

EVALUATION PRACTICES IN WATER PROJECT DECISION-MAKING PROCESSES: COMPARATIVE ANALYSIS OF ALQUEVA (PORTUGAL) AND EBRO RIVER TRANSFER (SPAIN)

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Abstract

The new Water Framework Directive requires prior evaluation of all new river basin interventions. However, its failure to provide detailed guidance on standards of evaluation best practice, could potentially undermine and threaten the WFD objectives. This is particularly the case where interventions are characterised by high levels of complexity, uncertainty and conflict. This paper is set within the context of the ADVISOR project, the main aim of which is to develop a set of evaluation guidelines for authorities and agencies responsible for administering river basin interventions. The development of the guidelines is informed by the ex-post analysis of five case studies of river basin projects and policies from across Europe. This paper presents a comparative analysis of two of these case studies, both located on the Iberian Peninsula. From this analysis a number of barriers and opportunities towards achieving sound evaluation practice are identified.

1. Introduction

The process of evaluating and authorising water-related projects is critical in the context of sustainable river basin governance. The new Water Framework Directive (WFD) asks for the prior evaluation of all new river basin interventions but does not provide extensive guidance to the river basin authorities on how to carry out such evaluations. Unless the evaluation procedure of new projects evolves into a multi-dimensional and multi-stakeholder participatory approach, that takes into account complexity, uncertainty and conflictive values in dispute, river basin objectives as expressed in the new WFD will be at stake (Funtowicz, O'Connor and Ravetz, 1996). ADVISOR's (Integrated Project Evaluation and Water Management)¹ main objectives are to provide an integrated project evaluation framework and methodology and to develop a set of guidelines for EU river basin authorities and agencies responsible for water administration.

The aim of the first work-package of the ADVISOR project was to undertake an *ex-post* analysis of past evaluations of important river basin projects and policy interventions in Europe, i.e. Evinos reservoir, in Greece, River Ythan, in the UK, The Gresmaas in The Netherlands, Alqueva in Portugal and the Ebro River transfer in Spain. The barriers and opportunities to achieve sound evaluation were identified for each case study. . The aim of the second work-package of the project, from which this paper is an initial outcome, is to contribute to the development of an "Integrated Theory for the Evaluation of River Basin Projects in the EU" starting from the comparative (horizontal) analysis of these past evaluations.

For the purpose of ADVISOR, the integrated theory of evaluation encompasses four inter-related dimensions of analysis: information, assessment, participation and context. The horizontal analysis will apply specific analytical frameworks to each of the four dimensions of the 'evaluation tetrahedron'. Together, the horizontal analysis of the four vertices will

¹ADVISOR Contract EVK1-CT-2000-00074, EC-Energy, Environment and Sustainable Development RTD Programme. <http://ecomana.dcea.fct.unl.pt/projects/advisor>

provide a comprehensive understanding of the theorisation and shortcomings of the evaluation process to date.

The concrete aim of this paper is to present the horizontal analysis of the assessment component of the 'evaluation tetrahedron' as applied to the two case studies belonging to the Iberian countries, i.e. Alqueva reservoir and Ebro river transfer. More specifically, the aim is to critically compare the assessment process in these two cases.

2. The case studies

The Ebro river transfer project is part of the Spanish National Hydrological Plan, the strategic objective of which is to achieve a general water balance throughout Spain by re-distributing water resources from areas of surplus to areas of deficit. Approved by the Spanish Parliament in 2001, the proposal aims to transfer around 1,050 hm³ of water per year along canals and has a budget of 6 billion Euros.

The Alqueva Multipurpose Project (AMP), is a strategic reservoir formulated to meet the needs of the semi-arid Alentejo region in southern Portugal. The reservoir is formed by the Alqueva dam located on the Guadiana river, one of the biggest dams on Western Europe, and will result in the largest artificial lake in Europe. The capacity of the dam will be over 4,000 hm³ of water and will require a total investment of around 1,768 million Euros (1998 prices).

3. Analytical framework

It is common for assessment to be understood as a formal and explicit part of the decision making or planning process, such as an Environmental Impact Assessment (EIA), Cost-Benefit Analysis (CBA) or more recently Strategic Environmental Assessment (SEA), contained or expressed in a technical report or document produced by the public Administration responsible of the project. However, from an integrated evaluation perspective assessment may also be informal and implicit within the decision making or planning process. A formal assessment may cover only one step in an overall process, such as the problem diagnosis or the consideration of different alternatives, whereas the overall assessment component may extend to the entire project life, from conception to completion, expanding even to the post-decisional stage. For the purpose of this report – in the frame of the process, dynamic, and integrated approach of the ADVISOR project to decision making processes –, the term assessment is used in this broader meaning, including informal assessment as well as formal and explicit assessment. This definition makes the limits between assessment and other components of the process – context, information and participation - blurred at times. Nevertheless, formal and explicit assessment practices - such as EIA, CBA or any other assessment practices – constitute key elements in the 'assessment vertex' as a whole, working as a central axis to which informal assessment activities are referenced (see table 1).

The assessment process is considered with respect to six specific elements, i.e. **tools, criteria, values, timing, responsibility and influence**, whose commonalities and differences in approach between case studies are identified with the help of cross comparison. The first element considered is the *technical tools and methodologies* used in the assessment, their type, scope and objectives, whose descriptive information is accompanied by an explanation as to why these instrumental approaches were adopted in the context of each case study. The second element constitutes a kind of *assessment axiology*, in as much as it considers the *assessment criteria* used and the weightings placed on these criteria, meanwhile the third

element deals with the underlying *values*. The fourth element is the *timing* of assessment, factors that influenced the timing and how this influenced the overall decision making process and the final outcome of the project. The fifth element is a consideration of the *responsibility* for initiating and undertaking the assessment, as well as the role of different stakeholders and networks in this component of the decision making process. The final element of analysis is concerned with the *influence* that the assessment had on policy, along with a critical analysis of its *role* in the whole decision making process and the factors that determined it.

Table 1 – Process of Assessment considered in each case study	
Case Study 1 Alqueva Dam, Portugal	<p>- The first references to create a water reserve in the Guadiana river can be traced back 100 years.</p> <p>- 1957: decision of Arantes e Oliveira (Minister of Public Works) to begin the Alentejo Irrigation Plan drawn up in 1955.</p> <p>- 1975: The project was approved (Ministry Council Resolution of 12th December), following the Portuguese-Spanish Agreement of 1968, for the use of international rivers.</p> <p>- 1978: the transition government of Nobre da Costa cancels previous decisions and suspends the project (Normative Decision no. 326/78), following a negative statement from the Central Bank due to high water costs estimated for irrigation.</p> <p>There were two distinct phases in the assessment procedure. The first phase was in the 80's when several studies were promoted, culminating in the first Environmental Impact Study (EIS) of the Alqueva Project concluded in 1987. The second phase started a few years later after the Portuguese EIA law (Decree-Law no. 186/90 of 6 June 1990 that incorporated the council directive 85/337/EEC of 27 June 1985 in the Portuguese legislation), and resulted in an Integrated Environmental Impact Study (IEIS) of the Alqueva Project.</p> <p>In short, three Environmental Impact Studies were conducted:</p> <ol style="list-style-type: none"> 1) 1985/87 – First EIS by DRENA/EGF; 2) 1992 – Global Assessment Study of the Alqueva Project by a Luso-Belgium consortium (Hidrotécnica Portuguesa, Tractebel and SEIA), promoted by the European Commission (Regional Development Office); 3) 1994/95 – Integrated Environmental Impact Study by SEIA. Also promoted by the European Commission (Regional Development Office). <p>The report on Alqueva Dam focuses mainly on this latter IEIS because it is the most recent and complete EIA process, incorporating the public participation component.</p>
Case Study 2 River Ebro Interbasin Water Transfer, Spain	<p>- 1933: First formal proposal of the national-wide interbasin water transfer (National Hydraulic Works Plan).</p> <p>- 1970-1980: partial implementation (interbasin water transfer from Tagus river to the Segura river).</p> <p>- 1985: The 29/1985 Water Law introduces the current planning framework.</p> <p>- 1988: The present process of hydrological planning starts (<i>Basic Information for the River Basin Hydrological Plans</i>).</p> <p>- 1993: The Ministry of Public Works and Urban Planning presents the first National Hydrological Plan (PHN) Draft.</p> <p>- 1994: <i>Scenarios Analysis Document of the PHN and Modified PHN proposal</i>.</p> <p>- 1998: The new Ministry of Environment published the “White Paper on Water in Spain” that reassessed the hydrological situation of the country.</p> <p>- 2000 (September): The Ministry of Environment presented the new PHN Draft accompanied by five technical reports. Reports by experts after a request of the Ministry of Environment.</p> <p>- 2001: The PHN draft is discussed in the National Water Council (January). The PHN is passed by the Spanish Parliament (June). A claim against the PHN is submitted to the European Commission.</p> <p>- 2002 (January): The Ministry of Environment submits to European Commission the <i>Strategic Environmental Assessment of the PHN</i> (SEA).</p> <p>- 2002 (September): The Ministry of Environment submits to public consult a <i>Memory-Resume</i> of the Environment Impact Study, starting the formal process of Ebro transfer evaluation.</p>

4. Comparison of case studies

4.1. Tools

a) Alqueva Reservoir

The assessment process was dynamic evolving into three Environmental Impact Studies (EIS) that increased in scope and coverage over time. These related studies employed some complex decision support tools- Multi-criteria Analysis (MCA), the Saaty method and Value Path Display² (VPD) method - to evaluate different project alternatives and were focussed at different scales.

The first of the three studies, the DRENA/EGF EIS (1985–1987), considered the impacts of the Alqueva Dam, and the proposed Hydroelectric plant on the surrounding area only. The second EIS, the Global Assessment Study (GAS) (1991-1992), was considerably broader in scope, considering the impacts of 24 different project alternatives. However, the GAS was not a typical EIS in that it had a very strong emphasis on economic and financial impacts, thus playing down the environmental impacts of the Alqueva project. The third study, the Integrated Environmental Impact Study (IEIS) (1994-95), was the most comprehensive comparing feasible project alternatives using a diverse set of socio-economic and environmental components in the analysis.

There was no explicit mention of environmental cost benefit and/or cost effectiveness analysis in the case study, although the socio-economic and environmental impacts of the project may have been included in the complex decision frameworks used. By applying the Saaty method, the complex decision problems in river basin project assessment process was decomposed hierarchically for better analysis. There is some indication that weighted averages, quantitative and qualitative analyses of the different components were factored into the decision framework.,

b) Ebro River Transfer

The 1993 PHN Draft was not accompanied by any formal environmental and socio-economic assessment. The proposal was basically supported on a hydrological evaluation of water surplus and deficit of the different river basins considered, taking into account ‘available water resources’ and ‘water demands’. The latter, mainly irrigation demands, were not justified in economic terms. Nevertheless, the 1994 *Scenarios Analysis Document* envisages a total of 24 water balance scenarios for the year 2012, which were the result of a combination of six water demand scenarios with four water availability assumptions.

The December 1998 *White Paper on Water* made a complete and in some way innovative revision of concepts, practices and methodologies habitually used in water management and planning, but ended with the acceptance of the conclusions of the River Basin Hydrological plans, that had already been passed in the same year (July 1998), based on the traditional ‘balance between water resources and water demands’ approach.

The September 2000 PHN Draft was accompanied by five *Technical Reports* which back the proposals and serve as its economic, environmental, hydrological and social basis: 1) Analysis

² The VPD is a graphical representation method applied for decisions with multiple criteria.

of water systems; 2) Delimitation and Assignment of Shared Groundwater (among different river basins); 3) Environmental Analysis; 4) Economic analysis; 5) Background analysis and evaluation of previous transfers. The assessment included in the *Technical Reports* just referred to one option, i.e. how to divert 1,050 hm³ to the Mediterranean Arch. The discussion was about the different alternatives in term of which rivers could be involved and the path of the needed canals. The techniques employed consist of cost-benefits analysis and environmental and socio-economic impacts of the transfer. These latter are characterised by lack of spatially detailed assessment of impacts which are postponed to future concrete EIA for each section of the inter-basin transfer scheme, i.e. work by work, each one by itself.

A *Strategic Environmental Evaluation* (2002) was presented seven months after the approval of the PHN. The main innovation of the *Strategic Environmental Evaluation* (2002) was the inclusion of four general basic alternatives (“strategic options”), i.e. Option 0. No intervention; Option 1. Programmed demand reduction in water deficit basins; Option 3. Large scale desalination and Option 4. Inter-basin transfers. One of the most significant considerations already put forth concerning the treatment of alternatives in the SEA is the lack of a hybrid strategic option, i.e. combinations of two or more of the options offered in the document.

The ‘formal’ process of Environmental Impact Assessment starts in September 2002, when a *Memory-Resume* of the environmental study is submitted to public discussion.

4.2. Assessment Criteria

a) Alqueva Reservoir

The overall emphasis of the IEIS was on regional development impacts (i.e. economic viability of the project). Environmental and social dimensions were integrated into the analysis using some kind of assessment criteria based on a) economic viability of the project (perceived regional impacts); b) environmental impacts from the perspective of measurable impacts on climate, water quality, soils and land use, desertification, sedimentation, air quality, noise, flora and vegetation, fauna, invertebrates, archaeological values, etc.

Impacts of the project were rated on an eleven-point scale ranging from – 5 to +5, integrating two factors: magnitude and significance of impacts. These were subsequently ordered by relative importance using the SAATY Method. The problems of aggregation were addressed by the semi-compensatory approach. This gives an impression that a comprehensive environmental impact decision framework was applied in the case study, but there is limited information as to how the data used for rating the different components analysed were generated.

b) Ebro River Transfer

The criteria of assessment encompassed in the *Technical Reports* accompanying the PHN September 2000 or that arose in the social debate about the project after its presentation are: The criteria to determine river basin water surpluses or deficits, including hydrological and socio-economic factors. This implies criteria of the economic, social and environmental role of water in surplus river basins as well as the approach to causes that lead to the over-exploitation of resources throughout the water recipient areas (Mediterranean coast).

1) The criteria for the evaluation of the socio-environmental impacts on the donor and recipient areas. The former affecting the Ebro Delta (process of subsidence and

regression, water quality problems; impact on river solid load; socio-economic impacts) and the areas affected by new reservoirs entailing the flooding of inhabited towns and valleys. The latter concerns the effects of water transfer on the demand-increasing trend in the recipient regions.

- 2) The criteria for the economic analysis, i.e. budgets; amortisation periods, estimation of the energetic costs of pumping and energy that can be produced, agricultural benefit assessment, cost of water regulation (reservoir) costs (not included in the economic evaluation of water transfer), costs of purification of the poor-quality flow from lower Ebro River (not included), value of urban water supply, full-cost recovery principle, desalination technologies.
- 3) Criteria to deal with uncertainty, mainly, i. Irrigation policy and the international position of Spanish agriculture, ii. Evolution of water quality and effects of climate change on the hydraulic assessment.

In the *Strategic Environmental Assessment* (2002) the four strategic options considered were evaluated in accordance to the following explicit criteria: 1. Planning area; 2. Caution and preventive action; 3. Quality of basic environmental resources; 4. Environmental values, ecosystems and habitats; 5. Economic rationality; 6. Social and territorial balance.

Once the ‘best strategic option’ was selected (inter-basin transfers), the different ‘transfer alternatives’ (Douro, Tagus, Ebro and Rhone) were comparatively analysed according with the following criteria: 1. Compatibility with the general water planning framework; 2. Incidence of the alternatives on exporting basins; 3. Incidence of the alternatives on territories that hold conduction infrastructures; 4. Incidence of the alternatives on recipient territories.

The document on 2002 *Strategic Environment Assessment* of the PHN constitutes undoubtedly a step forward in the justification of the transfer. Nevertheless, its formulation and presentation after the Plan’s approval conditions directly its contents. The information it uses is basically that already presented in the technical documentation of September 2000.

4.3.Values

a) Alqueva

Irrigation of Alentejo, the justification of the project, is felt as a national enterprise which is capable, not only of playing a decisive part in solving agricultural, economic and social problems, but also in ‘re-shaping’ the Geography of the Region. The most clear expression of this belief is the systematic presentation of Alqueva as a ‘strategic project’. In fact this objective, explicitly and usually uncritically presented, coincides with what has been defined as “‘strategic irrigation’ schemes, i.e. those which focus on territorial production for the ‘State reproduction’, to be implemented at whatever cost that is necessary” (Faggi, 1996)

b) Ebro River Transfer

The key concepts on which the transfer project rests are within the traditional perspective of water management, the *hydraulic paradigm* (supply-side and subsidies oriented) well defined in Spain and in other countries (Allan, 1999). In its deepest cultural facet, resistance and continuity of this model up to the present have as their mainstay a system of values concerning the relation between nature and society which is deeply rooted in the *symbolic universe* (Berger and Luckmann, 1968) which prevails in both countries. In recent surveys

society's tendency to relegate the environment to secondary positions is clear, as is privileging productive activities. The devaluation of recreational and leisure is confirmed, which is related to a perception of water alien to the idea of space of social enjoyment and appropriation (Paneque and Pedregal, 2000).

4.4. Timing

a) Alqueva

The environmental impact studies were conducted at different times of the project development, but the major drivers for the timing of the studies seem to have been political/institutional and socio-economic factors. The European Commission promoted both the GAS and the IEIS. However, the IEIS started when the government had already decided to implement the Alqueva project (based on the GAS) and there was little margin to evaluate new alternatives. Such ex-post studies are often used as a form of "rubber stamping" of decisions already taken by government. This limited the scale and number of alternative projects evaluated in the IEIS. It also limited the scope of the analysis, where the cost effectiveness of operating scales of the dam and the costs and benefits of other geographical options could have been analysed.

b) Ebro River Transfer

An explicit assessment, including alternative options to the water transfer, has only been formally drawn up after the approval of the PHN (2000-2001), in *the Strategic Environment Assessment* (2002). Nevertheless, considering the process as a whole, a noteworthy evolution is to be observed, at least since the first draft from 1993 up to the SEA of 2002. This evolution does not affect the content and central objectives of the project, but change substantially its features.

A *Scenarios Document* is presented in 1994, which opened a discussion that the previous document (1993) avoided. In 1998 the *White Paper on Water in Spain* presented a revision of the whole water management that could have lead to reconsidering the project. The final 2000 proposal was accompanied by five *Technical Reports*, which for the first time included a cost-benefit analysis of the project, albeit contested by several independent experts.

Overall, the evaluation process evolved behind the social debate on the project and the surrounding changing trends (changes in the Community's agricultural policy, new Water Frame Directive, increasing importance placed on the market factors). Each document attempts to recover part of the project's legitimacy, incorporating debate discourses that cannot be ignored. As a result, the number and magnitude of the works have been downgraded and their economic rationality increased.

4.5. Influence

a) Alqueva

The assessment process in the case study supported decisions to the extent that they demonstrated the socio-economic impacts of the project and provided supportive evidence to Government's decisions. The fact that results of the Global Assessment Study (1991-1992) indicated the positive impacts on the regional development policy of the Alqueva project, the

Government was happy to approve the project on the condition that negative environmental impacts are monitored and accounted for. This was prior to the more comprehensive IEIS. When the formal environmental impact assessment process started in 1994 the governmental decision to implement the Alqueva Project was already taken and there was little margin to evaluate new alternatives. This fact shifted the focus of the assessment to the importance of the global environmental management of the project. The IEIS did not suggest any major project modifications, and the emphasis was put on the implementation of compensation and mitigation measures to minimise the impacts.

The final conclusion from the IEIS is that the benefits (e.g. regional development and strategic importance) of the Alqueva Project are not clearly demonstrated, and there are several uncertainties about the magnitude of most of the impacts. However, the socio-economic context of the Project had a very significant role in the decision because the local authorities and communities see the Alqueva Project as the only solution for the development of the Alentejo region. Negative environmental and social impacts were acknowledged in terms of minimisation of compensation measures to be adopted. This led to the environmental management program for the project area e.g. knowledge transfer and impact monitoring programme, heritage minimisation programme, natural impact minimisation programme and other evolving regional plans (PROZEA, POAAP) that tried to establish rules for land use in the Alqueva area.

b) Ebro River Transfer

Focusing on the last stage of the process, the 2000 PHN *Technical Reports* and 2002 *Strategic Environmental Assessment* (SEA) are clearly transfer driven. The 2000 *Technical Reports* are not formal assessment documents, but technical annexes of the PHN Draft justifying the decision already taken. On the other hand, as already mentioned, the SEA was submitted eight months after the project approval. This could suggest that the assessment and the decision making were independent processes. In fact, the analysis procedure followed in this case was highly based on strong assumption ("the implementation of the planned infrastructures is both necessary and appropriate and as such it has to be carried out"), rather than following a deductive logic.

However, taking into account the overall process (at least 1993-2002), including the numerous official documents, not formally assessment studies, and the wider social debate throughout this period, another and more subtle conclusion can be obtained. The project finally passed maintained the basic concepts of the first proposal, but also contained some important novelties, that try to soften some of the most harshly denounced weaknesses of the previous proposal, i.e. a substantial reduction in the planned inter-basin water transfer volumes, enforcement of hypothetical users economic responsibility (at least as a legal requirement), and stabilisation of the growth of irrigation in recipient river basin. Nevertheless, due to the largely informal and iterative nature of the assessment process, along with the lack of transparency at its different stages, it is difficult to identify the extent to which the assessment inputs influenced policy outcome. Conversely, it is more probable that the evolution of assessment techniques and specific assessment items follow the changes in contextual factors and social pressures. Moreover, it is very likely that in spite of the official finalisation of the decision making process the project will be subject to new re-evaluations in the near future. In fact, just when this paper is being drawn up a new document, that starts the formal evaluation process has just been presented to the public.

4.6. Responsibility

a) Alqueva

Three Environmental Impact Studies conducted were all initiated by government legislation and conducted by consultants. All the assessment studies followed some kind of EIA decrees. The first EIS (1985) was prepared by DRENA/EGF, the global assessment (1991-1992) promoted by the EC Regional Development Office. There was extensive stakeholder participation in the assessment exercise. The integrated study of the Alqueva project apparently involved stakeholder participation from the inception of the project through the assessment process and after the approval of the project. The local stakeholders and the major political forces (national, regional and local) were involved at the different stages of the assessment exercise. The SEIA also involved external consulting experts in different areas of expertise.

b) Ebro River Transfer

In Spain, hydrological planning affecting several hydrological basins is a responsibility of the Central Government. Therefore, the design, evaluation, and implementation of the Ebro transfer, within the PHN, is ultimately the responsibility of this tier of Government. All the documents, starting with the River Basin Basic Documentation of 1988 up to the *Strategic Environmental Assessment* (SEA) of 2002 are documents signed by the corresponding Ministry, first the Ministry of Public Works and Urbanism, transformed into Ministry for the Environment after 1996. This general characterisation conceals a more complex reality. Some river basins are exclusively the competence of autonomous regions and therefore it is the Regional Governments that define the diagnosis. In any case, even in the case of river basins that are competence of the Central Government, Regional Governments make their own evaluations through their agriculture, tourism, and urban-spatial planning competencies. Those evaluations may be presented in the National Water Board (a merely consultative Board) and in Parliament, where the PHN is passed as a law.

A great social debate, often supported by a technical discourse, has taken place on a more diffuse level, from the presentation of the first draft (1993) up to the SEA (2002). This debate has produced an important number of documents of assessment nature throughout the whole process.

The EC has become a source of evaluation, due to its environment and agricultural policy competencies but mainly due to the Spanish Government's request for partial funding of the project. The Strategic Environmental Assessment (SEA, January 2002) is a document produced with the sole purpose of obtaining the EC's support and funding for the project. The EC has undertaken recently (August 2002) an independent evaluation report of the project, a report from which there is no public information yet.

One of the characteristics of the official documentation is that the specific authors (technical responsibility) are not habitually identified. This fact is particularly relevant since the Ministry often commissions the documents to consulting companies, which remain officially anonymous. An extreme case of this practice is the justification adduced by the Ministry for not publishing the reports on the PHN that the Ministry had requested from independent experts in October 2000, alleging the obligation to respect the 'right to privacy' of those

experts. Those experts, most of them scholars, had been paid with Government's money and in general wished their report to be published.

5. Conclusions

1. Both case studies (Alqueva reservoir-Portugal and Ebro River Transfer-Spain) have been formally and definitively approved by the responsible administrations (national governments in all cases) and are in a more or less advanced implementation phase. In both cases, this fact does not exclude the existence of some important uncertainties as regards the real feasibility of the projects or likelihood of their complete implementation.

2. Both projects are characterised by a strategy of 'productivist' management of water resources, not exempt of strong tensions and substantial changes throughout the formulation and decision process. In any case, the projects have as central objective, and as main driver behind the whole decision making process, the generation of water resources to supply urban, industrial and/or agricultural demands. This, together with other factors from the geographical context, gives them remarkable similarities.

3. Both projects regardless of the specific objectives behind them, coincide in a key feature that is firmly established in the formulation of the project and appears clearly stated in the respective case study reports: the assumption that the benefits are greater than the costs. This assumption is based on widely accepted and hegemonic (Bourdieu 1977, 190-197) social values and in long held traditions of hydraulic policy in the history of each country. In Portugal, a strategic water reserve and the regional development of Alentejo ("The hypothetical social benefits (e.g. regional development) of the Project were the main arguments to proceed with it despite the fact that economic benefits (irrigation, energy and water supply) aren't clearly demonstrated and the environmental impacts of the Project are very significant due to the submersion of a very large area". In the Spanish case the solution to hydrological imbalances which constitutes the country's main geographical problem. This does not mean that these strategies are immune to internal tensions within the water policy arena and to changes in the wider cultural, political and economic contexts that frame the decisions adopted at national level. Actually, these assumptions are deeply rooted in the kind of socially hegemonic 'schemas', 'shared strategies' and 'myths' about water environment, well described for other contexts by Social Theory (Anderson 1980, Thompson, Ellis et al. 1990, Burke 1992, 101-103).

4. The assumptions about the unquestionable value of the project are based on an **indisputable diagnosis** of the problem and its solution, and on the indisputable definition of the necessity and technical viability of the required infrastructures or programs: Regional underdevelopment open to change through hydraulic intervention, in the Alqueva dam project; Surplus and deficits between regions that are necessary and possible to be balanced by means of inter-basin transfers, in the Spanish National Water Plan.

5. All these factors lead to the following characteristics of the assessment carried out over the decision making process. They are more or less clearly present in both cases according with their specific features as were presented before.

a) Behind the overall process lie the deeper issues of **values and beliefs** influencing both perceptions of nature of the problems to be tackled, as well as of optimal ways to manage them. In all the cases, the high importance of established patterns and beliefs can be

confirmed, in the way that has already been stated in other contexts: “Assessment of risks and response options tends to follow, rather than lead, political target setting, and the range of options tends to contract over time” (Committee on Global Change Research 1999, 318). Formal institutional procedures are not neutral but embody beliefs and ideas (informal institutions) that provide an advantage to some actors over others, acting as independent or intervening variables between the preferences and power of actors on the one hand, and condition closely policy outcomes on the other (Jordan 2000).

- b) **Assessment** (be it strictly economic or multi-criteria oriented) is not really considered as an independent, less say previous, stage in the design of the projects. Evaluation, beyond the partial yet firm diagnosis of the problem and its solutions, is done after the formulation of the project or even after its approval and it is carried out, if at all, incompletely.
- c) The **implicit strategy**, strongly assumed in the formulation of the project, makes difficult if not impossible the discussion of global alternatives. In the two case studies can be confirmed that “policy is often strongly path dependent in that early decisions may constrain or determine later ones, thus making discussion of alternative policies extremely difficult at later stages” (Gooch et al. 2002).
- d) The **complexity** of ecological and social processes inherent to the projects tends to be simplified by the starting diagnosis, basically incomplete. As has been concluded in other cases (Nilsson and Langaas 2002), more effort appears to be put on collection of information on state and impacts than on driving forces, pressures and responses. The diagnosis is conceived as a sum of descontextualized representations and supposed to be objective and existing independently of human agents, following what Thsoukas recognises as an *information reductionism* (Thouskas, 1997: 832).
- e) The **uncertainty**, present in basic aspects of information about the relations among different components of natural and social systems, is reduced by the certainty that accompanies the diagnosis of the problem and the definition of the strategic solutions adopted. Decision-making processes based on the grounds of scientific alone criteria fail to recognise the complexity and the high levels of local scientific uncertainty and lead to a highly subjective and ‘political’ outcome
- f) Evaluation, conditioned by this fundamental fact, constitutes a **basically informal and iterative process**, sometimes diffuse, throughout the entire project life, from conception to completion, even over the post-decisional stage. In this changing process, the modules or vertices concerning actors’ participation, available and really used information together with the context that conditions the whole decision making process, are difficult to separate from evaluation. This does not exclude the formalisation of specific evaluation documents, in different forms and rhythms, sometimes late over the project formulation or even once it has been approved. This last fact is quite indicative of the real role that sometimes evaluation performs throughout the process, i.e. an instrument for the justification and defence of an already decided strategy.
- g) Nevertheless, in general some **evolution and development of assessment methodologies** and techniques can be found, closely depending on the time extension of the decision making process and the intensity of the social controversy. This, in certain cases, leads to significant changes influencing the dimension or complementary aspects of the project, although not affecting its core contents.
- h) Evaluation is closely dependent on the balance of power among actors (Mann 1986, 1, 518-521), habitually affected in the case studies by an **increasing polarisation**. To conclude from this that the decision making process in the cases outlined above were just ‘subjective’, ‘arbitrary’ and/or ‘groundless’ may be considered a simplification. The evaluation item plays, precisely, a key role in the way conflictive approaches are expressed and at times partially solved. . In reality, “achieving effective water governance

based on sound decision making process (including water projects assessment), is inherently political in nature” (Hall, 2002). We can say that the integrated perspective and practice that comprehends complexity of water issues’ evaluation is inseparable from explicit considerations of ethics and policy (Funtowicz, O’Connor and Ravetz, 1996).

- i) In the context of intertwined and partially overlapping tiers of authority that characterise the emerging system of multi-level governance, the **European Union scale**, for legal and/or financial reasons, performs a key role as a driving-force for the emergence of formalised evaluation inputs throughout the decision making process.

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