

MANAGING CONFLICT ON THE MEKONG: SHARING DATA, EXPERIENCE, AND CAPACITY WITH THE COLUMBIA RIVER BASIN.

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There are over 275 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 (TFDD 2008). Surface water, groundwater, water quality, quantity, timing, and the ecosystem are all interconnected and widely utilized for biological, economical, spiritual, cultural and domestic and political needs (Postel, 1999). Over 160 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 (Wolf et al., 2005).

The Mekong River Basin shares its waters with six countries covering over 795,000 square kilometers. The river originates at an altitude of over 4500 meters in the Qinghai province in China, winding its way over 4800 kilometers eventually depositing its remains in the South China Sea. With a flow of over 475 million cubic meters in the wet season, the Mekong has massive hydropower potential. The MRC estimates that up to 30,000 Megawatts can be attained from the Mekong Basin, 13,000 Megawatts on the mainstream, another 13,000 Megawatts from Lao tributaries, and the remainder from Cambodian and Vietnamese sources. China has already built two dams on the mainstream of the river, producing 2,850 Megawatts, and has 12 more dams planned. Current projections indicate power demands in excess of 70,000 Megawatts by 2020, placing power as a large development constraint in the Mekong region (MRC 2001).

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 five percent under protection. 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 (MacQuarrie et al. 2008; UNEP 2006). What is needed to prepare for these changes? The purpose of this paper is to analyze current and future development in the Mekong, assess its effects on institutional resiliency in the context of conflict management, and compare the results and implications with those on the Columbia River Basin.

The Columbia River Basin has developed a massive hydropower system over the last 70 years. The river supports a range of purposes, from flood control, navigation, hydropower, irrigation, domestic supply, fish and wildlife, and an increasing important recreation industry. The Basin exports and imports over \$12 billion dollars of goods annually, houses over 100 dams producing almost 35,000 MW of hydroelectric power, drains 669,300 square kilometers preventing an estimated \$32 billion in flood damage, and is home to a diverse array of salmon species – an important source of income and food to Native American tribes, fisherman, and over 12 million people living in the Pacific Northwest. Originally developed for jobs, hydropower, and flood control, there is increasing pressure to reconfigure the Columbia Basin system to accommodate migrating salmon and tribal fishing rights. While water quantity is an issue in the dry season, water *quality* is becoming an issue year-round. Grass roots organizations combined with tribal and environmental groups have been very influential in attracting national attention to the basin, and combined with federally mandated species restoration laws (ESA), there have been significant new developments in the management of water quantity, quality, and indeed conflict in the Columbia Basin.

At first glance, a comparison between the Mekong and Columbia River Basins does not seem straightforward. However, regardless of the differing hydrological conditions, socio-economic,

hydropolitical, and developmental regimes bind these two powerful basins together. The two basins are compared using competing and natural resource paradigm theory, in particular analyzing institutional values and their responses to rapid water resource development regimes in each of the respective basins. The Columbia River Basin, having already rapidly developed in the twentieth century, may offer key institutional insights in the rapidly developing Mekong River Basin. Cooperation between the two basins dates back to the 1950s, where many of the development plans generated for the Mekong are only beginning to take shape now.

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, comprehensive management plans, equitable allocations, and the distribution of reasonable costs and benefits (Wolf et al., 2005). A tool such as a database combining hydrological, geographic, socioeconomic, and political data relating to water is a key asset for river basin institutions to enable greater cooperation and capacity building among basin riparians.

The Transboundary Freshwater Dispute Database, or TFDD, located at Oregon State University houses a catalog of international river basins and international water treaties in a GIS environment. Combining hydrological, geographic, socioeconomic, and political data, this resource database brings together data across a wide array of disciplines, provides a third-party data warehouse, and enables institutional research and basin comparisons to be conducted by researchers around the world. In this paper, TFDD is used to analyze the Mekong and Columbia River Basins in the context of basin development and institutional resilience.

Regional institutions in the Mekong Basin are working to enhance regional cooperation through mechanisms such as co-management, public participation, stakeholder involvement, and institution building. The identification of potential transboundary issue areas, the development of best practices through transboundary case studies, and the collection and analysis of historical conflictive or cooperative events on the basin are all part of transformative initiative to strengthen capacity in transboundary basins. 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 (Jaspers, 2003; Alaerts, 2003). Basins employing these types of collaborative methods include the Nile Basin Initiative and the Northwest Power and Conservation Council on the Columbia River Basin.

Looking forward, the Mekong Basin may be approaching a period of rapid development in the hydropower sector. Leveraging best practices and tools from other basins such as the Columbia will undoubtedly better inform the planning process, and will help to prevent and better manage conflicts as they arise. Ultimately sharing data, decisions, and water are all interconnected through the human experience, whether on the mighty Mekong or the Columbia River Basin.

Alaerts, Guy. 2003. "Chapter 18: Institutions for River Basin Management: A Synthesis of Lessons in Developing Cooperative Arrangements." *Integrated Water Management at River Basin Level: An Institutional Development Focus on River Basin Organizations*. Water Week 2003. Washington D.C.: The World Bank.

Jaspers, Frank G.W. 2003. "Institutional arrangements for integrated river basin management." *Water Policy* 5: 77-90.

MacQuarrie, Patrick, Vitoon Viriyasakultorn, and Aaron T. Wolf. 2008. "Promoting Cooperation in the Mekong Region Through Water Conflict Management, Regional Collaboration, and Capacity Building." Bangkok: GMSARN International Journal 2008 (in press).

Mekong River Commission. 2001. *MRC Hydropower Development Strategy*. MRC Water Resources and Hydrology Programme. Phnom Penh: MRC.

Postel, Sandra. 1999. *Pillars of Sand: Can the Irrigation Miracle Last?* W. W. Norton & Company. New York.

UNEP. 2006. Snidvongs, Anond, and Seng-Key Teng. *Mekong River: GIWA Regional assessment 55*. Sweden: University of Kalmar.

Wolf, Aaron T., and Meredith A. Giordano. 2003. "Sharing waters: Post-Rio international water management." *Natural Resources Forum* 27: 163-171.

Wolf, Aaron 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*. The WorldWatch Institute. Washington, D.C.

Wolf, Aaron T., Kerstin Stahl and Marcia F. Macomber. 2003. "Conflict and cooperation within international river basins: The importance of institutional capacity." *Water Resources Update*, 125. Universities Council on Water Resources.

