

Improving Cross-Sector Policy Integration and Cooperation in Support of Freshwater Conservation

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Introduction

To achieve effective conservation of freshwater ecosystems, close coordination and cooperation is required among sectors responsible for protection and management of water resources, biodiversity conservation, land-use management (including agricultural resources), and integrated development planning (MacKay & Ashton 2004). Of special importance is the coordination between land-related and water-related sectors because freshwater ecosystems are affected by activities that happen throughout their drainage areas (Linke et al. 2007).

Acknowledging the precarious state of freshwater ecosystems in South Africa (Nel et al. 2007), the reality of overlapping and sometimes conflicting sectoral policy mandates and the need for cooperative action, several South African government departments and national agencies agreed to participate in a series of small discussion groups and 2 larger workshops to debate their respective mandates and strategies for managing and conserving freshwater ecosystems. Participants included the national departments responsible for governing water, environment, biodiversity, agriculture, and development planning, and South African National Parks. The engagement process led to the development of a hierarchical policy framework that links a national goal for conserving freshwater biodiversity through a set of cross-sector policy objectives, implementation principles, and operational policy recommendations. (For details on the content of the hierarchical policy framework, see Roux et al. [2006a].)

Generally, the convergence in thinking and conceptual integration that emerged during the engagement process was encouraging. Here, we reflect on and extract key

lessons arising from our experiences in initiating and facilitating the cross-sector process. These lessons relate to

- accessing and ensuring the application of the best available science within the policy development process;
- ensuring the commitment of all parties to a cooperative strategy for policy development;
- ensuring vertical and horizontal policy consistency and integration;
- connecting philosophical goals to operational tasks to bridge the gap between policy development and policy implementation; and
- designing and maintaining a social process to enable dialogue, colearning, and cooperation.

Using Best-Available Science to Inform Policy

Science, policy, and management domains should support each other to provide effective applied conservation. Nevertheless, the processes required to translate scientific understanding or knowledge into policy and management actions are not fully understood (Meffe 2002). Even if people understand, intuitively or explicitly, how to translate scientific understanding into policy, the translation process itself is often weak. This is primarily due to constraints such as inappropriate or weak institutional design and inadequate management. To resolve this problem, Roux et al. (2006b) suggest that instead of viewing knowledge as a “thing” that can be readily transferred between individuals, organizations, or domains, it should be viewed as “a process of relating” that involves carefully reasoned negotiation of meaning among partners.

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Toward this end, scientists participated in a cross-sector dialogue with an aim to summarize scientific consensus and clarify uncertainties and disagreements in a form that was relevant to the respective policy contexts (Carpenter & Folke 2006). The focus was to extract broad science-based principles that could help guide and harmonize future freshwater conservation efforts, rather than to focus on the specific technical methods that should be used in freshwater biodiversity assessment and conservation planning. Care was taken not to advocate a particular scientific position or to prescribe specific policy options. Instead departmental representatives were allowed to digest the evidence on the basis of best available science and then, together, on an equal power base, negotiate the most feasible, desirable, and acceptable policy options. The relatively equal power base that existed between scientist and government officials was probably a fortunate exception rather than the rule and was likely the result of a long history of significant interaction between scientists and government in the water sector (De Coning & Sherwill 2004).

Views of what constitutes best available science can vary widely, for example, between national and local levels of government (Francis et al. 2005). In our experience the national-level departments and agencies that participated in the cross-sector workshops readily accepted peer-reviewed literature as the main source of best available science. Guided by scientific evidence, several bold decisions were made by the participating government departments, for example, to set a quantitative target of conserving at least 20% of each major freshwater ecosystem type in South Africa. The uncertainty and lack of scientific validation around this and certain other decisions were noted, as was the importance of actively fostering a research and learning culture regarding questions that can lead to better management of freshwater ecosystems. The need for directed research and feedbacks into management was therefore reflected as an implementation principle within the hierarchical policy framework (Roux et al. 2006a).

Understanding Cooperation as a Key Enabling Behavior

A combination of top-down and bottom-up approaches was used to select participants. The top-down approach consisted of a letter from a senior official in a leading department (in the water resource management sector) to senior officials in other departments, requesting their participation and asking them to identify appropriate delegates. The bottom-up approach was derived from a social network trail that started with scientists and conservation practitioners and worked toward those individuals with decision making and policy responsibilities in the

relevant departments. Individuals identified through the latter route were approached directly and asked to participate. On the basis of our qualitative observations, the bottom-up approach resulted in participation of a significantly higher quality. A possible explanation for this is that the senior government officials targeted through the top-down approach were often focused on social and economic imperatives. Consequently they may not value, or understand the need for, freshwater conservation. Such a focus could result in a lack of political will (at this level) to make a significant contribution to freshwater conservation.

During the first workshop, many participants met their counterparts in other departments for the first time. Together, they formulated a common vision and goal and accepted the need for effective cooperation as a fundamental condition for achieving good environmental governance. Nevertheless, they acknowledged several barriers to effective cooperation, noting that the more people involved the higher the chance of opposition; benefits to all parties are not always explicit; most people operate at maximum work capacity without the additional burden of having to make cooperation or cooperative activities work; there is no explicit reward system for effective cooperation; proper understanding of another party's issues requires deep engagement and prolonged interaction between people (requiring individuals to spend more time on such activities than would normally be planned); few people are used to bidirectional communications, especially the listening part; turf protection is rife at all levels; continuity in relationships tends to break down due to high rates of staff turnover; and incompatibility of databases maintained by different organizations hampers data sharing.

Participants understood that effective cooperation has a cost and that the most basic requirement is a certain minimum degree and quality of interaction over time. In this regard, cross-sector participants were introduced to the typology of Kinnaman and Bleich (2004), which distinguishes between 4 types of interstakeholder behavior: toleration, coordination, cooperation, and collaboration. Following this typology, it was agreed that cooperation should be the goal to strive for because different parties will have to actively work together for mutual benefit while retaining their respective identities (working cultures, professional disciplines, and operational contexts); for many cross-sector issues, a low level of agreement over the appropriate course of action will exist; and the degree of certainty that specified actions will produce certain outcomes will generally be low. The Kinnaman-Bleich typology helped foster a shared understanding of the conditions required for cooperation to emerge and be sustained and what can be realistically expected from each participant.

Given the differences in disciplinary background and application contexts that exist in different government

departments and a general culture of fragmented learning, it was clear that a “boundary spanning function” (Cash et al. 2003) would be crucial to ensuring effective cross-sector engagement. In general, “boundary spanners” broker ties among different groups. This function is performed by individuals who may be affiliated with organizations that play an intermediary role between the science and policy domains and who facilitate perceptions of salience, credibility, and legitimacy, as well as the trade-offs among them. In the cross-sector negotiations, the senior official from the lead department chaired all the collaborative learning workshops. Her style portrayed intellectual grasp and emotional ownership of a problem, empathy for the operational realities of the various participants, and a desire to actively work together for mutual and national benefit. A combination of efficiency and perceived legitimacy made her an ideal intermediary during meetings. Furthermore, the overall process was initiated and facilitated by 2 external intermediaries: a national funding agency (Water Research Commission [WRC]) and a national research agency (Council for Scientific and Industrial Research [CSIR]), who also played important boundary-spanning roles.

Integrating Sectoral Policies along Vertical and Horizontal Dimensions

The integration of environmental policy objectives into other policy sectors is a defining feature of sustainable development. The aims of such integration are to remove contradictions between and within policies so that policies are mutually supportive. Policy integration has a vertical and a horizontal dimension (Lafferty & Hovden 2003). We define *vertical policy integration* as the process of achieving coherence between levels of governance (global, regional, national, state or provincial, and local) and between political and operational levels. *Horizontal integration* refers to the process of harmonization across sectors at any one (or all) of these levels.

When a nation is a signatory to an international treaty or convention, all organs of state should embrace the associated responsibilities and implications. Nevertheless, the enactment of such responsibilities is unlikely if legislation and regulatory actions are scattered across several government structures. In addition, policies that emerge from different service sectors are often contextualized around different disciplinary settings (e.g., engineering, aquatic sciences, agricultural sciences, social sciences, planning) and contain concepts and terminology that are specific to a sector or even a subcomponent of a sector. The mismatch between policy elements represents an important barrier to effective implementation.

Acknowledging the above complexity, strong emphasis was placed on the need to negotiate a shared un-

derstanding of key concepts related to the conservation of freshwater ecosystems. As part of this process, participants worked to identify and discuss international responsibilities related to signed treaties and conventions; identify and discuss concepts fundamental to future policy visions from within the respective sectors and relevant to the conservation of freshwater biodiversity; flag dominant or nonnegotiable concepts within respective sectors; identify a set of science-based principles for freshwater conservation planning and implementation; resolve differences in terminology through consensus building; and formulate national goals and cross-sector policy objectives.

Connecting a Philosophical Goal to Operational Tasks

From a practical perspective, it is not possible to allocate a uniformly high level of protection to all freshwater ecosystems without prejudicing social and economic development. Equally, it is not desirable for all ecosystems to be used and exploited to the maximum extent possible. Therefore, the cross-sector debates revolved around 2 key questions: How many freshwater ecosystems should be conserved? and How does one choose these systems to ensure maximum conservation benefit at the lowest possible social and economic cost?

Answering these questions required preliminary agreement on a common vision and goal. The national goal articulated by the participants in the cross-sector deliberations was to “conserve a sample of the full variety or diversity of inland water ecosystems that occur in South Africa, including all species and the habitats, landscapes, rivers, and other water bodies in which they occur, together with the ecosystem processes responsible for generating and maintaining this diversity, for present and future generations” (Roux et al. 2006a).

Although it may be relatively easy to share a common vision and goal, a significant challenge of the cross-sector negotiations was to disaggregate the goal into a comprehensive set of subordinate objectives. The 5 cross-sector policy objectives agreed on were to (1) set and entrench quantitative conservation targets for freshwater biodiversity, (2) plan for representation of freshwater biodiversity, (3) plan for persistence of freshwater biodiversity, (4) establish a portfolio of freshwater conservation areas (which may include, but are not restricted to, formal protected areas), and (5) enable effective implementation.

The first 3 objectives relate to planning and design issues, whereas the final 2 deal with issues of implementation. The 5 objectives were further broken down into 20 implementation principles and approximately 50 cross-sector policy recommendations (Roux et al. 2006a; see Supporting Information). The hierarchical nature of the

objectives made it possible for sectoral participants to see the overlapping mandates explicitly. This made it a relatively simple task to decide on an institutional lead agent and key role players for each of the policy recommendations and to plan and execute actions in the context of a unifying goal.

Several of the policy recommendations made have institutional and capacity implications. For example, "catchment management agencies" were identified as primary agencies responsible for achieving conservation targets at the catchment scale. This will require significant coordination of activities and resources within provincial and local spheres of government (whose administrative boundaries do not always coincide with catchment boundaries), which in turn can only happen if these agencies have an appropriate level of internal knowledge and capacity in the fields of conservation science and aquatic ecology. There is also the intricate issue of coordinating biodiversity assessment, conservation planning, and target setting between national and various subnational scales, particularly where river catchments and boundaries of water-management areas are not aligned with provincial and district municipality boundaries. An important implication of this finding is that a similar process of stakeholder engagement will be needed at the subnational level. Indeed, a key need in the wider process of establishing vertical and horizontal linkages is to disaggregate the national policy objectives to subnational levels, where conservation action is effected.

Maintaining and Expanding Dialogue across Sectors and Levels of Government

The debates among individuals from different sectors revealed the value of a well-designed social process and highlighted the limitations of a project. The social process facilitated the establishment of important relationships, a remarkable degree of convergence in thinking, and the drafting of a shared vision linked to practical actions. When the project, with its set end date and fixed budget, came to an end, the social process also ended. The key departmental facilitator and boundary-spanning agent has since left government; some departmental coordinators of policy have moved to new positions or new employers; and the scientists that were involved in the process are committed to new projects and initiatives. The promising momentum generated has largely been lost and start-up energy will have to be invested to reignite the process.

Although we acknowledge the importance of individuals in the facilitation of interorganizational relationships and dialogue, our experience suggests that overreliance on single individuals can be risky. One of the key lessons from this process was that it is important to anchor the process within a lead agency or department to ensure the

commitment and staff redundancy required to support a long-term process even if a key individual is lost. A central challenge in this respect is formalizing the process without stifling the informal learning that needs to take place across disciplinary and contextual boundaries. Similarly, an appropriate balance should be found between personality-based and inspirational building of political legitimacy and anchoring progress through bureaucratic mechanisms such as memoranda of understanding and white papers.

A hard lesson from our experience in this South African case study is that short-duration funding for applied research and policy development is not sufficient to maintain dialogue and anchor new knowledge into policy processes. This may be even more the case when implementing institutions are weak and where there is low agency stability, high staff turnover, and short institutional memory. The initiation and maintenance of dialogue in a cross-sector setting needs a broader and more long-lasting legitimacy than that which can typically be achieved within project time frames and budgets. This is in agreement with findings in the developed world for incorporating conservation visions into integrated management of river basins (WWF 2003). Furthermore, to ensure some measure of sustainability, the leaders of the process (or boundary spanning agents) should not leave the process until a white paper on the issue, or an equivalent legislative document, has been signed by cabinet ministers. This document would represent a binding commitment by public-sector agencies responsible for implementation of the policy, and it would have a considerable degree of accountability attached to it. To bridge the gap between policy development and policy implementation, such a binding commitment is essential.

Although the mere process of getting the relevant parties to the negotiation table may require significant planning and informal relationship management, several phases of negotiation should ideally occur once the parties have been brought together. According to Susskind and Cruikshank (1987), these phases are inventing without committing (a relatively risk-free and creative phase in which parties explore innovative new connections and elements without necessarily committing themselves); packaging an agreement (crafting the complex, inter-linked aspects of a multiissue agreement, similar to developing the hierarchical cross-sector policy framework [Supporting Information]); producing a written agreement; binding parties to commitments (could be an inter-departmental memorandum of understanding); and ratification (e.g., a white paper with cabinet signatures).

The South African cross-sector project focused on national-level government departments with responsibility for freshwater management and conservation. The approach could be expanded to cross-sector engagement at subnational levels. Authorities at provincial or state and district or municipality levels ultimately make decisions

that affect conservation on the ground. Horizontal policy integration and interdepartmental cooperation at this level, as well as alignment of policies and action with national ideals, are critical. The dialogue could also be expanded to include the general public (including business) and “science” at large.

Conclusions

The generation of new and appropriate knowledge is necessary to respond to new and evolving environmental challenges. Nevertheless, such knowledge is of little use without its acceptance, legitimacy, and subsequent adoption by user agencies (including absorptive capacity, emotional ownership, and financial commitment to allowed sustained use). We therefore suggest that practical conservation is strongly dependent on the design and maintenance of social processes that lead to the adoption of relevant information derived from the best available science.

The significance of the social process that we report here is that it took place in a developing context characterized by severe scarcity of skilled people and where conservation priorities are often overshadowed by a multitude of pressing needs such as economic development, job creation, and provision of basic services. We are optimistic that the uptake of new scientific information by individuals within the policy domain is achievable given the right combination of technical credibility, social skills, agency stability, and patient persistence. What lessons can we offer to those that would like to initiate similar processes, particularly in developing countries?

First, the ideals of environmental policy integration and use of best available science provide a useful mechanism around which to design an interagency process of dialogue and negotiation. Second, we regard the presence of a skilled, independent, boundary-spanning agent as invaluable for creating a relatively risk-free space within which the formal organizations explore and negotiate cooperative policy options. Third, it is important to eventually link the planning conducted in the informal spaces with more formal structures of policy and management. Failure to do so is likely to result in weak or nonexistent implementation, especially once a boundary-spanning agent leaves or external funding for the informal process dries up. This was a fatal shortcoming of our own cross-sector process. The phases of negotiation presented by Susskind and Cruikshank (1987) provide a useful roadmap to ensure that informal processes are complemented by formal processes to entrench negotiated advances into administrative and bureaucratic systems. Finally, long-term commitment of funding and key individuals to the process is essential. Building more effective

knowledge systems that span disciplinary, research, policy, and operational domains takes time (much more than is usually planned or budgeted for) and requires patient persistence. Strategies to promote such systems require a sufficiently long-term perspective that takes into account the generally slow impact of ideas (and new scientific information) in practice (Cash et al. 2003).

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Supporting Information

An excerpt of the hierarchical framework linking the national philosophical goal, through policy objectives and implementation principles, with practical cross-sector policy recommendations is available as part of the online article from (Appendix S1). The authors are responsible for the content and functionality of these materials. Queries (other than absence of the material) should be directed to the corresponding author.

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