

Strengthening Global Water Initiatives

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Intransigent, obdurate, intractable, perverse—these and similar words are commonly used and often suitable descriptions of freshwater as an issue in today's world. There are floods in normally dry parts of Africa, protracted droughts in Australia, still more than 1 billion people worldwide without a reliable supply, and at least double that number lacking effective sanitation. Could the situation be any worse? With a burgeoning population and increasing volumes of pollution, the demand for water in many parts of the globe has already outstripped the available resource. And climate change, now seen as manifest, threatens to exacerbate an impossible situation, particularly for the poor and weak in those nations least able to cope.

Water resource challenges are increasingly assuming a global face for governments, organizations, and citizens around the world. Groundwater systems provide 25 to 40 percent of the world's drinking water, yet they suffer from massive overdraft and inadequate rates of recharge.¹ The world's rivers, already overtaxed by pollution and the effects of damming and diversion, are also exhibiting declining flows—especially in arid and semiarid regions.² Nearly a billion urban dwellers live in slums with unacceptably low rates of water provision, while sanitation coverage in developing countries (49 percent) is only half of that of the developed world (98 percent).³ Drought, pollution, ecosystem degradation, natural disasters, urbanization, corruption, and population growth are some of the many dynamics that pressure water resources at levels beyond the watershed. The tenor of the world's water troubles has never been so global. Water governance, like the problems it seeks to mitigate and resolve, has also reached new heights of globalization.

Water problems extend across all dimensions from local to global, with the adequacy of governance being one of the major imponderables at all scales. Proficient at their best and weak and corrupt at their worst, the systems that govern the planning and management of water resources need attention. Echoing similar developments in other sectors (such as economics, forestry, and conservation) in recent years, the water sector has taken to the world stage to consider and debate its difficulties. Arguably one of the most prominent and controversial examples of this progression is the large international conference. Often called "megaconferences," these massive gatherings have become increasingly popular sites for debating nascent global environmental governance—a concept encompassing the people, processes, and institutions that guide the management of natural resources.

Megaconferences attract a spectrum of expertise, garner widespread media attention, and draw both enthusiastic praise and sharp criticism.⁴ On the one hand, these events provide important opportunities to enhance networks and share information, and may lead to improved coordination and management of the world's natural resources. Side meetings and alternative forums, hosted nearby, often bring key issues (such as the role of water privatization) onto mainstream policy and decisionmaking agendas. On the other hand, megaconferences have been criticized for their enormous costs, carbon footprints, unclear objectives, uneven attempts at inclusionary participation, weak declarations, and unsatisfactory outcomes.⁵ Venues are often mazelike, schedules dense, and hallways packed with participants numbering in the thousands. Papers on goals and policy principles are common; case studies are frequent, but focused plans for implementation are rare. Megaconferences are routinely cast as massive "talkfests": lots of good conversation, but

discussions with incoherent structure and few tangible results. However, critics do not offer alternative means of seeking consensus and inclusion. Until these are promoted, megaconferences will continue to provide the preferred venues for international debate on water problems.

But are megaconferences the only manifestation of the trend toward global water governance? In spite of media buzz, megaconferences—while prominent and newsworthy—are only one piece of a larger global governing puzzle. These meetings are organically linked to and supported by a milieu of organizations, events, programs, and efforts operating largely on the international scale. The ensemble draws on common notions of

regional bodies, professional and scientific associations, trade and business associations, philanthropic institutions, and developmental bodies. Some relate to the programs launched for a specific time period—for example, the International Drinking Water and Sanitation Decade (1980–1990) and the International Year of Freshwater (2003). Others are timed to fit established programs and schedules; examples of these are the annual World Water Week, the biennial meetings of the Intergovernmental Council of UNESCO's International Hydrological Programme, the triennial meetings of the International Water Association, and the quadrennial gatherings of the World Meteorological Organization's Commission for Hydrol-

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institutional sustainability that include laws, policymaking processes, organizational forms, and activities that induce stability and resilience; thus, they permit institutions to transcend personal politics, withstand opposition, and preserve legitimacy over the long term.⁶ In this view, global water initiatives (GWIs) can be broadly defined as the institutional frameworks, organizations, special events, and awareness-raising campaigns that focus on global water-resources management.⁷

The upshot is that GWIs are more than just highly visible international congresses. They comprise a broader institutional network of organizations and events that spans and stretches beyond the United Nations system, including

ogy. Still others are functional organizations with specific objectives and agendas, such as the World Water Council and the Global Water Partnership. These sorts of institutional arrangements are broadly referred to as "initiatives" to indicate their purposefulness. In the realm of water governance, GWIs are a global constellation of goals, interests, topics, specialties, and expertise.

The global phenomenon of GWIs, however, has been infrequently studied and poorly understood. Some recent work has outlined the main problems with megaconferences and reviewed experts' perceptions and preferences.⁸ But a pointed discussion on the history and future directions of these initiatives remains

nonexistent. How and when have GWIs formed? What knowledge trends were they responding to? What are their organizational connections? In what ways have they succeeded and failed? And perhaps most importantly, where and how can the most effective GWIs be nurtured and enhanced to maximize their contributions to global water governance?

Before examining these questions, however, an immediate one arises: Why is an appraisal of GWIs important to solving world water problems? While water is increasingly addressed through global networks such as megaconferences and other GWIs, it remains a local problem with local effects. Evaluating the reach and breadth of these networks is crucial in determining whether GWIs themselves are truly global or are more commonly "local"—limited to particular cities and the hallways of yearly conferences. In other words, to what degree have they achieved a truly global scope and impact?

Furthermore, the work of GWIs remains important to good governance, even though immediate local impacts are rarely clear or measurable in the short-term. GWIs, in fact, provide the networks that fit together "local" modes of water management. For example, the Fourth World Water Forum (WWF4), held in Mexico City in March 2006, represented a critical opportunity to coordinate research and policy, consolidate knowledge of water science and management, encourage new ways of information-sharing and "mega-networking," and develop strategies for the future. The largest international water conference to date, the WWF4 brought together about 12,000 participants from diverse sectors and attempted to tackle a long list of timely issues, including global climate change, local participation, water privatization, and approaches such as "integrated water resources management."⁹ GWIs such as the four World Water Forums and their organizer, the World Water Council, and the various water-related programs of the

United Nations have been applauded for heightening political and media awareness of high-profile water issues.¹⁰ How initiatives like WWF4 became global in the first place, however, remains key to understanding the value of GWIs in governing world water resources.

The Globalization of Water Management

Water was not always approached as a global issue. Nor was it always an issue organized under the banner of megacon-



ferences or multi-country programs. The arrival of water governance at the global level was prompted by the sequential adoption and adaptation of new paradigms and discourses about water and its proper management, each reflecting the scientific and political thoughts and practices that were dominant at the time.

Figure 1 on page 22 depicts the historical progression through different management frameworks. For example, in the

early 20th century, state-led development projects and highly centralized institutions were the norm, particularly in socialist countries. Rational-actor models of environmental behavior, economics, and decisionmaking rose to international prominence with the mid-century advent of the free-market-oriented Chicago school. The late 1970s, alternatively, marked a radical shift toward models of neoliberal governance, involving components such as structural-adjustment programs and sharp decreases in state spending. This period was followed by a rise of nongovernmental organizations (NGOs), which often took lead roles in managing local water resources and setting governance agendas. Sustainable development, public participation, transparency, privatization, and decentralization—concepts often taken for granted in contemporary water policymaking—are relatively new governance paradigms, rising to prominence in the late 1980s.

For well over a century, scientific institutions have played critical roles in shaping and legitimizing water governance as a specifically *global* process. The earliest efforts at formal, global organizing arrived through the scientific societies and government bodies that were established in Europe and North America in the early nineteenth century. From 1850 onward, there are a number of examples of international gatherings in the field of water, including the first International Sanitary Conference (Paris, 1851) and the first International Meteorological Conference (Brussels, 1853), followed by the International Geological Congress and the International Navigation Association.¹¹ Between World Wars I and II, a number of water-oriented scientific and professional bodies were established, such as the International Association of Hydrological Sciences (1922) and the International Association of Hydraulic Engineering and Research (1935). These were formed by professionals of various

disciplines and nationalities to construct common intellectual spaces—forums for sharing expertise—and especially to stimulate and promote research. In many ways, these associations laid the foundation for the global governance networks in operation today.

But these early professional societies sought to advance scientific and technological understanding of water and its management—not to elevate public awareness of the value of water and its importance in society. That sort of consciousness arose after World War II, whose end engendered strong multinational approaches to avoiding new wars. Recognizing that many of the world's problems transcend borders, the United Nations, which was launched in 1945, advocated broad multilateralism and acknowledged that the roots of military conflict could be addressed by improving human conditions. The convergence of concerted multilateralism and an integrated view of the causes of conflict spawned the establishment of the family of UN agencies to tackle the range of global issues: health, nutrition, education



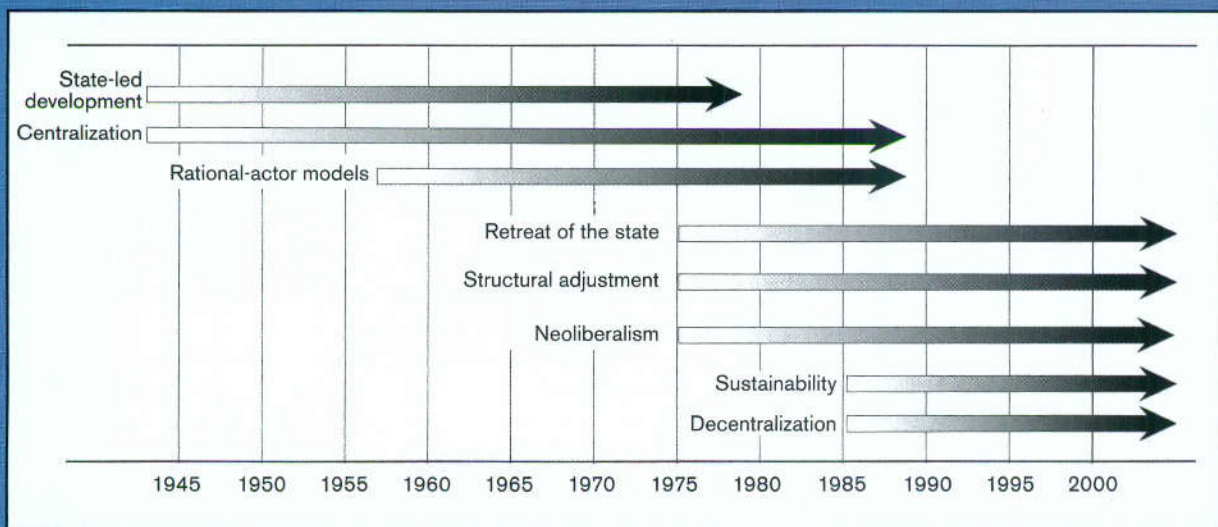
and science, economics, human rights, and so on. Through the advent of its specialized agencies, the United Nations system yielded a new tier of professional bodies with interests in water.¹² In these agencies, government representatives, who might be administrators rather than scientists and engineers, became prominent, mostly in

pursuit of advancement of sound practice and social progress.

In the developed countries, the postwar period was also a time of boundless confidence in the ability of science and technology to transform society and adapt the landscape to human needs. Nowhere was this new impulse more manifest than in the realm of water. The era was marked by ambitious, large-scale waterworks such as dams, tidal barrages, irrigation schemes, hydroelectric plants, river diversions, interbasin transfers, and projects to drain wetlands and reclaim land. Proclaimed as totems of twentieth-century progress, these enterprises underlined the centrality of water to society.

During the 1950s and 1960s, UN agencies spearheaded the earliest global resources initiatives. The first of these to address water issues was the influential International Hydrological Decade (IHD; 1965–1974), which drew together scientists and water managers from across the world, spanning the ideological divide created by the Cold War. IHD consolidated understanding of the hydrological cycle,

Figure 1. Evolution of global water management frameworks



compiled the first comprehensive water atlases and reference works, fostered programs to train new water researchers, established protocols for collecting and exchanging information, and perhaps most significantly, drew public attention to the importance of water. Similar consciousness-raising time periods—such as the International Drinking Water Supply and Sanitation Decade (1981–1990) and the current International Water for Life Decade (2005–2015; see Table 1 below)—have been designated since, but none proved as successful as the IHD, which at its conclusion became the International Hydrological Programme and one of UNESCO’s natural science programs.

For a time the International Hydrological Programme was the largest institutional vehicle for promoting research, education, and technology transfer on water problems with a global purview. However, from the 1980s onward, a number of other initiatives were created that spanned the governmental and nongovernmental worlds—a trend that accelerated in the 1990s. The World Water Council, the Global Water Partnership, the World Water Assessment Programme, and the Global Energy and Water Experiment are representative of a newer approach to managing water resources. Many of these advocate the prevailing concepts in water management (which are not always in harmony), such

as decentralization, public participation, privatization, and institutional cooperation at the global level. By 2007, there were at least two dozen important international professional, scientific, and nongovernmental organizations in existence.¹³

Since the IHD, the world of water also has seen the establishment of numerous water-related events such as symposia, workshops, conferences, and megaconferences. Some of these, such as the 1992 Dublin Conference, are one-time occurrences, while others, such as the annual World Water Week or the triennial World Water Forum, recur at regular intervals.¹⁴

All the GWIs described above—professional societies, designated time periods,

Table 1. Key moments in global water history since 1965

Event	Date(s)	Venue
International Hydrological Decade	1965–1974	Worldwide
UN Conference on the Human Environment	1972	Stockholm, Sweden
UN Conference on Water	1977	Mar del Plata, Argentina
International Drinking Water Supply and Sanitation Decade	1981–1990	Worldwide
International Conference on Water and the Environment	1992	Dublin, Ireland
UN Conference on Environment and Development (Earth Summit)	1992	Rio de Janeiro, Brazil
First World Water Forum	1997	Marrakech, Morocco
International Conference on Water and Sustainable Development	1998	Paris, France
Second World Water Forum	2000	The Hague, Netherlands
UN Millennium Summit	2000	New York City, USA
International Conference on Freshwater	2001	Bonn, Germany
World Summit on Sustainable Development	2002	Johannesburg, South Africa
International Year of Freshwater	2003	Worldwide
Third World Water Forum	2003	Kyoto, Japan
Commission on Sustainable Development, Sessions 12 and 13	2004, 2005	New York City, USA
International Water for Life Decade	2005–2015	Worldwide
Fourth World Water Forum	2006	Mexico City, Mexico
World Water Week ^a	2007	Stockholm, Sweden

^aWorld Water Week has been an annual event held in Stockholm each summer (though under different names) since 1991. In this table, only the most recent event is listed.

organizations, and events—have grown in frequency since the 1990s.¹⁵ Table 1 highlights some of the key moments in global water history, beginning with the IHD and following the growth spurt of GWIs over the past two decades.

Starting Points for Institutional Sustainability

Partly through the work of global water initiatives, the world has become more aware that access to freshwater holds the key to most quality-of-life issues. But there remains a large gap separating awareness from the resolution of widespread water problems. Despite their promise—or perhaps because of it—global water initiatives, which have arisen and evolved independently from each other, have come under scrutiny in recent years.

As noted above, some observers suspect that the relatively rapid growth of GWIs, coupled with too many concurrent and coinciding projects, has resulted in excessive institutional overlap, redundancies, and, ultimately, patterns of inefficient competition among initiatives.¹⁶ Others are troubled by what they see as the vagueness, unclear objectives, lack of quantifiable outcomes, and paucity of mechanisms for promoting accountability among global water initiatives. Perhaps most crucially, many question whether GWIs have been able to reverse the effects of water mismanagement on the ground.

Based on these critiques, three sets of problems with GWIs arise, centered on *overlap*, *proliferation*, and *imprecision*. These raise key questions for the current and future state of GWIs: To what extent are these characteristics perceived, attributed, and documented? What are their consequences for global water policy? How do they affect grassroots governance in cities, municipalities, and villages? What strategies are needed to manage overlap and proliferation, clarify goals,

and document outcomes? How can GWIs be strengthened and sustained in productive ways? The paths toward sustainability, although not straightforward, have grown clearer thanks to new research on global water initiatives.¹⁷

In 2004, a survey was conducted on the subject of global water initiatives.¹⁸ The survey was sent to about 125 experts, half of whom were active in particular GWIs; the other half were experienced observers. One part of the survey sought to quantitatively measure the influence of some 30 GWIs (events, designated periods, professional societies, and organizations). The second part, an open-ended questionnaire, probed intellectual leanings, organization-

later, in 2000, on the heels of its Millennium Declaration, the United Nations established the World Water Assessment Programme (WWAP). WWAP was also mandated to assess the world's freshwater situation and produce a periodic World Water Development Report, which it has accomplished twice at three-year intervals.²⁰

Based on examples such as the one above, 75 percent of survey respondents regard overlap as prevalent among GWIs, and more than half of those who commented on the scale of its impact rated it as significant. Among those who rated the relative benefits versus costs of overlap, 58 percent considered the trend as hav-

One of the most persistent frustrations expressed by experts asked to critique GWIs was that their objectives tend to lack specificity.

and background, practical currents, governance, institutional overlap, and success and failure. The survey results illuminate prevailing attitudes, perceptions, and perspectives on GWIs.

The Problem of Overlap

Defined as the duplication of institutional objectives and efforts, overlap among global water initiatives is a commonly cited problem. In 1999, for example, the UN Environmental Programme, the Global Environmental Facility (GEF), the Swedish International Development Co-operation Agency, and several other organizations created the Global International Waters Assessment (GIWA) and charged it with producing a "comprehensive and integrated global assessment of international waters."¹⁹ Less than a year

ing principally negative consequences for the water sector. As such, overlap was perceived to create unnecessary competition between organizations for financial, social, or status-linked resources.

In practice, institutional overlap is a complex phenomenon. Within the scientific and professional world, as one institution extends its activities into the space occupied by one or more of its neighbors, competition between associations commonly leads to overlap and duplication; the respective assessments produced by GIWA and WWAP form a prime illustration. Institutions having similar aims typically deny that they are competing with each other. For example, the two most prominent GWIs, the World Water Council (WWC) and the Global Water Partnership (GWP), were created in the same year. Each insists it pursues a

distinctive agenda and claims the two do not overlap.

Nonetheless, as they evolve, GWIs frequently broaden their purview or concentrate on previously unexplored aspects of their programs. Such expansion may be prompted by different motives: shifting priorities introduced by new leadership, a desire to glamorize new and demanding areas of science as interest in the original area fades, the need to broaden and increase organizational membership, the imperative to raise circulation of the house journal, and so on. A net result is that most organizations believe they are staking out unique spaces of operation and few wish to surrender elements of their own programs for the common good.

The Problem of Proliferation

Proliferation, the advent of new GWIs, is closely related to—and may exacerbate—the consequences of overlap. Especially since the mid-1990s, the number of GWIs has grown continuously. Between 1995 and 2005, for example, about two dozen such initiatives (organizations, professional societies, major events, and time periods) were established. These included several of the most influential and best-funded organizations such as WWC and GWP, both created in 1996; the World Water Assessment Programme, established in 2000; and the now defunct World Commission on Water for the 21st Century, set up in 1998. Since new institutions occupy some of the space—and take up the corresponding pursuits—of existing institutions, they are often viewed suspiciously by the GWIs already in place.

The propagation of new GWIs generated strong views among survey respondents, with most tending to view the trend as creating far more negative than positive impacts (64 percent as opposed to 25 percent). Proliferation of GWIs was blamed, for instance, for increasing the number,

frequency, incoherency, and, ultimately, disutility of megaconferences.

The Problem of Imprecision

The problem of imprecision among GWIs may be characterized as a pervasive lack of clarity, specificity, and quantifiable outcomes. Individuals trained in the western tradition have made up the majority of the world of water policy. For decades, water quantity and quality issues have



been addressed primarily through technological solutions that rely on crisp problem definition, access to reliable information, use of finely calibrated tools, and performance of statistically reliable analysis. This approach has been effective in diverting rivers, building dams, making drinking water safe, and treating effluent—all large, on-the-ground undertakings, and all measurable and amenable to being evaluated.

But global water initiatives are not public works projects, and they rarely seek

to directly change realities in the field. Rather, GWIs typically aim to introduce new management paradigms, influence practices, form and fortify networks, raise awareness, or marshal resources. Unfortunately, these actions are rarely tangible and few are readily quantifiable. According to water historian Martin Reuss, “actual benefits are subtle and elusive: support of ongoing projects, sharpening and disseminating the rhetoric of international water agendas, and sensitizing national and subnational governments. . . . These important developments may result in concrete successes only after many years have passed.”²¹ One of the most persistent frustrations expressed by experts asked to critique GWIs was that their objectives tend to lack specificity—and their outcomes are nearly impossible to gauge.

Strategies for Improvement

It appears the most effective way forward demands broad measures to help retain the most productive aspects of GWIs—while reducing duplication, containing proliferation, and alleviating the imprecision and lack of clarity that has been frequently observed. Few of these are easy to achieve. They face the difficulties of funding, organizational inertia, institutional territoriality, and especially the challenges of coordination across disciplines, organizations, and vast geographic spaces. Nevertheless, these measures are useful guiding strategies and starting points for institutional and GWI network sustainability.

Transform Overlap into a Resource

One possible means to counter the escalating problems of overlap—addressed in various ways by survey respondents—would be to invest formal authority in an independent body to manage GWIs.

Overwhelmingly, however, respondents eschew the concentration of power in an overarching authority. Instead, experts favor alternative mechanisms to mitigate overlap and transform it into a resource, such as reforming organizational practice to facilitate communication, collaboration, networking, and innovation. This preference for flexible modes of managing global initiatives sets the stage for considering new approaches for dealing with the problem.

To begin such a transformation, it is important to first identify and evaluate overlap in the field. Global water initiatives, as shown above, are of several types (organizations, societies, events, periods). These institutions also have widely varying aims. Some, such as the Global

Energy and Water Cycle Experiment, are purely scientific enterprises.²² Others, like GEF, seek to influence national policies. Still others, especially those within UN agencies, wish to effect operational changes. Some have global agendas, others local. Some promote basic research and development, others, applied technology. Figure 2 below is a visualization of institutional mapping in the global water sector.²³ Alongside such a mapping, conducting a large-scale inventory of existing GWIs and their activities would help pinpoint the most significant and wasteful instances of institutional overlap.

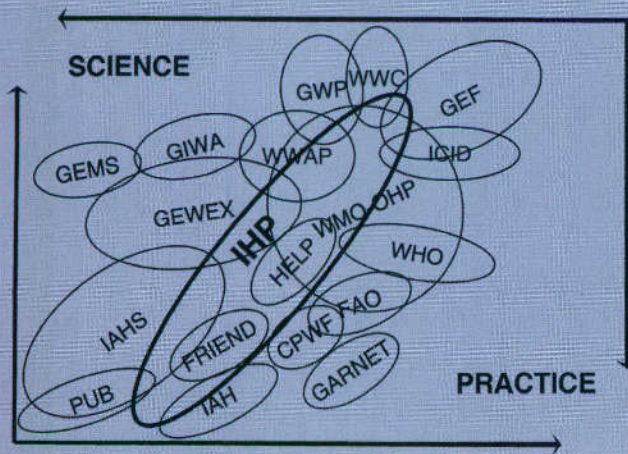
Then, to evaluate the significance of overlap, policy and program evaluation (which are popular approaches for analyzing organizations and projects in many

sectors such as foreign assistance, economic development, education, and health care) need to be incorporated as central features in water governance. The GWI phenomenon as an ensemble has yet to be scrutinized in this manner. Both as individual enterprises seeking their own goals and as a body of collective efforts, GWIs would benefit from a better appreciation of the effects of overlap. Duplication, competition for scarce resources, and lack of a sufficient focus all can result from overlap, while in other cases, overlap may be more productive than detrimental. But the degree to which impacts are negative or positive is unknowable without thorough and objective evaluation. Apart from the aforementioned survey, little empirical documentation exists to measure the effects of overlap. New efforts should incorporate multiple approaches—qualitative and quantitative, historical and prospective, process- and outcome-oriented—in order to fully capture the complexity of institutional overlap.²⁴

Given that overlap is difficult to fully eliminate, as a next step, GWIs might develop tools to manage overlap more productively. As one knowledgeable observer, UNESCO Institute for Water Education Rector Richard Meganck has stated, “overlap will never be eliminated, particularly when every issue can legitimately be claimed by almost any sector or group. But without GWIs, more chaos would prevail.”²⁵ Consequently, those bodies central to global water governance and its financing (such as GEF or UN Water, the umbrella grouping of the various water-related agencies²⁶) should invest time and resources to identify when and where overlap can be productive, and to develop incentives structures that spring from the field itself. One source for these is the body of ideas that emerge from programmatic evaluations that strongly involve participating initiatives themselves.

Examples from international issue networks also suggest using nontraditional

Figure 2. Evolution of global water management frameworks



NOTE: The IHP oval is in bold for readability only, since it overlaps with so many other initiatives. The acronyms identify various global water initiatives, and their placement is a schematic attempt to situate them according to their primary institutional aims.

SOURCE: Developed by the authors based on personal communication with hydrologist James Wallace, 2004.

settings—such as Internet-based portals, listservs, and search engines—to foster collaboration.²⁷ Overlap is regularly perceived to create duplication, competition, and often, conflict. However, it may also stimulate discussion, debate, and new approaches to solving problems, which in turn help to transform such overlap into a resource. Exemplary Internet sites from

Specifically, a new GWI portal would list and describe individual GWIs and, to the extent information is available, would include items such as budgets and reports, an inclusive schedule of events, summaries of news and developments, as well as interactive and value-added features. For example, the portal would make available a database of GWI institutions,

(18 percent). Following this inclination, arguably the best way to guide, rather than stunt, the creation of new GWIs is to strengthen networks, not centralize authority.

Global water governance is not characterized by even or smooth distributions of power, decisionmaking, or policymaking across space and time. Rather, global water governance occurs in specific places (for example, Paris, Stockholm, or Kyoto), through specific networks of knowledge transfer and communication (such as the referee system of water journals and recognized educational centers such as UNESCO's Institute for Water Education), and in specific venues (for example, the cafeterias and corridors of the World Water Forum). Given this empirical reality, together with new insights from studies on organizational theory and management, it is inadvisable to create an overarching water authority. Instead, pragmatic efforts could more productively focus on improving networks and practices (the interstices and actions of GWIs) and not on simply streamlining or eradicating existing initiatives. Furthering these goals, potential areas of future research and action might consider

- identifying what, where, and when are the most critical areas of articulation between the various GWIs, and thus the most promising sites for global water governance;
- examining what these articulations and sites actually involve and how they have changed over time and space; and
- determining the most effective ways to strengthen, improve, or democratize these areas and the patterns of global water governance that emanate from them.

As a beginning, there are several tangible means of strengthening networks available. For instance, the most popular suggestion for "guiding GWI diversity" (28 percent of responses) was to maximize incentives and opportunities for collaboration. In practical terms, this means

A net result of expansion is that most organizations believe they are staking out unique spaces of operation, and few wish to surrender elements of their own programs for the common good.

the United Nations High Commissioner for Refugees (UNHCR), UNESCO, and other sources provide coherent and accessible venues to bring together the elements of institutional overlap (the duplication of objectives, goals, outcomes, project successes and failures) in ways that lend themselves to stronger networking and better evaluation.²⁸

An analogous portal, one which focuses on GWIs, could usefully identify redundancy by permitting a fuller view of the universe of GWIs and their actions. Such a portal might act as a common ground for organizations that overlap and work across the spectrum of the international water community through information and discussion, pulling together national and regional agencies, academic specialty groups, graduate courses, and nongovernmental and grassroots organizations. Finally, such venues capture the complexity of water issues and the diversity of institutional mechanisms needed to address global water problems.

one-time events, and designated time periods. This would allow for research and comparison of their missions, budgets, scopes of work, project sites, and analysis of overlap and gaps. The GWI portal could be hosted by UN Water as part of its World Water Development Report process, with contributions from other well-placed global water institutions, such as the Global Water Partnership, World Water Council, and the International Hydrological Programme.

Address Proliferation by Strengthening Networks

The proliferation of GWIs may comprise an interorganizational nightmare, but water experts resoundingly—and, it should be said, appropriately—reject efforts to police such growth (if this were even feasible). Perhaps reflecting their distrust of imposed solutions, many more experts preferred that institutional proliferation be guided (82 percent) rather than limited

working through existing connections and networks to create collaborative opportunities. This approach could take various forms, such as:

- leveraging financial resources to promote cooperation (for example, cultivating donor-initiated programs that require joint-implementation of projects);
- identifying programmatic and organizational areas that are in need of GWI attention or efforts (such as developing an online database of GWI activities and contact information through “neutral” organizations like the International Hydrological Programme);
- creating a “GWI Assessment” chapter in the forthcoming (third) edition of the widely cited World Water Development Report; and
- strengthening avenues for information and knowledge exchange that encourage collaboration within and across specialties. One way to accomplish this is to recognize and support networking events at megaconferences.

Another important component of strengthened GWI networks is to promote conflict resolution by involving potential adversaries on joint projects or initiatives. An example of such an activity is a current initiative sponsored by the Israeli Palestinian Science Organization and UNESCO to have Israelis and Palestinians jointly examine the history of water use in their region over the last century.²⁹

Finally—and perhaps most significantly—one must acknowledge the role of funders. There is a need to support well-informed decisionmaking among donor agencies. New GWIs often arise in response to needs that are perceived as being unmet. This trend may be due to unawareness of similar existing initiatives. Or, in some cases, a new GWI may be created with the knowledge that a comparable institution exists but is seen as ineffective or inefficient in the eyes of those promoting the new one. New

organizations, time periods, and events that result from proliferation usually fill an important niche. Nearly always, these nascent enterprises require financial support and, most often, they turn to donor agencies. Because there is no repository of information on existing overlap, donor agencies are poorly equipped to identify voids in the GWI sector, yet wield



great responsibility to screen, select, and fund programs.

Address Imprecision

The role for improved assessment has already been alluded to in the preceding two strategy areas. In practice, the GIWA and WWAP initiatives, both designed as assessments, were intended to partially remedy the prevalence of imprecision. To some degree, WWAP’s World Water Development Report, with its numerous tabulations, has met this promise. And initiatives such as PUB (Prediction in Ungauged Basins) are research programs

steeped in hydrological science. But there have also been numerous instances of ambitious, though vaguely worded, mission statements. The World Commission on Water for the 21st Century provides an example: their lofty aim was to “raise awareness of the impending water crisis among decisionmakers and the general public . . . and to develop a widely shared view of a desirable water world in 2025.”³⁰

Can such perceived inadequacies be overcome? Surely, an organization like the World Water Council, whose principal function is to nurture networks and promote dialogue, cannot be expected to behave like an engineering contractor. Nor can a loosely structured, awareness-raising construct like the International Water for Life Decade be held to the accountability standards of a donor like the World Bank. Even more starkly, questions like “how many lives have been saved because of this or that initiative?” cannot be answered readily. But at a time of mounting uncertainty in water availability across the planet, GWIs will continue to play an important role in supporting translocal conflict resolution, management, information sharing, and governance. As a result, new, diverse, and better ways to articulate and assess their outcomes are needed.

One opportunity for improving overall GWI coordination and assessment is to take advantage of the well-honed networks that are a prominent outcome of past GWI activities such as meetings, workshops, and conferences. Perhaps it is time to convene a special forum, real or virtual, whose main aim would be to sort through the issues highlighted above, with a primary aim to implement self-generated procedures for assuring sustainability and diversity while minimizing unnecessary duplication. This would be meant to involve participants in network planning.

UN Water—with assistance from non-UN bodies such as private sector water

utilities, NGOs, and scientific associations—could be asked to take a lead role in helping to convene such a forum. All existing GWIs would be invited to participate, as would any NGOs or other interested stakeholders. And critically, this proposed gathering would also include international donor agencies. As Oregon State University professor of geosciences Aaron Wolf notes, “Real policy follows capital. . . . If you want to know what’s really happening in water policy, go to the working guidelines for development banks.”³¹

In advance of the forum, the conveners would ask donor agencies, such as World Bank or the GEF, to commission separate studies to

- seek models of initiatives in other domains, scrutinizing parallel global institutional arrangements in such important fields as public health, energy, and poverty reduction, with special attention to assessment and multi-organization coordination;

- survey the evaluation tools and interpretation techniques already in use by certain GWIs that might be adopted more broadly to measure qualitatively and quantitatively the individual and collective impacts of GWIs, and highlight the contributions and shortcomings of the various institutions; and

- develop prototype instruments such as charters, operating procedures, financial arrangements, and governance frameworks, all modeled on GWIs that are manifestly accomplishing their objectives.

The participants in the forum would then be charged with finding ways to develop and promote multiple criteria for successful GWI efforts: indicators, benchmarks, milestones, outside reviews, investment levels, and formal evaluations by external experts.³² In addition, they might devise ways to quantify such GWI accomplishments as the number of demonstration sites, the number of training programs and participants and,

when possible, the degree to which a particular GWI’s suggestions or guidelines are incorporated into regional or national policies or legal frameworks.

To supplement the approaches introduced above, more active steps may be considered. It may be desirable to investigate whether the increase in GWIs has had any impact on the level of global investment in water management. Even more radically, it would be advantageous to deploy a set of tangible incentives for GWIs to merge or dissolve when they cease to fulfill their stated objectives or become moribund. And finally, it may be productive to integrate the work of GWIs

global and national institutional problems relating to water, natural resources, and the environment. To assure effective global governance of water, it is thus desirable to assure the institutional sustainability of successful GWIs. Their diverse approaches to addressing water management appear welcome to most experts. But how can institutional sustainability be achieved while at the same time addressing the primary shortcomings of these initiatives—their frequent overlap and competition, the unchecked proliferation of new efforts, and the difficulty of measuring their effectiveness with some degree of precision? As importantly, is it

Can global water initiatives succeed in confronting the troublesome effects of water mismanagement in individual basins?

within the agendas of donors. This would be done by working with funding agencies to devise strategies for strengthening support for those GWIs whose observed impacts are considered the most significant and cost-effective.³³ For instance, one lesson learned widely is that water assistance should be directed to the grassroots, where spending small amounts tends to benefit those most in need. Table 2 on page 30 summarizes recommendations across all three strategy areas.

Conclusions

When GWIs perform effectively, they fill key organizational lacunae, complementing the efforts of nation-states, which often are poorly equipped to address transnational issues and whose instruments are not adequate for dealing with

possible to induce greater order and efficiency democratically, avoiding imposed, top-down solutions? Three key strategies emerge: Aim to transform overlap into a resource; address proliferation by strengthening networks, not centralized authority; and tackle imprecision using multiple ways of measuring outcomes.

The multipronged approach described above would tap the expertise, experience, and common sense of those already involved in the work and management of GWIs. At the same time, it would broaden the context in which individual GWIs are seen by viewing other global initiatives (on water and other topics) and making available new, relevant information on how to evaluate effectiveness. Finally, the presence and participation of donors would encourage a fresh look at how best to support and sustain successful initiatives.

Even armed with these tools for improving institutional sustainability and effectiveness, can global water initiatives succeed in confronting the troublesome effects of water mismanagement in individual basins? This question can be answered, in part, through the collection of additional data on initiative outcomes. At the same time, given the diversity and

dynamism of these initiatives, no existing metrics seem adequate to effecting a generalized assessment of the complex results of the globally oriented activities of GWIs. But even if GWIs continue to elude easy evaluation, their aims are nonetheless important. Global water initiatives are the institutions best positioned to induce a broad and inclusive form of

global water governance—the very form of governance most likely to yield the far-reaching changes in water management needed for the future.

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Table 2. Strategies for sustaining global water initiatives

Tasks	Options
Transform overlap into a resource	
Characterize overlap	<ul style="list-style-type: none"> • Use inventory and institutional mapping to assess overlap • Incorporate policy and program evaluation techniques in water governance
Manage overlap	<ul style="list-style-type: none"> • Seek examples from GWI programmatic evaluations to identify “productive” overlap opportunities and possible incentives structures
Use nontraditional settings	<ul style="list-style-type: none"> • Use Internet-based portals, listservs, search engines, other modes—especially drawing on examples from global initiative networks • With assistance from key GWIs and donors, develop GWI portal; include budgets, reports, events schedules, news summaries, interactive elements
Address proliferation by strengthening networks	
Devise collaboration strategies	<ul style="list-style-type: none"> • Leverage financial resources to promote cooperation • Compile online database of programmatic and organizational gaps • Add “GWI Assessment” chapter to future World Water Development Reports • Strengthen information flows that encourage collaboration within and across specialties
Mitigate conflict	<ul style="list-style-type: none"> • Attempt to involve potential adversaries on joint projects or initiatives
Support donor decisionmaking	<ul style="list-style-type: none"> • Use institutional overlap repository to help donors screen, select, and fund programs
Seek multiple ways to assess and influence outcomes	
Involve participants	<ul style="list-style-type: none"> • Hold GWI forum with assessment goals
Seek examples	<ul style="list-style-type: none"> • Survey models by successful GWIs and other global initiatives • Consider available tools for measuring impact, contributions, and shortcomings of GWIs
Develop tools	<ul style="list-style-type: none"> • Assess impacts via qualitative/quantitative, historical/prospective, and process/outcome approaches • Identify most/least successful GWIs: indicators, benchmarks, milestones, criteria, reviews, and investment levels • Quantify GWI accomplishments, such as number of sites, training programs, and participants • Assess degree of GWI impact on regional/national policies and global investment in water
Create incentives	<ul style="list-style-type: none"> • Develop incentives for GWIs to merge or dissolve when they no longer meet objectives
Engage donors	<ul style="list-style-type: none"> • Encourage donors to support GWIs whose impacts are most significant and effective

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Much of the early work on this subject was achieved during a 2003–2004 sabbatical by Robert Varady at UNESCO, where he was attached to the Division of Water Sciences and the International Hydrological Programme (IHP). The assistance—particularly in identifying key informants and institutions—of IHP's secretary, András Szöllösi-Nagy, and others at IHP was instrumental and fundamental. The authors wish to thank the nearly 100 water experts who participated in the survey cited in this work. The authors acknowledge the insightful comments provided by Robert Merideth, editor in chief at the Udall Center for Studies in Public Policy at the University of Arizona. Finally, Robert Varady is grateful to W. James Shuttleworth of the University of Arizona Department of Hydrology and Water Resources, for his strong encouragement at the start of this enterprise; Stephen Cornell, the director of the University of Arizona's Udall Center for Studies in Public Policy, for his sustained support; and the University of Arizona's Institute for Study of Planet Earth, for its year-long fellowship.

NOTES

1. World Water Assessment Programme (WWAP), *Water: A Shared Responsibility—The United Nations World Water Development Report 2* (Paris, New York, and Rome: UNESCO, Berghahn Books, and UN Water, 2006).

2. *Ibid.*

3. WWAP, note 1 above.

4. G. Sefyang, "Environmental Mega-Conferences—From Stockholm to Johannesburg and Beyond," *Global Environmental Change* 13 (2003): 223–28; R. G. Varady et al., "Mega-networking at the Fourth World Water Forum in Mexico City: Looking for Opportunities at a Mega-conference," *Arizona Water Resource*, 14, no. 5 (May–June 2006).

5. A large carbon footprint of megaconferences has been alleged, due to the large number of air-miles needed to attend, though this has never been estimated or measured. Other critiques have been cited in A. Biswas, "World Water Forum: In Retrospect," *Water Policy* 3 (2001): 351–56; P. H. Gleick and J. Lane, "Large International Water Meetings: Time for a Reappraisal," *Water International* 30 (2005): 410–14; J. G. Speth, *Worlds Apart: Globalization and the Environment* (Washington, DC: Island Press, 2003).

6. See, for example, D. Lewis, "NGOs, Organization-

and Institutional Sustainability," *The Annals of the American Academy of Political and Social Science* 590, no. 1 (2003): 212–26.

7. R. G. Varady and K. Meehan, "A Flood of Institutions? Sustaining Global Water Initiatives," *Water Resources Impact* 8, no. 6 (2006): 19–22.

8. For information regarding the experts' survey, see: R. G. Varady and M. Iles-Shih, "Global Water Initiatives: What Do the Experts Think?" in A. K. Biswas and C. Tortajada, eds., *Impacts of Megaconferences on the Water Sector* (New York: Springer-Verlag, 2008).

9. Varady et al., note 4 above.

10. Gleick and Lane, note 5 above.

11. J. C. Rodda, "Whither World Water?" *Water Resources Bulletin* 31, nos. 1–7 (1995).

12. The best early examples are UN Educational Scientific and Cultural Organization (UNESCO), World Meteorological Organization, World Health Organization, and Food and Agriculture Organization of the United Nations. These were later supplemented by the UN Environment Programme and the UN Development Programme.

13. R. G. Varady, "Global Water Initiatives: Some Preliminary Observations on Their Evolution and Significance," paper presented at Proceedings of the 3rd Conference of International Water History Association, Alexandria, Egypt, 12 December 2003.

14. The Dublin Conference was officially named the International Conference on Water and the Environment; World Water Week was formerly known as the Stockholm Water Conference.

15. R. G. Varady and M. Iles-Shih, "The International Hydrological Programme and the 'World of Water,'" keynote talk presented by Varady at 4th Conference of the International Water History Association, "Water and Civilization," Paris, France, 1 December 2005.

16. Gleick and Lane, note 5 above.

17. For more information on global water initiatives, see R. G. Varady, "Global Water Initiatives: Their Evolution and Significance," *IAHR/AIRH Newsletter* 21, no. 2 (2004): 22; Varady and Iles-Shih, note 8 above; and Varady and Meehan, note 7 above.

18. For results and more specific information regarding the survey, please see R. G. Varady and M. Iles-Shih, note 8 above.

19. Global International Waters Assessment (GIWA) homepage, at http://www.giwa.net/giwa/giwa_in_brief.html (accessed 17 August 2007).

20. The first WWAP report was *Water For People, Water For Life: The United Nations World Water Development Report* (Paris and New York: UNESCO and Berghahn Books, 2003); the second report was WWAP, note 1 above.

21. M. Reuss, response to Varady survey, 28 April 2004.

22. Global Energy and Water Cycle Experiment (GEWEX) is a project of the World Climate Research Programme, <http://www.gewex.org> (accessed 29 November 2007).

23. J. W. Wallace, personal communication with Robert Varady, 19 October 2004. The acronyms identify various global water initiatives, and their placement is a schematic attempt to situate them according to their primary institutional aims.

24. Varady and Iles-Shih, note 8 above.

25. Varady and Iles-Shih, note 8 above.

26. UN Water is the official United Nations mechanism for follow-up of the water-related decisions reached at the 2002 World Summit on Sustainable Development

and the Millennium Development Goals. It comprises the UN agencies, programs, and funds that have a significant role in tackling global water concerns. UN Water also includes some major non-UN partners who cooperate in advancing progress toward the water-related goals of the International Water for Life Decade and the Millennium Declaration. UN Water Web site (<http://www.unwater.org/about.html>) (accessed 3 August 2007).

27. A useful example is an effort by the Office of the United Nations High Commissioner for Refugees (UNHCR), which provides Reflink and Refworld as part of its homepage (United Nations High Commissioner for Refugees, *Reflink*, <http://www.unhcr.org/cgi-bin/texis/vtx/reflink> (accessed 8 August 2007); and United Nations High Commissioner for Refugees, *Refworld*, <http://www.unhcr.org/cgi-bin/texis/vtx/refworld/rwmain> (accessed 8 August 2007)). Reflink is a comprehensive portal to information on refugee, asylum, human rights, and related topics, while Refworld supports decisionmaking on refugee status by disseminating reports on countries of origin, policy documents, and international and national legal frameworks. Other similar sites provide either public or protected forums for sharing knowledge, expertise, and experiences in international work. See, for example, the Development Resource Management Portal of the U.S. Agency for International Development (USAID), <http://rmpportal.net/> (accessed 14 June 2007).

28. Existing examples of this type of Web-based information gateway in the water arena—though not as comprehensive as the UNHCR site—include the UNESCO Water Portal and the Sustainability of Semi-arid Hydrology and Riparian Areas (SAHRA) site. See UNESCO, *UNESCO Water Portal*, <http://www.unesco.org/water/about.shtml> (accessed 8 August 2007); and SAHRA homepage, <http://www.sahra.arizona.edu/> (accessed 8 August 2007).

29. International Meeting on Transboundary Water Conflicts, "From a Common History to a Common Thinking on Conflict Resolution in the Middle East." Israeli Palestinian Science Organization and From Potential Conflict to Co-operation Potential (PCCP) Program of UNESCO, Perugia, Italy, 4–5 December 2006. For other examples of water-based conflict resolution efforts, see A. Gerlak, "Lesson Learning and Trans-boundary Waters: A Look at the Global Environment Facility's International Waters Program," *Water Policy* 9 (2007): 55–72. See also UNESCO/IHP, *From Potential Conflict to Co-operation Potential*, <http://www.unesco.org/water/wwap/pccp/> (accessed 3 August 2007).

30. "From Vision to Action," Progress Report of the World Commission on Water for the 21st Century (August 1998–July 1999).

31. Varady and Iles-Shih, note 8 above.

32. Some of these instruments are described and employed in the two World Water Development Reports, WWAP (2006), note 1 above; and WWAP (2003), note 20 above.

33. For example, former International Commission on Irrigation and Drainage Commissioner C. D. Thatte has observed relatedly that in the face of fragmentation, "strengthening of existing initiatives is important." See Varady and Iles-Shih, note 8 above.

The logo for the journal 'Environment' is displayed in a dark rectangular box. The word 'Environment' is written in a white, serif font, with the 'E' being significantly larger and more stylized than the other letters.