Promoting Cooperation in the Mekong Region through Water Conflict Management, Regional Collaboration, and Capacity Building

Patrick R. MacQuarrie, Vitoon Viriyasakultorn, and Aaron T. Wolf

Abstract— *There are over 263 international river basins in the world covering almost half of the Earth's land surface. Over 145 nations are riparians to one or more of these basins, some sharing with up to 17 countries. Challenges facing the Mekong River Basin are prompting increased focus on water conflict prevention and management and regional collaboration. Discarding the water wars myth, research and case studies have shown that greater institutional capacity can prevent water conflicts, leading to enhanced cooperation in international basins. Strategic partnerships and conflict prevention activities such as training and "hotspot" mapping are current examples of collaborative cooperation in the Mekong Basin. Regional cooperation is driving most collaborative efforts including the emergence of civil society and stakeholder participatory processes at the basin level. Examples from the Nile and Columbia River Basins provide evidence from outside the Mekong region supporting claims that cooperative management institutions and collaborative processes are effective policies for promoting peace and cooperation transboundary and international water basins.*

Keywords— **Basin cooperation, basin institutions, capacity building, institutional capacity, Mekong, regional collaboration, river basin organization, transboundary water, water conflict management.**

1. SHARED INTERNATIONAL BASINS – THE SETTING

There are over 263 international river basins in the world, covering almost half of the Earth's land surface, nearly 40 percent of the world's population, and 60 percent global river flow [1]. Surface water, groundwater, and water quality and the ecosystem are all interconnected and widely utilized for a multitude of purposes, ranging from biological, economical, spiritual, cultural and domestic needs [2]. Over 145 nations are riparians to one or more international basins in the world. Some basins, such as the Danube, share up to 17 countries whilst many others share three or more boundaries between them [3]. Oregon State University's Transboundary Freshwater Dispute Database (TFDD) houses over 300 international agreements on international basins seen in Figure 1, an indication that cooperation may be prevalent on international transboundary water issues [4].

Beginning at over 4500 meters elevation in the Tanggula mountain range in Qinghai province, the Mekong flows for over 4800 km through China, Myanmar, Laos, Thailand, Cambodia, and Vietnam, terminating in the South China Sea, draining over 795,000 km^2 [5]. Thailand and Laos both share the highest percentage of area in the basin with 23 and 25 percent, respectively, while Laos contributes the greatest amount of flow (35 percent) [5]. Vietnam has the highest population density (236 persons/km^2) and the lowest percent of basin area (8%), posing potential concerns with respect to its political influence [6]. The Mekong's annual flow varies widely based on the monsoon season, ranging from 78.8 to 475 cubic kilometers dry to rainy seasons, respectively [7].

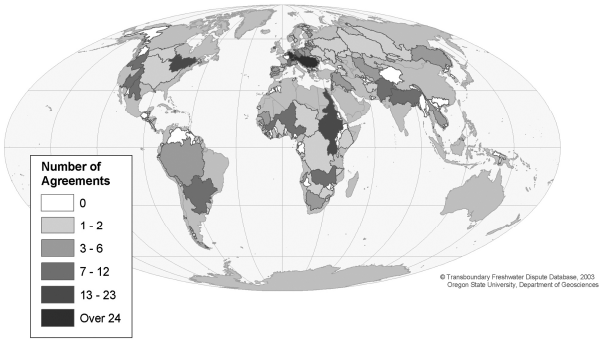

Fig. 1. Cooperative international agreements per basin [4]

The Mekong faces some monumental challenges in the years to come. Over 21 percent of the basin is eroding with only 31 percent of its original forests left intact and only 5 percent under protection [7]. Two percent population growth over the next 50 years combined with increasing environmental degradation leads the UNEP to predict severe and negative impacts in the areas of stream flow, pollution, loss of habitat, fish populations, and community health to those who rely on the Mekong for their livelihoods [7]. What is needed to prepare for

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these changes?

Water management is, by definition, conflict management. There is no such thing as managing water for a single purpose as all water management is multi-objective and based on navigating competing interests. Within a nation these interests include domestic users, agriculturalists, hydropower generators, recreation enthusiasts, and environmentalists - any two of which are regularly at odds, and the chances of finding mutually acceptable solutions drop exponentially as more stakeholders are involved. Add international boundaries and the chances decrease exponentially yet again [8].

This paper makes a case for promoting cooperation in the Mekong region through principles of water conflict prevention management, regional cooperation and collaboration, and multi-scaled capacity building. These activities must be clearly relevant; not to be ravaged by war or thwarted by political upheaval. Therefore we will refute the myth that wars are likely, and instead give evidence that water conflict, instead, is a catalyst for cooperation. Built on this premise, cooperative management techniques and collaborative efforts have their greatest influence on strengthening institutional capacity in the Mekong region.

2. WATER WARS OR CONFLICT MANAGEMENT AND COOPERATION? [1]

Many observers claim that increased geographical interdependence of water boundaries combined with population pressures and increased water scarcity leads to greater conflict. In contrast, historical evidence and current research demonstrate that tensions often become catalysts for cooperation, a much more prevalent strategy. People do affect their environment, but to what extent is the opposite true? Just how deep is the causal relationship between environmental stresses and the structure of human politics? This relationship is at the heart of understanding the processes of environmental conflict prevention and resolution. If, as the large and growing "water wars" literature would have it [9-13], the greatest threat for water conflicts is that water scarcity can and will lead directly to warfare between nations. The "water wars" idea potentially diverts a huge amount of resources to arrest these processes at the highest levels. When if fact, if the processes driving conflict are actually both more subtle, scalable, and more local in nature as suggested by [14, 15–18], then so too are the potential solutions to conflict over water [8].

It is important to note that shared water does lead to tensions, threats, and even to some localized violence. Later we offer strategies for preventing and mitigating these tensions. However, conflicts over water rarely lead to war. Moreover, these tense "flashpoints" or "hotspots" generally and eventually induce the parties involved to enter negotiations, often resulting in dialogue and, occasionally, precipitating creative and resilient working arrangements. Also significant is evidence discovered that shared water provides compelling inducements to dialogue and cooperation, even while hostilities rage over other issues.

An examination of the "water leads to war" thesis sheds some light on its relevance to reality on the ground. Although the extreme water wars literature mostly began to fade in the late 1990s, a number of articles dating back decades argue quite persuasively for some degree of causality between environmental stress and political decision making, employing rapidly approaching resource limits as a justification. One cannot discuss water institutions, for example, without invoking Wittfogel [19] and his classic argument that the drive to manage water in semiarid and tropical environments led both to the dawn of institutional civilization, described by Delli Priscoli [20] as the "training ground for civilization" and to particularly autocratic, despotic forms of government. Consequently, his argument was quite effectively challenged by Toynbee [21], among others. The premise that there is a critical link between how society manages water and its social structure and political culture remains as an important and valid insight.

This thread of causality between the environment and politics has been taken up regularly over the years. When Sprout & Sprout [22] describe the environmental factors inherent in international politics, it becomes the direct intellectual precursor to today's blossoming "environmental security" literature, as spearheaded by Homer-Dixon [23]. A summary of Homer-Dixon's findings, along with a debate on the topic is presented in [24]. In his defense, Homer-Dixon's arguments, along with many in the water wars camp, have become more muted over the last few years: In 1994, he wrote, "The renewable resource most likely to stimulate interstate resource war is river water" [25, p.16], which he repeats in his 1996 article [26]. He modifies the claim, elaborated in his 1999 book [27], "In reality, wars over river water between upstream and downstream neighbors are likely only in a narrow set of circumstances ...[and]...there are, in fact very few river basins around the world where all these conditions hold now or might hold in the future" [27, p.139].

The treatment of nations as homogeneous nations, rational entities linking internal and external interests is critical when we look at violent international conflicts [28], [29]. Gleick [30] is widely cited as providing what appears to be a history replete with violence over water resources. However, Wolf [31] points out that what Gleick and others have actually provided is a history rife with tensions, exacerbated relations, and conflicting interests over water, but not State level violence. Wolf [31] contrasts the results of a systematic search for interstate violence with the much richer record of explicit, legal cooperation with 3600 water-related treaties. In fact, a scan of the most vociferous enemies around the world reveals that almost all the sets of nations with the greatest degree of animosity between them, whether Arabs and Israelis, Indians and Pakistanis, or Azeris and Armenians, either have a water-related agreement in place or are in the process of negotiating one.

[1] This section is largely taken from Wolf, Aaron T., 2007, "Shared Waters: Conflict and Cooperation," Annual Review of Environment and Resources 32: 3.1-3.29.

International river basins

The Register of International River Basins of the world [32] defines a river basin as the area that contributes hydrologically (including both surface-and groundwater) to a first order stream, which, in turn, is defined by its outlet to the ocean or to a terminal (closed) lake or inland sea. We define such a basin as international if any perennial tributary crosses the political boundaries of two or more nations.

Similarly, the 1997 UN Convention on Non-Navigational Uses of International Watercourses defines a watercourse as "a system of surface and underground waters constituting by virtue of their physical relationship a unitary whole and flowing into a common terminus." An international watercourse is a watercourse with parts situated in different States [33].

Within each international basin, demands from environmental, domestic, and economic users increase annually, while the amount of freshwater in the world remains roughly the same as it has been throughout history. Given the scope of the problems and the resources available to address them, avoiding water conflict is vital. Conflict is expensive, disruptive, and interferes with efforts to relieve human suffering, reduce environmental degradation, and achieve economic growth. Developing the capacity to monitor, predict, and preempt transboundary water conflicts is key to promoting human and environmental security in international river basins, regardless of the scale at which they occur.

A closer look at the world's international basins gives a greater sense of the magnitude of the issues: First, the problem is growing. There were 214 international basins listed in a 1978 United Nations study [32], the last time any official body attempted to delineate them, and there are over 263 today [1]. The growth is largely the result of the internationalization of national basins through political changes, such as the break up of the Soviet Union and the Balkan states, as well as access to today's better mapping sources and technology.

A way to visualize the dilemmas posed by international water resources is to look at the number of countries that share each international basin in *Table 1*. Nineteen basins are shared by five or more riparian countries: one basin—the Danube—has 17 riparian nations; five others are are shared by between 9 and 11 countries; and the remaining 13 basins have between 5 and 8 riparian countries [3].

Fortunately, there is room for optimism due to the global community's record of resolving water-related disputes along international waterways. For example, the record of acute conflict over international water resources is overwhelmed by the record of cooperation. Despite the tensions inherent in the international setting, riparians have shown tremendous creativity in approaching regional development, often through preventive diplomacy, and the creation of "baskets of benefits," which allow for positive-sum, integrative allocations of joint gains. Moreover, the most vehement enemies around the world either have negotiated water sharing agreements, or are in the process of doing so as of this writing, and once cooperative water regimes are established through treaty, they turn out to be impressively resilient over time, even between otherwise hostile riparians and even as conflict is waged over other issues. Violence over water does not seem strategically rational, hydrographically effective, or economically viable. Shared interests along a waterway seem to consistently outweigh water's conflict-inducing characteristics.

Table 1. Number of countries sharing a basin. Source: [1]

Number of Countries	International Basins
3	Asi (Orontes), Awash, Cavally, Cestos, Chiloango, Dnieper, Dniester, Drin, Ebro, Essequibo, Gambia, Garonne, Gash, Geba, Har Us Nur, Hari (Harirud), Helmand, Hondo, Ili (Kunes He), Incomati, Irrawaddy, Juba-Shibeli, Kemi, Lake Prespa, Lake Titicaca-Poopo System, Lempa, Maputo, Maritsa, Maroni, Moa, Neretva, Ntem, Ob, Oueme, Pasvik, Red (Song Hong), Rhone, Ruvuma, Salween, Schelde, Seine, St. John, Sulak, Torne (Tornealven), Tumen, Umbeluzi, Vardar, Volga, and Zapaleri
4	Amur, Daugava, Elbe, Indus, Komoe, Lake Turkana, Limpopo, Lotagipi Swamp, Narva, Oder (Odra), Ogooue, Okavango, Orange, Po, Pu-Lun-T'o, Senegal, and Struma
5	La Plata, Neman, and Vistula (Wista)
6	Aral Sea, Ganges-Brahmaputra-Meghna, Jordan, Kura-Araks, Mekong, Tarim, Tigris and Euphrates (Shatt al Arab), and Volta
8	Amazon and Lake Chad
9	Rhine and Zambezi
10	Nile
11	Congo and Niger
17	Danube

3. SCIENTIFIC EVIDENCE OF WATER AS A CATALYST OF COOPERATION

Basins At Risk (BAR) projec [2]

In order to cut through the prevailing anecdotal approach to the history of water conflicts, researchers at Oregon State University undertook a three-year research project which attempted to compile a dataset of every reported interaction between two or more nations, whether conflictive or cooperative, that involved water as a scarce and/or consumable resource or as a quantity to be managed. The central focus of the study was that water was the driver of the all events over the past 50 years. The study documented a total of 1831 interactions, both conflictive and cooperative, between two or more nations over water during the past five decades and found the following (see Figure 2) [18].

First, despite the potential for dispute in international basins, the record of acute conflict over international water resources is historically overwhelmed by the presence of cooperation. Over the 50 year study, there were only 37 acute disputes (those involving violence); of those, 30 were between Israel and one or another of its neighbors, and the violence ended in 1970. The only water war between nations on record occurred over 4500 years ago between the city-states of Lagash and Umma in the Tigris-Euphrates basin [31, 34).

The total number of water-related events between nations of any magnitude is likewise weighted toward

[2] This section is largely taken from Wolf, A. T., Annika Kramer, Alexander Carius, and Geoffrey D. Dabelko. 2005. Chapter 5: Managing Water Conflict and Cooperation. In *State of the World 2005: Redefining Global Security*, 80-95. Assadourian, E., *et al*. Washington, D.C.: The WorldWatch Institute.

cooperation with only 507 conflict-related events versus 1228 cooperative events. The figures suggest that violence over water is neither strategically rational, hydrographically effective, nor economically viable [18].

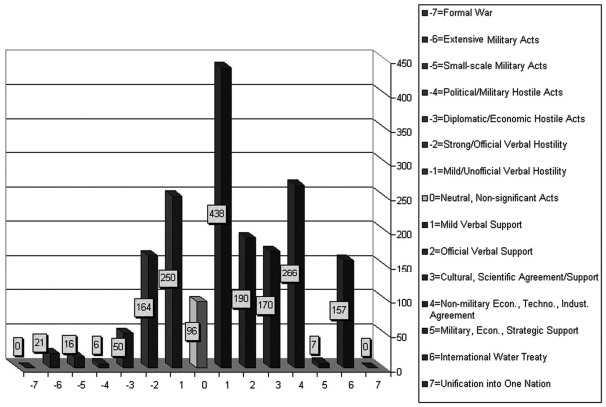

Figure 2. Number of events by BAR scale. Source: [18]

Second, despite the occasional fiery rhetoric of politicians - perhaps aimed more often at their own constituencies than at the enemy - most actions taken over water are mild. Almost two thirds of all events were only verbal, and more than two thirds of those had no official sanction [18].

Third, there were more issues of cooperation than of conflict. The distribution of cooperative events covered a broad spectrum, including water quantity, quality, economic development, hydropower, and joint management. In contrast, almost 90 percent of the conflict-laden events related to quantity and infrastructure.

Finally, despite the lack of violence, water acted as both an irritant and a unifier. As an irritant, water can make good relations bad and bad relations worse. Despite the complexity, however, international waters can act as a unifier in basins with relatively strong institutions [35]. This historical record suggests that international water disputes do get resolved, even among enemies, and the institutions they have created often prove to be resilient even when relations in other areas are strained.

Research done through Oregon State University's Program in Water Conflict Management and Transformation suggests that institutional capacity is key to successful and enduring cooperation. Results indicate that conflict in a basin is more likely if 1) there are rapid political or physical changes in the basin, and 2) basin institutions are unable to absorb and manage those conditions. International river basin institutions can effectively absorb and manage major changes in a river basin through a number of instruments, including: treaties, cooperative arrangements, creation and distribution of technical data, stakeholder involvement in management plans, equitable allocations, and the distribution of reasonable costs and benefits [3], [18], [35]. Tools such as databases combining hydrological, geographic, socioeconomic, and political data relating to transboundary water can be a valuable asset for river basin institutions to enable greater cooperation, training, and capacity building among basin riparians.

Demonstrations of cooperation over water

There are numerous examples of cooperative persistence found between riparians along shared waterways. Israelis and Arabs since the 1950's, the Indus River Commission which survived two major wars between India and Pakistan, and decades of dialog and cooperation on the Mekong River are all examples of cooperation while disputes remained unresolved among neighbors.

Israel and Jordan have held secret "picnic table" talks on managing the Jordan River since the unsuccessful Johnston negotiations of 1953–1955, even though they were technically at war from Israel's independence in 1948 until the 1994 treaty [36]. The parties have adopted a policy of cooperation over water rather than conflict, developing new water resources, sharing information, and providing assistance to alleviate water shortages. Institutional examples of this include arrangements for joint monitoring of common water resources and data exchange through the establishment of a Joint Water Committee.

The Indus River Commission survived two major wars between India and Pakistan [3], [37]. Despite all evidence to the contrary, India and Pakistan cooperated over the Sutlej River and signed the Indus Water Treaty in 1960, during which the broader conflict continued over the Line of Conflict within Kashmir. The intervention by the World Bank was an important institutional stop-gap that sponsored India and Pakistan's development of institutional capacity [38], [39].

With regards to the Mekong, cooperation goes back even further than the Mekong Committee to 1949 and the establishment of the Bureau of Flood Control and Water Resources [40]. Following this, the Mekong Committee was established by the governments of Cambodia, Laos, Thailand, and Viet Nam as an intergovernmental agency in 1957. It exchanged data and information on water resources development throughout the Viet Nam War [39], [41], and during the wars in Indochina, still managed in 1970 to produce medium and long range plans to develop water resources in the lower Mekong basin. Even after the withdrawal by Cambodia in 1975, the Secretariat continued to meet in Bangkok, eventually setting up the Interim Mekong Committee in 1978. With intense involvement by the US and Asian Development Bank (ADB), there is good evidence to suggest that existing cooperation in the Mekong was being offered as an alternative to war in Vietnam and Cambodia [42]. Hydropower works, such as the Nam Ngum project, were also seen as a link between Thailand and Laos, connecting Nam Ngum Dam to Vientiane to Udon Thani in Thailand and on to Nam Pong Dam in the Ubol Rattana province [42]. Eugene Black, one of the first presidents of the World Bank in 1949, voiced his perspective on cooperation explicitly,

"The most important aspect of the development of the Mekong Basin is to provide a means for inhibiting violence in the region, and evoking among riparian countries a sense of what is possible if they cultivate the

habit of working together." [43].

Again reinforcing the notion that strong institutions enable cooperation, the Mekong River Commission signed the Agreement on Cooperation for Sustainable Development in the Mekong River Basin in April of 1995 [40]. Regional cooperation took another step forward in 1992 by the formation of the Greater Mekong Subregion (GMS) to jointly development natural resources and infrastructure through increased economic cooperation.

4. REGIONAL COOPERATIVE ACTIVITIES TOWARD CONFLICT PREVENTION IN THE MEKONG REGION

As the Mekong sub-region develops, riparian countries have been constructing dams, dikes, irrigation infrastructure, and navigational waterways that potentially impact river livelihoods. A challenge for countries in the Mekong region is the adoption and implementation of policies and practices that enable participatory and collaborative engagement for planning and development, that support sustainable development, and that both protect vital ecosystems and promote economic and social prosperity, while ensuring prevention, management and mitigation of conflict. Regional institutions in the Mekong region are working to enhance regional cooperation through several mechanisms such as strategic partnerships, conflict management training, public participation, stakeholder involvement, and institution building [44].

The Mekong River Commission (MRC) fosters inter-governmental cooperation among the four lower Mekong countries of Cambodia, Lao, Thailand, and Vietnam. The MRC and the National Mekong Committees (NMCs) have a mission to preserve the natural resources and environmental quality of the river basin while promoting the interdependent and economic growth of the Mekong region. The MRC's goal is to achieve this mission through participatory and collaborative decision-making within and among the Mekong countries [45].

Cooperative partnerships

The MRC Strategic Plan for 2006-2010 includes Goal 2 for the MRC to enhance effective regional cooperation. One objective under this goal is, "To identify potential transboundary issues for negotiation, mediation and conflict prevention, and develop mediation and conflict management capacity" [45]. To achieve this objective, the MRC is working to develop new mechanisms and institutional arrangements for addressing transboundary issues and differences in cooperation with international and regional development partners. One such partner is Planning and Development Collaborative International, or PADCO, which implements the United States Agency for International Development (USAID) Environmental Cooperation-Asia (ECO-Asia) Governance project [46]. The MRC's strategic partnership with ECO-Asia aims to promote collaboration by the adoption of improved conflict prevention policies, plans, and mechanisms at regional and national levels. Cooperative arrangements between partners such as the MRC and ECO-Asia serve to provide a foundation to enhance regional cooperation in Basin activities and increase capacity for joint planning, cooperation, and resolution of transboundary water-related issues in the Mekong region [45].

Water conflict prevention and management training

Joint MRC and ECO-Asia workshops on conflict prevention and management are aimed at strengthening human and institutional capacity, including facilitating the identification of potential transboundary issues across the wide range MRC program activities including the environment, flood management and mitigation, agriculture, irrigation, forestry, and watershed management, navigation, fisheries, basin development planning, and water utilization. In addition to helping develop capacity at the MRC in the prevention and resolution of transboundary issues, training activities also promote cooperation between the MRC Secretariat and National Mekong Committees (NMCs) in each of the four member countries and line agencies. These activities are designed to dovetail into existing MRCS and NMC programs. Feedback from stakeholders and partners has indicated that training should be focused on general conflict prevention and resolution tools and techniques [47].

Water conflict prevention management training aims to enhance regional cooperation through three levels of learning objectives. The first type of training encompasses introductory training in transboundary water conflict prevention, management and cooperation. It provides a broad overview of transboundary water issues, basic knowledge, principles and practices in cooperation, and prevention and management of conflict. This type of training is designed specifically to build awareness and improve the general understanding of conflict prevention and management practices for several target stakeholder groups within the Basin [47].

The second type of training focuses on building skills in facilitation and mediation at the national and line agency level. In the Mekong region, training is aimed at NMCs and line agencies, which may be called upon to assist with potential transboundary issues or differences. Their responsibilities include information sharing and facilitation of meetings, activities requiring key skills essential to effectively address potential conflict involving shared water. In this setting, the training is designed to assist staff to carry out these tasks effectively, employing exercises and practices aimed at developing practical skills rather than concepts. Examples of skills emphasized in this area include communication, negotiation, facilitation, and mediation [47].

The third type of training being conducted is directed toward policy makers and senior water managers. It is critical that these participants have some knowledge of national, regional, and international legal issues relating to water. Policy implications are best understood using real life examples, and case studies and event analysis play a large role in developing these skills with policy makers [47].

Finally, all the water conflict prevention and

management material is combined into a cohesive package. Training programs need to be modular so that skills and concepts can be delivered in bite-size, digestible, and practical chunks. Hydropolitics and transboundary water are included in the conceptualization of international water, stages of water conflict transformation, water use and international law, and the effect of boundaries on basin management [48]. The states of negotiation, a critical component to managing water conflict, are put in the context of environmentally-based disputes. The training then moves to the concept of benefit sharing and institutional capacity, an active ingredient in preserving peace and cooperation in transboundary waterways. Moving to more practical training, specific skills in water conflict prevention and management are taught, including but not limited to public and stakeholder participation, collaboration, alternative dispute resolution, negotiation, mediation, and other conflict management methods. These concepts, combined with collaboration, communication, and negotiation skills, have the potential to yield significant transformations in participants involved. Initiating shifts in the thinking and attitudes of participants is an integral part of a complete and successful conflict prevention management training program. Additionally, tools such as databases, GIS, and other mapping tools provide systematic ways of understanding transboundary water conflict prevention and help to furnish current and legitimate data for making accurate situational assessments. Using data in addition to case studies provides powerful examples of how conflict can be transformed into cooperation and reinforces cooperative approaches to resolving water issues [31], [44]-[50].

Mapping "hotspots"

The identification of potential transboundary "hotspots" and historical events through a collaborative participatory process contributes to the transformative initiative to strengthen capacity in the Mekong transboundary basin.

The theoretical benefits of identifying transboundary issues are that prevention is more effective and inexpensive than fixing a problem or issue after an event. In fact, the process of cooperation in addressing the operative issues may identify options and opportunities not previously realized. Because the MRC is fundamentally aimed at promoting cooperation and the sustainable development of Mekong River Basin, cooperation requires capacities to address constraints, impacts, priorities, and opportunities, and directly addressing issues contributes to these goals. The process of addressing issues allows the MRCS to focus energy on the prioritization of the most critical issues. Developing clear criteria in this process allows for early issue identification and proactive management of transboundary issues [47].

As part of the MRC and ECO-Asia joint program, representatives from MRC Secretariat, NMCs and line agencies met and identified potential transboundary issues in an effort to raise awareness and provide a foundation for capacity building and tools development. As part of this effort, stakeholders developed criteria that could be used to identify issues and to identify an illustrative list of potential transboundary issues. The criteria discussed were well-defined, existing or potential activities that could result in significant impacts across national boundaries. Hotspots were designated as geographical or non-geographical. This activity has the potential to be an important step in building institutional capacity within the MRCS, the national committees, and line agencies, engaging local stakeholders and NGOs in the capacity building process [45], [47].

In addition to mapping hotspots, employing a collection of historical events on conflict and cooperation is an essential tool used to dissect indicators of conflict or cooperation in the basin geography. As already mentioned, data from the TFDD and subsequent analysis have led to published conclusions indicating greater institutional capacity reduces the possibility of water conflicts [35]. A well conducted study of the Mekong region with local, national, and regional level data is an excellent opportunity to enhance cooperation and strengthen institutional capacity among stakeholders, partners, and institutions.

5. COOPERATIVE MANAGEMENT INSTITUTIONS AND COLLABORATIVE PROCESSES - EXAMPLES

Much of the research internationally confirms that cooperative management organizations emphasizing collaborative processes can reduce potential conflict by including conflicting interests in decision-making, providing forums for negotiation and discussion, building trust and confidence through stakeholder collaboration, and encouraging stakeholder and participatory involvement in basin planning and development projects [49], [50]. Examples of basins employing these methods include the Nile and Columbia River Basins, among others. Some of these principles and approaches may be developing in the Mekong region.

Civil society has a potential role in these institutions, although its role is not fully being realized in the Mekong region. Badenoch [51] makes the point that the lack public involvement in national planning activities permeates into regional institutions, suggesting that the role of stakeholders and civil society in organizations such as the MRC is limited. Compared with European and American standards this may be the case, however regional organizations such as the MRC are involving civil society directly through integrated basin development planning [52].

Phase II of the MRC's Basin Development Plan (BDP) facilitates various degrees of stakeholder participation through a number of mechanisms, ranging from public hearings, consultations, sub-area forums, to multi-stakeholder forums or "regional multi-stakeholder dialogues" [52, p.33]. The forums provide an ongoing mechanism for civil society to provide input into the planning process while Regional Technical Working Groups (RTWGs) involve the academic community in basin planning details. BDP has also created its own

training program aimed at capacity building at regional, national, and community groups. In this respect, the MRC is tapping into civil society, NGOs, and the NMCs through its regional planning process despite the absence of stakeholder involvement at the national level – championing a regional-based collaborative approach to basin planning.

Some observers are critical of collaborative approaches to decision-making in river basins, and fear they complicate regional cooperative approaches to water governance. They think that these local-based efforts may exacerbate tensions and strain relations between riparians [53]. The problem with these claims is similar to the water wars debate already discussed; there is simply an overwhelming amount of credible evidence to the contrary.

Nile basin

The Nile Basin Initiative (NBI) is an example of collaborative management of a river basin at a regional level. Its mission is to cooperatively share the river, share substantial socioeconomic benefits, and promote regional peace and security in the Nile Basin. The NBI started its organizational development with a participatory process of dialogue among the riparians (10 countries), resulting in an agreement on a shared vision to "achieve sustainable socioeconomic development through the equitable utilization of, and benefit from, the common Nile Basin water resources" [54]. In addition to providing security and peace among Nile riparians, the NBI also ensures that cooperation and action is taken jointly. The NBI contains the NBI Strategic Action Program, which has two main legs: the Shared Vision Program (SVP) and Subsidiary Action Programs (SAP). The SVP contains the primary coordination component, focusing activities on stakeholder involvement, capacity building, and training, including on-the-ground activities. By 2004, more than $35 million dollars had been allocated toward these activities by donor countries [55]. Outside funding has been a key component to the NBI's success in building institutions that are long-standing, stable, and well-defined resulting in cooperation rather than conflict in the basin [56]. The evolution of cooperation has been largely process focused, building collaborative structures and sustainable institutions at both the national and regional levels, expanding capacity in water uses, and importantly, building trust amongst riparian states.

Pacific northwest

Conflict resolution through collaborative management is actively working in the Pacific Northwest on the Columbia River Basin. The Northwest Power and Conservation Council (NPCC), is an example of an institution that is responding to ecological and institutional dilemmas, bringing together federal, regional, state, local and tribal actors. It was authorized by the 1980 Northwest Power Act (NPA) that prompted Oregon, Washington, Idaho, and Montana to enter an interstate agreement for devising basin-wide planning for energy conservation and fish and wildlife protection and restoration in the Columbia River Basin [57]. Federal, regional, state, county, tribal, and local agencies are working together to integrate recommendations for fish and wildlife management while considering the region's needs for efficient, economical, and reliable power. The Bonneville Power Administration operates most of the dams on the Columbia River and is tasked by the NPA with funding the majority of costs for the NPCC's Fish and Wildlife Program. Other federal agencies involved in managing the basin's dams and hydropower, like the Corps of Engineers, are responsible for acting in accordance with the plans devised by the council. Importantly, the NPCC also cooperates with the BPA and Army Corps of Engineers (USACE) in managing the Columbia Basin Treaty (CBT) between the United States and Canada [58].

In the state of Oregon, local watershed councils are working with agencies to restore the ecological integrity of the Columbia River Basin as well as other basins in Oregon. While also motivated by federally mandated Endangered Species Act (ESA), local stakeholders and private landowners are making decisions and taking actions on the ground, improving the quality of their respective watersheds, and interacting with agencies at many scales of governance. Communities are developing social and institutional capacity at multiple scales, involving local, tribal, state, and regional and federal stakeholders in the process.

The contemporary trend in river basin management is to organize into integrated units – around hydrological boundaries. Many communities in river basins are seeking new ways to cooperate and participate to avoid conflict, resulting in the emergence of new and innovative governance models. Throughout this important but at times erratic process, a few lessons are available. Stakeholder participation is critical to institutional effectiveness. Institutions that plan and carry out significant water resources management measures without stakeholder involvement often end up reworking major projects or paying large (legal) mitigation costs. In fact cost recovery is proving to be elusive when stakeholders are left out of the planning process of many water projects [49].

Alaerts [50] lists a number of distinctions that separate water management necessities from other resources. Importantly, he provides an analytical framework to model successful river basin institutions and institutional frameworks, placing cooperative and collaborative decision-making with stakeholder involvement firmly in the center of the model. Moreover, his analysis shows that "smaller is better," meaning that decisions made at the lowest levels have the greatest chance of success [50].

6. CONCLUSIONS

Water is daily basin need to humans. Access to it is being recognized by some as a human right. Catchment-based cooperative water management has been achieved where water users put their common long-term interest ahead of their desire for short-term personal gains. These are not new ideas. Bali's *subak* village-based system, Spain's medieval *confederaciones hidrográficas* [50],

and the tribal Berber allocations of time rather than water [59], are old examples of cooperative institutions. In the modern context, the complexity of borders, population growth, changes in governance, and climate change are placing pressures on shared water users and demanding that effective, sustainable, and peaceful solutions be found to conflicts. Research and case studies show that water conflict prevention management, regional collaboration including civil society, and capacity building at all scales provide credible solutions to these challenges, creating an environment of peace rather than conflict on international and transboundary waterways.

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