

SCIENCE-POLICY INTERFACES FOR MORE EFFECTIVE GOVERNANCE OF BIODIVERSITY AND ECOSYSTEM SERVICES: INSTITUTIONAL MISMATCHES, SHIFTING PARADIGMS, OBSTRUCTIONS, AND OPPORTUNITIES

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This policy brief highlights the need to see the current discussions on strengthening of the science-policy interface on biodiversity and ecosystem services – including the negotiation of an intergovernmental science-policy platform on biodiversity and ecosystem services (IPBES) – in the context of the larger, often fragmented, debate on international environmental governance. Three reasons support this conclusion. First, fundamental impediments to the governance of biodiversity and ecosystem services largely reflect those of international environmental governance as a whole. Second, the role of science-policy interrelations in both causing and addressing these impediments, and the need to shift paradigms in how to interface science and policy to reach more effective governance, are central (but not sufficient) to meaningfully advance not only biodiversity governance but also international environmental governance more broadly. Third, many if not most of the important elements of such an innovative conceptual and institutional framework are currently being discussed or firmly rooted in decisions taken by the international community in the context of reform of international environmental governance. The IPBES negotiations, seen as explicit acts of institutional reform aimed at improving the institutional structures of the biodiversity science-policy interface, should therefore not only build substantively on decisions already taken by the international community as part of the reform of international environmental governance, but should also be seen as an opportunity to support and further the ongoing directional shifts towards more effective international environmental governance in general.

The international environmental governance system in general and the system of biodiversity governance in particular are increasingly perceived as inadequate to meet the challenges we are experiencing today. And in both cases, a significant disconnect between the environmental and the economic and social spheres, the inability to respond adequately to the needs of countries in meeting challenges they are confronted with at local, national and regional levels, a lack of trust in the intergovernmental system, in particular as regards a fair distribution of costs and benefits and an equitable capacity to articulate values and interests, and weak linkages between science and policy are identified as being among the key factors contributing to the disconnect [1-3].

In this context, science-policy interfaces are rapidly emerging as essential (but not sufficient) elements towards more effective environmental governance [4], with relevance, credibility and legitimacy being their most important attributes [17]. But institutions interfacing science and policy play a role not only in addressing the impasse of environmental and biodiversity governance, but also in causing and reinforcing that impasse. It is increasingly recognised that the impediments to governance are expressions of institutional mismatches [5] originating, at least in part, in the co-evolution of the globalization of environmental governance and a compartmentalized approach to science [6], and in simplistic concepts of science-policy interrelations that invoke an independent, unproblematic, linear relationship between them [7].

The compelling logic for issue-specific global discourses and activity, and the expectations that consensus on science will lead to consensus in politics and will eventually compel certain policy responses, which these narrower beliefs of science and governance provide, became essential characteristics of the current system of international environmental governance. Also the proliferation of global environmental assessments intended to arrive at consensual conclusions providing an objective, global rationale for policy action, can be seen as a consequence of the systemic tendencies of putting the onus of problem resolution onto the back of science and of

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focusing predominantly on the setting of global norms, which are then expected to ‘cascade’ down through sub-global levels of governance [7, 8]. However, this technocratic or linear model of science-policy interrelations has been found to successfully lead to more effective environmental governance only in circumstances where the problem is relatively simple (in both its scientific and political dimensions), for example, as has been documented in the case of ozone depletion.

Facing more complex realities in which facts are uncertain, values in dispute, stakes high and decisions urgent, science, governance and their interactions are challenged in unprecedented ways [9]. Based on inadequate conceptual and institutional foundations, insufficient, inappropriate or even dysfunctional interrelations between science and policy often compromise the relevance, credibility and legitimacy of the system. For example, despite increasing awareness of the mainly social and economic drivers of change, most science, governance and science-policy interfaces still focus predominantly on biophysical status and trends of the environment [6, 10]. Under the prevalence of the technocratic paradigm, scientists typically eschew discussions of the significance of their scientific findings for policy seeking to be ‘policy-relevant but not prescriptive’, which again leaves decision-makers dependent on government agencies, corporations or interest groups to (mis)interpret these findings as regards their implications for policy action [7]. As such, science has increasingly become used as a tool of politics as opposed to its role informing policies, causing “political battles that are played out in the language of science, often resulting in political gridlock and the diminishment of science as a resource for policy-making” [7, p. 10]. This is an issue of crucial importance, particularly in light of the uneven distribution of social activities that drive environmental change (mainly in rich countries) and the damage caused (most pronounced in low-income countries) [11] on the one hand, and the knowledge divide on the other (ninety-five percent of the new science in the world is created in the richer countries and often neglects the problems that afflict most of the world’s population), which systematically disadvantages low-income countries in expressing and pursuing its perspectives and priorities, and risks ‘locking’ science-policy interfaces into the ‘North-South’ divide [12, 13].

Thus, in exploring ways to overcome the institutional mismatches that impede more effective governance of biodiversity and the environment at large, a strengthened science-policy interface cannot simply be grafted onto the old philosophical underpinnings of science and governance. Instead, what is needed is a new paradigm and procedural innovations in science, policy, governance and the interactions among them [6, 7, 13-15].

In line with the values declared to be fundamental to international governance,¹ including equity and the general principle of shared but differentiated responsibility, innovative approaches to strengthening the science-policy interface of biodiversity or environmental governance in general, should at least include the following objectives when aiming to enhance the principles of relevance, credibility and legitimacy of interrelations between science and policy [2, 6, 7, 14-16]:

- Facilitation of a considerably enhanced integration of socio-economic and environmental perspectives and policies to meet the challenges posed by sustainable development – in particular regarding socio-economic drivers and origins of environmental change and the links between biodiversity, ecosystem services and human well-being. This implies networked, place-based long-term social–ecological research, improved monitoring, and opportunities for mutual learning;
- Generation of more detailed explanations of the implications of scientific findings for policy action, and the honest brokering of policy alternatives that systematically presents a broad range of policy options under detailed framing assumptions to provide better guidance for policy implementation, enforcement and evaluation;
- Promotion of tolerance and pluralism of divergent styles of reasoning, including the recognition and judicious use of a mix of perspectives, methodological approaches, tools, and the accommodation of non-formal, undocumented, or local knowledge;
- Provision of rules and procedures that enable deliberative processes of reasoning together, including processes for extended peer review and transparent fair negotiations of differing standpoints, and implying broader active and equitable participation of relevant stake- and knowledge holders;

¹ See United Nations Millennium Declaration, General Assembly resolution 55/2 of 8 September 2000.

- Orchestration of science-policy interrelations and activities across various levels of governance to better unbundle and down- or up-scale the problem, defining and addressing it at appropriate levels and harnessing scale-dependent comparative advantages. This requires constant translation back and forth across relatively well-articulated global, regional national and local knowledge-power formations;
- Facilitation of the necessary programmes and means to build the capacity for critical policy reasoning, interdisciplinary research and coordination, not only but particularly in developing countries, in order to overcome the shortcomings and inequalities that otherwise would fundamentally undermine the relevance, credibility and legitimacy of any serious approach to strengthening the science-policy interface.

There are various possible institutional arrangements that would support such principles and objectives. However, studies have shown that it is often collaborative networks of a range of science-policy interfaces of different institutional types, functions and focus with complex, partly redundant, and layered institutional arrangements that constitute the most effective form of managing complex interrelations between science and politics [17, 18]. These analytical considerations suggest an institutional framework that is characterized by an incremental and networked approach, building on what exists, creating new institutions where institutional gaps remain, and establishing a network of collaboration, coordination and other forms of institutional interrelations between them. Given the identified institutional shortcomings, probably the most important feature of such institutional framework would be the support, enhancement, and where necessary, the establishment of national and regional platforms and networks interfacing science and policy and an effective network between them [2, 19].

Distributing authority like this across multiple institutions, rather than concentrating it in just one, allows for greater flexibility in design and management and for adaptation to culturally appropriate styles of reasoning, more contextual learning and deliberation in forums that are not as politically fraught as global governing institutions, and create the necessary institutional framework to interlink global environmental governance processes to regional and local policy institutions [14]. Such an institutional framework would also provide valuable foundations for a networked and place-based approach to research, a regular multi- and cross-level assessment process that includes consideration of policy implementation and evaluation; and better coordination of relevant capacity-building programmes.

As ambitious and visionary such a conceptual and institutional framework for integrating science and policy on biodiversity and ecosystem services might appear, many, if not most, of the important elements of such a framework are currently being discussed or firmly rooted in decisions taken by the international community in the context of reform of international environmental governance. Following the Malmö Ministerial Declaration,² which called to review the requirements for a greatly strengthened institutional structure for international environmental governance, and the UN General Assembly resolution on the 2005 World Summit Outcome,³ setting the agenda for a UN system-wide coherence and reform, the international community has embarked upon important directional changes in international environmental governance, prominently reflected for example in the Bali Strategic Plan for Technology Support and Capacity-Building, the Environment Watch Strategy for strengthening the scientific base of UNEP, and UNEP's Medium Term Strategy.

The Bali Strategic Plan for Technology Support and Capacity-Building, adopted in 2005, aims at more coherent coordinated and effective delivery of environmental capacity-building and technical support for developing countries and countries with economies in transition, including a number of important capacity building needs more specifically addressing research and assessments, such as "the need to strengthen national capacities for data collection, research, analysis, monitoring and integrated environmental assessment; support for assessments of environmental issues of regional and subregional importance and for the assessment and early warning of emerging environmental issues; support for scientific exchanges and for the establishment of environmental and inter-disciplinary information networks; and promotion of coherent partnership approaches." [20]

² UNEP 2000 Governing Council decision SS.VI/1; Annex

³ General Assembly resolution 60/1 of September 2005, paragraph 169

The Environment Watch Strategy for strengthening the scientific base of UNEP, of which a revised version was presented at UNEP's 25th Governing Council in 2009, is "designed to achieve enhanced institutional, scientific and technological infrastructures and capacity for cooperation in keeping the state of the environment under review and providing timely, accurate, credible, relevant and consistent environmental data and information." [21] Its aim is to move toward a structured set of worldwide multi-scaled assessments, and to connect national, international, scientific and technical capacities and efforts, to support scientific exchanges, establish environmental and interdisciplinary networks and promote coherent partnerships, linking "incrementally relevant thematic and geographically oriented networks at various levels, including regional, multidisciplinary, thematic and, as appropriate, national environmental information networks and partner institutions, working towards a highly connected system by 2020." [21]

Both the Bali Strategic Plan and the Environment Watch Strategy represent significant shifts in paradigm for international environmental governance. They also build the foundation for UNEP's Medium Term Strategy for 2010-2013, which probably best reflects the evolution of the role and mandate UNEP is undergoing to address the institutional mismatches impeding effective international environmental governance [22]. Central elements of this evolution are the commitment to significantly enhance the linkages between environmental sustainability and economic decision-making, the stronger focus on regional and national governance and institutional arrangements, and the commitment to better support governments according to their needs and priorities.

However, institutional mismatches are often difficult to eliminate and old paradigms can be highly resistant to change, even if there is a general awareness of their existence and their negative consequences [5]. In the debate on international environmental governance, for example, governments have still not reached agreement on the weight that should be given to sustainable development and how to implement the Bali Strategic Plan. Also propositions towards conceptual and institutional pluralism regarding the science-policy interface on biodiversity have sparked resistance among those who see the current impasse of biodiversity governance primarily in terms of either an insufficient involvement of the scientific community in the global political process, a failure by scientists to communicate the true extent and consequences of global environmental risks effectively, or the unwillingness of political leaders and public to undertake necessary reforms [23].

Limited knowledge, institutional constraints, and political behaviour are put forward as the main reasons for the persistence of institutional mismatches and old paradigms [5]. First, it is often limited systematic understanding of a problem that gives rise to analogous procedures to and repetition of institutional arrangements that are perceived as successful in the context of a seemingly similar problem, assuming that they will work well also in other settings. Once established, ideas stick even though the limitations of old models become apparent, as reflected by the sheer tenacity of the technocratic linear model of science-policy interrelations, which, although widely refuted, continues to exist as a guiding 'myth' [7]. The same is true for institutions, which often reflect a certain path dependency. Once a pattern takes hold, existing social practices become routine and the status quo turns into the default option, as again in the case of earlier narrow concepts about the nature of science-policy interrelation, which have structured our social organisation such that our efforts to coordinate our understanding and adapt it to the problems at hand are seriously constrained [5]. Finally, there is the political behaviour of those actors or interest groups that benefit, at least in the short run, from maintaining or even nurturing institutional mismatches "using older, narrower beliefs about science and governance to attack the new, not to replace them with the old but rather to replace rational governance with raw power politics." [6]

Institutional analysis has shown that efforts to eliminate or alleviate institutional mismatches and to eventually shift paradigms normally involve political processes and require explicit acts of institutional reform aimed at altering the features of the institutional structures that give rise to these problems [5]. In defining the procedures, processes and programmes necessary to eliminate the impeding institutional mismatches, the ongoing negotiations on strengthening the science-policy interface on biodiversity and ecosystem services therefore present a unique opportunity to support and advance paradigm shifts in interfacing science and policy towards more effective governance not only of biodiversity and ecosystem services but also of international environmental governance in general. Thus, as concerns the IPBES negotiations, one should resist the illusive temptation of false analogies, overcome the obstructions that originate from older inadequate paradigms, and take the opportunity

of strengthening the science-policy interface on biodiversity and ecosystem services in ways that follow or even lead ongoing institutional reforms towards more effective international environmental governance.

Crucially, this implies avoiding the seductive calls to replicate the IPCC-model that represents much of the outdated paradigm (there is discussion as to whether there should even be a 5th climate assessment comparable to the earlier ones). Taking a more innovative path will inevitably require the disposition to consider alternative structures interfacing science and policy and the commitment to engage in new and challenging approaches to addressing the problems of biodiversity loss, degradation of ecosystem service and of the environment in general. Ignoring the present opportunity, however, would mean missing the opportunity to close critical institutional mismatches and risk perpetuating deep-seated political inequalities and further exacerbating ideological divides, which significantly impede the effectiveness of biodiversity and international environmental governance [14].

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