The puzzle of policy learning in water resources management

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Abstract Policy learning is essential for the management of complex and changing water resources systems. However, the lack of genuine interest in policy evaluations suggests that at best a partial effort is made to enable such learning. This paper explores this discrepancy, based on a review of current evaluation practice and literature. This indicates that there is a need for more and for better evaluations of water policies. Current evaluations are generally limited to the efficiency and effectiveness of water policy implementation, ignoring the importance of reviewing the theories underlying the original policies. The contours of two avenues to deal with limitations and facilitate more innovative learning in water resources management are identified and discussed.

Key words adaptive management; evaluation; policy analysis; policy learning; water policy; water resources systems

INTRODUCTION

Water resources management in today's complex, dynamic water resources systems requires constant learning. Not only about the state and nature of our physical water resources system, but also about how to manage this system and how to live in it. The complexity of the systems and the interactions between human and natural components requires us to plan and manage under uncertainty, moving forward as insights develop. At the same time, our decisions and activities impact on the water system, inducing change and thus requiring us to adapt our strategies (Olsson *et al.*, 2004). Thus, the continuity of our society critically depends on our capacity to adapt to change in a context of co-evolution of society and the environment (Van der Leeuw *et al.*, 2005).

Learning from past and existing water resources management policies forms a critical component of such adaptive management (Olsson *et al.*, 2004). Strangely enough, the systematic evaluation of past and ongoing experiences does not receive the kind of attention one would expect from the importance of policy learning. The main focus of attention in water resources management is on the formulation of flexible and robust policies and forecasting future trends. Monitoring and evaluation are acknowledged as part of the policy cycle, but their treatment in textbooks ranges from a small designated section (GWP, 2004), to an annex (Loucks & VanBeek, 2005), or deliberate exclusion (Cap-Net & GWP, 2005). This does not seem sufficient to counter the lack of an evaluation culture and the negative attitudes to evaluation, to name but a few of the challenges for monitoring and evaluation mentioned by the Global Water Partnership (GWP, 2004).

This does not mean that evaluation is completely absent in water resources management, as there are examples of programme or policy evaluations (see e.g. NRC, 2000; World Bank, 2002). But, with some exceptions, these evaluations are done on an incidental basis and are not being done in the systematic manner that would be required for policy learning, as will be argued below. Thus, there is a puzzle of policy learning in water resources management: if policy learning is much needed, why is there so little effort to enable such learning? This paper further explores this puzzle, based on a review of current evaluation practice and evaluation literature.

EXPLORING THE PUZZLE

Current practice in policy learning: Introduction to a World Bank case

Although ex-post policy evaluations are not as widespread as ex-ante policy analyses, there are examples in the water sector. One of those is the evaluation by the World Bank of its 1993 Water Policy. The World Bank has a good track record in evaluating its policies and activities, with an internal process for evaluation of its operations and policies, institutionalized in the Independent Evaluation Group (known previously as Operations Evaluation Department). Thus, evaluation practices at the World Bank can be considered to be a potential "good practice", or at least to be representative of current practice in water policy evaluation.

In 1993, the World Bank published a policy paper on water resources management (World Bank, 1993). Underlying this policy paper was the observation that investments in water resources management were often hampered by operational, environmental, and social problems (World Bank, 1993). The World Bank thus proposed a new approach, which was strongly influenced by the rise of the paradigm of integrated water resources management. Basically, this entailed a shift away from a "hard" approach that focused on construction and rehabilitation of infrastructure towards a "soft" approach that focused on policy and institutional reforms, capacity building, environmental protection, and, when requested, cooperation in the management of international water courses (World Bank, 1993). Furthermore, the adoption of economic pricing and incentive policies, decentralization and participation in water management were to play an important role (World Bank, 1993).

In 1999–2000, the World Bank's Operations Evaluation Department conducted an evaluation of the 1993 Water Policy (World Bank, 2002). The purpose of this evaluation was to inform the development of a new World Bank Water Resources Sector Strategy and to evaluate the degree to which the issues identified in the 1993 Water Policy had been internalized into World Bank operations. The main finding was that the policy had been only partially implemented and that effectiveness in implementing key elements of the Strategy varied widely. It was further concluded that this was "less a failure, however, than it is an indication of the complexity of water reform" and that it would remain a major challenge to get good results in this regard (World Bank, 2002).

Using this evaluation, as well as other sources of information, the World Bank in 2003 published a new Water Resources Sector Strategy. Where the 1993 Water Policy

placed the emphasis on an integrative and participatory approach, suggesting institutional reforms and "soft" measures, the 2003 Water Strategy clearly made the case for a re-engagement of the World Bank in "hard" measures, notably hydraulic infrastructure, including high-reward/high-risk types of infrastructure (World Bank, 2003). An important basis underlying this shift was the "difficult, slow and uneven" progress in implementation of the ecological, institutional and economic principles underlying the 1993 Policy (World Bank, 2003).

Limitations of the evaluation in the World Bank case

The purpose of the World Bank's evaluation of its 1993 Water Policy was to "evaluate the Bank's performance in implementing the Water Policy and derive lessons for improving Bank lending and nonlending activities and Bank staff capabilities" (World Bank, 2002). The focus of the evaluation study was on reforms in water management institutions, policies and planning as principal outcomes of Bank and other interventions. The expected impact of these reforms was an improved water sector performance, but this link between outcomes and impacts was not investigated in the evaluation study, as it was "too early to estimate the impact of Bank interventions on the ground" (World Bank, 2002). Thus, one can characterize the evaluation as assessing if the World Bank did what it was expected to do based on its 1993 Water Policy, and, when done, what its effectiveness was in inducing water policy reforms.

Based on the main finding that implementation of the World Bank's water policy was difficult and partial, the evaluation looked into the reasons of why implementing the policy was difficult, and how this might be improved. The link between World Bank interventions and water policy reforms (i.e. the link between outputs and outcomes) was addressed in less specific detail. Where the evaluation report addresses "options for improving performance in the water sector" (World Bank, 2002), this refers to the performance of the World Bank in inducing and supporting water policy reforms, not to the overall performance of the water sector in the supported countries.

The evaluation does not review whether or not the 1993 Water Policy was "right", based on a thorough review of the World Bank's experiences where elements of the policy were implemented. Likewise, there is no reflection of why the "soft" measures had become the sole focus of the 1993 Policy, and what re-engagement in "old-fashioned" infrastructure projects implies for the integrated and participatory approaches advocated in 1993.

There are good reasons to explain this limited focus on implementation of the policy rather than outcomes and impacts. There is the reason given by the World Bank: the time-lag between the implementation of policy interventions and the occurrence of impacts (World Bank, 2002). More generally, there are difficulties in isolating the influence of specific policy interventions from a range of factors and events that determine changes in complex systems, which is further hampered by a lack of monitoring data and data sharing among agencies (Gysen *et al.*, 2006). Notwithstanding the truth in these arguments, the bottom line is that this current practice severely limits our capacity for much needed policy learning.

PLACING THE WATER SECTOR EXPERIENCE IN PERSPECTIVE: INSIGHTS FROM LITERATURE ON POLICY EVALUATION

Limitations of instrumental learning

Current evaluation practice in water resources management, as represented by the World Bank example and as described by the Global Water Partnership (2004), is aimed at instrumental learning: "learning in support of the efficiency, effectiveness and successful implementation of policy" (Argyris & Schön, 1996; Sanderson, 2000; Van der Knaap, 2004). The purpose of evaluation is to investigate whether or not the chosen means have indeed been implemented, if this has been done in an efficient manner, and how this could be improved to better contribute to the achievement of policy objectives.

This instrumental focus is found in most policy sectors and generally stems from a rational view of policymaking, incorporating the implicit assumptions that "we know how to change" and "we know what we want to achieve" (Sanderson, 2000; see also Gysen *et al.*, 2006; Van der Meer & Edelenbos, 2006). Both assumptions do not hold for most complex water systems and their implicit adoption poses the risk that important opportunities for policy learning are missed.

The assumption that we know how to change, means that we assume to know the answer to the question of why a certain policy or strategy works (or does not work). Good water policies are based on theories and assumptions that seem appropriate at the time the policies are formulated. However, we should not treat those theories and assumptions as fixed and timeless truths that refute new insights from practice or changing conditions. Therefore, evaluation should include attention for the theories behind a policy, which led policymakers initially to believe that certain policy interventions would have beneficial impacts on the water system as a whole (cf. Van der Knaap, 2004). Explaining these policy theories is critical for learning. Unfortunately, awareness of the importance of such a theory-driven evaluation has been lost in past practice and has only recently been rediscovered (Chen & Rossi, 1992; Pawson & Tilley, 1997; Sanderson, 2000; Van der Knaap, 2004). The World Bank example is a point in case, as neither the evaluation report nor the policy paper discuss why the 1993 Water Policy was expected to improve water sector performance.

The second assumption of instrumental evaluation, that we know what we want to achieve, suggests little need to reflect on the objectives and underlying values of the initial policies. However, our values are not fixed but change over time, or they may change when we see how pursuing certain values plays out in practice: successful economic development with little attention for environmental impacts may give rise to increased appreciation of environmental values at a later stage, for instance. Assuming that our objectives and values are known and are fixed ignores that policy learning also requires values inquiry or "double-loop learning" (Argyris & Schön, 1996; Sanderson, 2000; cf. Van der Knaap, 2004; Van der Meer & Edelenbos, 2006).

Besides the limitations stemming from a focus on instrumental learning, there is another dimension which adds complexity to water policy learning and which tends to be underestimated: the multi-actor dimension of water resources management. Water resources management involves a range of actors, with different responsibilities and different interests. This can make it difficult to determine "who is to be held responsible for what" (Van der Meer & Edelenbos, 2006) and "whose values are to count" (Sanderson, 2000; Van der Meer & Edelenbos, 2006).

A WAY FORWARD

Innovative learning: theory-driven and participatory evaluations

Addressing the limitations of instrumental learning requires us to move towards innovative learning, which means to evaluate also "the contents of the policy, its underlying policy theory and the policy objectives embodied in this theory" (Van der Knaap, 2004; see also Argyris & Schön, 1996). A central notion thus is the concept of a policy theory or a "theory of action" (Argyris & Schön, 1996):

"We define a theory of action in terms of a particular situation, S, a particular consequence, C, and an action strategy, A, for obtaining consequence C in situation S. The general form of a theory of action is: If you intend to produce consequence C in situation S, then do A. Two further elements enter into the general schema of a theory of action: the values attributed to C that make it seem desirable as an end-in-view and the underlying assumptions, or the model of the world, that make it plausible that action A will produce consequence C in situation S."

Using theories of why certain activities would cause parts of a water system to change, evaluators should start by developing hypotheses or causal stories, which can be tested through observations of various kinds (cf. Pawson & Tilley, 1997; Gysen *et al.*, 2006). The assumptions on causality might be derived from policy texts, but they might also be reconstructed using other sources of information, such as practitioners, scientific theory and results from previous evaluations (Gysen *et al.*, 2006).

For water resources management, such innovative learning should also recognize the existence of multiple interdependent actors, which means that collaboration and participation are required (HarmoniCOP, 2005; Van der Meer & Edelenbos, 2006). In developing hypotheses or causal models, evaluators should make sure they represent the views and ideas of the full range of actors involved. Just as policy development should be enriched by incorporating different views and experiences, so should policy evaluation be.

Scientific theory as the basis for evaluations in water resources management

The notion of theory-driven evaluation has rapidly gained recognition in the policy sciences in the last decade (see above). In water resources management little reference is made to these insights, but nevertheless we can see some similar approaches emerging, although they still seem incidental rather than structural.

Among those are a recent study on collaborative approaches to watershed management (Sabatier *et al.*, 2005) and a recent study on the performance of water institutions, co-published by the World Bank in 2004, i.e. after its 1993 Policy evaluation and 2003 Strategy formulation (Saleth & Dinar, 2004). Both studies use

theoretical frameworks from the social and policy sciences to identify relevant variables and interrelations, which then provide a basis to develop hypotheses about the mechanisms affecting formation and success of water institutions and partnerships (Saleth & Dinar, 2004; Sabatier *et al.*, 2005). The developed models are compared with empirical evidence to evaluate the developed models and hypotheses, resulting in key implications for both theory and policy.

The approach followed in those two studies is rigorous and provides a sound basis for policy learning on such "fuzzy" issues as institutional reform, decentralization and participatory water resources management. However, such an approach is also demanding in terms of expertise, data and time, while there is a risk that its results are of limited value in specific water resources management problems, as these all require context-specific solutions (Sabatier *et al.*, 2005). Also, they do not offer a clear strategy to support evaluations as collaborative efforts between various actors.

Participatory reconstruction of policy theories as a basis for evaluation

Another approach toward theory-driven evaluation would be to reconstruct policy theories based on the actors' views. There are various methods to reconstruct actors' views on a problem, its underlying causes, and measures that are considered promising to aid its resolution. Methods such as discourse analysis and cognitive mapping enable actors and experts to reflect on the factors and mechanisms that induce changes, as well as on the underlying values and objectives that should be served by such changes (for an overview of such methods, see Hermans, 2005). Such methods could thus offer a useful first step in the development of specific hypotheses on causal mechanisms.

These methods are already being used as part of policy development, especially in those cases where multiple actors are involved and where complexity requires a good qualitative understanding before moving to meaningful quantitative analysis (see e.g. Eden, 1989; Bots *et al.*, 2000; Hermans, 2005). There seems to be ample potential to use them for evaluation and policy learning as well. Obviously, using them throughout the policy cycle would make it easier to connect evaluation findings and policy development.

An important advantage of an actor-centred approach is that some of the available methods can also be used in the absence of quantitative data. Although eventually data will be necessary to further investigate the assumed causalities, the first step of developing hypotheses on causal mechanisms does not necessarily require such data. This means that, although the current need for more monitoring and data sharing is not bypassed, it also offers no excuse for not starting a theory-driven evaluation of water policies.

CONCLUSIONS

There is a puzzle of policy learning in water resources management: although policy learning is much needed for the management of complex dynamic water systems, little attention is paid to systematic evaluation to enable such learning. The evaluations that are being done are limited in scope. They focus on instrumental learning while generally ignoring innovative learning that focuses on the theories underlying policies and the policy objectives.

The contours of two avenues to facilitate more innovative learning in water resources management can be recognized. The first uses scientific theory on institutional, economic and policy processes to develop hypotheses regarding what types of interventions can be expected to produce certain outcomes in certain circumstances. The second is actor-centred, taking the actors' policy theories as a basis. It would use cognitive mapping or discourse analysis to reconstruct these theories, as a basis for discussion and hypothesis development.

Neither of these two avenues holds a complete answer to the evaluation puzzle, but they are complementary and could offer a useful starting point. Where the first avenue is stronger in its theoretical underpinnings, the second has the advantage of allowing for "tailor-made" theories and enabling multiple actors' participation in the evaluation activities. Other approaches that are currently being used for ex-ante policy analysis may be equally useful for ex-post policy evaluations, or, most probably, different approaches apply to different settings.

The paths proposed here are in line with the current knowledge on water resources management, but they have still to be taken up by researchers and practitioners. What is needed is to complement the technically-oriented evaluation activities, aimed at a better understanding of physical water systems, with policy-oriented evaluation activities, aimed at a better understanding of what policy measures help in what conditions and why. If we continue to ignore the requirements for innovative policy learning, we continue to leave our capacity to adapt to change underdeveloped.

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