EVALUATION PRACTICES IN WATER PROJECT DECISION-MAKING PROCESSES: COMPARATIVE ANALYSIS OF FIVE EUROPEAN CASES: ALQUEVA DAM (PORTUGAL), EVINOS RESERVOIR (GREECE), YTHAN NITRATE VULNERABLE ZONE (UK), THE GRENSMAAS (THE NETHERLAND) AND EBRO RIVER TRANSFER (SPAIN)

DEL MORAL Leandro*, HILL Gary**, PANEQUE***, PEDREGAL Belén*, SPASH Clive** and URAMA Kevin**.

* *Department of Human Geography, University of Seville, c/ Maria de Padilla, s/n 41004 Seville, lmoral@us.es*

** *The Macaulay Institute and University of Aberdeen.*

*** *University Pablo de Olavide (Seville)*

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). The main objectives of ADVISOR project (Integrated Project Evaluation and Water Management)[1] 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. the development of the Evinos reservoir in Greece, the designation of the River Ythan as a Nitrate Vulnerable Zone in the UK, a river restoration project in The Gresmaas in The Netherlands, the development of the Alqueva dam in Portugal and the Ebro River transfer project 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 outcome, was 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 this 'evaluation tetrahedron'. Together, the horizontal analysis of the four vertices will provide a comprehensive understanding of the theorisation and shortcomings of the evaluation process to date.

---

[1] Integrated Evaluation for Sustainable River Basin Governance (ADVISOR), contract EVK1-CT-2000-00074 Energy, Environment and Sustainable Development R+D Programme .

Web site: ttp://gasa3.dcea.fct.unl.pt/ecoman/advisor/

The concrete aim of this paper is to present the horizontal analysis of the assessment component of the 'evaluation tetrahedron' as applied to the five case studies. More specifically, the aim is to critically compare the assessment process in all of these cases.

2 THE CASE STUDIES

The location of the five case study projects is presented in Figure 1, with the project details summarised in Table 1. The projects were selected to be broadly representative of the main water related issues in the five respective countries.

Figure 1 Location of five case study projects

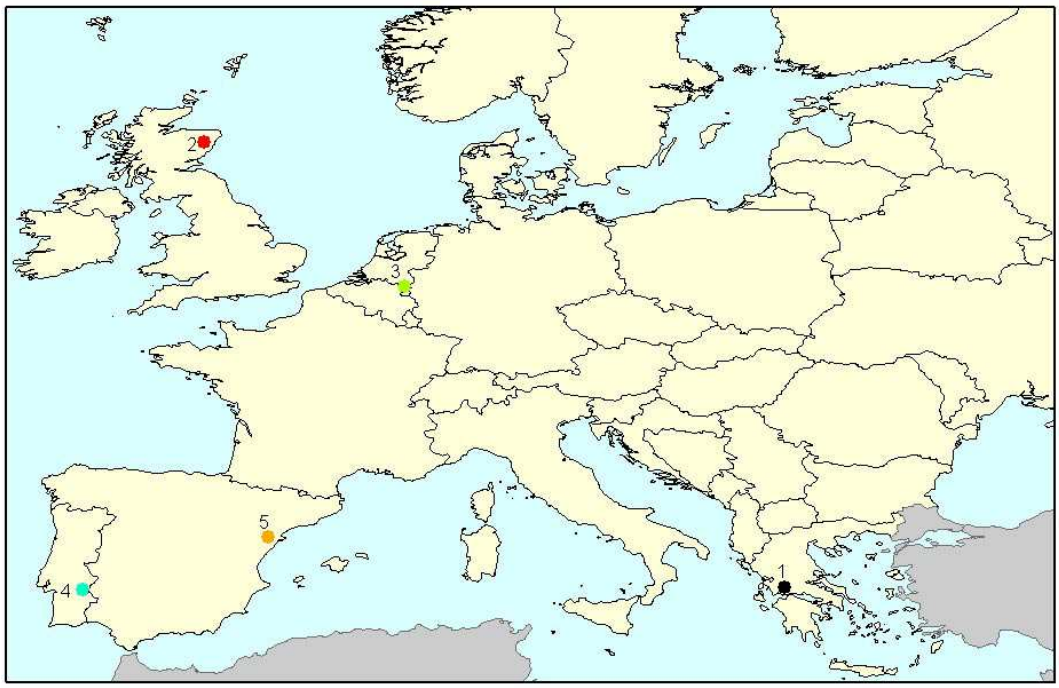


Table 1 Summary of case study projects

Country	Project	Description
1. Greece	**Evinos reservoir**	Increase potable water supply for Athens by damming River Evinos
2. United Kingdom	**Ythan NVZ**	Designation of River Ythan & estuary as Nitrate Vulnerable Zone to reduce agricultural loss of nitrate & improve water quality to protect sites of high nature value
3. Netherlands	**Grensmaas**	Improve flood defence, create natural areas & extract gravel through restoration of River Meuse channel & floodplain
4. Portugal	**Alqueva Dam**	Improve irrigation & develop Alentejo region through construction of Alqueva Dam on River Guadiana
5. Spain	**Rio Ebro Water Transfer**	To improve balance in national water resources by abstraction from Rio Ebro & transfer to Mediterranean coast

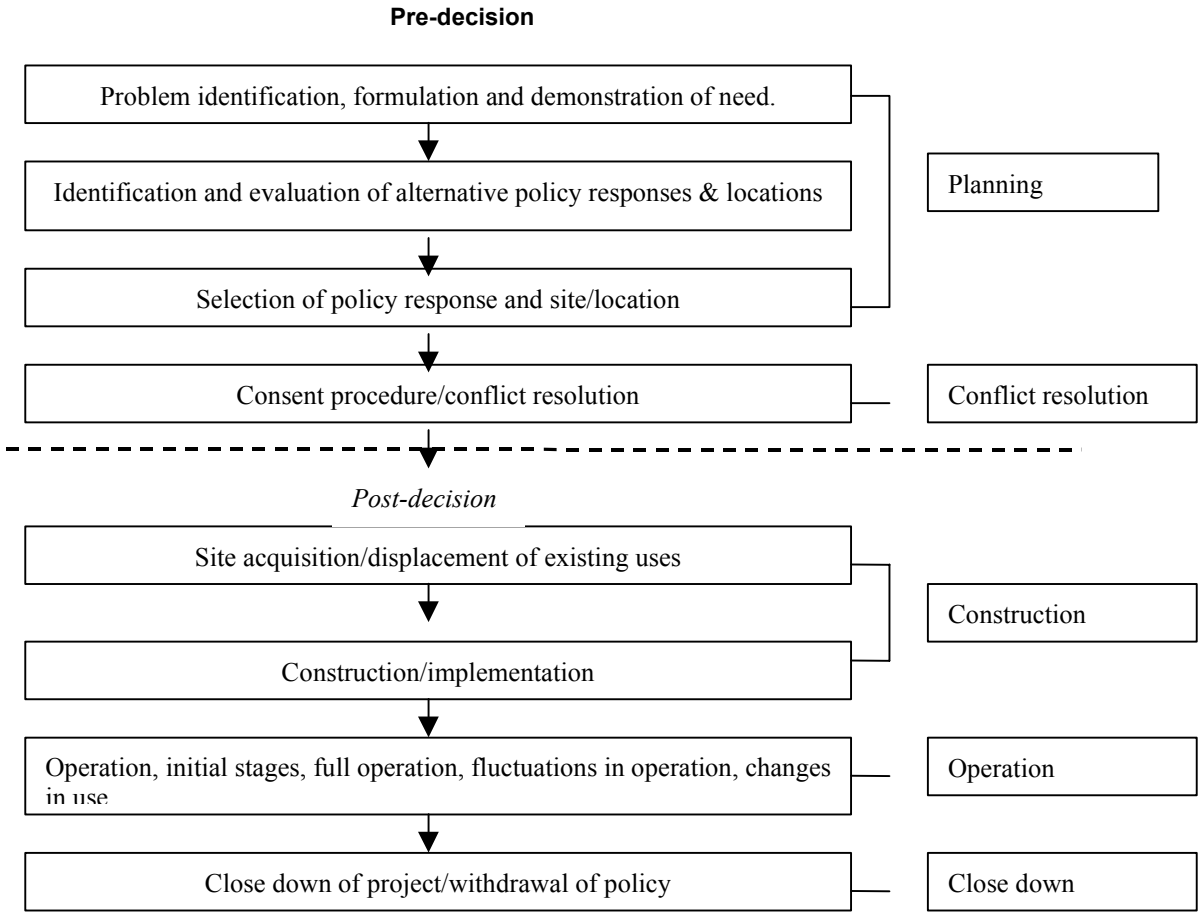
The projects in Greece, Portugal and Spain are water supply projects, whilst the project in the Uk is a water quality project. The project in the Netherlands is a multi-purpose project aimed at providing both construction materials and .environmental services

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, for the purpose of this paper – in the frame of the process, dynamic, and integrated approach of the ADVISOR project to decision making processes -, assessment is not seen as a single, formal evaluation but a dynamic process of informal and formalised learning that takes place throughout a project planning and development life-cycle (Munda, 2000). Thus, whilst a formal assessment may cover only one step in an overall process, such as the problem diagnosis or the consideration of different alternatives, the overall assessment component may extend to the entire project life, from conception to completion, expanding even to the post-decisional stage.

Figure 2 describes a generalised planning and development assessment cycle for major projects (of any kind) incorporating a number of distinct, but sometimes overlapping, stages. The lifecycle describes those stages that would ideally precede any decision, and those that may come afterward. However, ideally all stages should be subject to some degree of assessment prior to any decision to proceed. Initiation of a project can be through the government/public sector, or the private sector may identify a market opportunity. This is a fundamental stage of the planning process as it is at this stage that the need/problem/opportunity is formulated and described (mapped), the outcome of which will directly influence proposed responses. The remainder of the planning stage is largely concerned with the identification and evaluation of alternative solutions/management/policy options. It is at this stage that the more strategic formal assessment tools, such as Cost/Benefit Analysis (CBA) and Environmental Impact Assessment (EIA), are introduced into the wider assessment process. These formal and explicit assessment practices constitute key elements in the ‘assessment vertex’ as a whole, working as a central axis to which informal assessment activities are referenced. The outcomes of these formal assessments generally play an important role in the process leading to project consent and resolving conflict. Following project consent, the assessment process continues through the construction, operational phases. Here monitoring and auditing are important aspects of the assessment process. The final phase of assessment relates to the final stages of the project’s life, dealing with issues such as redundancy, decommissioning and policy withdrawal.

Figure 2 Generalised assessment (planning and development) life cycle (adapted from Glasson, Therivel and Chadwick, 1994).



The comparative analysis examines the different stages of assessment for the case studies with respect to five specific elements, i.e. tools, criteria and values, timing, responsibility, and influence (Figure 3), whose commonalties 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. This 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 an *assessment axiology*, in as much as it considers the *assessment criteria* used and the weightings placed on these criteria, as well as the underlying *values*. The third 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 fourth 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.

Figure 3 . Analytical framework

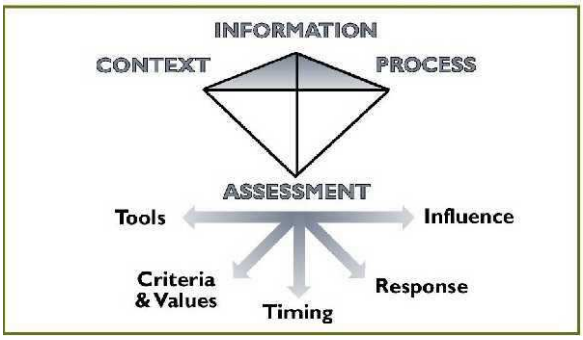


Table 2 sets out a summary of each project life cycle and the process of assessment.

	Table 2 – Process of Assessment considered in each case study
Case Study 1 Evinos River Reservoir, Greece	- The project was conceived in 1964. - 1988: the Ministry of Environment, Physical Planning and Public Works assigned a technical study to the Department of Water Resources, Hydraulic and Marine Works of the National Technical University of Athens (Koutsoyannis et al 1990), that examined three alternative dam dimensions - 1990: "Study of the enforcement of Athen's water supplies for the coverage of water demands until the year 2030", carried out from June to September by 14 of the most renowned technical offices in Athens (YPEHODE 1990). Five alternatives were examined. Evinos dam was proposed as the best solution. - The Hellenic Ornithological Society (HOS), that raised strong objections to the project, proposed five alternatives of which four had already been examined by the YPEHODE study. - 1991: "Preliminary study on the enforcement of water potential of the Mornos reservoir from the Evinos River Basin", whose objective was to assess more thoroughly the feasibility of the project (available water quantities, stability of the structures, geo-technical data, evolution of water consumption issues, first estimation of the cost of the project. First and second phases of call for tenders. - 1992: The construction works started. Some months later, the Environmental Impact Assessment (Panagopoulos et al. 1992) is presented. It concluded that some impacts are expected but consider that none of them is irreversible or impossible to be dealt with. - 1993: Report on cumulative effects of the Evinos and Acheloos diversions by Greek and two EU external experts (Heurteaux & Soulios 1993). - 1997: a complete cost-benefit analysis was carried out.
Case Study 2 River Ythan Nitrate Vulnerable Zone, Scotland	- 1991: Approval of the EC Nitrate Directive (91/676/EEC) by the EC Environmental Council. - 1993: The North East River Purification Board (NERPB) proposed the Ythan Estuary as a candidate for designation as a Nitrate Vulnerable Zone due to eutrophication. - 1994: Public consultation on two proposed areas for designation as Nitrate Vulnerable Zones in Scotland, including the River Ythan and estuary. - 1996 Government decides not to designate the River Ythan and estuary on the grounds of inconclusive scientific evidence of a link between agriculture and eutrophication in the estuary. - 1997 Scottish Environmental Protection Agency (SEPA) proposes the River Ythan and estuary as a candidate for designation in accordance with the obligations of the Directive. - 1998 Once again Government decides not to implement recommendation of designation due to the lack of conclusive scientific evidence. - 1999 Government warned by European Commission that evidence of eutrophication from agriculture is sufficient to designate the River Ythan and estuary a NVZ under the Directive. Scottish Executive issue a public consultation paper on the proposed boundary of the area to be designated the River Ythan and estuary NVZ. - 2000 The River Ythan and estuary is designated on 8th May as a NVZ. - 2001 Scottish Executive issues a public consultation paper on the action programme measures to apply in the Ythan NVZ. Scottish Executive issues a public consultation paper on the action programme measures to apply in the Ythan NVZ.
Case Study 3 Meuse River, The Netherlands	- 1990-1992: 'Conceptual phase' (feasibility studies). - 1990: publication of "The future for the gravel river" report ("Concept Stroming"). The province of Limburg made an agreement with the Ministry of Transport, Public Works and Water management to supply 35 million-tons of gravel for national needs. - 1992: The Province of Limburg, in collaboration with the Ministry of Agriculture, Nature Management and Fisheries and the Ministry of Transport, Public Works and Water management, presented the "Grensmaas project" (GM) intention-declaration, aiming at the recovery of gravel and the development of large-scale natural area. - 1994: 'Initiative phase' (announcement of intention). Publication of the EIA 'notice' "Nature

	Development for Gravel". - 1993-1995 floods resulted in the addition of safety as a third objective of the project. The Ministry of Transport, Public Works and Water Management formed the "Deltaplan Grote Rivieren". - 1996: 'Preparation phase'. The EIA of the GM project is drawn up. - 1998: Publication of the IEA of the GM project by *Maaswerken*. - Drawing up, assessment and approval of local and provincial spatial plans. - Judicial processes affecting GM project, spatial planning, transborder agreements. - 2001: in August the national government asked for twice as much gravel as was decided in the year 1990. In December, an inquiry on the quality of the soil revealed that the soil is more polluted than was expected. *Milieu defensie* claimed for an independent investigation. - 2002: The direction of the project organisation Maaswerken resigned.
Case Study 4 Alqueva Dam, Portugal	- The first references to create a water reserve in the Guadiana river can be traced back 100 years. - 1957: decision of Arantes e Oliveira (Minister of Public Works) to begin the Alentejo Irrigation Plan was drawn up in 1955. - 1975: The project was approved (Ministry Council Resolution of 12th December), following the Portuguese-Spanish Agreement of 1968, for the use of international rivers. - 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. 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. In short, three Environmental Impact Studies were conducted: 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).
Case Study 5 River Ebro Interbasin Water Transfer, Spain	- 1933: First formal proposal of the national-wide interbasin water transfer (National Hydraulic Works Plan). - 1970-1980: partial implementation (interbasin water transfer from Tagus river to the Segura river). - 1985: The 29/1985 Water Law introduces the current planning framework. - 1988: The present process of hydrological planning starts (*Basic Information for the River Basin Hydrological Plans*). - 1993: The Ministry of Public Works and Urban Planning presents the first National Hydrological Plan (PHN) Draft. - 1994: *Scenarios Analysis Document of the PHN* and *Modified PHN proposal*. - 1998: The new Ministry of Environment published the "White Paper on Water in Spain" that reassessed the hydrological situation of the country. - 2000: The Ministry of Environment presented the new PHN Draft accompanied by five technical reports. Around one hundred reports by experts after a request of the Ministry of Environment. - 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. - 2002 (January) The Ministry of Environment submits to European Commission the *Strategic Environmental Assessment of the PHN* (SEA). - 2002 (September): The Ministry of Environment submits to public consult a *Memory-Resume* of the Environment Impact Study, starting the formal process of Ebro transfer evaluation.

3 COMPARISON OF CASE STUDIES

1. Four of the case studies (Alqueva reservoir-Portugal, Evinos reservoir-Greece, Ythan NVZ-UK 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 most of these 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.

The fifth case considered (The Grensmaas-The Netherlands) has reached a stalemate situation due to disputes concerning some important aspects of the project (quantity of gravel that should be dredged), lack of support by the inhabitants and legal allegations. The intended planning timing has changed and

the project is so far in a “preparation phase” that have had to be fulfilled between 1997 and 1999. Furthermore, the direction of the project, i.e. organisation Maaswerken, had to resign from their tasks in January 2002. This situation could be considered similar to some stagnation stages experienced by other projects, e.g. Alqueva reservoir between 1978 and 1980 or Ebro transfer between 1995 and 2000. Nevertheless, the stalemate situation currently affecting the Grenmaas project, together with other distinctive features which will be commented further below, could be eloquent of some substantial differences in the governance issues encompassed by The Netherlands case.

2. Three projects (Alqueva, Evinos and Ebro) 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. As the report on Evinos points out: "It seems that the supply management approach, seeking to satisfy ever growing demands, prevailed against a demand management approach, the main weighing factors being the pressure of time, the urgency of the matter, the anticipated EU subsidies and perhaps the knowledge and safety inherent in the implementation of tested technologies (dam constructions), instead of new innovative ones."

The Scottish case study (Ythan) can be regarded as a representative case of a 'post-productivist' approach to water environment management, as far as it aims to protect or recover the quality of this environment by reducing the intensity of economic activities (agriculture) that it is hypothesised are having a negative impact on water quality. This fact introduces substantial differences in the nature of the contents that feature in this project's decision making process, i.e. legitimacy and hegemony (Bourdieu 1977, 190-197) of values and interests at stake, position of actors' networks, and the coherence with the general trend to ‘naturalisation’ dominant in the surrounding cultural context.

The fifth case study (The Grensmaas) begins as a 'multifunctional project'. However, one of its initial objectives (gravel recovery, although in a less aggressive manner than traditionally carried out) is increasingly contested by social demands of protection and recovery of water environment and landscape quality, which constitutes the other basic initial objective. Furthermore, the increasing weight of environment and landscape conservation contradicts the objective of financial balance, through gravel exploitation, explicitly included in the formulation of the project. In this same case, over the decision making process (mainly since 1994-1995 floods) an already ongoing revision of the general strategy to deal with flooding has got strength. The new *schemas* (from controlling river flows to living with them, i.e.“Space for the River”) become superposed and should be compatible with the project's initial objectives.

3. Regardless of the specific objectives behind them, the four projects formally approved (Alqueva, Evinos, Ythan and Ebro) 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.

In some cases (Alqueva, Evinos, Ebro) this assumption is based on widely accepted and hegemonic 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 Greece, overcoming a water deficit that prevents the development of the main national metropolis by implementing a project foreseen decades ago, an unquestionable objective reinforced by the situation created by a drought spell in the early nineties. In the Spanish case the solution to hydrological imbalances that for more than a Century has been considered 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).

In a similar way, the legal framework (EU Nitrate Directive) of the Scottish case (Ythan) implicitly implies that benefits of reducing nitrate pollution in an area designated as an Nitrate Vulnerable Zone (NVZ) will justify any costs that may be incurred in achieving these reductions. As opposed to the before-mentioned cases, given the 'postproductivist' nature of the project's objective, social legitimisation of this assumption demands changes in the configuration of power balances and of power relations between the different networks of stakeholders. In this case there is a transition from the hegemony of the alliance between Ministry of Agriculture and Fisheries (MAFF) and the agricultural interest group the National Farmers Union (NFU), in the context of a nation state, to the emergence of a more pluralistic process of policy development where wider interests are no longer marginal and subservient to the MAFF-NFU alliance, with environmental interest groups establishing connections in Brussels, in a sub-state/ supra-state context. Here the changes in actors and in decision-making scales, inevitably interconnected, express and accompany transformations in social objectives and values.

As regards the Duch case study, the Grensmaas project is based in the assumption that "no changes will occur in the markets for sand and gravel". This leads to a lack of interest on prospects about the impact of extra gravel and sand on prices of these resources, thus conditioning the cost-benefit analysis. Nevertheless, it seems that the Grensmaas case does not present a clearly hegemonic assumption, in a social and/or legal way, that could be compared with those present in the other cases, in terms of basic and strong driving-force of the project.

4. When they are present, 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 feasibility of the required infrastructures or programs: 1. Regional underdevelopment open to change through hydraulic intervention, in the Alqueva dam project; 2. Stagnation due to water deficit of the country's main development area open to solution by implementing a historical project, in the case of Evinos River reservoir; 3. 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; 4. Eutrophication processes that can be solved through changes in agricultural methods, in the Ythan River.

In the Grensmaas project despite the importance of this above-mentioned assumptions about market stability, the initial goals of the project (gravel exploitation together with protection against floods by means of canalisation and dikes) were already weakening when the project was being launched, and generate even deeper doubts during the decision making process. Thus, diagnosis and definition of alternatives have been more controversial.

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 the different cases according with their specific features as were presented before.

a) Underlying the overall process are the deeper issues of values and beliefs influencing both perceptions of the nature of the problems to be tackled, as well as of the 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 closely condition policy outcomes on the other (Jordan 2000).

b) Assessment (be it strictly economic or multi-criteria oriented) is not really considered as an independent, or even 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 all the case studies it 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 incomplete starting diagnosis. 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 masked 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 criteria alone fail to recognise the complexity and the high levels of local scientific uncertainty and inevitably 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 actually 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, sometimes late in the project formulation process or even once it has been approved. This last fact is quite indicative of the real role that evaluation sometimes 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 fact, "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.

4 CONCLUDING REMARKS

4.1 CONTRASTS AND SIMILARITIES

a) Four case studies have been **formally and definitively approved**. The Grensmaas case has reached a stalemate situation

b) Three projects are characterised by a **strategy of 'productivist' management of water resources.** The Scottish case study can be regarded as a representative case of a **'post-productivist' approach to water environment management**. The Grensmaas case begins as a **'multifunctional project'**.

c) **The assumption that the benefits are greater than the costs** is firmly established in the formulation of the projects, i.e. 'unquestionable value of the project'. The Grensmaas case does not present a clearly hegemonic assumption.

d) This assumption is based on an **indisputable diagnosis** of the problem and its solution, and of the necessity and technical feasibility of the required infrastructures or programs. In the Grensmaas project, diagnosis and definition of alternatives have been more controversial.

4.2 ALL THESE FACTORS EXPRESS OR LEAD TO THE FOLLOWING **CHARACTERISTICS OF THE ASSESSMENT** VERTEX

a) Underlying the overall process are the deeper issues of **values and beliefs** influencing both perceptions of nature of the problems to be tackled, as well as optimal ways to deal with them.

b) **Assessment** is not really considered as an independent, even less previous, stage in the design of the projects.

c) Evaluation constitutes a **basically informal and iterative process**, sometimes diffuse, throughout the entire project life, even throughout the post-decisional stage.

d) The **implicit strategy,** strongly incorporated into the project design, makes it difficult if not impossible to discuss global alternatives.

e) The **complexity** of ecological and social processes tends to be simplified by the starting diagnosis, which is basically incomplete.

f) The **uncertainty,** present in natural and social systems, is masked by the certainty that accompanies the diagnosis of the problem and the definition of the strategic solutions adopted.

g) The real role evaluation habitually performs throughout the process is as an **instrument for the justification and defence** of an already-decided strategy.

h) Nevertheless, some **evolution and development of assessment methodologies** and techniques can be found, closely depending on the length of the decision-making process and the intensity of the social controversy.

i) Evaluation is closely dependent on the balance of power among actors, habitually affected in the case studies by an **increasing polarisation**.

j) In the context of the emerging system of multi-level governance, the **European Union scale** performs a key role in the emergence of formalised evaluation inputs.

4.3 IMPLICATIONS FOR THE DEVELOPMENT OF EVALUATION THEORY

The assessment processes, both formal and informal, are domianted by the existing hegemony, resulting in a narrow and incomplete problem diagnosis and proposed solution. Alternative perspectives are systematically countered by the political manipulation of the assessment process (institutional capture), which occurs due to the over reliance on scientific assessment underpinned by assumptions which ignore high levels of scientific uncertainty. The resulting inherently political nature of the decision making process, demands that the assessment process be democratised through greater participation of the relevant actors at all stages. Only by allowing the full range of values and beliefs to be considered in a context where uncertainty is recognised, can effective and implementable decisions regarding water related problems be made. This requires the development of assessment tools and methodologies that go beyond conventional scientific assessment, capturing different perspectives and accommodating both risk and uncertainty. Clearly identified guidleines as to when and how such tools can be effectively applied are clearly required.

5 REFERENCES.

Allan, A. (1999): "Water in international systems: a risk society analysis of regional problemsheds and global hydrologies", in *Sustainability, Risk and Nature: the Plitical Ecology of water in Advanced Societies*, Oxford, European Science Foundation, School of Geography, pp. 73-82.

Berger, P.L. and T. Luckmann (1968): *La construcción social de la realidad*, Amorrortu, Buenos Aires.

Bourdieu, P. (1977): Outlines of a Theory of Practice, Cambridge.

Burke, P. (1992): *History and Social Theory*, Policy Press, Cambridge.

Committee on Global Change Research, B.O.S.D., Policy Division (1999): Global Environmental Change, Washington, D.C., National Research Council.

Faggi, P. (1996): "Water in developing countries: productive and strategic values", in J.A. Allan (comp.), *Perceptions of the values of water and the water environments,* SOAS University of London, pp. 113-116.

Funtowicz, S., M. O'Connor and J. Ravetz (1996): "Emergent Complexity and Ecological Economics" in Van del Straaten and Van den Berh (Ed. 1996), *Economy and Ecosystems in Change,* Island Press.

Gooch, G. et al. (2002)*: Policy formulation, management and implementation in the transition to social, economic and environmental sustainability*, Mantra-East project, Mid-term Meeting, Tartu (Estonia).

Hall, A. (2002): *Introducing Effective Water Governance. A Background paper for the Dialogue on Effective Water Governance*, Global Water Partnership.

Hill, G., K. Urame. C. Spash and G. Wynn (2002) *The Designation of River Ythan and Estuary as a Nitrate Vulnerable Zone. ADVISOR*, WP1-Case Studies Reviews, May.

Atzilacou, D., G. Kalllis and H. Coccossis (2002) *The River Evinos Reservoir. Greece.* ADVISOR, WP1-Case Studies Reviews, May.

Jordan (2000): "The politics of multilevel environmental governance: subsidiarity and environmental policy in the European Union", *Environment and Planning*, 32, pp. 1307-1324.

Mann, M. (1986): *The Source of Social Power*, Cambridge.

Moral, L. del, B. Pedregal, M. Calvo and P.Paneque (2002)*: River Ebro Interbasin Water Transfer (Spain),* ADVISOR, WP1-Case Studies Reviews, May.

Nilsson, S. And S. Langaas (2002): *Environment information management in some transboundary water regimes in Europe,* Mantra-East project, mid-term meeting, Tartu.

Paneque, P. and B. Pedregal (2000): *Social perception of water in the Lower Guadalquivir River basin: Myths and Values,* SIRCH working paper, Madrid.

Tsoukas, H. (1997): "The tyranny of light. The temptations and the paradoxes of the information society." *Futures* Vol. 29. nº9, pp. 827-843.

Van Leeuwen, E., J. Dalhuisen, R. Vreeker and P. Nijkamp (2002) The Grensmaas Project (The Netherlands). ADVISOR, WP1-Case Studies Reviews, May.

Videira, N., G. Lobo, P. Antunes, R. Santos and A. Pereira (2002), Alqueva Multipurpose Project (Portugal), ADVISOR, WP1-Case Studies Reviews, May.

Walker, B., S. Carpenter, J. Anderies, N. Abel, G. Cumming, M. Janssen, L. Lebel, J. Norberg, G.D. Peterson and R. Pritchard (2002): "Resielience management in social-ecological systems: a working hypothesis for a participatory approach", *Conservation Ecology,* 6 (1):14. [online] URL: http://www.consecol.org/vol6/iss1/art14.