

Delivering on Environmental Commitments? Guidelines for an “On-Board” approach

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In contemporary contexts of complex, integrated policies, it has become ever more essential to assess whether environmental political commitments are effectively implemented. Endeavouring to find out, the evaluator finds himself “on-board”: committed to one problematic, under strategic pressure, caught between paperwork and field investigation and looking for markers in ever changing situations and discourses. Based on an evaluative research on environmental management programs in an arid region, the Senegal River valley, this paper reviews the pitfalls the evaluator has to confront, the successive deconstruction, reconstruction and assessment phases the evaluation has to go through, and proposes guidelines to prevent blurring the environmental bottom-line.

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Over the last decades, the environmental field has seen an accumulation of commitments (policy goals, principles, international conventions) and of rules, plans, programs, and projects intending to fulfil them. In much of the field, a major issue is now to find out whether policies (i.e. rules, plans, programs and projects) really meet existing commitments. Evaluation in general, and especially evaluating the environmental effectiveness of policies – whether or not they meet the environmental bottom-line – increasingly becomes a prerequisite for further progress in environmental management and policy (Crabbé & Leroy, 2008; Mickwitz, 2003).

The problem can be framed in two quite different ways, depending on the status conferred to dissension about the goals and means of environmental policies (Scrase & Sheate, 2002). On the one hand, one may regard politics and dissension as confined to goal-setting, and so as having been settled by institutional commitments (international treaties, EC directives, national laws). In that perspective, the implementation of environmental commitments is seen as a joint challenge shared by all actors. The explanation for, and the remedies to, gaps in the implementation is then to be looked for in difficulties such as coordination problems, poor organisational design and administration, technical obstacles, insufficient methods and indicators, etc. One may, on the other hand, view environmental political commitments as just one step in an on-going struggle that is underpinning the transition to a more ecological society. From that perspective, the implementation of any environmental policy is no less political, and thus strategic and dissension ridden, than was the negotiation of the commitments the policy is meant to meet. Furthermore, the evaluation of environmental policy must then itself be seen as subject to the same dissension and struggle.

Our experience of, and research on, environmental policies and management clearly converge with Scrase and Sheate's analysis and conclude in favour of the second, more

strategic, perspective on environmental commitments, policies, program and their evaluation. This has profound consequences on the theory and practice of evaluation. It justifies critical reluctance towards methods that rely on consensus-building between the policy's stakeholders convened "around the table", if these methods run the risk of providing a majority in evaluation fora to stakeholders opposed to effective implementation, or eager to "drown the fish" of the environmental effectiveness of policy. As an alternative, we have proposed a concern-focused evaluation (Mermet, Billé & Leroy, 2010), based on our strategic environmental management analysis framework (Mermet, Billé, Leroy, Narcy, & Poux, 2005, p.71). Concern-focused evaluation can be summarised in the following four points. (1) The aim is to find out to what degree political commitments responding to a given environmental concern are met, and why. (2) The "actual policy" regarding that concern consists of the whole set of public policies that impact it positively or negatively (e.g., in matters of wetlands conservation in arid regions: agricultural development and irrigation programs, subsidies to several crops and intensive agricultural practices, hydroelectric development projects,, wetlands conservation programs, etc.). Identifying and analysing this "actual policy" is a central task for the evaluator. (3) Policies that explicitly aim at meeting the environmental concern (a subset of the actual policy) make up the "intentional policy" regarding that concern. (4) By assessing the "intentional" policy, by understanding how it actually plays out in the wider picture of "actual policy", the evaluator will see all the classical, non-dissensual causes for implementation gaps. But he will also uncover causes and responsibilities that are often obscured by consensual framings and methods of evaluation. Furthermore, he will clearly situate the multiple aspects of implementation and its difficulties in the strategic, dissensual scenes and struggles of policy implementation. In that way, the evaluation will offer to those actors who really expect environmental results equal to commitments as clear as

possible a view of shortcomings, of responsibilities, and of strategic margin of manoeuvres to press for more effectiveness.

However, such an approach places the evaluator in a particularly challenging situation.

By trying to understand the responsibilities in less than adequate compliance to environmental commitments, he jeopardises the comfort of the stakeholders, for whom such commitments are not a priority, and will sooner or later find himself embroiled in the strategic struggle of environmental policy design, implementation, and evaluation.

Four aspects of this multifaceted “on-board” evaluation situation can be pointed at from the outset.

- (a) By basing the evaluation on the strong but limited basis of one clearly defined, limited set of environmental concerns, the evaluator accepts that he will probably be confronted with other evaluations, covering other concerns, backed by other social actors. He engages differently with some stakeholders than with others; he is “on-board” in that he cannot claim not to be involved in their dissension.
- (b) By striving to make plainly legible responsibilities in environmental commitments maybe not being met, the evaluator engages in the same strategic struggle that characterizes policy design, implementation and evaluation. Evaluating environmental efficiency of public action requires constant strategic initiative to face ever-renewed forms of resistance, precisely to such evaluation. “On-board” here means constantly mobilized to that effect.
- (c) As the evaluator accepts the political dimension of environmental policy implementation, he cannot confine himself to the refuge of technical and bureaucratic information and procedure and has to immerse himself also in the field where the environment is concretely (and usually, “messily” (O'Neill, 2007))

played out. Being “on-board” in that way involves bearing the tension between these very different ranges of knowledge and experience, and the different tools they require.

- (d) Environmental issues in need of policy evaluation are in constant flux. Politics and policies, definitions and data, ecological, technical, economic and social conditions are ever changing. As will be shown with our on-board framework, perhaps the best the evaluator can aim at is a relative appraisal that makes it clear whether or not we are getting closer to delivering on environmental commitments, and why.

The problems of the “on-board” approach, as we saw when implementing our “concern-focused evaluation” is that one takes the risk of renouncing the usual consensual view of policy and evaluation. Guidelines and tools that can help the evaluator as he embarks on his strategic evaluation adventure are the topic of this paper. The remainder of it will be organized in two main parts before the final discussion. The first reviews in a pragmatic way six challenges that the “on-board” evaluator has to take up, and proposes guidelines to steer his way through the confusion and turmoil of volatile environmental issues. The second accompanies the on-board evaluator through a case study - the evaluation of environmental programs in the Senegal River valley (Leroy, 2006)- and reflects more systematically on steps and tools for the enterprise.

Six challenges and guidelines for the evaluator who wants to get at the environmental bottomline

Based on a series of evaluative studies and research projects over the last 15 years (see for instance Billé, 2007; Leroy, 2006; Mermet, 1996), we have identified six potential pitfalls confronting any evaluator who is intent on getting at the environmental bottom-line of

policies, programs and projects. Since they combine different levels – tactics of the evaluation situation, methodology, position of the evaluator and framing of the evaluation – they may come out as heterogeneous. But taken together they provide, we think, pragmatic and experience-tested complementary perspectives on the challenges of “on-board” evaluation. As we present each of the six challenges, we introduce it by a simple guideline suggesting how it may be overcome.

(1) Refusing consensus as a sine qua none condition for implementation and evaluation

There is a strong temptation and pressure to assess policies in view of goals that are accepted by all or most parties or stakeholders. In many situations, this hinders evaluation of environmental management because there is little consensus on the level of ambition with which an environmental goal should be pursued or even, on the nature of environmental goals. A frequent second-best solution is to redefine the aims of the policy through stakeholders participation and pluralistic or deliberative evaluation methodologies (House & Howe, 1998; Monnier, 1992). On environmental issues, this often results in constantly re-negotiating criteria amongst a constituency of stakeholders, many of which hold both a strong position of power and a reticence towards ambitious environmental goals. This may result in relegating environmental effectiveness to second place in evaluations, often to the point where it is effectively lost sight of.

To overcome this problem, the evaluator should be prepared to base his evaluation on environmental goals that do not always receive wide support in the field where he conducts his work. He can then base his evaluation on environmental criteria that are viewed as clear and compelling by those actors who are committed to environmental goals, even if such goals do not attract wide support at a given time, in a given field situation. In the Senegal valley research presented below (Leroy, 2006), this was done by focusing on international commitments taken by the riverside states on wetland protection, water management and

biodiversity in an arid region. Although interviews showed such standards were met with remarkable reluctance by many actors in the field, both from Senegalese and from international institutions, they provide a clear and legitimate base for an environmental evaluation of how the ecosystem is, in effect, managed.

(2) Starting from clear environmental commitments, rather than from one program or project

Another temptation is to focus evaluation right from the start on one given program, rather than on the environmental problem at hand. This is rarely relevant for environmental evaluation because most environmental problems have complex causes and are subject to many rules, programs and projects. Analysing just one of them for evaluation, it may be difficult to connect it with the environmental bottom-line.

So the evaluator may rather start not from one program or the other, but from the environmental bottom-line he has set as the basis for his evaluation. For example in the 1994 French wetland policies evaluation (CIME, 1994), it rapidly became clear through a survey of all public programs affecting the condition of wetlands, that the decreasing extent and ecological quality of French wetlands is the result of policies from the Ministries of agriculture (drainage, fir plantations in bogs, dams and pumping for irrigation), of industry (hydroelectricity, gravel extraction) or of public works (dredging and filling for canals, harbours, or other infrastructure), rather than of conservation programs which were directly enforced on only approximately 7% of the total wetland area at the time of the evaluation. Literally dozens of programs have a bearing, positive or negative, on wetland conservation. To evaluate with the environmental bottom-line in view, it is crucial to consider – even if to focus later on just some crucial programs - the whole set of programs with an impact. Otherwise, one could well end up with a situation where the degradation of wetlands is imputed to the inefficacy of wetland protection programs, when it is mainly caused, for instance, by an aggressive agricultural drainage policy. Blaming a bad environmental bottom-

line on those few actors who struggle in favour of the environment (provided they use their limited means soundly) seems less useful than clearly assessing the impact of other policies that are responsible for environmental degradation.

(3) Aiming at sufficient proof rather than at unachievable datasets and calculations

Environmental systems are complex and change with time. Characterising an ecosystem, measuring how its quality evolves, can rapidly turn into technical puzzles. How exact and exhaustive should the data be for an adequate assessment of the environmental bottom-line? In our work, we have repeatedly noticed situations where excessive demands on the quantity or quality of data were bogging down the evaluation. This can happen as a result of arbitrarily high standards by experts, or through the deliberate efforts of those actors who are hostile to environmental evaluation. This has proven instrumental in the high impact of the wetland policy evaluation study. Actors reluctant to the evaluation first claimed that one could not assess variation of wetlands conditions, without a precise map of wetlands at the beginning and the end of the evaluation period. But if a wetland is known to be between 2 and 3 000 ha in surface (the lack of a precise figure being due to difficulties and debates about limits on fringes of the wetlands), if there is an 800 ha drainage program in the heart of the wetland, and if no other changes are manifest, then it is clear enough that the wetland will be reduced by about 800ha. So the evaluator can insist that the evaluation does not yield to demands for irrelevant levels of precision, data quality, or levels of proof, but focus on the best feasible demonstration in the real situation.

(4) Firmly linking environmental political commitments to ecological criteria.

In evaluation situations, pulling together political commitments on the one hand, and ecological and technical data on the other, often seems like linking together two disconnected spheres, with different languages, actors, logics and experts. The gap is often so wide that this can be used to defuse demands for evaluations that clarify the environmental bottomline. For

instance, political commitments often both leave a wide margin for interpretation and include such long lists of items, or “to-do lists”, that they make it easy to lose sight of the few key issues in a given environmental situation.

Assessing the environmental bottomline, however, does require that one connect clearly political commitments on the environment and scientific/technical criteria. Just as the evaluator had to clearly posit which environmental commitments he was going to use as the bottomline for his evaluation, he also has to translate them into crucial ecological and technical criteria. Our findings have shown that in most situations, an appropriate diagnosis can identify, – in the midst of the puzzling proliferation of issues, actions and programs – a very limited number of issues that are crucial if the ecological problem is to be solved, and that are the core obstacles, the “hard issues”, which environmental policies come up against. Defining those few issues that connect knowledge on the main needs of ecosystems and the most relevant environmental political commitments requires an in-depth work of screening material and interviews both on the political and technical side. But once this is done, one can focus the evaluation on the decisive hard issues that will make an essential difference for the environmental bottom-line.

(5) Forefronting the relevance of programs, goals and outcomes to crucial ecosystems issues.

Another challenge is the gap between commitments with a wide scope (for instance sound management of water at the watershed scale) and tools and programs with a much more restricted scope (for instance a program subsidising residual water purification at the household level). If the gap is very wide, evaluation may tend to opt for one of three strategies, each of which miss the environmental bottom-line. If it focuses only on the scope of one program, it may lose sight of the main environmental issues. If it embarks upon the task of assessing all programs relevant for an environmental issue at once, it may end up bogged down in an unfeasible project. If it renounces the careful evaluation of given projects

and programs and declares itself satisfied with a more general view of the situation, it tends to miss the crucial concrete issues of implementing environmental policy in the field.

What the evaluator can do here is to strike a balance by focusing on those few projects and programs that are most relevant to account for the degree to which the environmental bottomline is met or not. Their in-depth analysis is likely to reveal essential information and understanding about the difficulties and opportunities in the situation. The Senegal valley evaluation presented below will illustrate how the evaluator can link political commitments on the one side and action programs on the other and look for relevance – that is, both to choose which programs should be analysed for the evaluation to be relevant, and to evaluate each program based on a clear understanding of what can make it relevant or otherwise in terms of the environmental bottomline.

(6) Actively reconnecting management systems and evaluation tools to concrete situations

A last challenge and possible pitfall lies in the tendency to isolate administrative and technical environmental management systems from the threefold background of the political scene carrying (or not) the environmental commitments they address, of the concrete social and administrative contexts of program implementation, and of the concrete field conditions of the environmental issues they address. A rational approach to the implementation of environmental programs, at the risk of caricature, can be summarized in the following way : once political commitments have been made, they could be translated into technical criteria and indicators; those could then be used directly both for the design of programs and for their evaluation. If the system is coherent enough from the start, there should be no need to go back either to political debates on aims, or to the intricate analysis of social and organisational implementation, nor to open new debates on the science of the case. One would just have to gather information on the indicators and, from there on, evaluation would just be a technical and administrative matter of compiling and treating data.

Whereas such approaches may seem to provide a rational way of keeping focused on the bottom-line right from the start, they run a major risk of failing. Indeed, by staying on technical and apparently more objective ground, they do not escape political and stakeholders' pressures to avoid or water down criteria that may expose insufficiencies and hard issues. Rather, the pressures are played out in technical form (methodology, data, etc.) and are difficult to discuss openly if technical (methodological) and political questions are not dealt with in parallel. Systematic and continuous systems of indicators tend to induce much higher demands on data than what is sufficient to demonstrate important changes in the environment bottom-line in an external evaluation. Also, these approaches are vulnerable to the pressure of (political) time. After an interval of several years between the inception of the system and its use for evaluation it can be easy for some actors to evade or redefine political commitments they can present as obsolete. In a word, trying to isolate on the one hand management and evaluation systems, that would cover all the bases, and on the other hand political commitments, in no way guarantees sincerity, relevance and adequate impact of the evaluation.

The evaluator can choose the opposite path. Rather than trust – or distrust – management and monitoring systems, he can revive systematically their connections with political environmental commitments. To do so he may re-examine afresh (a) the meaning of previous political commitments, (b) the concrete administrative and social functioning of the corresponding programs, (c) the concrete environmental situation in the field - and then tie up the three dimensions. The impact of an evaluation lies precisely in confronting each of them against the others. Does it hold good in the current concrete situation (political, administrative and social, ecological)? If not, why so? And what re-commitments are called for if we are finally to take up the environmental challenge? In that sense, evaluation is profoundly different from the administrative follow-up of action programs deriving from past political

commitments. It is closer to laying the foundation for a new, or renewed, commitment, and thus, to strategic planning for the future.

Evaluating an environmental management program in the Senegal valley: an example of the “on-board” approach

Each of the six challenges we just reviewed can be quite difficult to overcome, but they are also interconnected. They all have to be dealt with every time one wants to reach clear answers on the environmental bottom-line. Inversely, if one is poorly met, it tends to make the others more difficult. For instance, unclearly stated goals confuse the definition of technical criteria and the acquisition of data. So a significant evaluation has to rely on a methodology that meets them in an organised way. We will introduce, illustrate and discuss this here based on an evaluative research on environmental management programs in the Senegal valley (Leroy, 2006). Of course, designs can, and have to, vary depending on environmental and policy issues, and on evaluation use intentions in the context of the evaluator’s strategic situation (Patton, 2008). But whatever the detailed tools and steps of the methodology chosen, the “on-board approach” has to go through three phases:

- a deconstruction phase, to go beyond the apparently consensual environmental management that is usually presented,
- a reconstruction phase, when the evaluator posits criteria for his analysis and assessment,
- an assessment phase, when he confronts the realities of the field to the environmental commitments – the bottom-line – the evaluation is based on.

The deconstruction phase: concrete situations in place of management discourse

Evaluation starts from a roughly stated environmental problem and a complex field situation. In the Senegal valley, the central environmental issue is the impact of two recently built dams, and of on-going projects to modify their hydraulic management and maybe complement them with new hydraulic works.

The Senegal River, 1800 km long, is shared between 4 main riverside states: Senegal, Mauritania, Mali and Guinea. It flows through mostly desert region. Yearly floods create a complex of aquatic and terrestrial habitats which are essential for biodiversity, birdlife, fisheries, grazing and for flood recession agriculture. The Senegal valley and the estuarine zones were areas of extraordinary ecological richness which have degraded over a century of agricultural development projects (dykes, irrigated areas) which has accelerated over the last twenty years, following the Saharan drought, when two dams were built. Upstream, the Manantali dam was built in the 1980s and came into operation in the 1990s, with the triple purpose of complementing low water flows for irrigation along the valley and for navigation, and of producing hydro-electric power. Its main impact is the disappearance of the natural annual flood which is vital for wetland ecosystems along the valley, for water habitat and fisheries, for groundwater and vegetation, for flood recession agriculture and more generally traditional, ecosystem-services based activities, such as fishing, farming and range management.. Downstream, the Diama dam blocks the dry-season intrusion of sea water along the river bed, with the purpose of increasing freshwater resources, especially for massive irrigated agriculture projects. Its main impacts are severe disturbance of the estuarine ecosystem and replacement of most associated habitats by intensive agriculture. The damage to ecosystem functioning and biodiversity is considerable, yet mitigated by the creation of protected areas that are artificially supplied with water, mostly to conserve some habitat for migratory birds. Both dams and large-scale hydraulic engineering works have been carried out

under the authority of the Organisation for the Development of the Senegal River (OMVS), an intergovernmental organisation grouping Mali, Senegal and Mauritania. Created to promote the economic development of the Senegal river basin, the OMVS hosts the technical team in charge of planning and of management of the dams, and its governance relies on negotiation between the member states.

The main current project is to fit out the Manantali dam with a capacity of 200 MW of hydro-electric power generation, that would provide about 800 GWh in a average hydrology year, to be dispatched to the three riparian countries capitals, through transmission lines totaling about 1,400 km. International funding for the project, by the World Bank and several donor countries, has been made conditional on the satisfactory implementation of a “comprehensive environmental impact mitigation and monitoring plan”, the PASIE. How effective is that program, in environmental terms? And what are the prospects for the ecosystems of the Senegal valley under current development projects?

The deconstruction phase starts from reading official documents. To push beyond a management discourse emphasising consensus and environmentally responsible choices, one has to open the black box of political backgrounds and games, of intricate management systems and programs, of highly complex ecosystem issues. In the Senegal valley, this was done through an extensive study of existing documents, both managerial and academic, and a program, in the first year of investigation, of fifty interviews with policy-makers, managers, engineers, natural and social scientists, local resource users. This work turned up a host of information, social and political, anthropological, managerial, hydrological and ecological. After a year of such open investigation, the importance of the accumulated information put to light major contradictions and controversies between sources about the facts and diagnostic of the case, serious gaps in knowledge and data, contradictory or incompatible points of view from various actors on values, management issues, options and prospects. In the Senegal

valley, this includes inter alia debates on complex hydrological data about annual floods and their effects, abundant but heterogeneous and incomplete information on valley ecosystems, complex social, political, administrative and managerial processes that several management documents fail to capture. The evaluator now musters ample and relevant material, but in a thoroughly deconstructed form. He seems to be worse off for evaluation than he would be, had he taken for granted the official management discourse and built his evaluation from there.

The reconstruction phase: re-defining relevance and efficacy

A priority is then to reconstruct a clear picture of the ecological criteria that will serve to assess the environmental bottom-line against which “actual” and “intentional” policies will be evaluated. This is largely a matter of determining a small set of key environmental claims, of crucial drivers and outcomes for ecosystems, and of pulling them together to define criteria. The key issue here is relevance: establishing a very small number of criteria with high relevance both to environmental commitments and to the ecological issues of the case.

In the Senegal valley evaluation, the vital lead for this reconstruction was provided by the international conventions that helped us to build a normative framework for the assessment of programs decided by governments, intergovernmental organisations and international donors. Moreover, large international environmental agreements produce relevant bodies of work that link political commitments with managerial doctrines and technical understanding and standards. For instance literature produced by the Ramsar convention includes commitments to the conservation of wetlands, but also identifies key technical issues like wetland functions and preservation of lateral and vertical exchanges between hydrosystems and wetlands, as well as the management concept of “wise use”, that is, favouring human activities that rely on, and do not damage, the ecological functioning of wetlands. The result of this first effort of

reconstruction is presented in table 1. Senegal valley environmental projects, programs or policies will be assessed as to their effective contribution to fulfilling this set of commitments.

insert table 1

However, so defining the issues fundamental to environmental bottom-line evaluation goes only half way. One still has to define the benchmarks against which the bottom-line will be appraised. Here the issue is one of effectiveness: do programs make enough of a difference to reach the relevant environmental commitments? As discussed above, defining the benchmark risks bogging down evaluation if excessive demands of precision are made, relative to limits in the available knowledge and data.

In the case of the Senegal valley, as in some previous studies (Cattan, Dubien, Laurans, & Mermet, 1996; Poux, Dubien, & Servheen, 1996), we adopted a very simple set of relative benchmark levels. The program under assessment either leads (or contributes to):

- rapid degradation,
- gradual degradation,
- stabilisation of ecosystem state and functions,
- restoration of ecosystem state and functions.

These criteria allow us to produce a “relative evaluation” is why we design this evaluation as an “on-board approach”. The criteria define the variations, that is to say the “trends” and not the “state” of the ecosystem, in terms of slowing down, stabilisation, or acceleration of damaging processes. The programs, projects, plans to be evaluated can therefore be positioned within a standardised framework of which the evaluative reference points are the major environmental issues.

For each of the key targets defined in table 1, based on a careful expertise of the massive amount of available data and understanding from the deconstruction phase, we defined

qualitative and or quantitative criteria to help with the benchmarking of programs' aims and outcomes.

Regarding the crucial issue of the annual flood, for instance : a lack of artificial flooding, or a high proportion of years without such flooding (1 in 2 or 3 years) is interpreted as rapid degradation; a weak artificial flood (150 000 flooded ha or 40 000 of flood recession agriculture), or more years without flooding than in the natural hydrological pattern, is interpreted as slower degradation; a regular annual artificial flood with a fair duration and volume (230 000 ha flooded, or 70 000 ha of flood recession agriculture will count as a stabilisation on this issue; a regular annual flood of high amplitude (330 000 ha, or 110 000 of flood recession agriculture) will be seen as a form of ecological restoration.

Regarding the “wise use” issue, policies effectively promoting technical and economic activities that do not rely on ecosystem functions and that require infrastructure works that hinder such functions are assessed as rapid degradation; policies that plan for the gradual disappearance of activities based on a sustainable use of ecosystem functioning (fisheries, non-intensive cattle-raising, flood recession agriculture, ...) are assessed as resulting in slow degradation; policies that support and revitalize such activities are seen as restorative.

The same construction of criteria for all five key issues leads to a synthetic “on-board” evaluation framework crossing relevance and effectivity, that is, key issues and the level to which they are met by evaluated programs (see table 2).

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The assessment phase: appraising programs against the environmental bottom-line

The reconstruction phase thus provides a clear set of criteria against which the environmental effectiveness of management and policies can be assessed. As discussed above, such management must be conceived both at the program level – because the effective operation of such programs is the concrete basis of management – and at the level of the

overall human action on the ecosystem, the sum of all impacting programs and activities which we defined as the “actual management” of the ecosystem.

To illustrate program assessment, we will focus on the program for environmental impact mitigation and monitoring (PASIE). Identified by states and donors as the main tool to reach environmental goals in managing the river Senegal, it is the means through which funding is presented as conditioned on good management of the environment, and receives major funding (in the 1999 OMVS plan, 17,5 millions US\$, about 4% of the cost of the hydro-power plant project). The assessment phase requires a detailed analysis of the design of the program, of its concrete organisational operation and of its implementation (allocation of funds, redefinition of priorities, etc.).

The PASIE is a six-fold program : (1) mitigation of impacts of the power-plant project, (2) involuntary resettlement and compensation program, (3) optimisation of reservoir management, (4) health component, (5) monitoring, coordination, communication, (6) auxiliary actions. On close examination, the first two are only about the construction of the installations and the direct, momentary impact of the works, including resettlement and land acquisition in order to establish the transmission towers and substations, access roads and construction work areas. The fourth is about public health policy (all aspects of proposed plans to improve impacts on human health through ecosystem management and restoration have been rejected at an early stage by OMVS). The sixth is about rural electrification and development, with no relevance to the main environmental issues. The fifth has a limited element of ecosystem management, through the establishment of an Environmental Monitoring Office within OMVS (“Observatoire de l’environnement”), planned for a cost of 1,8 millions US dollars. The only part of the project with a bearing on the management of the valleys ecosystems is the third. It receives the lowest funding : approximately 15% of the programs budget. Let us look more closely at its content.

The initial terms of reference for that part of the program revolved around two issues:

- building a rainfall-runoff model so as to optimise the ecological use of water released for floods by coordinating it with the natural floods of non-dammed affluents of the river;
- evaluating floods from the point of view of “the theoretical needs of natural habitats and of human uses relying on them”, so that release for artificial flooding will “re-establish for a considerable part the traditional floodplain functions” (World Bank, 1997 : 35) and will “allow flood recession agriculture, but also aquifers recharge, grazing land and forests regeneration, fish reproduction, wetlands management (OMVS, 1996, section E-1:3; 1999, partie C:6).

Such terms of reference have a clear relevance to the key environmental issues of the Senegal valley. Implementation, however, led to major redefinition.

The rainfall-runoff model was dropped from the program at the initiative of the (French) research institute in charge of it, on technical, cost and feasibility considerations. The final recommendation for this part of the programme is a fixed-date release for artificial flooding because “it will have only minor consequences on electricity production”. Such a fixed-date release does not take advantage of synergies with natural flooding (and thus leads to smaller levels of flood, the amount and cost of water released remaining constant), and leads, in years with a long interval between natural and artificial floods, to very negative consequences for ecosystems and flood recession agriculture. The proposed release is also conditioned on technical consideration of the water level in the dam for ensuring optimal electricity production, which results in adopting a no-release policy even in years with sufficient rainfall for flooding.

The second main topic of the terms of reference is redefined during the program study phase as a need to characterise the “uses” of water. It effectively focuses mainly on water for

agriculture, both for irrigation and for flood recession agriculture. The first has no need of annual floods, and no connection with ecosystem functioning – on the contrary, new irrigation perimeters are often built at the expense of wetlands, forests, or extensive grazing land. As for flood recession agriculture, the authors of the study find it hard to see it as sustainably resting on ecosystem functioning. They propose to optimise the flooding of cultivated areas and to retain water in a controlled way through “simple hydraulic works”. In other words, they recommend a transition towards controlled irrigation by submersion, that would effectively disconnect flood recession agriculture from the ecological functioning of hydrosystems and wetlands. On the other aspects of “the needs of natural habitats”, only the issue of fish populations’ viability has been investigated seriously. The Canadian experts in charge of that part of the study recommend management aims for artificial flooding between 234 000 and 200 000 flooded ha, corresponding to what we defined above as “stabilisation” or “restoration” levels. These recommendations, to our knowledge, have not been adopted by the dam management in preparation by OMVS. All other aspects (grazing areas and activities, forests, aquifer recharge, water quality, health connected with ecosystem management) were only granted means for light expertise (between 5 and 10 person-days each). They could produce no new information or analysis, and made no difference in the output of PASIE.

Our careful analysis of the PASIE studies and their cross-checking with other and previous hydrological studies clearly shows that there is opposition between the aims of maximising the profitability of electricity production and of ensuring a flood sufficient (in amplitude, length and frequency) to sustain ecosystems and traditional uses in the valley. Finally, OMVS has had to include some artificial flooding as one of the objectives of the dam’s management. It has done so under the social and political pressure of poorer farming communities who depend crucially on flood recession agriculture and cattle-raising in the

valley. But the amplitude, length and frequency of the flood have been reduced to as low a level as possible, the priority aims being electricity production and irrigation.

When measured against our evaluation frame, the PASIE leads to slow degradation on some issues and rapid degradation on others (see table 3). One can choose, in examining the PASIE, to focus mainly on efforts to attenuate the impacts: they slow down the already rapid degradation of the ecosystems in the valley. Is it a compromise, maybe? The PASIE also states that artificial flooding should be maintained for a transitory period of twenty years, until agriculture relies entirely, the planners expect, on irrigation..

When carefully assessed beyond its fine façade of demanding procedures and reasonable compromises, the intentions and results of the PASIE are in clear contrast with the aims for wetlands conservation and sustained wise use, for functional hydrosystems, that the states of the Senegal valley and their donors are committed to (see table 3).

insert table 3

Do other programs or activities fill up the gap? We studied two of them in detail, in Senegal: the left-bank land management plan (Plan Directeur Rive Gauche –PDRG, 1994) and the regional environmental action plan (Plan Régional d’Action pour l’Environnement, 1997). Although they contain some positive features that may slow down the degradation of ecosystems and very locally lead to some restoration, they do not have the potential of reversing the trend. During the deconstruction phase, we looked systematically for actors and strategies in favour of a more environmental management of the Senegal valley ecosystems. The best of their strategic intervention as it is translates in the results of the PASIE, which they fought to reorient as much as was in their power to do, with the results we just assessed. The compromise on the Senegal valley ecosystems is one of gradual degradation. It is highly fragile, when considering the pressures of the irrigation, electricity and navigation sectors. In

the Senegal valley today, riverside States and their donors are not on the way to fulfilling their international environmental commitments.

Conclusion and discussion

We will not elaborate here on the reasons (historical, political, financial, bureaucratic) which effectively confer a low priority to environmental commitments, analysis of these reasons is part both of the deconstruction and assessment phases and is an important part of the evaluation (see Leroy, 2006).. Our main points have been here (1) to underline that environmental evaluation of policies is based on a duty of clarification, of enabling those parties and stakeholders who take environmental commitments seriously to assess what actions are effectively (in both senses of the word this time) taken to fulfil them; (2) to show the challenges and pitfalls such clarification has to overcome and (3) to suggest a coherent, strategic approach to overcome them. This “on-board” approach raises some fundamental issues that we will now briefly discuss.

Based on the Senegal Case and the preceding review of challenges to the evaluator who wants to get at the environmental bottom-line (of whether environmental commitments are met or not), let us take stock of our main proposals.

Getting at the environmental bottom-line when evaluating policies requires that the framing of evaluative questions and the treatment of content be constructed with a constant focus on environmental effectivity concerns. This is in essence the “concern-focused evaluation” and its five steps for constructing the evaluation: define a focal concern, translate it into ecological and technical criteria, identify and analyse all policies with an impact on the concern (“actual policy”), then those policies that are targeted on the focal concern (“intentional policy”), and finally confronting actual and intentional policy to understand actual results and the strategic situation of actors with a serious environmental intent. For more on concern-focused evaluation, we refer the reader to Mermet, Billé & Leroy (2010).

The concern-focused approach, however, centers on the core of evaluation methodology: the framing of evaluative questions, and the terms of evaluation use (in our case, the intent to serve most directly those actors who are intent on obtaining environmental effectiveness from policies). This leaves open essential aspects of the evaluator's intervention. Here, we have been concerned with situations where (at least a significant part of the) stakeholders in the field perceive the effort to clarify the environmental bottom-line of policies as inappropriate interference. Whether he is conducting an evaluation commissioned by stakeholders who have not been able to create a consensus on the environmental issue, or whether he is conducting non-commissioned evaluative research (as in the Senegal case above) the evaluator is then "on-board", embarked on an adventure that is at once strategic and methodological, of clarifying environmental efficiency in the face of (active or passive) resistance.

Let us briefly discuss the four aspects of this "on-board" situation, as we listed them in the paper's introduction.

Concern-focus and pluralism. It is often objected that when focusing on clear environmental criterias and benchmarks, the evaluator may not reflect the balance of priorities of the community (local, national, international). Indeed, we do not know *a priori* which parties and stakeholders take environmental commitments seriously. Finding out should precisely be one of the main aims and benefits of an evaluation focused on the environmental bottom-line. Far from lacking pluralism, the clarification it produces is a crucial input to revive pluralistic debate on environmental commitments and actions which is lacking in so many situations of dubious consensus around environment and sustainable development. . We cannot expect adherence of all parties. In our view, evaluation approaches aimed at obtaining a consensus-based assessment of environmental policy run the risk of being diverted from the environmental bottom-line by the very forces which generate the

environmental problem in the first place. A clarified public debate should confront an environmental evaluation with other (agricultural, geopolitical, etc.) evaluations. The evaluator is “on-board” in that he cannot keep out of the fray: clarifying environmental commitments and achievements does make him an additional party in the controversy. In Senegal, the PASIE provides a good example of an environmental program that passes in a context where pluralistic debate is insufficient, and where the evaluation creates new possibilities to engage others in such debate.

Evaluation as a form of strategic intervention, based on strategic understanding. A major theoretical issue in evaluation focusing on the environmental bottom-line is that it cannot rely on theories and concepts that conceive of environmental management as primarily (or even, as only) an exercise in coordination and cooperation (based on the premise that we all want good environmental quality, but are just not yet organised well enough to reach it). Such theoretical backgrounds support evaluations that focus on compromise points and procedures, not on the environmental bottom-line. The latter needs theories that acknowledge the political, adversarial, dimensions fundamental to most environmental issues and instead of euphemising them, strive steadily to clarify them whenever this is useful for the discussion and treatment of environmental problems. In our work, the strategic environmental management analysis framework provides such a conceptual foundation. It is essential for the on-board approach to be able to mobilize theoretical resources sensitive to the strategic dimensions, such as sociology of organisations (Crozier & Friedberg, 1980), environmental geopolitics (Le Prestre, 2005), anthropology of development (Olivier de Sardan, 1995) or critical and political sociology (Boltanski & Chiapello, 1999)

Between managerial approaches and immersion in the field. At the center of the on-board evaluator’s situation rests the awareness that the implementation of policies is subject to the

deep contingencies such as field situations, ecological, technical, political, cultural, social, etc. Linking together a real understanding of the field reality of environmental policies and the constructed abstraction of environment management tools and systems raises important theoretical and methodological challenges. On the one hand, the evaluator must embark in comprehensive approaches that allow deconstruction of the situation and provide irreplaceable materials for the (re)construction of the evaluation. On the other hand, a normative and management-oriented approach is indeed necessary for positing criteria, benchmarks and assessments. Mobilizing them together is a challenge, not just for the demand on time and expertise in very different disciplines (from management to anthropology, from sociology to planning and law), but also because these are two profoundly different perspectives, mind sets even. To put it mildly, comprehensive approaches promote immersion in the field, not the researcher coming up front with a load of normative (environmental) demands (Brosius, 2006 expresses this very clearly in the example of conservation issues). Managerial approaches have a normative basis; they welcome excursions into the concrete confusion of the field, but only so far as the benefits for clarification are rapidly visible. The tension is apparent for instance in the analysis of programs, which has to be conducted both from an internal point of view (understanding the real functioning of the program on its own, internal terms and dynamics) and from an external point of view (analysing it based on external expectations, independent of their having meaning and support for program members).

An on-board evaluation framework for assessment in the midst of shifting references and situations. Evaluation of environmental effectiveness of policies almost always occurs in a context of complex natural and social dynamics that composed with strategic games the stakeholders play, leads to ever shifting references. An essential issue here is to posit a small set of well-defined, synthetic criteria, that will allow the evaluator to synthesize into a clear

assessment the complex information and understanding gathered in the evaluation's field- and paper-work. This is the object of the "on-board evaluation framework" used in the Senegal valley evaluation. Two further points are to be underlined here. First, the framework is based on an assessment with regard to dynamic, relative, notions of efficiency. When discussing any serious political matter (think of unemployment, wages, taxes, ...), everyone readily admits that the crux of the debate is laying down clearly, about a given policy or reform, who is set out to win some or lose some, who is going to get closer to his goals and principles and who is not. Treating an environmental issue seriously does not consist in pondering about absolute, agreed upon reference states, but about whether a given policy works towards or against the goals expressed by those actors who express a high stake in making progress on a given environmental issue. This is what the apparent simplicity of the on-board framework sets out to do, as a synthetic tool in situations where environmental efficiency tends to be lost in strategic translations. Second, the choice of the criteria (the lines in the table) is of course essential. Beyond their small number and their clear definition, each of them has to make sense both in terms of political commitments and in technical and ecological terms. Much of their usefulness lies in their capacity to link firmly technical and political debates. Like a good compass, or a GPS, they help hold the line of environmental effectiveness in the midst of the accumulated and tangled maps of contemporary environmental policy problems.

To sum up, we could paraphrase the title of Eileen Shapiro's (1996) book on management fads, and state that a crucial issue today is to recover the courage to assess in the age of integrative discourses that tend to embrace so much and sometimes achieve so little. The concern-focused evaluation approach, the analysis of the "on-board" evaluator's situation and the "on-board framework" presented here, are resources we propose to complement courage with method. But even once his purpose and method are clear, the evaluator will still have to manage, in the concrete and messy world of environmental policy and evaluation, the pitfalls

we reviewed in the first part of the paper. Here, we hope the six more intuitive and experience-based guidelines we propose may also be of use. All along the way, from deconstruction to assessment, through the construction of the evaluation, they provide complementary mottos to help resist being led astray by the combination of complexity and strategic opposition to clarification of the environmental bottomline that will be thrown in the evaluator's way.

Références

Billé, R. (2007). A dual-level framework for evaluating integrated coastal management beyond labels. *Ocean & Coastal Management*, 50(10), 796-807.

Boltanski, L., & Chiapello, E. (1999). *Le nouvel esprit du capitalisme*. Paris: Gallimard.

Brosius, J. P. (2006). Common Ground between Anthropology and conservation Biology. *Conservation Biology*, 20(3), 683-685.

Cattan, A., Dubien, I., Laurans, Y., & Mermet, L. (1996). *Elaboration d'un plan d'utilisation des espaces inondables et d'un plan de gestion du Val de Saône, Paris, AScA/Syndicat Mixte d'Etudes pour l'Aménagement du Bassin de la Saône et du Doubs*.

CIME. (1994). *Les Zones Humides, Rapport de l'Instance d'Evaluation*. Paris: La documentation française.

Crabbé, A., & Leroy, P. (2008). *The Handbook of Environmental Policy Evaluation*. London: Earthscan.

Crozier, M., & Friedberg, E. (1980). *Actors and Systems : the Politics of Collective Action*. Chicago: University of Chicago Press.

House, E. R., & Howe, K. R. (1998). *Deliberative Democratic Evaluation in Practice*. Boulder, CO: University of Colorado.

- Le Prestre, P. (2005). *Protection de l'environnement et relations internationales. Les défis de l'écopolitique mondiale*. Armand Colin. Paris: Armand Colin.
- Leroy, M. (2006). *Gestion stratégique des écosystèmes du fleuve Sénégal : action et inaction publiques internationales*. Paris: L'Harmattan.
- Mermet, L. (1996). Les études d'évaluation entre stratégie et méthodologie - l'exemple des politiques publiques en matière de zones humides. *Gérer et Comprendre*(n°46), 55-64.
- Mermet, L., Billé, R., Leroy, M. (2010). Concern-Focused Evaluation for Ambiguous and Conflicting Policies: An Approach From the Environmental Field. *American Journal of Evaluation* 31 (2), 180-198.
- Mermet, L., Billé, R., Leroy, M., Narcy, J.-B., & Poux, X. (2005). L'analyse stratégique de la gestion environnementale : un cadre théorique pour penser l'efficacité en matière d'environnement. *Natures, Sciences, Sociétés*, 13(2), 127-137.
- Mickwitz, P. (2003). A Framework for Evaluating Environmental Policy Instruments: Context and Key Concepts. *Evaluation*, 9(4), 415-436.
- Monnier, E. (1992). *Evaluation de l'action des pouvoirs publics*: Economica.
- O'Neill, J. (2007). *Markets, Deliberation and Environment*. Abingdon: Routledge.
- Olivier de Sardan, J.-P. (1995). *Anthropologie et développement. Essai en socio-anthropologie du changement social*. Paris: Karthala.
- OMVS. (1996). *Projet Energie Manantali. Programme d'atténuation et de suivi des impacts sur l'environnement (PASIE-Manantali).Version progressive. Mardi 10 décembre 1996.* : Coyne et Bellier, Fitchner, Tecsalt. Groupement d'ingénieurs Conseils - OMVS-Haut Commissariat.
- OMVS. (1999). *Programme d'atténuation et de suivi des impacts sur l'environnement (PASIE) de la mise en valeur du fleuve Sénégal. Version définitive (janvier 1999)*: Coyne et Bellier, Fitchner, Tecsalt / OMVS Haut Commissariat.

Patton, M. Q. (2008). *Utilization-focused evaluation*: SAGE (4th edition).

Poux, X., Dubien, I., & Servheen, C. (1996). *Etat des lieux de la population ursine et de son habitat dans le Haut-Béarn; stratégies de conservation et de renforcement éventuel*: ASCA-IUCN-Université du Montana/IPHB.

Scrase, J. I., & Sheate, W. R. (2002). Integration and Integrated Approaches to Assessment: What Do They Mean for the Environment? . *Journal of Environmental Planning and Policy*, 4, 275-294.

Shapiro, E. C. (1996). *Fad Surfing in the Boardroom - reclaiming the courage to manage in the age of instant answers*. Oxford: Capstone.

Table 1 : Environmental commitments and stakes in the Senegal river valley.

Environmental commitments	Environmental stakes for the Senegal river valley
<p>Preservation of hydro-system functions <i>(Ramsar Convention, Convention on Biological Diversity-CBD, Agenda 21 article 18, Global Water Partnership and World Water Council)</i></p> <p>Conservation of wetlands <i>(Ramsar Convention, CBD, Convention to Combat Desertification – UNCCD)</i></p> <p>Conservation of biological diversity and of threatened wild species <i>(CBD, Bonn Convention, Berne Convention, World Heritage Convention, Algiers Convention, Ramsar Convention, Convention on International Trade in Endangered Species-CITES, Agenda 21 article 15)</i></p> <p>Wise use of ecosystems and multi-usage management at community level <i>(Ramsar Convention, CBD, Agenda 21 articles 26)</i></p>	<p>1- Release sufficient water from the Manantali reservoir to maintain an artificial flood (to allow for flooding of the valley).</p> <p>2- Limit Dyke building and other unfavourable construction or alteration (to allow for lateral and vertical exchanges).</p> <p>3- Safeguard and restore wetlands in terms of ecological quality as well as surface area.</p> <p>4- Limit degradation and disappearance of natural resources : maintain viable populations of species in natural surroundings or re-populate, restore habitats and control pollution.</p> <p>5- Favour knowledge, innovations and practices which preserve, maintain, and enhance natural ecologic and hydraulic functioning of wetlands ecosystems.</p>

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Table 2 : « On-board » environmental evaluation framework for Senegal valley environmental commitments

	RAPID DEGRADATION	SLOW DEGRADATION	STABILISATION	RESTORATION
ANNUAL FLOOD	Lack of artificial flooding (flood coming only from uncontrolled tributaries, high proportion of years without flooding)	Weak artificial flood (or more years without flood than in the natural hydrological pattern) 150 000 flooded ha (or 40 000 ha of flood recession agriculture)	Regular artificial flood with a fair duration and volume 230 000 ha flooded (or 70 000 ha of flood recession agriculture)	Regular artificial flood of high amplitude 330 000 ha flooded (or 110 000 of flood recession agriculture)
LATERAL AND VERTICAL EXCHANGES	Acceleration of major dyke building and infrastructure works and dredging in the river bed with mitigation of impacts (or development at current rate without reduction of impacts)	Development of dyke building and infrastructure works in the river bed with mitigation of impacts	Termination of dyke and river bed works limiting lateral and vertical exchanges or equivalent compensation	Termination of major dyke and river bed works and restoration of degraded areas
WETLANDS	Infrastructure works in the river bed without wetlands protection	Infrastructure works in the river bed with wetlands protection, restoration of existing protected	No net loss (in surface or quality), termination of destructive practices or equivalent restoration	Termination of destructive practices and restoration of degraded wetlands

		wetland areas		
BIODIVERSITY	Uncontrolled use with negative impact on the preservation of fauna and flora and disruption of natural ecosystem functions	Maintenance of certain species in protected areas, gradual degradation of functional ecosystems	Maintenance of biodiversity at current levels. No net loss	Preservation of functional ecosystems and restoration of habitats, regeneration of species reproductive potential.
WISE USE	Promoting technical and economic activities that do not rely on ecosystem functions and that require infrastructure works that hinder such functions	Gradual disappearance of activities based on a sustainable use of ecosystem functioning (fisheries, non-intensive cattle-raising, flood recession agriculture, traditional forestry...)	Maintenance at current levels of activities based on a sustainable use of ecosystem functioning (fisheries, non-intensive cattle-raising, flood recession agriculture, traditional forestry...)	Support and revitalize activities based on a sustainable use of ecosystem functioning (fisheries, non-intensive cattle-raising, flood recession agriculture, traditional forestry...)

Table 3 : « On-board » environmental assessment of the PASIE

	RAPID DEGRADATION	SLOW DEGRADATION	STABILISATION	RESTORATION
ANNUAL FLOOD	Lack of artificial flooding (flood coming only from uncontrolled tributaries, high proportion of years without flooding)	Weak artificial flood (or more years without flood than in the natural hydrological pattern) 150 000 flooded ha (or 40 000 ha of flood recession agriculture)	Regular artificial flood with a fair duration and volume 230 000 ha flooded (or 70 000 ha of flood recession agriculture)	Regular artificial flood of high amplitude 330 000 ha flooded (or 110 000 of flood recession agriculture)
LATERAL AND VERTICAL EXCHANGES	Acceleration of major dyke building and infrastructure works and dredging in the river bed with mitigation of impacts (or development at current rate without reduction of impacts)	Development of dyke building and infrastructure works in the river bed with mitigation of impacts	Termination of dyke and river bed works limiting lateral and vertical exchanges or equivalent compensation	Termination of major dyke and river bed works and restoration of degraded areas
WETLANDS	Infrastructure works in the river bed without wetlands protection	Infrastructure works in the river bed with wetlands protection, restoration of existing protected	No net loss (in surface or quality), termination of destructive practices or equivalent restoration	Termination of destructive practices and restoration of degraded wetlands

		wetland areas		
BIODIVERSITY	Uncontrolled use with negative impact on the preservation of fauna and flora and disruption of natural ecosystem functions	Maintenance of certain species in protected areas, gradual degradation of functional ecosystems	Maintenance of biodiversity at current levels. No net loss	Preservation of functional ecosystems and restoration of habitats, regeneration of species reproductive potential.
WISE USE	Promoting technical and economic activities that do not rely on ecosystem functions and that require infrastructure works that hinder such functions	Gradual disappearance of activities based on a sustainable use of ecosystem functioning (fisheries, non-intensive cattle-raising, flood recession agriculture, traditional forestry...)	Maintenance at current levels of activities based on a sustainable use of ecosystem functioning (fisheries, non-intensive cattle-raising, flood recession agriculture, traditional forestry...)	Support and revitalize activities based on a sustainable use of ecosystem functioning (fisheries, non-intensive cattle-raising, flood recession agriculture, traditional forestry...)