer etc), as it completely ignores serious scientific analysis of future trends[4] in terms of rainfall, temperatures, and water needs due to climate change.

Indeed, the SNHP clearly appears to be an added threat more than a solution to the problems of water scarcity and desertification that the Spanish Government is claiming to solve through it.[5]
The SNHP should in fact be seen more as a political tool to give economic support to the Spanish Levante region - a region that currently suffers high pressure on its natural resources (water, soil, biodiversity). This clearly speculative form of development is based on the construction of new infrastructures for irrigation and tourism through the purchase at low prices of land in former croplands that have been re-classified, untilled land, zones damaged by forest fires, or protected sites that have been declassified. This speculative development is clearly subsidised through the construction, by the Spanish government, of infrastructures to transport water, a factor that currently limits the unsustainable speculative growth that afflicts the Levante region. The zones that will benefit from this water transfer are areas of high per capita income (coastal areas of Cataluña, Valencia, Murcia, Almería), with an economy based on tourism and intensive irrigation agriculture held by firms (agro-buildings) or individuals. In many cases they reap large yields (this type of agriculture is thus highly profitable) by exploiting the labour of legal and illegal immigrants. (Salaries are quite low due to the excess in manpower on offer.) This unethical gain is currently limited solely by the availability of and access to water.

[1] Full Report: http://ramsar.org/ram_rpt_43s.htm ; English language summary: http://ramsar.org/ram_rpt_43e_summ.htm

[2] Vid. Arrojo Agudo, Pedro: "El Plan Hidrológico Nacional a debate". Bakeaz-Fundación Nueva Cultura del Agua. Bilbao. 2001. Sobre el Delta en concreto, vid: Ibáñez, Carles; Prat, Narcís; Canicio, Antoni y Curcó, Antoni: "El delta del Ebro, un sistema amenazado". Bakeaz-Coagret. 1999.

[3] Hartmut Grassl, Director of Max-Planck Intitute, see article Vicente Aupi, Levante Digital, Comunidad Valenciana, http://www.levante-emv.com/elemgraf/tr.gif

[4] Of at least 60 years.

[5] To note the Communication from the Commission "Towards a Thematic Strategy for Soil Protection" where human activities are considered one main cause of desertification, and it is also the salinisation of soils associated with irrigation.

On the other hand, the zones that will supply the water (the headwaters of the Ebro basin, the Ebro Delta and the Pyrenees) are low income areas. Their water resources will be regulated by dams that will flood villages, as well as cultural and natural heritage sites. This will also impact the last remaining unharnessed rivers of the Pyrenees. These valuable assets are the foundation for rural development in these regions.

WWF agrees with those claiming that the SNHP is a "case study" in unsustainable water management, both in the European and the international arena. At the EU level, it is WWF's concern that the implementation of the Plan will clearly breach many EU policies and activities (notably, the Water Framework Directive, the Habitats and Birds Directives, the Directives on Environmental Impact Assessment (EIA), the Strategic Environmental Assessment Directive (SEA), as well as overall European Commission / EU commitments under international conventions eg. Arhus Convention on access to environmental information and justice on environmental matters). Further, that it will no doubt set a precedent and allow other similarly unsustainable water management schemes in Member States and Accession countries to be implemented. WWF is even more concerned about preventing this potential scenario as, in the case of the SNHP, at least one third of the total costs[6] are expected to come from EU Regional Development and Cohesion Funds. Therefore, the SNHP damage may end up being subsidised by European taxpayers. At the International level, WWF believes that the SNHP weakens and contradicts the Global Water Initiative (GWI), a priority in the EU contribution to the World Summit on Sustainable Development, as this is based on the principles of Integrated River Basin Management, the same ones included in the Water Framework Directive. The EU should, therefore, first put its "own house in order" before promoting further implementation of this Global Water Initiative.

WWF believes that the question of developing a sustainable water management policy in Spain needs to be urgently considered, and that the parameters on which the SNHP was based have to be revised. WWF shares and welcomes the emphasis on this issue expressed by the European Commission in a letter[7] sent recently to the Spanish Government about notably the gaps in the evaluation of water resources availability and the cost/benefit of the proposed works. We believe that it is absolutely necessary that the Plan is globally and appropriately assessed before any further decision on its implementation and/or funding is taken.

In order to help address the weaknesses of Spanish water policy and to prevent unsustainable water management schemes such as the SNHP being developed in Europe ever again, WWF has set up a four-year SNHP Initiative within the context of its Living Waters Programme, in line with the Programme's objective of "ceasing or re-orienting water infrastructure developments that threaten the conservation of ecological processes in high priority freshwater ecosystems by 2007".

WWF's main objective is to stop the SNHP as it currently stands, and to ensure that it is revised so it contributes to the proper implementation of the Water Framework Directive's principles and requirements. The present document includes a summary of WWF's main reasons for stopping the SNHP, and specific policy proposals to improve the situation. Following from this paper, WWF will develop an in-depth analysis of the specific environmental and socio-economic impacts of the SNHP, promoting sustainable alternatives for water management to be applied in Spain, which can be used as "best practices" – in cases of apparent water scarcity - inside and outside the EU.

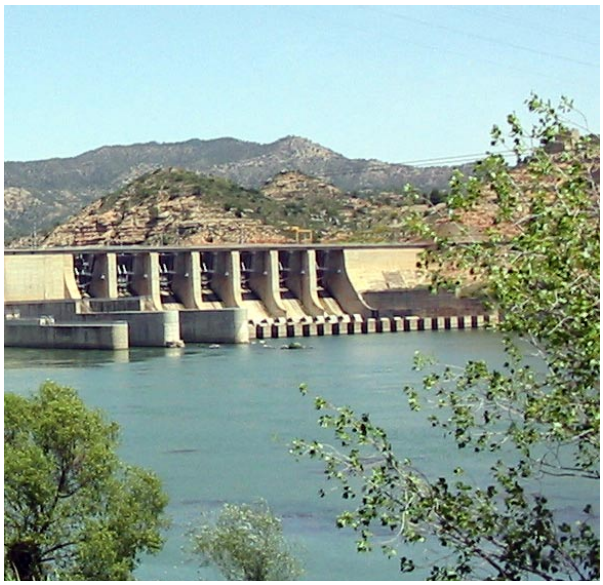

Photo 1: *The existing Riba Roja dam in the Ebro delta /* ***Credit:*** *WWF*

[6] Official cost € 4,507 billions, but this figure could be increased up to € 6,010 billions for the transfer and up to € 24,040 billions for the works planned under Annex 2, including the dams in the Pyrenees necessary for the transfer.

[7] Letter sent on May 23, 2002 and signed by Catherine Day, Director General of DG ENV, CCE.

SEVEN REASONS WHY WWF OPPOSES THE SNHP

1 IT IS A "YESTERDAY" PLAN

In Spain, the development of large infrastructure hydraulic projects reflects the ancient dream of liberal policies in the 19th century as expressed by the Premier Mendizabal[8]'s words in 1835 "Spain will never be rich if its rivers reach the sea".

The implementation of such a dream since then, in particular under dictatorship regimes, has made Spain the Mediterranean country with the highest retention of rainfall in upstream reservoirs. Spanish water resource planning has been carried out by civil engineers used to thinking big and therefore has been focussed on huge water infrastructures, big dams and canals to provide "unlimited" water resources with a clear and outdated supply sided approach. Construction of such infrastructure has often generated conflicts between different regions in Spain and between Spain and Portugal because of the diversion of Atlantic-bound water. The Tajo-Segura inter basin transfer (see Box 1 below), illustrates such internal and international conflicts, given that the diversion of the Tajo's flow to the Almeria and Murcia regions of the south-east and south of Spain was perceived to result in reduced water availability in donor areas of Castilla. Therefore, it would imply less water arriving in Portugal.

Spain is not an isolated case where a "yesterday" approach to water management has been implemented. Many other countries have also tried in the past to base economic growth on the development of important water infrastructures. Water policies based on this approach aimed and may still aim at alleviating drinking water shortages and increasing resilience to droughts, and/or to promoting development of coastal areas with high potential for tourism and irrigated agriculture. However, there are also other (hidden) reasons, such as those in countries under dictatorship regimes, were the objective of water work development was to maintain farming in rural areas through the development of irrigation and/or to produce important revenue to profit the socio-economic groups close to the decision making levels.

Whilst in the short-term the development of huge water transfers has provided direct benefits to construction companies, farmers, agri-traders or the tourism industry in the Spanish Levante, in the medium and longer term it has proven to be negative. Contrary to its expected aims, the construction of big dams and water transfers has served to perpetuate the water deficit and to maintain the idea that water is an unlimited resource. It has, therefore, led to an increase in water consumption, wastage and pollution; to the loss of habitats and rare (protected) species; to the deterioration of the ecological status of water and wetlands; and to the degradation of soil structure, salinisation and desertification. The final result has been a reduction of "ecosystem services" to local people, and a lowered potential for socio-economic development based on sustainable activities. In contrast, the average water loss in the pipes and channels used for irrigation is 40-45% in the Spanish territory.

The Tajo-Segura transfer in Spain (see Box 1) clearly illustrates the failure of such an approach, given that the water deficit has doubled over the years; whilst water and soil degradation have increased. It is puzzling that a country like Spain, where there is such a blatant illustration of the "uselessness" of an interbasin water transfer as the Tajo-Segura, is developing further transfers in the 21st century and, worse, one aiming at transferring even more water to the river basin where the existing transfer has collapsed (the Ebro river transfer will feed the Segura basin).

To cope with all the negative impacts and limitations associated to the development of large water infrastructure works, a "new water culture"[9] has developed at the international level. This new culture is clearly reflected in EU legislation, in particular in the new EU water law since 22 December 2000: The Water Framework Directive (200/60/EC). This law obliges European countries to protect, enhance and restore all waters with the aim of achieving good ecological and chemical status, to ensure the continued availability of drinking water, less polluted water, more aquatic plants and animals,

[8] Spanish Premier. As quoted in Barraque, B. *Are hydrodinosaurius sustainable? A Case study on the Rhone-to-Barcelona Projected Water Transfer,* in Shared Water Systems and Transboundary Issues with Special Emphasis on the Iberian Peninsula, Proceedings of the Conference held at the Luso-American Development Foundation, Lisbon, March 1999, published in March 2000

[9] Llamas, R., *New and Old Paradigms on Water Management and Planning in Spain*, in Shared Water Systems and Transboundary Issues with Special Emphasis on the Iberian Peninsula, Proceedings of the Conference held at the Luso-American Development Foundation, Lisbon, March 1999, published in March 2000

less floods and droughts, less water management costs etc. The type of water management promoted by the Water Framework Directive is based on the integrated river basin management approach, no-deterioration and precautionary principles, introduction of "real" water pricing and other measures to increase the sustainability of water use etc, which have been further described in this paper (see Chapter 5). A "new water culture" is also reflected in UNESCOs International Hydrological Programme (IHP) adopted in 1999, which includes five criteria specifically related to inter-basin water transfers as follows:

- The receiving area must suffer from water scarcity that cannot be avoided by other reasonable measures
- Water resources of the area of origin must be adequate, and any loss must be compensated[10]
- Substantial environmental damage should not occur in either area
- No substantial socio-cultural disruption should result in either area, including also emotional and religious motivations
- The benefits of the inter basin water transfer should be equitably shared between the area of delivery and area of origin.

Although not fully applied yet, the development of this new water culture approach has been translated - notably in the EU - into new, sustainable water policies[11]. Most of the national or international long distance water transfer projects have been progressively questioned and abandoned. In the UK, for instance, a project to carry water from Scotland and Wales to London and the South East area was postponed as the government forced companies to stop the leaks in the water piping systems first. In Germany, there has been a reduction in the volume of water transferred from the Bodensee (Lake Constance) to cities in Baden-Wurttemberg and the promotion of groundwater use as an alternative to transfers. In France, a project to pipe water from the Geneva lake to Paris, which was conceived a hundred years ago, was eventually discarded in favour of closer sources, and many of the other transfers planned have simply been made obsolete because of the progress in water treatment technology. In Greece, although not fully abandoned, the Acheloos River Diversion Plan (see Box 3) was strongly reduced (in terms of water works development and diverted water quantities), and was refused EU funding (Structural Funds) for its development. More generally, it has been admitted that irrigated agriculture cannot sustain the (full) costs of large transfers or even of more modest water works and therefore transfers that are still being planned, such as the Rhone-to-Barcelona transfer (strongly questioned[12]), involve cities and/or industries that could afford expensive water.

Sadly, Spain has not learnt from past experiences or from the progress made in the rest of Europe. The SNHP has nothing to do with the "new water culture" movement, and it is characterized by most of the weaknesses and limitations described above. The SNHP does not reduce Spain's water consumption spiral, it does not establish any sustainable vision for water management in Spain for the coming decades, nor uses scenarios to analyse strategic land-use development options and their positive and negative effects.

Although included in the wording of the actual law and in Annex 2, the SNHP does not actively promote a reduction in water consumption, ignores the full cost of water and does not properly consider sustainable alternatives including the existence of available groundwater resources[13] (see Chapter 7). On the contrary, the SNHP and especially the Ebro river transfer (one half of the Plan), will raise expectations for new irrigation and activities (golf courses, etc), leading to increase mismanagement and degradation of existing resources. By doing so the SNHP works against the UNESCO IHP principles listed above, and the "new water culture" that has developed, particularly in Europe in recent years, which has culminated with the adoption of the Water Framework Directive. In fact, the SNHP contravenes key requirements of this Directive, notably the no-deterioration obligations, as it will be demonstrated in the following chapters (see Chapter 5).

In conclusion, the SNHP is simply a policy to benefit major interest groups - large property irrigation farmers, construction and hydropower companies, the tourism industry - without taking into account the socio-economic and territorial cohesion, nor the huge and irreversible impacts on the environment and the services it provides for human growth and wellbeing.

[10] Note that using the word in its broad sense, it would mean that the loss of any "value" which would make the transfer possible has to be compensated, and not just the vending of water. WWF does not agree with this approach in general terms

[11] The following examples are taken from Barraque, B. *Are hydrodinosaurius sustainable? A Case study on the Rhone-to-Barcelona Projected Water Transfer,* in Shared Water Systems and Transboundary Issues with Special Emphasis on the Iberian Peninsula, Proceedings of the Conference held at the Luso-American Development Foundation, Lisbon, March 1999, published in March 2000

[12] Barraque, B. *op.cit.*

[13] Groundwater resources are not taken into consideration; although they could render/make the Ebro river transfer (one half of the Plan), and the planned works in Annex 2 obsolete in most of the cases.

BOX 1

CASE STUDY: TAJO – SEGURA TRANSFER

The first plan for a Tajo-Segura Transfer was published in 1933 although the works were completed only in 1973. The basis of the project was transfer of water from the Tajo River basin (Atlantic Versant of the Iberic Peninsula). The objective was high yields in the intensive farming region of Southeast Spain where winter crops had increased sharply in recent years.[14] The transfer stretches 286 km from several large dams (Entrepeñas, Buendia, Bolarque) where water is distributed through various natural waterways, canals and dams.

The project first estimated a structural deficit of 500 hm³ for the Segura basin and was intended to transfer 1000 hm³/year to the provinces of Alicante, Murcia, and Almeria (Southern basin) to a lesser extent. This was later reduced to 650 hm³/year[15] (400 for irrigation and the rest for urban supply), under the Law of 1971 and the Tajo Basin Hydrological Plan. The volumes transferred were later increased[16] without taking into account improvements in transport efficiency, which cut previous consumption losses estimated at 15% of the total amount of water transferred per year (Segura Plan).

The functioning of the transfer, revealed the limitations and contradictions of an outdated policy to manage water demand, and had several major adverse effects. From an environmental point of view, for instance, the construction of dams destroyed thousands of hectares of natural zones. What remains has now been partially included in Red Natura 2000. The transfer works also decreased the ecological flow of water and seriously degraded water quality as polluted effluents flowing into the Tajo from the Community of Madrid could no longer be diluted. The Middle Tajo is one of the most polluted rivers in Europe, and for a large part can not even meet the parameters required for irrigation. The pollution has destroyed fauna and aquatic flora and has seriously altered the riverside vegetation.

The aqueduct has facilitated the passage of fish species from one basin to another, which has led to the extinction by exclusion of endemic fish species in the Júcar.[17]

In its social and economic repercussions, the transfer led to major territorial imbalance. The donor basin was granted economic compensation to promote tourism near the dams, which declined due to lack of water. The donor zones presently show lower income, population loss and a rise in the average age of population.

In the recipient basin, on the other hand, the transfer raised expectations and sparked unsustainable development in the agricultural and tourism sectors along with an exponential rise in water demand. This, linked to the overuse of pesticides and fertiliser, has degraded the soil, polluted water tables and the water of the Segura, the most polluted river in Spain (and in Europe as well18) despite the fact that it is still the only river into which water has been transferred from another basin. The transfer facilitated the legalisation of marginal and illegal operations19 and has fostered a black market in water20 through administrative mismanagement and the fact that the price of the water is much lower than the real cost.

All these impacts, in addition to the fact that the structural deficit has doubled over the years21, demonstrates the failure of the Tajo-Segura transfer "model" and is an ill omen of a similar fate for the Ebro project, which will hardly be able to resolve the problems entailed by the earlier transfer without changing its parameters.

[14] Almeria, has the biggest concentration of hot house in the world, 27,000 Hectares. Production increased from 57 M€ in 1975 to 1,500 M€ in 2.000 (in El Pais Semanal, May, 19,2002)
[15] Of which 50 hm³ were transferred to the Guadiana River in the aim to replenish Tablas de Daimiel and supply water to villages in the La Mancha plain.
[16] In 1995 a provisional reduction in the flow of the Tajo was approved in its passage through Aranjuez (from 6 to 3 m³/sg) to meet the needs of the Segura basin.
[17] 90% of the Iberic Peninsula's aquatic species and sub-species are exclusively endemic to each specific basin.
[18] See the results of the Water and Wetland Index project, phase I, of the WWF European Freshwater Programme
[19] The Segura Basin Hydrological Plan (PHCS) admits 57,000 new hectares of irrigation in addition to the 140,000 already reached by the transfer.
[20] The Community of Castilla-La Mancha has denounced an imbalance, losses excluded, of 113 hm³ between the water transferred over the past 3 years and the amount actually used for irrigation in the Segura area.
[21] From 500 to 1000 hm²:year according to the PHCS

2 IT WILL NOT WORK

There are several reasons why the SNHP, in its present form, will not "work" (i.e. it will not fulfil its aim of addressing the apparent differences in water balance across the Spanish territory). In the specific case of the Ebro river transfer, many of these reasons are due to the fact that it is unsustainable, especially in relation to loss of existing water resources resulting from climate change and deterioration of water quality as well as the effects of these two parameters on the cost of the transfer, which will be prohibitive. Another reason is the mismanagement of aquifers (ie. illegal boreholes), which is a big problem in many of the river basins that will receive the water transferred from the Ebro river.

Loss of existing water resources in the Ebro river basin due to climate change

Neither the Memorandum that accompanies the SNHP legal text, nor the SEA on the SNHP carried out by the Spanish government, meets essential EU requirements concerning climate change. Moreover, the SNHP assumes a water "deficit" in four Mediterranean basins, to be covered by an estimated water "excess" in the Ebro river. Not having properly considered climate change forecasts for the region means that the water resources in the Ebro river basin have been over-estimated. The affirmation that the Ebro donor river basin as "excedentary" cannot, therefore, be defended if one considers that there is a need to ensure water resource availability for both the populations living in the Ebro basin and for the natural areas that rely on these resources for future generations.

All forecasts made on either parts of or all of Spain's river basins since 1996, whether by the government or independent researchers, have shown that climate change will lead to a reduction of available water resources[22]. The reduction foreseen, up to the middle of this century, varies from 15% to approximately 40% and is generally higher in the southern half of the Spanish Peninsula. To also note, the volume of rain has already declined throughout most of the country during the second half of the 20th century. It also appears that data from various sources, including official ones about supply on several river basins show a uniform reduction trend over the past few
decades. According to the UN Intergovernmental Panel on Climate Change, the temperature increase rate is and will be higher than initially forecasted. This rise in temperature will affect and increase the water needs of existing irrigated land[23].

The evaluation of water resource availability in the documents that provide the scientific backing of the SNHP (5 volumes published by the Ministry of the Environment in 2000) neglected considering downward trends in rainfall and other resources. They estimate the availability of water resources on the basis of average volume, etc. instead of actual availability at given time of the year, which should be the approach followed for a Mediterranean country such as Spain. The documents also ignored the rising need for water of existing irrigated land because of drought. The SNHP's SEA, which does make an attempt at considering the effects of climate change, limits its analysis to a few years after the completion of the works included in the SNHP law.

The short lapse of time (15 years) considered in the SEA's assessment of the effects of climate change shows that the approach chosen by the Spanish government (i.e. the SNHP) is not sustainable. In contrast the period for redemption of the costs of the water infrastructure works chosen is 50 years. The estimated impacts on ecosystems (see Chapter 4) will continue much longer, affecting future generations. Further, over these 50 years, climate change will lead to a sea level increase that, under current rates, is estimated at 35 cm, which will worsen impacts on the lower Ebro and its Delta. This has been ignored by the SNHP.

According to Spanish researchers[24], the two milestones to consider when assessing the impact of climate change on the SNHP's approach to resolve the apparent water scarcity problems in Spain are: (i) economic redemption in 2050 (works completed: 2015 + 25 years for cost redemption under the "Law on Water"[25]), and (ii) the technical design: 2060 (2010 + 50 or 100 years of functional life in the case of large works).

The calculations for 2060, based on the method used by the White Paper on Water (published by the Spanish Environment Ministry in 1998), show a reduction in the currently available resources of approximately 28% throughout the Spanish territory

[22] As a consequence of both less precipitation and increased temperatures

[23] Through an increase in evaporation and in crop needs under higher temperatures.

[24] Francisco Ayala, Datos para una reflexion sobre el PHN y el Cambio Climatico, (*Data for a reflection on the SNHP and Climate Change)* Instituto Geologico y Minero

[25] Revised text of Spanish Water Law, 2001. (Texto Refundido de la Ley de Aguas, Real Decreto Legislativo 1/2001 de 20 de julio.2001)

When this same method is applied to the Ebro river basin, the reduction in water resources, together with the higher consumption by existing irrigated land, would imply a 6,394 hm³ total decrease in "theoretical" resources, which is much more than the SNHP's calculated 5,000 hm³ of "excess" water. This means that by 2060 the Ebro river basin will in fact suffer from a water deficit of 1,394 hm3. This is without considering the 1,050 hm³ that need to be transferred.

In conclusion, independent scientists foresee a much larger climate change-induced loss of current water resources in the Ebro river basin than the government. Over 4,000 hm³ of water in the Ebro river will be lost by 2040, and more than 6,000 hm³ (28% of the total river flow) by 2060, due to evaporation, lower rainfall and increased irrigation demands. The climate change estimates clearly put the Ebro river transfer into its true context and show that it will not be able to resolve the apparent water scarcity in certain regions of Spain.

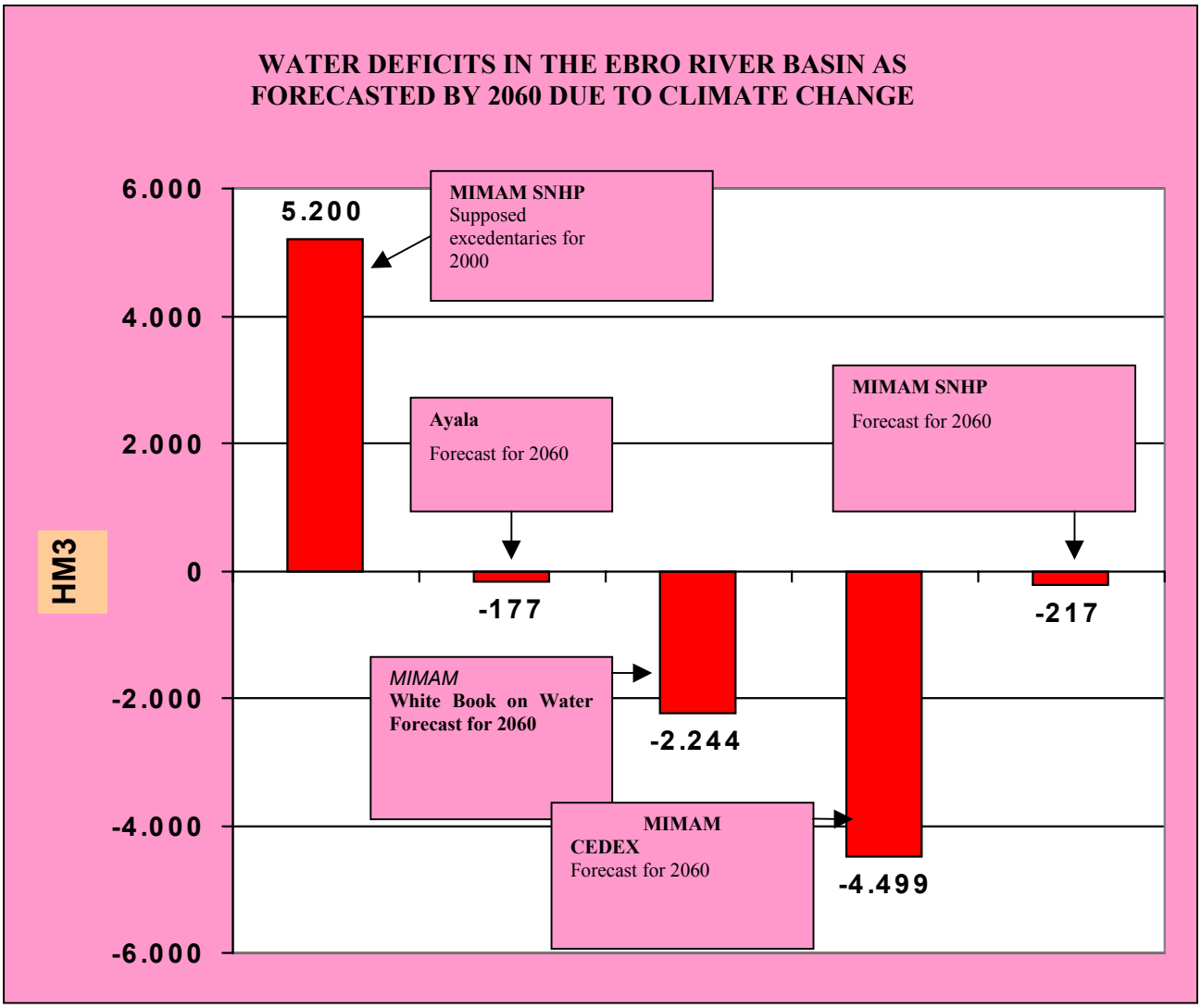

***Figure 2**. Water Deficits in the Ebro River basin as forecasted by 2060 due to climate change*

Deterioration of water quality[26]

The waters to be transferred from the Lower Ebro river are of poor quality. They contain on average more than the 1,000 µs/cm salinity limit for pre-drinking water recommended by the UE. Mixture with other salinised waters such as those from the Jucar river along the transfer will surpass this limit, endangering the potable quality of the drinking water for the Valencia area (1 million inhabitants) downstream. Future predictions show a drastic worsening of the evolution of water quality. This would be exacerbated by huge water abstractions for new irrigation along the Ebro river and the resulting salinity impacts. In addition, the effects on the salinisation of cultivated land as a consequence of this poor quality water (leading to desertification) and the intensification generated by the present unsustainable development model have yet to be analysed. These effects can already be seen in the spiral of deterioration of the Lower Segura fields as a result of the current Tajo-Segura transfer (see Box 1), despite the high quality of the waters transferred to the Segura river basin.

It is worth noting the afore mentioned Ebro river abstraction calculations have been carried out using an incorrect "ecological river flows" system (a measure of the water "needs" for the environment) proposed in the - existing but yet to be implemented - River Basin Plans). These obsolete figures should be revised in accordance with the WFD's hydromorphological parameter for "good status". The arbitrary figure of 100m3/sec fixed for the Ebro Delta in the Ebro River Basin Plan is of particular concern. Studies published over the last few years by teams of the most prestigious specialists in this field[27] show that the flow system required to guarantee the sustainability of the Ebro Delta is 9,000 – 12,500 hm3/year. This is almost four times higher than the figure for "environmental requirements" of 3,000 hm3/year, given in the SNHP and the Spanish Government SEA of the Ebro river transfer.

Prohibitive costs

As shown above, there would be less water than expected to be transferred from the Ebro river basin as a result of climate change, which would seriously affect the estimated cost-benefit balance of the transfer (already negative as shown in Chapter 3). This would also entail a considerable rise in the price of water if the costs of obtaining and transporting it are internalised under the WFD's principle of full cost recovery. As a result, the farmers will not be able to pay the real price of water and this water, as seen above, will be of low quality, which will imply that higher volumes are needed to maintain production until the system collapses[28].

Nevertheless, whether farmers can or cannot pay for the water does not appear to be an issue as, currently in Spain, the use of surface water is heavily subsidised[29]. The SHNP will perpetuate this subsidy despite the fact that it aims at satisfying current "demand", an economic concept inherently linked to a price set in relation to the offer. Water for agriculture is a production factors for an economic activity, but farmers get it and will get it without even meeting the costs of obtaining and transporting it.

The water prices estimated in the SNHP not only fail to take into account the future loss of resources in the donor basin, but also of other costs such as treating the Ebro's polluted and salinised water, the loss of agricultural production, and the need for restoration of soils affected by salination due to irrigation with water of high salt content (in order to prevent desertification). They also fail to account for the distance that the water needs to be transferred[30],

[26] Information from the "Analysis of the Strategic Environmental Assessment document of the NHP presented to the European Commission by the Spanish Government". This is a document from the "New Water Culture Foundation", prepared by a team under the direction of Professor D. Pedro Arrojo, Dept. of Economic Analysis, Zaragoza University, Spain (February 2002).

[27] Prat, N. El estado ecológico, elemento clave de la gestión del agua en el siglo XXI . Conferencia Internacional: El Plan Hidrológico Nacional y la gestión sostenible del agua. Zaragoza 13-14/6/2001. Zaragoza. * Prat, N. 2001. El Plan Hidrológico Nacional, un proyecto engañoso y destructivo. Ecosistemas , 2. Madrid. Ibañez, C.; Prat, N.; Canicio, A. & Curcó, A.1999. El delta del Ebro un sistema amenazado. Bakeaz Ed. 109. Bilbao.
N.and Ibañez, C. The effects of the National Hydrological Plan on the Lower Ebro. Flow Regime Needed to Maintain its Ecological Status. Unpublished report.

[28] See Sequeira, S. "Desertification and salinisation in the Alentejo region, Portugal", Proceedings WWF/EC seminar on "Water and Agriculture", 2000, available at http://www.panda.org/europe/freshwater/seminars/sem1/seminar1.html

[29] For instance, farmers in the lower Jucar (Acequia Real del Júcar) receive the water for free and only pay for the irrigation channels.

[30] The price foreseen by the SNHP, € 0,31/m³ (52 ptas.), is the same for all recipients of the transfer, which does not account for the fact that greater distances entail higher costs, and that it is thus not the same to take water in Castellon and in Almeria, where the cost could triple, meaning that this water would not be competitive with new desalination techniques.

the non-use of water as a natural resource (which will decrease and deteriorate), or costs of the dams in the Pyrenees that will ensure that the promised 1050 hm3 are transferred. When all these parameters are accounted for, the final cost of this water is completely prohibitive.

Mismanagement of Aquifers

Another reason the SNHP is unworkable is that it will exacerbate the mismanagement of water tables, on which there is not much information (e.g. condition, water availability). The assumed "deficit" of resources along the Spanish Mediterranean coast justifying the SNHP is based on the exhausting of aquifers, mainly held privately. This is the result of thousands of farm operations that are unchecked and unlawful (i.e. illegal boreholes). Earlier water transfers (the Tajo-Segura transfer, Box 1) show that, in the receiving basins, expectations for the water transferred have led to a rise in the number of hectares being ploughed and in need of irrigation. These are lands fed by water tables, which means that, by the time the transferred surface water arrives, the water tables have been exhausted, there is thus already a new unsatisfied "demand" and this calls for a new transfer (the Segura river will be one of the recipients of the Ebro river transfer).

***Photo 2**: The Ebro delta, Spain / **Credit:** WWF*

BOX 2

CASE STUDY : JÚCAR – VINALOPÓ TRANSFER

The transfer of water resources from the Júcar to the area of Vinalopó, Alicantí-Marina Baja (Alicante) was approved on 29th August 1998 and is currently included in Annex 2 of the SNHP. It concerns the transfer of 80 hm³/year, of which 55 hm³/year are intended for agricultural irrigation with the official aim of recovering the aquifers. This is a transfer between basins which are different but governed by the same basin administrative authority.

The project overestimates the volume the Júcar can actually supply, demonstrating an unacceptable ignorance of its hydrology (or else false data). It does not take into account hydrological records from 1994/95, which show no transfer was possible, all the more so when decreases in flow through climate change are considered. Contrary to what is affirmed by the project, there are no "peak flows in winter", the season in which the transfers occur, since it is precisely this time of the year that has shown the lowest levels of water flow over the past 10 years.[31]

Its Environmental Impact Study (EIS) gives rise to numerous inaccuracies, discrepancies, data gaps and false pictures of the social and environmental reality of the affected areas. Only a portion of this study was made public[32], which weakened Directive 90/313 on the freedom of access to information on the environment. Surprisingly, no mention is made of the price of a metric cube of the water at its destination which is contrary to the Framework Water Directive (WFD) recommendation for full cost recovery. The same can be said for the price of the water destined for supply.[33] The EIS does not include the economic effects of Valencia's irrigated farmlands on the fertile plain of the Júcar. Neither does it mention all the Bronze Age, Iberian and Roman archaeological sites that will be jeopardised.

From an environmental point of view, the EIS ignores the fact that diverting 80 hm³/year would affect the ecological flow, the banks of the middle Júcar, and Valencia's Albufera National Park, a wetland of international renown. The study also fails to indicate where the quarries, deposits of aggregates and debris will be located, an estimated half a million m³ of rocks and earth. Nor does it account for the environmental impacts or the "barrier effect" on the surface covered by the aqueduct. The EIS does not consider the existence of a large aquifer that partially feeds an extensive water network (the Caroche Cretaceous Mass) which will be affected by microbial, fungous and algae pollution, as the tract runs through a zone of limited use due to "high risk of aquifer contamination".

The EIS does not study the quality of the habitats affected, nor does it specify for individual sections. It does not mention that in the first section of the tract, an area traditionally isolated, the vegetation is well-preserved[34] and its unique fauna, [35] including many protected predatory birds, is well represented. Many of the affected habitats are protected under Directives 92/43/EEC and 97/62/EEC, for example Mediterranean seasonal ponds, European dry moorlands, calcareous carstic and basophilic meadows, and stands of *Juniperus phoenicea* – all priority habitats.

Given the low budget, no construction company has participated in the first bid, which would indicate the official cost is quite low, hiding inevitable costs not reflected in the project's overall budget (expropriation of legal users such as irrigators and hydroelectric companies). In WWF's opinion, the alternative would be to increase the Vinalopó basin's own resources by using existing aquifers that are still exploitable, modernising the irrigation systems of the Alicante Marina Baja, and requiring the installation of water saving devices when new tourist residences and services are built as well as encouraging the population to purchase them.

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[31] 28 m³/sec in October, 22 m³/sec in November, 24 m³/sec in December, 28 m³/sec in January, 26 m³/sec in February and 22 m³/sec in March compared to the summer flow levels (47 m³/sec in July and 43m³/sec in August)

[32] See statements on this EIS by the Asociación para la Defensa de la Naturaleza de Enguera (Enguera Association for the Defense of Nature) – ADENE, and Asociación de Lucha contra Incendios Forestales de Ayora y Valle-Ecologistas en Acción (Ayora and Valle Association to fight forest fires-Ecologists in Action)

[33] See Estevan, Antonio and Viñuales, Víctor (comps.): "La eficiencia del agua en las ciudades". (Water efficiency in cities) Bakeaz-Fundación Ecología y Desarrollo. Bilbao. 2000.

[34] The worldwide distribution of 4 plant species is found only in this zone: *Chaernorhinum tenellum, Sideritis sericea, Echium setabense* y *Narcissus randiganorum*.

[35] The critical reviews of the EIS contain a complete list of the species affected, many of which are listed in Annexes II and IV of Directive 92/43/CEE on Habitats. These species are found in IBAs n° 158, 160 y 161, which will be affected.

3 IT IS NOT ECONOMICALLY JUSTIFIED[36]

Cost-benefit analysis

The economic justification of the SNHP is full of errors, which do not respect scientific and technical knowledge, even when considering a margin of "different" interpretations of the established "economic" rules.

The Strategic Environmental Assessment (SEA), carried out by the Spanish Government in reply to a suggestion from the European Commission of July 2001, has an "economics" section referring to the cost-benefit study included in the SNHP memorandum. It is in this SEA where one can find evidence of the errors and twists that have allowed the "fraudulently" positive cost-benefit balance of the SNHP (which the SEA accepts as correct). In reality, if this balance was calculated rigorously, the result would clearly be negative.

As mentioned in this paper's Introduction, the Plan has not been properly evaluated, or evaluated as a whole. The SEA's attempt at a more detailed economic evaluation is also insufficient as it only covers the Ebro river transfer senso-stricto. It does not consider the costs of the six big dams to be built in the Pyrenees in order to provide the necessary water for the transfer. Other infrastructures, like the 117 new dams or river dredging works listed in Annex 2 of the SNHP, have not been considered in any economic analysis; although such big infrastructure works usually tend to have negative cost/benefit balances.

The SNHP estimates water demand on the basis of the current situation of Spanish agriculture, excluding any scenario for the future development of, for example, the citric market and social and labour restrictions (current agricultural practices are widely based on employing illegal workers, mainly in the recipient basins of Murcia and Almeria).

Cost – recovery

Article 9 of the WFD asks Member State to take into account costs-recovery for water services, including environmental and resources costs, via an adequate contribution of the different water uses (e.g. industry, households and agriculture), so that water pricing policies provide adequate incentives to use water resources efficiently by 2010. This requirement is ignored by the SNHP because, the unit costs per cubic metre from the Ebro river transfer is expressed as an average, hence there is no calculation of costs for the different users; the recovery is centred on the "financial" costs only; and not all the financial costs have been taken into account.

In any event, even if the WFD requirement for cost-recovery did not exist, the information below shows that the revenues from the Ebro river transfer (*the only part of the SNHP for which an economic assessment has been attempted*) will not re-pay the initial investment, and that the manner in which the cost-recovery has been calculated has prevented cheaper options from being considered.

Today's prices are 0.3-0.7€/m3 as an average, groundwater prices – considering financial cost recovery – are about 0.9-0.12€/m3 and the "free" water market in Murcia is in a range between 0.12-0.18€/m3 (exceptionally 0.30€/m3). The SNHP puts forward an "admissible" water price of 0.24-0.48€/m3, which is much higher than actual prices and contradicts the Government's promise of "acceptable and subsidised prices" for agriculture. This means that farmers are now demanding unlimited water resources to be made available to them, but will not be able to pay the final financial cost-recovery prices.

The SNHP does not adequately analyse cheaper alternatives (see Chapter 7), and completely fails to consider the "full cost-recovery" of the Ebro river transfer, as it hides additional financial costs and does not consider the environmental and resource

[36] For further information see "Analysis of the Strategic Environmental Assessment document of the NHP presented to the European Commission by the Spanish Government". This is a document from the "New Water Culture Foundation", prepared by a team, with participation of WWF, under the direction of Professor D. Pedro Arrojo, Dept. of Economic Analysis, Zaragoza University, Spain (February 2002). Available on the internet : www.us.es./ciberico

costs (*see below*). For instance, the estimated financial cost for the water transferred from the Ebro river is 0.31€/m3, and this is the same for all the beneficiaries along the transfer without considering that the costs will increase with the distance. This price of 0.31€/m³ will also end up being higher as:

- It does not include the expected budgetary deviations of a public project of this scale, which can double or even triple the final cost and thus be higher than the 30% predicted. Recent water infrastructure projects[37] have increased their budgets by +50-100%, a fact that has not been taken into account in the SNHP's economic studies.
- It is based on cost redemption periods that have been artificially increased to 50 years, ignoring that between 20 – 25% of the foreseen investments are for the kind of works (pumps, turbines, pipes etc.) that should be redeemed over no more than 20 – 25 years.
- The operationalisation of the transfer will be more expensive than expected because the SNHP has assumed that 100% of the water will be available 1 year after the start of the works. However, more realistic calculations[38] show that the transfer will only work at a 100% capacity 10 years after the works have started. This distorts the cost-benefit balance, avoiding costs, which from a realistic point of view would increase the unit costs by about 20-35% per cubic metre (because of erosion of discount rates in the period from the beginning of the works until 100% of the promised water is supplied). Resulting delays in the cost redemption period would mean an increase in the costs of about 0.11€/m3.

A rigorous analysis[39] of the SNHP should also take into account other costs, such as:

- The environmental and resource costs eg. the effects of the Ebro transfer on the status of the Ebro Delta have not been considered in the SNHP. The SNHP sets the value of the existence (or "non-use") of a given natural resource, without any supporting study, at 0.03€/m3. However, this is barely 10% of the total annual costs (0.31c€/m3), whereas various authors[40] have estimated this non-use value ranges from 30 to 90%.
- The costs of building the dams that will ensure the Ebro river is capable of supplying the 1,050 hm³ of water destined for the transfer, and which will exceed 693 million €.
- The cost of treating the Ebro's polluted and salinised water (45% is for water supply) which is an additional 0.06€/m³ (for osmosis treatment). Due to the bad water quality of the transferred water, the 493 hm3 destined for domestic use needs to be treated so it complies with drinking water standards.

When all these costs are included, the price of a metric cube of transferred water from the Ebro would range from 0.82€/m³ to 1,04€/m³ in Murcia , and in Almeria 1,46 €/m³. These prices are definitely not competitive when compared to other means of providing extra water to these areas. See, for example, the most recent project proposals for seawater desalination in Almería and others.[41]

Other extra costs for which there are presently no estimates are derived from:

- Climate change, which will result in increasing water scarcity and thus problems to guarantee the fixed volume to be transferred from the Ebro river. This would logically raise the costs of the transferred water, but has not been accounted for.
- The "Loss of Opportunities" costs linked to the need to ensure the fixed volume to be transferred from the Ebro river. The Government's chosen option will imply huge additional costs due to the expropriation of hydro-power rights and the costs of the construction of the six dams in the Pyrenees (up to 783 million€).

Finally, it is also necessary to re-calculate the total annual cost of the transferred water (the 0.31€/m3) to consider that, depending on the season and the hydrological year, the total volume available to transfer will be less than what was initially calculated (1050hm3). If not, the cost redemption period (initially 50 years) should be further extended.

[37] See SAHUQUILLO, A. (2001): " Crítica a la justificación del trasvaseEbro-Júcar-Segura", en Arrojo. P. (coord.) *El Plan Hidrológico Nacional a Debate,* Bakeaz, Bilbao; pp. 453-465

[38] See SAHUQUILLO, A. (2001): " Crítica a la justificación del trasvaseEbro-Júcar-Segura", en Arrojo. P. (coord.) *El Plan Hidrológico Nacional a Debate,* Bakeaz, Bilbao; pp. 453-465 ; AYALA, F.J. (2001) : "Impactos del Cambio Climático sobre los recursos hídricos en España y viabilidad del PHN –2000"; en Arrojo.P. (coord.) *El Plan Hidrológico Nacional a Debate,* Bakeaz, Bilbao; pp. 51-67.

[39] Carpintero, Oscar, ob. cit, pág. 92 y ss.

[40] The « Comunidad de Madrid » estimated the economic value of its forest heritage at 75% in 1996.

[40] See Carpintero, Oscar, ob. cit., pág. 96 y 97 y diario El País, 10-6-02.

[41] See Carpintero, Oscar, ob. cit., pág. 96 y 97 y diario El País, 10-6-02.

4 IT WILL HAVE SIGNIFICANT IMPACTS ON THE ENVIRONMENT

The SNHP will impact the environment in two ways. On one hand, the Ebro-Levante/Cataluña Transfer, including the courses and dams in the Pyrenees needed to assure its functioning. On the other hand there are the impacts arising from Annex 2 (the Investment Plan), which proposes over 889 works, among them 117 dams and embanking.

Summary of impacts on Habitats and Species of EU importance

Both the Ebro river transfer and the SNHP's Annex 2 water infrastructure works (e.g. dams, river broadening, reservoirs and channelling) will affect 126 Important Bird Areas (IBAs - BirdLife sites for the EU Birds Directive) out of 391, thus 32% of Spain's total, and 86 Special Protection Areas (SPA's for the EU Birds Directive), out of 303 across Spain, thus 28%. These figures are quite conservative![42]

The water infrastructure works proposed in Annex 2 will seriously affect 18 species and 14 habitats (that should be part of the EU's Natura 2000 network[43]) protected by the Habitats Directive. At least 71 of the proposed works have been identified by WWF as having an adverse effect on 82 official Sites of Community Interest (SCI, for the Habitats Directive) that the Spanish Government itself has proposed for inclusion in the Natura 2000 network. There are 44 sites which will be affected directly and 38 indirectly.

The most affected habitats will be "Riparian forest of white willow and white poplar - *Salix alba* and *Populus alba* galleries", which will be impacted by 21 of the works; "Alpine rivers and associated ligneous vegetation - *Salix elaeagnos",* which will be impacted by 15 works; and "Southern riparian galleries and thickets (*Nerion tamaricetea and Securinegion tinctoreae)*" will be affected by 14 works. The water engineering works will also impact priority habitats under Annex I of the Habitats Directive. These include "Alluvial forest with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion Albae*)", which will be affected by 12 works; "Endemic forest with *Juniperus spp"* affected by four works; and "(Sub) Mediterranean pine forest with black pine (*Pinus uncinata*)" affected by three works.

The fauna species most threatened by dams and river regulation/channelisation are fish such as Madrilla (*Chondrostoma toxostoma*) to be affected by 33 of the proposed works and Calandino (*Rutilus alburnoides*) threatened by 28 works. The SNHP will impact negatively on two species for priority protection under the Habitats Directive - the Iberian lynx (*Linx pardinus*) which would be affected by 25 works, and the Brown bear (*Ursus arctos*), threatened by 2 works.

Specific impacts on Habitats of EU importance per river basins

In the Ebro Basin where most dams are proposed, up to nine dams will affect over 11 SCI. The North Basin is the most affected by negative proposals, where up to 13 SCI will be damaged as a result of water and river engineering works. Impact on other basins is as follows: North Basin - 13 SCI, Tajo Basin - 11 SCI, South Basin - 11 SCI, Guadalquivir - 10 SCI and Guadiana - 9 SCI.

Main impacts on "water status"

On of the main impacts will be deterioration of the current ecological and chemical status of affected freshwater ecosystems throughout the Spanish territory (with possible impacts in Portugal) contrary to the WFD's environmental objectives (ie. prevention of further deterioration of current status and achievement of good status). In some cases, the deterioration will be irreversible (due to the large water infrastructures created) preventing the affected water body from ever reaching good status.

There are about 117 large dams proposed in Annex 2 of the SNHP. Many of these threaten sections of rivers at the head of basins, which make up the best conserved ecosystems of Spain, or even Europe in some cases. Impacts from dams and reservoirs include disruption of fish migration, increased water temperature and salinity, reduction in sediment loads and ecological flow, etc. leading to deterioration in all the components of status (biological, physico-chemical and hydro-morphological as well as chemical) defined in the WFD.

[42] See SEO/Birdlife: "Queja presentada por Seo/Birdlife ante la Comisión Europea con motivo del Plan Hidrológico Nacional". (Complaint lodged by Seo/Birdlife to the European Commission concerning the National Hydrological Plan) February 2002. It is based on a highly detailed study of the zones affected by the SNHP's 800 main works, to which we refer in its entirety.

[43] To be established, as required by the Habitats Directive by 1995 at the national level and by 1998 at the EU level

Piping for the water transfers will lead, *inter alia*, to deterioration of biological status via introduction of alien species in the basins receiving transferred waters with the subsequent threat to the survival of native species. In addition, there can be a deterioration of chemical status depending on the origin of the transferred water (e.g. the Lower Ebro river has very poor water quality). Further, there could be hydro-morphological deterioration (via over abstraction) in the donor basins, as calculations on the "excess" water to be transferred have not fully integrated, amongst other parameters, long-term (100 years) climate change forecasts for the region.

Details of impacts on "nature conservation" and "water status" in the Ebro river transfer (main bulk of the SNHP)

The main impact of the Ebro river transfer is the irreversible deterioration of the Ebro Delta, through the Ebro/Cataluña Transfer's deviation of 1,050 hm³/year. The transfer will also affect four Sites of Community Importance (for the Habitats Directive) and several protected species of molluscs (e.g. *Margaritifera auricularia)*. This data[44] is supported by various studies from noted specialists in Aquatic Ecology and was deliberately held back by both the Autonomous Catalan Government and the Spanish Environment Ministry until after the adoption of the SNHP law and later published by the authors[45]. In as much as possible, the impacts on the Ebro Delta have been confirmed by several Spanish scientists in different fora.

The Ebro Delta is currently undergoing serious erosion due to lack of sediments (held back by existing dams in the Ebro river basin). This condition will deteriorate with the SNHP because the Plan does not acknowledge the need for a minimum flow of solids, which has been estimated to be between 1.3 and 2 million metric cubes/year.

The Delta's average flow, which will drop due to climate change[46], is 350 m^3/s, and not 430 m^3/s as stated by the Spanish Environment Ministry. Furthermore, the Environment Ministry has set a totally arbitrary value for the minimum flow for the city of Tortosa near the Delta of 100 m^3/s; although even in years of heavy rainfall and flooding it has never reached this volume of water[47]. This flow is thus unfeasible from an environmental point of view**.** In addition, if 1,050 Hm³ are transferred yearly from the Ebro river the volume of water will not be enough to meet environmental requirements, which is mandatory under the WFD principle of "no deterioration". Further, this reduced flow will only aggravate the lower Ebro's lack of fresh water, which must reach the sea.

All of the above will lead to the increased duration and length of the salt wedge, which presently spreads over 30 km upriver from the Ebro river mouth leading to salination, pollution (low dilution) and anoxia of the area[48]. These effects will accentuate if additional (40) new dams are built in the rest of the Ebro river basin.

Climate change forecasts indicate that the sea level will increase by 35 cm by 2050 (the cost redemption period estimated for the project), and that available resources in the Ebro river basin are not enough to transfer the fixed 1,050 hm³ This situation will lead to the final degradation of the Delta, as has already happened in the Po estuary (Italy), in the outlet of the Nile and in the State of Louisiana (USA).

Other estimated impacts on the Ebro Delta are as follows - pollution from fertilisers and pesticides (from the extra irrigation to be set up in the Ebro river basin); increased salinity in the Delta water bodies that could lead to the disappearance of some lagoons; impacts on wetland vegetation; reductions in fish and shellfish fisheries; and severe effects on protected animal species (eg. *Margaritifera auricularia*) and others. Besides several scientific papers that have been published in different international journals, most views can be found in the "Analysis of the Strategic Environmental Assessment document of the NHP presented to the European Commission by the Spanish Government"[49].

The Ebro river transfer will also affect rivers in the Central Pyrenees, in particular threatening "high status" sections of rivers at the head of basins, and the Ebro river basin itself via the construction of six

[44] The RAMSAR Assessment Mission n° 43 published its report, which pointed to serious concerns for the future of this wetland due to the development of the SNHP. Available on the Internet, Full Report: http://ramsar.org/ram_rpt_43s.htm English language summary:http://ramsar.org/ram_rpt_43e_summ.htm

[45] See Arrojo Agudo, Pedro: "El Plan Hidrológico Nacional a debate" ("Debate over the National Hydrological Plan"). Bakeaz-Fundación Nueva Cultura del Agua. Bilbao. 2001. On the subject of the Delta itself, see: Ibáñez, Carles; Prat, Narcís; Canicio, Antoni y Curcó, Antoni: "El delta del Ebro, un sistema amenazado" ("The Ebro Delta, a system under threat"). Bakeaz-Coagret. 1999.

[46] See Ayala-Carcedo, Francisco J: *Impactos del cambio climático sobre los recursos hídricos en España y viabilidad del Plan Hidrológico Nacional 2000*,*(Impacts of climate change on Spain's hydrological resources and feasibility of the 2000 SNHP)* in Arrojo Agudo, Pedro (coord.), ob. cit., pág. 51 y ss.

[47] See Ibáñez, C.; Prat, Narcís et al: ob. cit. pág. 101.

[48] The latest heavily subsidised irrigations of the Ebro mid-valley will carry out an additional 10,000 tons of carbon, 1,000 of phosporus and 15,000 tons of discolved nitrogen. See Ibáñez , C.; Prat, Narcís et al: ob. cit. pág. 61 y ss.

[49] A document from the "New Water Culture Foundation", prepared by a team under the direction of Professor D. Pedro Arrojo, Dept. of Economic Analysis, Zaragoza University, Spain (February 2002)

dams. These are needed to provide water to make the transfer of the desired volume from the Ebro river possible. Flooding will lead to habitat destruction in two rivers designated as Proposed Sites of Community Interest (Habitats Directive), and will also be in breach of the no-deterioration obligation in the WFD.

Another effect is deterioration of the coastline fisheries through lack of nutrients and freshwater, as happened with the Nile after the Aswan dam was built[50]. The Institute of Marine Sciences, CSIC, in Barcelona, has calculated that the quantity of fish (anchovies, sardines, swordfish - an important part of Spaniards' daily diet and export economy) will decline by around 20 per cent if the Ebro river transfer scheme is allowed to go ahead. In the case of anchovies, for instance, each cubic metre of water per second from the Ebro river leads to a harvest of 200kg the following year. Now the Institute is studying the effect the water transfer from the Ebro will have on the reproduction of sardines, which reproduce at a different time of year than anchovies. In many parts of the Spanish Mediterranean coast, the water from rivers is the only source of nutrients during the reproductive cycles of fish, whether they occur in spring or winter.

A significant environmental impact is also foreseen in those river basins receiving the transferred water from the Ebro. To begin with, the salinised and polluted waters of the Ebro are intended for urban use (45%), and this has not taken into account future growth of tourist housing along the Mediterranean[51] coast. This will lead to higher energy costs for water treatment and desalination in order to comply with standards for drinking water.

The "General Urban Zoning" plans of many areas in the Levante are presently being revamped, solely in the light of the planned Ebro river transfer (creating new, "artificial" demands that are unsustainable due to lack of water). Land is being ploughed, especially in protected areas as well as in areas affected, strangely, by forest fires. The environmental protection status of some 14,000 hectares has even been lifted.

Other notable effects are the invasion of fish species and aquatic flora in the receiving basins, leading to deterioration of current biological status against the WFD, as no preventative approach has been undertaken as shown by SNHP official documents[52].

***Photo 3**: Iberian Lynx, the priority protection species under the Habitats Directive / **Credit**: WWF-Spain/ADENA*

[50] Atwi, M. B. y Arrojo, P: *Impacto ambiental de las grandes presas en los cursos bajos, deltas y plataformas litorales: el caso de Aswan*, (*Environmental impact of large dams on the lower waterways, deltas and coastal margins"* in "Actas del II Congreso Ibérico sobre Gestión y Planificación de Aguas". Zaragoza, 2001.

[51] In the province of Valencia there is barely 20km of un-urbanised coastline remaining.

[52] See Doadrio Villarejo, Ignacio: *La ictiofauna continental en el Plan Hidrológico Nacional*, *(Continental ichthyofauna in the National Hydrological Plan*) in Arrojo Agudo (coord.), ob. cit., pág. 125 y ss. Ibáñez Martí, Carles: *El impacto ambiental del Plan Hidrológico en el tramo final del Ebro (The Environmental impact of the SNHP on the Lower Ebro)*, in Annex 8 of the study of Mediterranean fisheries conducted by WWF/Adena, and available on its Internet site – www.wwf.es

OVERVIEW

The SNHP, Natura 2000 and species protection under the Habitats and Birds Directives

Summary: WWF and other NGOs have identified at least 71 of the proposed water and river engineering works (dams, river broadening or reservoirs, water transfers, regulation/canalisation of rivers and streams, etc) from Annex 2 of the SNHP as having a significant negative impact on at least 82 of the official Sites of Community Importance (SCI) proposed by the Spanish Environment Ministry for the Natura 2000 network. There are 44 sites which will be affected directly and 38 indirectly. At least 126 Important Birds Areas and 86 Special Protected Areas (protected in application of the Birds Directive) will be affected, including at least 14 habitat types and 18 species.

Habitats of Community Interest (Annexe I of the Habitats Directive): The most affected habitats will be "Riparian forest of white willow and white poplar - *Salix alba* and *Populus alba* galleries" - which will come under the impact of 21 of the total of 71 river engineering works identified as "damaging" for Natura 2000 sites. "Alpine rivers and associated ligneous vegetation - *Salix elaeagnos"* - will be under the impact of 15 of these projects. "Southern riparian galleries and thickets (*Nerion tamaricetea and Securinegion tinctoreae)*" will be affected by 14 river works. The engineering works will also impact priority habitats such as: "Alluvial forest with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion Albae*)", which will be affected by 12 works; "Endemic forest with *Juniperus spp"* affected by 4 works; and "(Sub) Mediterranean pine forest with black pine (*Pinus uncinata*)" affected by 3 works.

Impacts on Sites of Community Importance (SCI) in river basins: In the Ebro Basin where most dams are proposed: there will be up to 9 dams affecting over 11 Sites of Community Importance (SCIs). The North Basin is the most affected by negative projects, where up to 13 SCIs will be damaged as a result of water and river engineering works. Impact on other basins is as follows: North Basin - 13 SCIs, Tajo Basin - 11 SCIs, South Basin - 11 SCIs, Guadalquivir - 10 SCIs and Guadiana - 9 SCIs.

Species protected under the Habitats Directive: The fauna species most threatened by dams and river regulation/canalisation are fish such as Madrilla (*Chondrostoma toxostoma*) to be affected by 33 of the proposed works and Calandino (*Rutilus alburnoides*) threatened by 28 works. The SNHP will impact negatively on 2 priority species protected under the Habitats Directive: the Iberian lynx (*Linx pardinus*) to be affected by 25 works, and the Brown bear (*Ursus arctos*) threatened by 2 works.

Birds species: At least 86 Special Protection Sites (SPAs under the Wild Birds Directive) will be adversely affected by the SNHP, with the Spanish Imperial Eagle one of the major bird species at great risk.

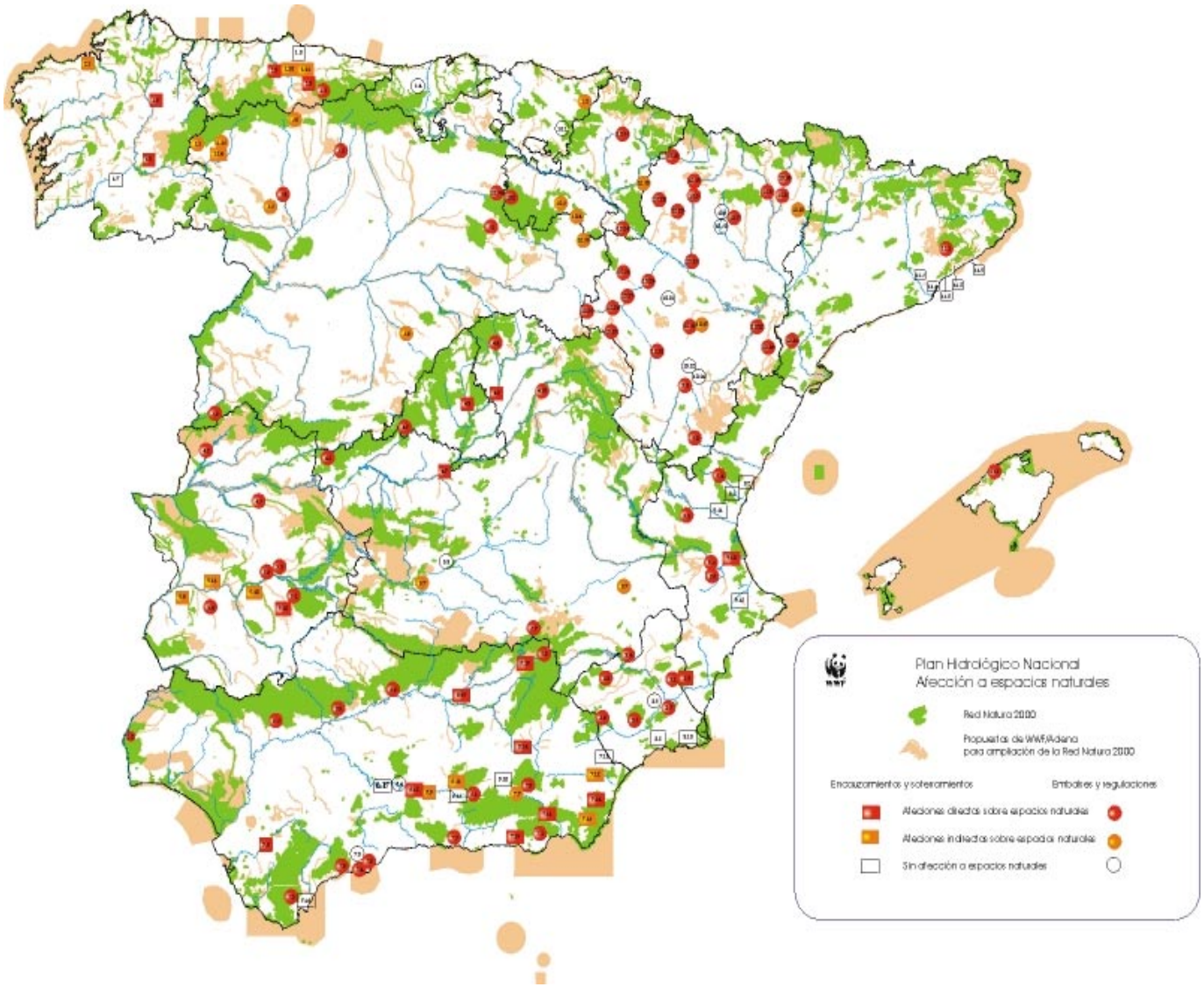

Figure 3. *Map showing Natura 2000 areas threatened by the Spanish National Hydrological Plan.* ***Credit:*** *WWF*

WATER INFRASTRUCTURE WORKS AFFECTING NATURA 2000 SITES

1. North River Basins

- Presa[53] de Herrerías
- Presa de Ibiur
- Presa de Caleao
- Aprovechamiento hidráulico del Alto Aller
- Encauzamiento[54] del río Cabe en Monforte de Lemos
- Encauzamiento de los ríos Rato y Fervedoira
- Encauzamiento del Miño en Orense
- Encauzamiento del río Piles en Gijón
- Encauzamientos de los ríos Caudal y Nalón
- Encauzamiento y túnel de desvío del río Gafo en Las Caldas
- Encauzamiento del arroyo Otero en Santa Cruz de Bezana
- Mejora hidráulica de la red fluvial en Liendo
- Encauzamiento de los río Cúa, Burbia, Barredos, Sil y Boeza en el Bierzo

2. Galician River Basins

- Encauzamiento del río Mero entre la presa del Cecebre y la desembocadura

3. Duero River Basin

- Presa de Castrovido
- Embalse hidroeléctrico de Sahechores
- Presa de El Cobanillo, Río Eria
- Presa de El Sardonal, Río Duerna
- Presa de Casares de Arbás
- Presa de Irueña
- Presa de Irueña

4. Tajo River Basin

- Recrecimiento del embalse de Navalcan y trasvase al Tietar
- Recrecimiento del embalse de Borbollón
- Presa del Almonte
- Regulación del Sorbe
- Regulación del alto Alberche
- Acondicionamiento del Henares desde Humanes hasta Jarama
- Ordenación hidráulica del Tajo entre Bolarque y Talavera
- Acondicionamiento del Jarama entre la carretera de Algete y el Henares
- Diques inundables del embalse de Entrepeñas

5. Guadiana, Piedras, Tinto and Odiel River Basins

- Presa de la Coronada
- Embalse55 del Andévalo
- Presa de Sanlúcar
- Presa de Villalba de los Barros
- Presa de Alcollarín
- Presa de Búrdalo
- Presa de Alcolea
- Presa de la Cerrada en el Arroyo Atalaya
- Defensa contra avenidas de los arroyos Rivillas y Calamón
- Encauzamiento en Valdetorres
- Encauzamiento en Puebla de la Calzada
  Encauzamiento en Quintana de la Serena

6. Guadalquivir River Basin

- Presa de Jesús del Valle
- Presa de Siles
- Presa de los Melonares
- Presa de San Calixto. Río Genil
- Presa de La Breña II
- Presa del Arenoso
- Presa de Salobre
- Encauzamiento del Guadalete en Arcos de la Frontera
- Encauzamiento de los ríos Cubillas y Genil en la vega de Granada
- Encauzamiento de la rambla de Fiñana y el Río Guadix
- Unión de los cauces de los barrancos de la zona norte de Granada en el río Genil
- Encauzamiento del Genil en Villanueva de Mesía
- Encauzamiento del Monachil entre Monachil y Granada
- Presa de Gor
- Corrección del río Guadalimar aguas abajo de la presa Giribaile
- Encauzamiento del río Guadalimar en el entorno de la presa de Giribaile
- Encauzamiento del arroyo Burriana en su desembocadura en el río Genil

7. South River Basins

- Presa de Carcauz
- Recrecimiento de la presa de Guadarranque y encauzamiento del río
- Presa de Otivar
- Presa en el río Ojen
- Presa en el Alaminos

[53] Dam
[54] Channeling

[55] Reservoir

- Embalse del Nacimiento
- Embalse de Canjayar
- Presa de Cerro Blanco. Río Grande
- Recrecimiento de la presa de la Concepción
- Encauzamiento del río Almanzora
- Encauzamiento del río Andaráx
- Dragado y encauzamiento de la rambla del Pantano
- Encauzamiento de la rambla del Saliente
- Encauzamiento de la vega del río Aguas
- Reencauzamiento del río Adra
- Encauzamientos de los arroyos de La Línea de la Concepción y San Roque
- Adecuación del curso bajo del Guadalhorce

8. Segura River Basin

- Presas de las ramblas de Torregorda y Seca Salada
- Ampliación de la desembocadura de la rambla de las Moreras
- Presa de la rambla de Lebor
- Recrecimiento del embalse de Camarillas
- Presa de rambla Salada
- Recrecimiento de la presa de Valdeinfierno
- Presas de las ramblas del Puerto de la Cadena, Tabala y Arroyogrande
- Presa de Moratalla
- Encauzamiento de la rambla de Abanilla
- Encauzamiento de la Rambla de Benipila

9. Júcar River Basin

- Regulación del río Belcaire
- Regulación de la rambla de Cerverola
- Nueva presa de Tous
- Presa del Algar
- Presa de Villamarchante
- Presa del río Sellent
- Presa de Montesa
- Embalse de Mora de Rubielos
- Embalse de los Alcamines. Río Alfambra
- Acondicionamiento del Júcar en Carcagente
- Acondicionamiento del bajo Turia
- Laminación y control de avenidas en la cuenca media del Serpis

10. Ebro River Basin

- Embalse de Araia
- Regulación del Oja
- Presa de Terroba
- Presa de Enciso
- Embalse de Biscarrués
- Embalse de Montearagón
- Regulación del Alcanadre
- Embalse de Beranuy. Río Esera
- Embalse de Vero
- Presa de Lechago
- Presa de la Fresneda-Torre del Compte
- Embalse de Molino de las Rocas
- Presa del Batán
- Embalse de las Parras. Río Martín
- Embalse de Ciscar
- Regulación del Tastavins. Río Matarraña
- Regulación del Alchozasa. Guadalope
- Contrapresa de Moneva. Aguas Vivas
- Recrecimiento del embalse de la Peña
- Embalse de Biota
- Recrecimiento del Embalse de las Torcas
- Embalse del Pontet. Río Matarraña
- Recrecimiento del embalse de la Tranquera
- Regulación de los ríos Queiles y Val
- Embalse de Espeso. Río Jalón
- Embalse de Carabán. Río Jalón
- Embalse de Umbrías. Río Jalón
- Embalse de Orera. Río Jalón
- Embalse de Luna. Arbás
- Embalse de Valtejedores
- Embalse de Trasobares
- Recrecimiento del Yesa
- Presa de Arraiz
- Presa de Villagalijo
- Presa de Cigudosa-Valdeprado
- Embalse de Santa Liestra
- Recrecimiento del embalse de Santolea
- Embalses laterales de Bárdenas

11. Cataluña River Basins

- Actuaciones en la cuenca del Tordera
- Canalización de la Riera de Arenys de Munt
- Canalización del río Llobregat
- Soterramiento de las rieras de Tiana y Miquel Matas
- Soterramiento de la riera de Teia
- Canalización de tramos urbanos de las Rieras de Sant Domenec, Gavarra y Buscarons y torrente de Can Figuerola. Canet de Mar

12. Baleares River Basins

- Regulación de la Sierra de Tramontana

TOTAL Reservoirs: 95, of which 11 are "enlargements" + Channeling: 43 = 138 water infrastructure works

5 IT GOES AGAINST EU LEGISLATION AND POLICY

In WWF's view, the SNHP is incompatible with Community policies and activities. It is in breach of several articles of the EU Treaty and contravenes the purposes and objectives of several EU Directives, notably the Water Framework Directive (WFD), the Birds and Habitats Directive, the Directives on Environmental Impact Assessment (EIA), the Strategic Environmental Assessment (SEA), as well as overall European Commission/EU commitments under International Conventions (eg. the Århus Convention on access to environmental information and justice on environmental matters).

The SNHP contradicts EU legislation and actions on the following issues:

Sustainable Development

The SNHP contravenes the sustainable development objective expressed in the EU Treaty (Articles 2 and 6) and recalled in many EU laws and official texts, notably the Sustainable Development Strategy adopted at the Gothenburg Summit, and the promotion of sustainable water use based on long-term protection of available resources in Article 1 of the Water Framework Directive.

Since one major strand of the EU contribution to the World Summit on Sustainable Development agenda is a Global Water Initiative, based on the promotion of sustainable management of water resources (Integrated River Basin Management), a principle that underpins the Water Framework Directive, any support from the EU to the implementation of the SNHP would no doubt strongly weaken the EU's position at the Johannesburg Conference. Further, developing the SNHP is contrary to the European Parliament's Resolution on the EU Sustainable Development Strategy for the "Barcelona Summit" of 15-16 March 2002, where the Parliament expressed "concern about unsustainable water management schemes across Europe", such as water transfers, and called on the Commission "not to provide any EU funding for such projects".

Applicability of EU Laws

According to the Treaty, Member States have "standstill" obligations during the transposition of EU law, which are applicable in the case of the Water Framework and Strategic Environmental Assessment Directives. In relation to both these Directives, the SNHP contravenes Article 10 of the Treaty obliging Member States to ensure fulfilment of obligations resulting from the Treaty itself or from actions taken by the institutions of the Community (e.g. adoption of a Directive). This means that during the transposition period of a Directive, a Member State cannot undertake measures against EU legislation, or any action that can jeopardise the short, medium or long-term objectives pursued by such legislation[56]. However, the Spanish government adopted the SNHP law after the entry into force of the Water Framework Directive, even if it goes against its purpose and environmental objectives, and will start developing projects within the transposition period of the Directive.

"No-deterioration"

The SNHP goes against the "result" obligations (ie. the environmental objectives in Article 4) of the WFD, in particular the "no deterioration" objective, which entered into force with the entry into force of the Directive (22 December 2000). The WFD requires that Member States must implement the necessary measures to prevent deterioration of the current ecological and chemical status of all water bodies[57]. It is WWF's (and many others including the Commission[58]) view that the WFD no-

[56] The meaning of this Article has been illustrated by EU case law, for example, judgement 18-12-1997, C-129/96, *Inter-Environnement Wallonie ASBL against the Wallone Region of Belgium*, Rec.p I-7411.

[57] Recalling and underlining obligations of existing water legislation for chemical quality of waters and adding new obligations to prevent deterioration of the ecological quality and quantitative aspects of waters.

[58] Including Commissioner Liikanen speaking on behalf of the European Commission at the European Parliament Plenary debate on water management, on 15 March 2001, following oral questions B5-0015/2001, B5-0020/2001, B5-0153/2001 and B5-0154/2001 by the different Parliamentary groups. Similar statement made by the Head of Unit D2 of DG Environment speaking at the EP's Environment Committee on the SNHP and infringements of EU law last 27 March 2002. Note that 22 December 200 is the date included in the Spanish Environment Ministry's brief (legal) Environmental Analysis of the SNHP (pp 24) as the date for entry into force of the "no-deterioration" clause of the WFD. See also the paper "Water Framework Directive (2000/60/EC), Legal interpretation of the 'No

deterioration objective/clause implies that an action causing deterioration of a water body - such as many under the SNHP would - is prohibited since 22 December 2000.

According to the WFD, and confirmed by the Commission[59], this prohibition can only be overcome if the Member State planning to execute such projects/measures invokes one of its limited derogation clauses (e.g. under Article 4.7). However, the granting of WFD derogations is, in turn, subject to meeting a range of conditions on the basis of a thorough analysis of the environmental impact and economic aspects on the affected river basin/s - a task to be completed under the WFD by the end of 2004. Thus, even if the SNHP will, strictly speaking, not be a River Basin Management Plan - as defined by the WFD – its implementation will necessarily require fulfilment of the mandatory obligations of the WFD. The Commission[60] has confirmed this on several occasions, and concluded that its services would not be able to fully assess whether the operational measures under the SNHP would comply with the WFD until the end of 2004.

It is, nevertheless, unclear whether projects listed in the SNHP could be granted a derogation from the WFD obligations given that this option is overruled by Article 4.8. In relation to the application of any water management measure, this Article obliges Member States not to "permanently exclude or compromise the achievement of the objectives of this Directive in other bodies of water within the same river basin" and that the measure "is consistent with the implementation of other Community legislation". In the case of the Ebro river transfer, the water abstractions will lead to deterioration of the current status of the river itself and in particular of the Ebro Delta which means that, in as far as this SNHP water transfer is concerned, there cannot be a derogation from WFD obligations.

Deterioration of water quality and quantity along the Ebro river transfer and its impact on the Ebro Delta[61] will take place despite the above-mentioned WFD "no-deterioration" obligations. The waters to be transferred from the Lower Ebro are highly saline[62]. This will put in danger the potable quality of the drinking water for the Valencia area (1 million inhabitants) downstream. Future predictions[63] of the evolution of water quality show a drastic worsening exacerbated by huge water abstractions for new irrigation along the Ebro river and the resulting salinity impacts.

The aforementioned Ebro river abstraction calculations have even been carried out using the obsolete (not in line with WFD requirements) and wrongly-called "ecological river flows" (a measure of the environmental needs). The arbitrary figure of 100m3/sec fixed for the Ebro Delta in the Ebro River Basin Plan is particularly worrying. Studies[64] show that the flow system required to guarantee the sustainability of the Ebro Delta is 9,000 – 12,500 hm3/year, which is almost four times higher than the figure for "environmental requirements" of 3,000 hm3/year - given in the SNHP and the Spanish Government SEA of the Ebro river transfer.

Global and Appropriate Environmental Impact Assessment prior to the adoption of the Plan

No EIA has been carried out on the Ebro river transfer prior to agreement on its development as part of the SNHP law adopted by the Spanish Parliament in July 2001. This absence of EIA not only contravenes the EIA Directive[65] but also the Habitats Directive. Article 6.3 of the Habitats Directive requires that national authorities undertake an appropriate assessment of the plan or project likely to have a significant impact on Natura 2000 sites before a decision on the plan itself is taken[66]. Six months after the adoption of the SNHP, the Spanish Government did publish a Strategic Environmental Assessment of the SNHP at the end of January 2002. This assessment is flawed in that it not only comes after the adoption of the Plan but is also scientifically incomplete and fundamentally

deterioration in status' duty of Member States by the Royal Society for the Protection of Birds (20 October 2001).

[59] Commissioner Liikanen, speaking on behalf of the Commission following oral questions B5-0015/2001, B5-0020/2001, B5-0153/2001 and B5-0154/2001 by the different Parliamentary groups.

[60] Commissioner Liikanen, speaking on behalf of the Commission following oral questions B5-0015/2001, B5-0020/2001, B5-0153/2001 and B5-0154/2001 by the different Parliamentary groups. Commission reply to petitions Nos. 28/2001 and 296/2001, received on 23 October 2001.

[61] Information from the "Analysis of the Strategic Environmental Assessment document of the NHP presented to the European Commission by the Spanish Government". This is a document from the "New Water Culture Foundation", prepared by a team under the direction of Professor D. Pedro Arrojo, Dept. of Economic Analysis, Zaragoza University, Spain (February 2002).

[62] They contain on average more than the 1000 µs/cm salinity limit for pre-drinking water recommended by the EU

[63] Information from Prat, N. and Ibañez, C, 2002, "The effects of the National Hydrological Pan on the Lower Ebro. Flow regime needed to maintain its ecological status", unpublished.

[64] Information from the "Analysis of the Strategic Environmental Assessment document of the NHP presented to the European Commission by the Spanish Government". This is a document from the "New Water Culture Foundation", prepared by a team under the direction of Professor D. Pedro Arrojo, Dept. of Economic Analysis, Zaragoza University, Spain (February 2002).

[65] Dir 85/337/CEE modified by Dir 97/11/CE, which obliges Member States to elaborate EIA of inter-basin water transfers.

[66] "In light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public" (Article 6.3 of Directive 92/43/EEC).

insufficient. The SEA is restricted to works associated to the Ebro river transfer and, therefore, excludes Annex 2 water infrastructure projects. Furthermore, the synergetic impacts of several new large dams (especially in the Pyrenees), together with the development of 450,000 hectares of new irrigated lands, combined with the proposed huge water transfers have been ignored, whereas they will dramatically affect the Ebro Delta. Additionally, the SEA does not consider the impacts from water abstractions and the status and potential availability of underground water resources.

Future assessments of individual projects already included in Annexe 2 of the SNHP cannot be considered as appropriate in light of the requirements of Article 6.3 of the Habitats Directive. Article 15 of the SNHP law requires that a joint impact assessment of all the projects linked to a given water transfer (e.g. on the dams, piping, water abstraction, irrigation infrastructure) is carried out before the transfer is eventually developed. However, all the SNHP water transfers including dams, abstractions etc. are already approved and included in the SNHP law text. Therefore, these joint assessments will probably only deal with the details surrounding the final layout of the water pipes and not with the global and entire implications of the SNHP on Natura 2000 sites. Therefore, the only way to fulfil the obligations of Article 6.3 of the Habitats Directive and undertake the appropriate assessment of the SNHP is to carry out a global assessment of the SNHP law text of July 2001. To note, breaches of the Habitats Directive can also be breaches of the WFD, as the latter contains requirements for special management of protected areas (Articles 6 and 8), and also adds an extra obligation for the implementation of the Habitats Directive (Article 2 and Annex 6).

Species and nature protection

Some of the 889 works listed in Annex 2 of the SNHP law (e.g. dams, river broadening, reservoirs and channelling) will have a severe impact on 126 Important Bird Areas (IBAs, sites identified by BirdLife for protection under the Birds Directive) over 30% of the Spanish total; 86 Special Protection Areas (SPAs, sites designated by Spanish Government for protection under the Birds Directive) approximately 50% of the Spanish total; 82 proposed Sites of Community Importance throughout Spain already proposed by the Spanish Government itself for the Natura 2000 Network [67] (Habitats Directive) these sites are essentials for the conservation of 14 habitat types and 18 species of Community interest - including priority species such as the Iberian Lynx and the Brown Bear.

Cost-recovery for water services and economic analysis of water use[68]

The obligation in Article 9 of the Water Framework Directive to take into account cost-recovery for water services, including environmental and resources costs, via an adequate contribution of the different water uses (e.g. industry, households and agriculture) is ignored by the SNHP, even in future predictions. Costs per cubic meter of transferred water put forward by the Spanish Government SEA of the Ebro river transfer (of 0.32 Euros/m3) are the average costs. Further, this information is fairly useless in terms of adequately considering alternatives to this transfer. What is worse, precise calculations of the costs assigned to each water unit demand by user developed by others for Alicante, Murcia, and Almeria show that the original costs estimated by the Spanish Government rise to almost 0.60 Euros/m3.

The SNHP also contravenes Water Framework Directive requirements in terms of proper economic evaluation, which are part of the "process" obligations of the Directive. There have been many errors and twists allowing a false “positive” cost-benefit balance of the SNHP. However, all these errors and gaps come to light by following and verifying the detailed reporting of the economic analysis found in the Spanish Government SEA of the Ebro river transfer. If this cost-benefit analysis had been calculated properly the result would have been negative.

Public participation and access to information

There has been a lack of transparency not only during the SNHP's development at the national level, but also, to a certain extent, during the handling of this dossier within the European Commission services. Requests by NGOs for documentation on ongoing Commission activities on the SNHP have not always received adequate

[67] According to the Habitats Directive, sites for Natura 2000 had to be proposed by Member States by 1995 and the list of Sites of Community Importance should have been adopted by the European Commission by 1998

[68] For more information please see the “Analysis of the Strategic Environmental Assessment document of the NHP presented to the European Commission by the Spanish Government”. This is a document from the “New Water Culture Foundation”, prepared by a team under the direction of Professor D. Pedro Arrojo, Dept. of Economic Analysis, Zaragoza University, Spain (February 2002).

responses. Lack of transparency surrounds the specific projects and figures in Spanish funding requests to the Commission, despite Parliamentary questions to this respect (e.g. E-2288/01), and DG REGIO's[69] commitment to "developing a partnership for transparency".[70]

Cultural heritage

The SNHP also infringes Article 151 of the EU Treaty, which states that "Action by the Community shall be aimed at the conservation and safegarding of cultural heritage of European significance". This can be illustrated by the fact that the flooding of river valleys in the Pyrenees to build six dams to make the Ebro transfer possible, will affect a number of villages and monuments of high cultural value (as is the case of the enlargement of the YESA dam, which will flood 12km of the "Santiago pilgrim's route", six Romanesque chapels, etc)

As a result of the above-mentioned incompatibility with Community policies and activities there have been several formal complaints about the SNHP issued to the European Commission, which will also be discussed at the European Parliament's Petitions Committee. Further information on all possible breaches of EU policies and activities by the SNHP can be found in a complaint to the European Commission signed by over 60 Spanish politicians, farmers, workers, rural development stakeholders, anglers, and environmental organisations (including WWF-Spain/Adena) and submitted on 10 September 2001 (registration number 2001/4649, SG(2001) A/8836).

Photo 4: *The Ebro delta, Spain /* ***Credit:*** *WWF*

[69] "Manager" of EU regional funding

[70] As stated under policy priority no. 6 on "information for the general public and publicity" of DG REGIO's Annual Management Plan 2002

BOX 3

CASE STUDY : ACHELOOS RIVER DIVERSION PLAN (GREECE)

The diversion of the Acheloos River was originally described by the Greek government as a "multiple purpose project" and was the largest, most ambitious and environmentally damaging water works project ever conceived in Greece. The original plan provided for installations with a diversion capacity of 1.2 billion cubic metres of water. The original version of the plan, promoted during the mid-1980's, included the construction of five dams, a number of tunnels, corresponding hydroelectric plants, an extensive road network and a vast irrigation and drainage network covering 350,000 hectares. The aim was to irrigate 240,000 hectares on the Thessaly plain, produce hydroelectric power which would eventually save power by reducing the need to deep drill in the Thessaly plain, provide the towns of Larissa, Volos and smaller regional towns with water and improve the water quality of the Pinios River and the quality and quantity of the underground aquifers.

Five Greek NGOs[71] applied for cancellation of state decisions approving the diversion works in 1995. The application was upheld by the Council of States, but not before one of the dams (the Mesochora Dam) had already been completed. The Mesochara diversion tunnel and the Hydro Electric Power Station are also currently under construction. An Environmental Impact Assessment Study was assigned and completed in a very brief 3 months, and this, coupled with the Council of State's decision, prompted the Ministry of the Environment to announce the modification of the scheme and the implementation of a "small" or "ecological" diversion. Within this revised plan, two of the originally proposed dams were cancelled and the annual quantity of diverted water would be 600 million m3 instead of 1.2 billion m3. The original dimensions of the tunnels and dams have remained unchanged within the new plan however. Under the revised plan not a single hectare of the Thessaly Plain would be irrigated by water from the Acheloos. Critics suggest the second plan was set up to fail, and with no change in the size of the dams or tunnels from the original plan, there is a clear opening for expansion later.

A second application for the cancellation of the works for the diversion of the Archeloos River, put forward again by the NGO coalition, was heard at the Greek Council of State on November 12, 1999. Work continued on the water transfer works, though due to a lack of funding, progression was slow. At this time it became clear the Greek government was being swayed by the international outcry against the project, but was forced to contend with powerful internal farming and construction lobbies. In November 2000, the Council of States concluded that the decisions made by the Ministeries for the Environment and Culture to grant approval to the construction project, were illegal. According to the ruling, the national authorities failed to examine alternatives in order to avoid impacts on the natural and cultural heritage of the affected areas. The Greek Ministry of Environment and Public Works has repeatedly ignored the rulings of the Council of States, and it is clear that the decision to stop or proceed with the water transfer scheme is a political one, with the integrated re-examination of rationale of the transfer not within the competence or scope of the Greek supreme court.

A letter sent to WWF Greece by the Greek Ministry of Environment in April 2002 states that the works have officially ceased as a result of the court decision. The dam which has already been constructed however (Mesochora), while not filled, is expected to be filled in the near future, and used for the production of hydroelectric power by the Public Power Corporation.

Arguments against the plan are conclusive and damning. It was estimated there would be irreversible environmental damage to four SAC's, including one Ramsar site and one Special Protected Area. Under the reformed CAP and Agenda 2000, Greece is required to significantly reduce its production in high yield crops such as cotton, but the premise behind the diversion of the Archeloos has always been the needs of agriculture, and the project is/was supporting intensive farming that would worse the already high pollution levels in Thessaly. (Greece is already at the very high end of the EU directives on the use of pesticides / hectare). The impact on mountainous communities, including those in S. Pindus, through the imbalance of funding and infrastructure in favour of the irrigated plain, would be negative too. The colossal cost of the project (1998 estimate of 23,500,000 Euros) had to finally be covered through national budget lines following the refusal of the EU to fund the plan through Structural Funds because it included plans for irrigation works and not only the generation of hydropower and rehabilitation of the Pinios River in eastern Greece as the Greek government claimed.

The plan is a good example of an outdated water transfer scheme that needs to be revised within a modern agricultural policy which takes into account modern trends towards more sustainable and less environmentally destructive farming methods, and would therefore also provide a basis for a more competitive agricultural industry on the world stage.

[71] (WWF Greece, Hellenic Ornithological Society, Elliniki Etaria, Hellenic Society for the Protection of Nature and Nea Ecologica)

6 IT WILL MISUSE EU TAXPAYERS' MONEY

The Spanish Government aims to execute the SNHP with the use of considerable EU Structural Funds, in particular the European Regional Development Fund (ERDF), and the Cohesion Fund. Furthermore, the Spanish National Irrigation Plan (SNIP), which will make use of the transferred water (new water supplies) for expanding irrigation, is to be co-financed by the European Agricultural Guidance and Guarantee Fund (EAGGF).

Spain is the largest recipient of ERDF, EAGGF Guidance and Cohesion Funds in the EU. The total sums allocated to Spain for the period 2000-2006 amount to approximately 43,000 €M from Structural Funds (nearly a quarter of the EU total) and 11,430 €M (63.5% of the EU total) from the Cohesion Fund.

It is, therefore, especially important that Spain uses (and is seen to use) these EU Funds in accordance with the principles established in the EU Treaty, including the requirement that all EU policies promote sustainable development, and that environmental protection is integrated into all policy areas (Articles 2 and 6 of the Amsterdam Treaty). Now is the time to set good examples for EU-Accession Countries, as well as to show that the EU puts into practice its rhetoric on sustainable development.

Yet, as shown in the previous chapter, the SNHP is incompatible with these Treaty requirements, as well as being inconsistent with several specific EU policies and activities. Co-financing of the SNHP with Community funds is thus in breach of Articles 2.5 and 12 of Council Regulation 1260/1999 laying down general provisions on the Structural Funds.

There are also important questions to be asked as to whether the use of EU Funds to co-finance the SNHP and the SNIP complies with the objectives established for the Funds themselves[72]:

Economic and social cohesion

Promoting economic and social cohesion is the overall aim of the Structural and Cohesion Funds. WWF understands that this means not only raising overall Spanish economic and social levels to those of the rest of the EU, but also improving cohesion with Spain itself. This implies focusing the investment effort on the most marginal geographic areas, and on populations most in need of economic and social improvement.

In practice, much of the investment proposed under the SNHP will benefit areas with relatively high levels of economic development, especially the east and south-east coastal regions, which were reported recently to have the fastest rate of economic growth in Spain.

Indeed, the SNHP justification on the basis of increased social and territorial cohesion is incorrect. In reality, the SNHP will transfer water from the extremely poor Aragon mountains and the rice-farming Ebro Delta to some of the richest towns of the Mediterranean coast, in clear contradiction of "cohesion" principles. The SNHP obscures this reality by a selective use of statistics. First, it excludes the Aragon region from its analysis (here six dams to feed the transfer will be built), simply because the water transfer starts further down the Ebro river. Secondly, the relatively "poor" situation of the Ebro Delta is hidden within the statistics of "rich" Catalonia. Finally, the wealth of coastal towns in Almería, Valencia and Murcia is obscured by regional statistics which include the poorer inland economies of these regions.

The social response to the SNHP is also misrepresented in the Government's document, which only refers to and values the positive responses from Murcia and Valencia, two of the "water receiving" regions. In contrast, there have been massive demonstrations against the SNHP both inside and outside Spain (eg. 300,000 people in Barcelona in February 2000, 400,000 people in Zaragoza in October 2000, the Brussels "Blue March" in September 2001 with more than 15,000 people from Spain, 500,000 people again in Barcelona on March 2002, the most recent one of 10,000 people in Palma de Mallorca in view of the EU Environment Ministers Council of May 2002 etc), which have not been acknowledged by the Spanish Government. Furthermore, other concerns as expressed by Regional governments, municipalities, the scientific community and other social actors have been ignored.
Consensus-finding is one of the UNESCO's principles for dealing with inter-basin water transfers. However, the Spanish Government

[72] These are intended to "contribute to the harmonious, balanced and sustainable development of economic activities, the development of employment and human resources, the protection and improvement of the environment, and the elimination of inequalities..."

"pushed" the SNHP upon Spanish society, e.g. by discussing in just 3 minutes the hundreds of amendments put forward to the Senate. Further, 120 scientific reports financed by the Spanish Government on the SNHP were not made public by the Government because 80 of them criticised the scheme (and thus had to be compiled and published in a book by their authors[73]). The "Water Basin Councils" have not been effective because they exclude "new" actors (those affected by dams and transfers, environmental groups, farm unions, citizens groups, fishermen and universities) from their meetings, and have served merely to negotiate deals between the two main water users - hydropower companies and irrigation farmers. In short, due to existing conflicts and lack of consensus, it is not even clear whether the SNHP will still receive political support in the event of future changes in the Spanish national or regional governments.

Environmental priorities

At least 50% of the Cohesion Fund is specifically intended for promoting EU environmental priorities (the other 50% is for transport infrastructure). The Structural Funds should contribute to environmental improvements as an integral part of greater social cohesion and sustainable development. The EU's environmental priorities are established under the Sixth Environmental Action Plan (6th EAP), as follows:

- Tackling climate change
- Nature and Biodiversity - protecting a unique resource
- Environment and Health
- Sustainable use of natural resources and management of wastes

The environmental priorities established by the Spanish Government for Cohesion Fund spending are rather different, namely waste treatment, water treatment and water supply. These priorities do not coincide well with those of the Environmental Action Plan and are open to several criticisms: First, increasing water supply is *not* an environmental priority of the EU, and should not be financed by the Cohesion Fund. In fact, it is not an environmental action at all. However, by including this "priority" the Spanish Government can "misuse" Cohesion Funds for a wide range of water infrastructure works associated with the SNHP, from dams to inter-basin transfers.

Secondly, WWF has identified a range of deficiencies in water monitoring and management that need to be corrected if Spain is to comply with the EU Water Framework Directive (WFD) (see Section 2.5). For example, the network of monitoring stations is inadequate and most River Basin Management Plans fall far short of the requirements of the Directive. Correcting these deficiencies are priority actions, which should be co-financed by the Cohesion Fund, instead of more dams and water transfers.

Thirdly, it is striking that the second priority of the 6th EAP (nature and biodiversity) is not to be supported by the Cohesion Fund in Spain. This is remarkable given the enormous challenge of establishing an effective Natura 2000 network (which once complete will cover over 25% of Spanish territory), and that implementation of the Habitats Directive is already seven years behind schedule, partly because of the lack of funds devoted to it.

Fourthly, Spain's lamentable performance in tackling climate change has recently been highlighted by the European Environment Agency, and will not be helped by the SNHP. Tackling climate change is one of the EU's declared environmental priorities, and should be a higher priority for the use of Cohesion and Structural Funds in Spain (e.g. reducing emissions and increasing energy efficiency) than increasing water supply.

Finally, the 6th EAP emphasises the importance of promoting new models of development that are *not* based on the unsustainable exploitation of resources. The SNHP does quite the opposite - it uses public funds to increase the exploitation of a scarce resource, in order to drive the development of certain economic sectors (irrigated agriculture in the east and south-east of Spain).

Sustainable rural development

The new Rural Development Programmes introduced under Agenda 2000 are intended to establish a new Second Pillar of the Common Agricultural Policy, with the specific aim[74] of promoting sustainable rural development. However, the biggest single item of public expenditure under the Spanish programme is the execution of the National Irrigation Plan (SNIP).

[73] "El Plan Hidrológico Nacional al debate". Bakeaz-Fundación Nueva Cultura del agua. Bilbao, 2001.

[74] Council Regulation 1257/1999

As with the SNHP (See Chapter 3), the economic sustainability of the proposed irrigation projects is questionable. For example, one of the crops cited in the SNIP as a potential beneficiary of new irrigation is olives, yet Spain already exceeds its CAP subsidy quota for olives by over 50%. This year (for 2002), a surplus of 400,000 tonnes of olive oil has been announced, resulting in falling prices and decreasing viability of olive production in marginal areas. In these circumstances, it makes no sense to invest EU funds in increasing the area of irrigated olive plantations.

At the same time, the Spanish Government has failed to make use of environmental mechanisms introduced to the CAP under Agenda 2000 that could contribute significantly to promoting a more sustainable use of water in agriculture. In particular, environmental cross-compliance (Article 3 of Regulation 1259/99) should be used to clamp down on illegal bore-holes, which are a major problem in parts of Spain.

Transparency

The process of approving EU funding for SNHP projects is not transparent. First, WWF was refused access to the draft Structural Fund programmes for 2000-2006, during the design phase. Secondly, the programmes include insufficient detail. There is no mention of specific projects, only broad lines of action. These include a major and supposedly environmental line covering water and river management, where much of the spending may be on hydrological works which damage the environment, such as river channelling and dams. Until individual projects are presented to the European Commission for funding, nobody knows precisely which works might receive the money of EU tax-payers.

Thirdly, the programming documents do not provide a meaningful assessment of the state of water resources in Spain from the point of view of sustainability of use, quality or environmental problems, nor do they define clear and quantifiable targets that demonstrate progress towards a more sustainable situation.

Finally, this lack of clarity is compounded by the veil of secrecy maintained by the Spanish authorities and the European Commission as to which projects are currently being presented for funding, despite Parliamentary questions[75] and DG Regional Development's own commitment to "developing a partnership for transparency" in its Annual Management Plan 2002. In Spain, WWF has been refused access to the Monitoring Committees that oversee the selection of projects.

WWF is deeply concerned about how the Spanish Government will present SNHP projects for EU funding. Although the intention seems to be to present a series of individual projects, whose environmental impact will be evaluated separately, WWF strongly recommends that all of the works contributing to the SNHP should be considered as a "Major Project" (under Article 25 of Structural Funds Regulation 1260/1999), and thus should be evaluated as a whole in terms of sustainability and environmental impacts.

Accordingly, a recent letter from WWF to Commissioner Barnier urges the Commission "to ensure that the Spanish National Hydrological Plan, and its different components, are evaluated from this broad context of global climate change and aligned to Community policies and environmental protection requirements, and not to invest EU funding in its development until this is the case".

[75] (e.g. E-2288/01),

BOX 4

CASE STUDY : TAJO – LLANURA MACHEGA TRANSFER

The project was launched in 1992 and is listed in Annex II of the SNHP as an inter-basin transfer. Due to various problmes, modifications76 and continuous refusals by the European Commission, the transfer's sole objective is now to provide water to the people living in La Mancha. This is somewhat paradoxical as the recipient region has an almost inexhaustible source of underground water (aquifer systems of the High Guadiana), the quality of which has seriously degraded through overuse by intensive agriculture (encouraged by CAP subsidies and consuming 90.5% of the aquifer's resources) and nitrate pollution.

The project calls for taking 33 m³/sec and diverting it to the Tajo-Segura Aqueduct. Starting from a 4.25 hm³ regulator dam (Valdejudios dam), the water will run through two main pipelines stretching 17km and 97km respectively, with a 52km branch at the Gasset dam, a 37.6km pipeline from Puerto Lápice to Casas de Bolote, and another 46.8km pipeline from Cuidad Real to Puertollano.

Expropriation procedures have already begun in the headwaters zone, although the final works covered by the project will be financed by the European Union, through the Cohesion Fund (70% of the €270 million budgeted). The project was presented to the Commission and is the subject of a Community complaint which has been accepted for proceedings.

The project will have significant environmental, economic and social impacts. The piping works will affect zones of the Mancha "Humeda" SCI/ Special Protected Area (SPA), and will run completely through the SPA of the North La Mancha steppe zone. It will also destroy communities of natural relict steppe vegetation in a strip at least 10-15 meters wide along 250 km of pipeline. As it skirts problems of pollution, the transfer will do nothing to halt the overuse of water linked to intensive agriculture and urban projects. It will also curb efforts to recover the aquifers and wetlands of Wet La Mancha. Thus nothing will come of over €240 million invested in the area to check overuse and recover wetlands (Tablas de Daimiel, Ruidera Lagoons) through a programme to compensate loss of farm income from subsidies.[77]

As early as its planning stage, the transfer sparked conflict in Castilla-La Mancha between donor and recipient zones, not unlike the situation generated by the Tajo-Segura Transfer (see Box 1). A heightening of imbalances between the donor (poor) and recipient (quite rich) basins can be foreseen. It is also predictable that intensive irrigation farming will further degrade the quality of drinking water supplied by the La Mancha aquifers.

All the experts appear to concur that the water deficit in the recipient zone has turned into a "chronic" problem, and the levels of nitrate pollution continue to rise. There is no plan to recover this water or treat it for use as drinking water for the people living in the area. Neither has a sustainable alternative to the transfer been proposed. For WWF, the €270 million to be spent on these works would provide far more environmental benefit if it was invested in the recovery of the La Mancha aquifer, its wetlands, rivers and associated floodplains.

[76] The Law 8/1995, of 04/08/1995, adopting urgent measures to improve the supply of the Tajo-Segura transfer sets a limit of 50 hm^3 to the volume transferable to the Guadiana basin from the Tajo Segura aqueduct.
[77] European Agricultural Guidance and Guarantee Fund

BOX 5

CASE STUDY : "ALCOBENDAS, CITY OF WATER FOR THE 21ST CENTURY" PROJECT

This project, conducted by WWF/Adena, was supported by the European Commission, (DG ENV, LIFE Budget line), and was completed in March, 2001. The results of the project clearly show it is possible to affect the demand for water, reducing consumption but maintaining users' comfort and thus avoiding the need to increase water supply and helping to conserve the resource and the natural environment.

The project aimed to raise awareness and prevent the wastage of water, to implement corrective measures to optimise the use of water in private houses, commercial premises and public buildings, and to encourage gardening with species that require little water. The objective was also to promote the introduction of permanent mechanisms of water saving and efficiency in the use of water.

To achieve these objectives, the activities developed were:

- Awareness campaigns encouraging people to buy efficient water saving systems
- Promotion of water saving systems with neighbours and consumer associations, as well as professional and commercial associations, creating a new market and increased demand for saving measures.
- Technical events - Wise Use of Water, Mediterranean xerogardening
- Undertaking technical and legislative documents - Municipal Ordinance about urban water in Alcobendas with environmental criteria; city-planning rules; designing, systematization and the undertaking of an auditor system; publication of handbooks for housing, industry, commercial establishments and services.
- Developing financial mechanisms (Green Credit). Designing a whole Water Saving Plan in the city-planning project of Valdelasfuentes, including housing, common installations and gardens.

As a result of these activities 4,840 water saving systems have been sold, which implies a potential saving of 102,218,863 litres a year (more than 102 Olympic swimming pools). Moreover water-saving devices are installed in 3,192 homes of Valdelasfuentes, meaning a saving of another 497 million litres.

Today, measures such as Environmental Management by companies are beginning to bear fruit. Other measures which have a major impact, such as local By-laws presented to the Council and approved in Plenary Session to serve as a legislative instrument that will permit on-going savings in new homes and buildings that are refurbished, will show their effects in the future.

But the most important outcome of the project was not the savings in absolute terms, but rather the creation of mechanisms that produce a change of attitude towards water saving in cities. Compared to other water-saving campaigns, the project was not just a campaign to raise awareness, but tackled the problem in a systematic and comprehensive way, providing the appropriate tools to change the mechanisms that influence water use.

7 THERE ARE ALTERNATIVES

The SNHP does not sufficiently consider more economic alternatives to the large water infrastructure projects it promotes, despite the fact that its Article 36.1 stipulates that before water transfer works can be undertaken, other means for water provision (such as water savings) must be developed for those river basins with scarce water resources.

The Spanish Government is promoting the Ebro river transfer through a State company, "Sociedad Española para la Construcción y Explotación del Trasvase del Ebro (INTRASA)". Therefore, it does not prioritise the option of reducing, for example, current water losses in urban water distribution systems in the recipient river basins, which should be possible with an estimated investment of 5,422M€ for the total implementation of the Plan. Such a reduction could amount to 30%, "liberating" 1,500 hm3 of water. Neither does the SNHP consider the possibility to shift water from the irrigated agriculture to "urgent" needs in neighbouring urban areas via existing water markets, which would possibly be the cheapest option to meet the moss pressing urban demands. Further, the SNHP has considered old estimates of the costs of sea water desalination (0.81€/m3), although recent technical innovations mean this can now be done at 0.36-0.39€/m3.

As a result, the are several cost- and time-effective alternatives to the large water infrastructure projects of the SNHP, which have been listed in the paragraphs below and which should be developed with full participation by all users.

Respect to existing legislation and control of water use

The first thing to do before planning a water transfer scheme is to deal with the "structural illegalities". In most of Spain, these take the shape of illegal bore-holes providing irrigation water to thousands of hectares. These illegal bore-holes need to be regulated and closed, which would also require an inventory of all irrigated areas, a re-arrangement of certain crops, satellite monitoring of legal irrigated areas, flow meters etc. Such measures would curb water losses and discrepancies such as those already reported for the Castilla-La Mancha transfer (part of the SNHP's Annex 2, see Box 4), estimated at 113 hm³.

Full cost-recovery

As indicated earlier, the Ebro river transfer is based on the need to satisfying "demand", an economic concept intrinsically linked to an asking price that is related to the offer of water, merely seen as a resource for agriculture. Applying a more "real" price to water that reflects at least the full financial costs would avoid false "demands", hidden subsidies and wasted water. This is the intention of Article 9 of the WFD, which also requires integration of the full environmental and resource costs (on top of the full financial costs) in the water pricing policies of Member States.[78]

A noted Spanish water specialist[79] has shown that the cost of obtaining well water in the Mediterranean part of the country is approximately 0.52 €/m³, whereas the cost of surface water abstraction is 0.22€. However, the average official prices (€0,005/m³) included in the SNHP covers only 15% of the average real (financial) cost (€0,031/m³). In other words, the price per unit of transferred water includes a subsidy of 85%. According to this author, the Spanish authorities have recognised that, with a minimum recovery of half of the costs, between 12% to 27% of currently irrigated land could shift to dry farming in the Levante region (some 285,000 to 634,000 ha), saving then between 2,000 to 4,500 hm³ of water per year.

Desalination

According to studies by the Spanish Socialist Workers Party (PSOE)[80] (the main opposition party), desalination could yield 405 hm³/year, or 40% of the volume planned to be transferred from the Ebro river. The PSOE 2000 SNHP memorandum does not see this as a sustainable alternative, to be used only in the case of emergency (given for example high energy consumption, problems for the disposal of the salt residue etc.). Nonetheless, the Canary Islands employ this technique successfully

[78] Full cost recovery is a pillar of the FWD. The European Commission also underlined it in its document "TAP INTO IT! The Water Framework Directive" (ref: KH-41-01-317-EN-C)

[79] See Vergés, Josep C: "El saqueo del agua en España" ("*Water pillaging in Spain"*, Pub. La Tempestad. Barcelona. 2002. p.77. Page 97 of this work shows a table with the official tariff and real price in Spain by hydrographical basin.

[80] Report available on internet, in the section on water policy: www.psoe.es

using renewable sources of energy as well. In this respect, the SNHP only considers it viable to a limited extent in the Almería region and the Segura river basin, although inexplicably it does not consider it an option for the Júcar river basin and the inland basins of Catalonia.[81]

Water savings via modernisation of irrigation systems

Flood irrigation with overall water use efficiencies (i.e. the ratio of water reaching the crops over the water supplied at the source) of a maximum 55-60% is still the chosen method in most regions of Spain with a supposed "structural deficit". Flood irrigation in Andalusia affects 42.3% of the irrigated surface area; whereas in Murcia this figure is 60.3% and in Valencia 80.2%. This illustrates how much water is currently being wasted by the use of obsolete irrigation methods in regions that apparently suffer from water scarcity problems[82].

In the Jucar Basin, both the SNHP and the Strategic Environmental Assessment of the Ebro river transfer carried out by the Spanish Government underestimate the option of water savings, especially in the existing irrigation systems, which have an overall efficiency estimated at 38%. Increasing this rate to 55%, a figure still low and certainly compatible with the socio-environmental values of traditional irrigation methods, would save 123 hm³/year. Likewise, assuming that farming in the Valencia region has the potential to save 10% of the water volume currently used there (this being a minimum realistic objective), this would amount to savings of approximately 250 hm³/year. According to data from the PSOE, savings in the four recipient basins of the Ebro waters could reach 1240 hm3/year, which would render the Ebro river transfer of 1050 hm3/year unnecessary.

Urban water savings

The potential for saving by modernising the urban water networks throughout Spain is some 1,500 hm³/year[83], and in the Mediterranean regions of Spain up to 400 hm³/year. Improving the efficiency of the urban networks by only 10% in those regions that are recipients of the Ebro water could save approximately 150 hm³/year.[84] It is also worth mentioning the water already saved in the Greater Barcelona area, where consumption has dropped to 1973 levels leading to restoration of the Llobregat aquifer.

In Zaragoza**,** the "Ecology and Development Foundation"[85] promoted the "Saragossa, Water Saving City" project, which led to savings of 1,176 million litres of water (5.6% of the city's annual household consumption). WWF (see Box 5) set up a very successful water savings project in Alcobendas (Madrid) from 1999 to 2000, which resulted in 102 million litres of domestic water saved via the installation of 5,000 water saving devices in over 3,000 households[86]. Further, in Sevilla, households which installed individual meters lowered their consumption by 30%.[87] In conclusion, before planning a water transfer project, an integrated program for water demand management should be developed, similar to those implemented in the United States since 1983. In Spain the Mallorca town of Calvia installed such a programme in 1998, with a 20% drop in consumption foreseen by 2007[88].

Water re-use

Unlike current practices in California and Florida[89] with a climate and rainfall similar to Spain, the SNHP hardly mentions the option of re-using water, which is limited to the Canary Islands and a few areas in the inland basins of Catalonia. Re-use is,

[81] See Gobierno de Aragón: "Alegaciones al Plan Hidrológico Nacional de 2000". (*"Statements on the 2000 SNHP"*)Civitas. Madrid. 2001, pp.128-129

[82] See Roldán Cañas, José: *Comentarios al PHN: Aplicación a las Cuencas del Guadalquivir y del Sur*,("Commentary on the SNHP: Application to the Guadalquivir and Southern Basins") in Arrojo Agudo, Pedro (coord.): "El Plan Hidrológico Nacional a debate" ("*The SNHP under debate")*. Bakeaz-Fundación Nueva Cultura del Agua. Bilbao. 2001, pg. 437

[83] WWF recommends the report by Estevan, Antonio and Viñuales, Víctor (comps.): "La eficiencia del agua en las ciudades"("*Water efficiency in cities")*. Bakeaz. Bilbao. 2000.

[84] An essential source is the report by the Fundacion Nueva Cultura de Agua, prepared by notable specialists and professors on water management in Spain, entitled "Análisis del Estudio de Evaluación Ambiental Estratégica del Plan Hidrológico Nacional" (*"Analysis of the National Hydrological Plan's Strategic Environmental Assessment")*, which was presented to the European Parliament and the European Commission in February 2002. Available on internet: www.us.es/ciberico

[85] www.ecodes.org

[86] Information available on internet www.wwf.es.casadelagua/resultados.html

[87] www.aguasdesevilla.com

[88] See Estevan, Antonio and Viñuales, Víctor (comps.): op.cit. p.145 and following and p.178.

[89] See Mujeriego Sahuquillo, Rafael: *La reutilización planificada y el Anteproyecto del Plan Hidrológico Nacional*, ("Planned re-use and the first draft of the National Hydrological Plan") in Arrojo Agudo, Pedro (coord.), op. cit., p. 409

strangely, not planned in Almeria, one of the regions which apparently suffers from severe water scarcity.

Studies by the PSOE estimate water re-use figures at 265 hm³/year for Spain overall. The 1995 version of the SNHP foresees re-use at 415 hm³/year, a figure that has surprisingly being reduced to 200 hm³/year in the 2000 version of the SNHP.[90]

Intermediary markets or water banks

California, with a climate and rainfall similar to Spain[91], suffered a severe drought from 1987 to 1991. Early in 1991 they set up a Water Bank. The firms participating in the Water Bank estimated their critical urgent needs at 614 hm³. The Bank, together with the State of California, then purchased a total of 1,042 hm³ through 351 contracts with farmers and water agencies. The average price of these purchases was €0.08/m³. By October 1991, the Water Bank had reassigned (resold) 481 hm³, in other words only 78% of what the requesting firms themselves had considered critically necessary. Thus with prices averaging approximately €0.11/m³, they managed to cut these critical demands by 22%.[92].

Territorial and Urban Planning

The island of Lanzarote (Canarias, Spain) had to prioritize the conservation of its landscape and natural sites in the face of urban-tourist development, in the context of drastic limitations on available water. It thus promoted a "zero growth" plan in tourist housing by reducing the resident and tourist water consumption (respectively 4% and 2%), reducing losses in the urban water network (from 26% to 14%), urban water recycling (30% of the demand) and stabilising the resident and tourist population rates. In such conditions, Lanzarote's water supply system should be able to satisfy its gross needs for "reserve" water, stabilised at 10.2 hm³/year, and increase its net demands up to 15%. Desalination has dropped to 31% and water re-use has increased.

In contrast, the Region of Murcia, one of the recipients of the Ebro river transfer, has just approved a reform of its "Land Law" that has lifted the protection of 14,000 ha from areas with a high ecological value. These are areas where pressure from illegal irrigation is growing, coupled with the threat of increased housing construction for tourism and golf courses along the coast, which will now be promoted by the Ebro river transfer[93].

Integrating European policies on agriculture, the environment and water

The increased "demand" for water throughout the Spanish territory reflects, more often than not, the EU Common Agriculture Policy (CAP) subsidies, which enable non-profitable irrigation systems to survive, such as the "Riegos del Alto Aragon" (Upper Aragon Irrigation System) in the semi-arid Monegros region in the Ebro valley, or in "La Mancha Humeda" (the "wet" part of the La Mancha region). This illustrates the lack of integration between policies on agriculture and the environment both at the EU and national levels.

Even a "green" CAP subsidy such as agri-environment payments can be misused and promote increased water demand. These payments were introduced in La Mancha, from 1993 through 1995, as a last resort to help regenerate the aquifer of the Las Tablas de Daimiel National Park, a protected wetland on the Ramsar list. This managed to save 716.54 hm³ of water; although it entailed high public expenditure and led to an increase in the irrigated surface area of 40%.

Eco-conditionality, another CAP "green" subsidy, is a much more efficient tool to lower public costs and improve the environment. Curiously, however, the SEA on the SNHP neglects even a minimal consideration of this possibility (illustrating once more the lack of co-ordination between the SNHP and agriculture policies), when it comes to analysing the problems of over-exploitation in the Segura river or Almeria's river basins.

Integrated management of surface and groundwater

At the time the water deficits in the recipient basins were evaluated for the SNHP, the integrated use of surface and groundwater resources was underestimated, and existing aquifer resources were not taken into account. Neither was an evaluation of the aquifers currently being used done following reasonably sustainable criteria. In this way the offer of water has been concentrated almost

[90] See Gobierno de Aragon, op. cit. p. 217

[91] WWF recommends the report by Arrojo, Pedro and Naredo, José Manuel: "La gestión del agua en España y California" '*"Water management in Spain and California")*. Bakeaz-Coagret. Bilbao. 1997

[92] See ibid p. 132

[93] See Fundación Nueva Cultura del Agua: "Análisis del Estudio de Evaluación Ambiental Estratégica del Plan Hidrológico Nacional" (*"Analysis of the SNHP's Strategic Environmental Assessment")*. Madrid. 2002 p.114.

exclusively on surface water resources, thus showing in some basins overall water "deficits" that in reality do not exist. Such is the case of the Jucar river basin, considered by the SNHP to be structurally deficient (in water) in order to justify the Ebro-Levante/Catalunya water transfer. This was done despite the fact that it was recognised by the same Ministry that prepared the SNHP[94] that this zone's water table is annually refilled by over 1,000 cubic hectometres, which go unused and can be extracted at a much lower cost than transferring water.

Catalonia also has unused aquifers[95] reserves. Its 30 large aquifers have a capacity of 1,414 hm³, of which only a third (464 hm³) is used. Out of the 3 main aquifers, which contain a total of 615 hm³, the Llobregat aquifer has currently an excess capacity due to a drop in consumption, which went from 129 hm³ in 1973 to 54 hm³ in 1994.

Photo 5 : *Desalinisation in the Ebro Delta, Spain /* ***Credit:*** *WWF*

[94] In the White Paper on Water, prepared by the Spanish Ministry of the Environment (1998).

[95] Data taken from Vergés, Josep C: op.cit. p. 100 and ss. The 3 main aquifers are those of Puertos de Beceite (325 hm^3), Cadí-Taga-Ripoll (158 hm^3) and the Llobregat Delta (132 hm^3)

WWF SUGGESTED ACTIONS

WWF believes that the SNHP can be improved and re-oriented so that, instead of being a hindrance, it actually increases the chances of achieving sustainable water management in Spain. This will require actions both in Spain and at the EU level.

1. ACTIONS IN SPAIN

- **Elaborate an Environmental Impact Assessment of the whole Plan**

The SNHP should be evaluated by experts independent from the Spanish national or regional governments in order to have non-biased information on its environmental impacts. Further, additional information[96] should be gathered on specific SNHP components, in particular:

- The evaluation of water resource availability in the Spanish territory (including groundwater resources)
- A cost-benefit analysis of the Ebro river transfer
- The assessment of (sustainable) alternatives to the transfer.

Following the requirements of the Environmental Impact Assessment (EIA) Directive an EIA is mandatory for water transfers over 100 hm3 and should therefore have been carried out in the case of the SNHP. This has not been the case and it is now needed without further delay. Further, the missing EIA cannot be substituted by the Strategic Environmental Assessment (SEA) carried out by the Spanish government, as this is restricted to the Ebro river transfer. The EIA should cover the entire Plan, both the Ebro river transfer and all the water infrastructure works listed in Annex 2 of the Plan, as required by the Habitats Directive (Article 6.3).

- **Develop in-depth analysis of alternatives to the current SNHP**

As explained earlier, water savings in all sectors, water re-use and re-cycling, real water pricing, water markets and seawater desalinisation are some of the alternative measures that could be developed in each of the "beneficiary" river basins to solve the apparent water scarcity problems, instead of the huge water infrastructures proposed in the SNHP.

[96] As it has been recently requested to the Spanish Government by DG Environment of the European Commission in its letter of May 23, 2002.

These and other technically viable options should be investigated in depth and developed via an independent scientific analysis, which considers not only their cost/effectiveness when compared with the existing/proposed Plan, but also how future climate change trends will affect their expected impacts on water availability and water quality.

- **Revise the SNHP ensuring full transparency and proper public participation in the development of alternative water management measures**

The SNHP should be revised using the information gathered by the EIA of the overall Plan and from the analysis of alternatives referred to above. However, any assessment of the Plan and redefinition of appropriate and sustainable alternatives should be done with the full and active involvement of civil society as required by the EIA and SEA Directives[97]. This is also supported by Article 14 of the WFD, which obliges Member States "to encourage the active involvement of all interested parties in the implementation of the Directive", ie. in any stage of the development of any water management measures in a given river basin. Accordingly, the WFD guidance on public participation in river basin management, which is currently under development in the context of the WFD Common Implementation Strategy (CIS), states that a deeper involvement of local bodies is needed in all water management planning processes in order to ensure that they deliver "good status" in all waters, which is the mandatory final objective of the WFD. To that end, a "partnership for transparency"[98] should, for example, be established at different levels, with participation of researchers, environmental NGOs, local stakeholders and representatives of affected sectors (tourism, fisheries) in Water Councils at the national and river basin level as well as in the Management Committees of the Structural Funds.

Detailed information about the status of funding submissions to the European Commission's DG Regional Development, environmental assessments and implementation of alternative water management projects to the SNHP should not only

[97] In its letter to the Spanish Government of May 23, 2002, the Director General of DG ENV expressed concerns about the way the documents of the SNHP have been offered for public consultation, if all of them, for how long, and following which procedures.

[98] As stated under policy priority no. 6 on "information for the general public and publicity" of DG REGIO's Annual Management Plan 2002

be provided, discussed and agreed in these fora, but should also be made available to the public via the Internet and other means.

- **Implement Integrated River Basin Management in line with the Water Framework Directive**

Timely and effective implementation of the WFD should ensure sustainable water management through the EU territory including Spain. However, as explained earlier in this paper, the SNHP law is moving away from the WFD "process" (eg. real water pricing) and "result" (eg. no-deterioration) obligations, which should not have been the case as it was adopted after the entry into force of the WFD.

It can be argued that the River Basin Management Plans required by the WFD do not need to be up and running until 2009, or that the SNHP is not, strictly speaking, a River Basin Management Plan in itself. However, the development of the SNHP will necessarily require fulfilment of the mandatory obligations of the WFD[99].

Spanish water policy is already based on river basin management plans, but these do not currently fulfil the obligations of the WFD, as many of them take into consideration the development of the water infrastructure works needed to implement the SNHP. These plans, therefore, need to be revised in a fully transparent and participatory manner and aligned to the WFD obligations. Furthermore, the list of projects from the Annex 2 come precisely from these Basin Plans.

If the current river basin management plans are revised with the WFD in mind, the competent authorities would gain clear and real information about the actual pressures and impacts on the status of all water bodies on each river basin, and about the cost/effectiveness of the proposed SNHP measures etc. The revision is therefore necessary to gather real information on the actual situation per river basin and identify the weaknesses of current water management measures. This would go a large part of the way to providing more fitting solutions to the apparent water scarcity of certain Spanish river basins that is the underlying justification for the SNHP.

[99] Commission reply to Petitions Nos. 28/2001 and 296/2001, received on 23 October 2001

2. ACTIONS AT THE EU INSTITUTIONAL LEVEL

- **Enforcement of EU policies and activities**

In its role as the "Guardian of the Treaty", the European Commission should ensure that the SNHP does not go ahead until it can be proven that it will not be in breach of any obligations under Community legislation and it is in line with the Treaty (Articles 2, 6, 10, 151). Further, the Commission should also ensure that all the above mentioned WWF proposals to improve the SNHP actually take place, as they are all related - in one way or another - to the implementation of Community policies and activities (EIA Directive, Århus Convention, Habitats and Birds Directive, WFD etc).

- **Adopt and defend a joint Commission position regarding EU funding forthe SNHP**

The European Commission should agree on a coherent approach to deal with SNHP submissions for EU funding and urgently establish a SNHP Task Force for coordination. Addressing the different parts of the Plan individually as a first stage should be avoided, as the cumulative environmental impacts would not be perceived leading to irreversible environmental damage (resulting from the development of large water infrastructure works). This joint position needs to be developed urgently at the Commission level - with agreement from the main DG involved (Environment, Agriculture and Regional Development) - as some of the SNHP individual projects have already been submitted to DG Regional Development eg. the Tajo-La Mancha water transfer.

The SNHP should be seen as a "major project" with a clearly identified aim[100], a series of works fulfilling a precise technical function and a total cost which largely exceeds 50 million Euro. The Plan should, therefore, be appraised from the point of view of its compliance with other Community policies (Structural Funds Regulation, Art 26.2.e) and from a cost benefit analysis (Structural Funds Regulation Article 26.2.b).

- **No funds for the current SNHP**

The Spanish Government should be using EU Funds to address pressing environmental needs, not to exacerbate them through inappropriate development projects such as the SNHP. For instance, EU Funds

[100] Regulating water resources in the Spanish territory by transfers from river basins that have (so-called[100]) water "in excess" to river basins with a (so-called) "water deficit",

should be used to develop and implement alternative water management measures to the SNHP that are in line with WFD requirements.

The European Regional Development Fund (ERDF) should be used to improve the situation of the population in Spain's most marginal geographical areas, instead of increasing gaps in economic and social cohesion even further by benefiting areas with relatively high levels of economic development. The Cohesion Fund should not be used to increase water supply so it appears to be unlimited, but serve to promote EU environmental priorities such as:

- Planning for sustainable water management at the river basin level in line with WFD requirements.
- Reducing water consumption in over-exploited river basins in line with WFD requirements.
- Improving monitoring of the status of water resources in line with WFD requirements.
- Planning and management of the Natura 2000 network in line with Habitats Directive requirements.
- Helping to correct Spain's extremely poor efforts in tackling climate change (eg. by reducing emissions and increasing energy efficiency).

Detailed information about the status of funding submissions to the European Commission and their environmental impact assessments should be pro-actively provided by DG Regional Development and DG Environment respectively via the Internet.

3. ACTIONS TO BE TAKEN BOTH IN SPAIN AND AT THE EU-INSTITUTIONAL LEVEL

Promote environmental integration and coherence between water policy objectives and the Common Agricultural Policy and the EU Regional Funds Spain, as any other Member State is required to provide impact assessments of its agricultural sector on the environment. It is also invited to use specific measures (including cross-compliance, modulation and agri-environmental schemes) to address priority impacts and identified needs. At present, Spain has consistently relegated the integration of environmental needs in agriculture at the bottom of ts concerns. It has not taken-up any of the measures available to it to counteract the environmental impacts of farming.

Spain must be made to undertake a realistic, meaningful assessment of its water needs for agriculture, (a first approach was done by the Spanish National Irrigation Plan, SIP), as was required under the CAP's Common Rules Regulation by April 2002 and Rural Development Regulation, alongside that required under the Water Framework Directive by 2004. The SIP proposed a new irrigated 241,742 hectares of National Interest, but the SNHP, in a clear contradiction, offers water to 650,000 potential new hectares.

The CAP and ERDF are major European policies which should drive Spain towards consideration of environmental impacts and the SNHP. Major reforms are needed for these large policies with special attention on two fronts. Firstly, at the time of the mid-term evaluation of rural development plans in 2003, the European Commission should apply greater scrutiny in approving budgetary transfers for investment plans and agri-environmental schemes leading to potential environmental degradation. For the next programming period, they must ensure proper environmental impact assessments, as detailed above, accompany such requests. Secondly, the European Commission must put forward proposals aimed at reversing those subsidy systems that drive the use of irrigation for the unsustainable maximisation of yields, in particular for crops that do not require it.

For example, the Commission must ensure that, in the up-coming revisions of the olive oil sector in 2003, reforms are no longer postponed and proposals are put forward to move production support towards area payments which allow for a lower input, and more rational use, of water resources.

Only a coherent work on these policies can ensure that water resources will not be overexploited and that "water demands" will be calculated realistically.

WWF's main objective is to stop the SNHP as it currently stands, and to ensure that it is revised so it does not jeopardise nature conservation and contributes to the proper implementation of the Water Framework Directive's principles and requirements for sustainable water management, leading to higher economic and social cohesion in Spain.

Following from this Position Paper, WWF will develop an in-depth analysis of the specific environmental and socio-economic impacts of the SNHP, promoting sustainable alternatives for water management to be applied in Spain, which can be used as "best practices" – in cases of apparent water scarcity - inside and outside the EU.

GLOSSARY OF TERMS

AGENDA 2000	A package of reforms to the Common Agricultural Policy and EU Structural Funds agreed in 2000
ANNEX 2of the SNHP	Works included in the National Hydrological Plan, including dams, water transfers, etc
AQUIFER	Geological formation that stores water underground
ARHUS CONVENTION	International Convention on access to environmental information and justice on environmental matters)
ACCESSION COUNTRIES	Countries intending to join the EU
CAP	Common Agricultural Policy of the EU
CIS	Common Implementation Strategy for the EU Water Framework Directive
COHESION FUNDS	Fund created for transport infrastructure and environment in the EU countries with lowest per capita incomes (Spain, Portugal, Greece, Ireland)
COUNCIL REGULATIONS	EU Regulations (a type of EU legislative tool)
CSIC	"Consejo Superior de Investigaciones Científicas", an official State research body in Spain
DG ENVIRO	Directorate General for the Environment of the European Commission (EU)
DG REGIO	Directorate General for Regional Development of the European Commission (EU)
EAGGF	European Agricultural Guidance and Guarantee Fund of the EU
6TH EAP	Sixth Environmental Action Plan of the EU
EEA	European Environmental Agency
EIA	Environmental Impact Assessment
ERDF	European Regional Development Fund of the EU
EU TREATY	The legal framework for all EU legislation
GWI	Global Water Initiative
HABITATS DIRECTIVE	EU Directive 92/43/EEC on the conservation of natural habitats and wild fauna and flora
hm3 / year	A measure of water volume, equal to 1 million cubic metres per year
BIRDS DIRECTIVE	EU Directive 79/409/EEC on the conservation of wild birds
HYDROMORPHOLOGICAL PARAMETER	A measure of the characteristics of water courses in terms of, for example, depth, flow, substrate of the bed etc.
IBA	Important Bird Areas (Birdlife Sites for the EU Birds Directive)
IHP – (UNESCO)	International Hydrological Programme
INTRASA	"Sociedad Española para la Construcción y Explotación del Trasvase del Ebro", a State company created to undertake the Ebro water transfer.
LIFE FUNDS	EU fund for nature conservation and environmental projects
m3 / sec	Cubic metres per second
MEMBER STATES	The member countries of the EU
NATURA 2000	A European network of nature sites established by the Habitats and Birds Directives
NGO	Non-government organisation
PETITIONS COMMITTEE	European Parliament's Committee dealing with citizen's petitions on n applicability of EU legislation
PSOE	Spanish Socialist Workers Party (main opposition party in Spain)
RAMSAR (CONVENTION ON WETLANDS)	International Convention for the protection of wetlands signed in Ramsar (Iran) in 1971
RIVER BASIN MANAGEMENT PLANS	Plans aiming at managing all waters in a given river basin together as a whole
RURAL DEVELOPMENT PROGRAMS	Programmes established under the EU Rural Development Regulation (introduced by Agenda 2000), also known as the Second Pillar of the CAP
SEA	Strategic Environmental Assessment
SNIP	Spanish National Irrigation Plan
SNHP	Spanish National Hydrological Plan
SPA	Special Protected Areas designated under the EU Birds Directive

STRUCTURAL FUNDS (REGULATIONS)	EU funds for regional development, directed at EU regions with specific problems and for particular objectives
UNESCO	United Nations Educational, Scientific and Cultural Organisation
WATER BASIN COUNCILS	River basin councils in Spain that include regional and State authorities and water users
WFD	EU Directive 2000/60/EC establishing a framework for Community action in the field of water policy (Water Framework Directive)
WHITE PAPER ON WATER	"Libro Blanco del Agua", Spanish government report on the state of inland waters
WSSD	World Summit on Sustainable Development (Johannesburg, August/September 2002)

Photos this page: *Agriculture in the Ebro delta* ***/ Credit:*** *WWF*

The WWF European Living Waters Programme's overall goal is to conserve and restore the functions and integrity of freshwater ecosystems for the benefit of all life.

WWF's mission is to stop the degradation of the planet's natural environment and to build a future in which humans live in harmony with nature, by:

- conserving the world's biological diversity
- ensuring that the use of renewable natural resources is sustainable
- promoting the reduction of pollution and wasteful consumption.

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WWF European Living Waters Programme

Paloma Agrasot,
WWF European Policy Office, Brussels, Belgium
Tel. + 32 2 743 88 11,
PAgrasot@wwfepo.org

Guido Schmidt,
WWF-Spain/ADENA, Madrid, Spain
Tel. +34 91 35 40 578,
guido@wwf.es

Tania Paschen,
WWF Living Waters Programme, Tour du Valat, France
Tel: +33 490 972 943
Mobile: +33 680 73 70 33,
t.paschen@tourduvalat.org

www.panda.org/europe/freshwater