

# Some Observations from Recent Experiences with the Governance of International Drainage Basins\*

Richard Kyle Paisley and Glen Hearn<sup>1</sup>

## *Abstract*

This paper focuses on articulating some observations from recent experiences with the governance of international drainage basins. The paper begins with a synopsis of the world water crisis and the global water agenda, and then discusses various institutional problems facing shared water resources. The paper then attempts to identify a number of possible best practices and lessons learned.

## **The World Water Crisis<sup>2</sup>**

*Apart from air, (fresh) water is the only natural resource that the human species cannot do without.*

El-Hadji Guisse, Special Rapporteur on the Right to Water, UN Commission on Human Rights

Accessible freshwater accounts for less than one percent of the total volume of water on earth. Essential as it is to human life, over one billion people lack access to safe drinking water and by 2025 this group could grow to three billion.<sup>3</sup> At the sub-regional and sub-national levels in the

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\* Reference Article as: Paisley, R. and G. Hearn (2006). Some Observations from Recent Experiences with the Governance of International Drainage Basins. (In A.C. Corr ea and Gabriel Eckstien (Eds.) *Precious, Worthless or Immeasurable: the Value and Ethics of Water*. Centre of Water Law and Policy, and the International Centre for Arid and Semi-arid Land Studies (p 73-103) Texas Tech University).

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<sup>2</sup> This section draws heavily on a recent paper by Michelle Leighton entitled "The Human Right to Water: Exploring Public and Private Legal Obligations for the Equitable Distribution, Transfer and Use of Water" presented at the American Bar Association Section on Environment, Energy and Resources 11<sup>th</sup> Section Fall Meeting in Washington, D.C. 08-12 October, 2003.

<sup>3</sup> Statement by United Nations Secretary General Kofi Annan in New York on Habitat Day, 06 October 2003 stating that "[I]ncreased investment is critical, whether small-scale projects at the local level or national efforts to build up essential infrastructure" <http://www.Unhabitat.org/whd/2003/sgenglish.asp> (accessed 12 October 2003). See, also: WHO, The Global Water Supply and Sanitation Assessment 2000, Geneva 2000, at p.1 ([www.who.int/water\\_sanitation\\_health/Globalassessment/Global1.htm](http://www.who.int/water_sanitation_health/Globalassessment/Global1.htm)) (accessed 12 October 2003)

underdeveloped world, this figure is even more startling. For example, over fifty percent of Africans generally, and fifty-four percent of those living in the Niger Delta, cannot obtain clean water.<sup>4</sup>

Some 2.4 billion more people do not have access to adequate sanitation, the primary cause of the estimated 2.3 billion people suffering from water borne diseases.<sup>5</sup> Eighty percent of illnesses are transmitted by contaminated water.<sup>6</sup> Astonishingly, this could get worse: ninety percent of the wastewater discharged to waterways in developing countries goes untreated.<sup>7</sup>

“The loss of water may have serious consequences for humans if it amounts to 10 percent of body mass and may cause death if it reaches 20 percent or more....water... constitutes 58-67 percent of body weight among healthy adult males and 66-74 percent among newborns. When over a billion people are short of this source of life, our species has reason to be alarmed.”<sup>8</sup>

In response to the emerging global crisis in water scarcity there has been a global water agenda since at least the United Nations Conference on the Human Environment in Stockholm in 1972, which famously acknowledged the importance of protecting and improving the human environment.<sup>9</sup>

At the majority of these meetings, combinations of governments, experts and nongovernmental organizations joined to raise international attention and priority to the issues and to commit themselves to addressing the most acute problems.

Among other things this has resulted in various ministerial declarations proclaiming water as a “security” issue while acknowledging that water

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<sup>4</sup> *Ibid.* WHO, The Global Water Supply and Sanitation Assessment 2000, Geneva 2000.

<sup>5</sup> *Ibid.*; See, also UN Commission on Sustainable Development, Comprehensive Assessment of the Freshwater Resources of the World, Report of the Secretary General (N.Y. 1999) at p. 39.

<sup>6</sup> Preliminary report submitted by Mr. El Hadji Guisse in pursuance of decision 2002/105 of the Commission on Human Rights and resolution 2001/2 of the Sub-Commission on Promotion and Protection of Human Rights, at p.3, UN Doc. E/CN.4/Sub.2/2002/10 (25 June 2002).

<sup>7</sup> UNEP International Environmental Technology Centre (<http://www.unep.or.jp/ietc/Issues/Freshwater.asp> at p.1).

<sup>8</sup> Preliminary report submitted by Mr. El Hadji Guisse in pursuance of decision 2002/105 of the Commission on Human Rights and resolution 2001/2 of the Sub-Commission on Promotion and Protection of Human Rights, at p.3, UN Doc. E/CN.4/Sub.2/2002/10 (25 June 2002).

<sup>9</sup> See, <http://www.unesco.org/iau/sd/stockholm.html> (accessed 08 October 2003).

scarcity contributes to poverty and water supply to its reduction. Governments also generally committed themselves to undertake activities to improve integrated water resources management and water supply management.<sup>10</sup>

Regrettably there has not yet been a lot of focus on international drainage basin issues. Nor has there been an international statement that has focused exclusively on international drainage basins. No where is the crisis described by Leighton more applicable than in the case of international drainage basins.<sup>11</sup>

*“A legitimate question today is whether many of these new, largely unenforceable proclamations by governments will make a difference. In the 25 years of declarations and international commitments since Mar del Plata, too few substantial gains in water management efficiency, distribution and access by rural populations can be documented in the developing world. In some countries, the level of access to water in both urban and rural areas has declined.”<sup>12</sup>*

## **International Drainage Basins<sup>13</sup>**

International drainage basins refer to fresh water resources that are shared by two or more sovereign states. They include boundary water resources where the boundary between two or more sovereign states is formed by an

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<sup>10</sup> Ministerial Declaration of The Hague on Water Security in the 21<sup>st</sup> Century, 22 March 2000, The Hague, Netherlands. Governments agreed to undertake activities based on “integrated water resource management,” taking into account “social, economic, and environmental factors,” and to integrate “surface water, groundwater and the ecosystems through which they flow.” The Declaration recognized the importance of water quality issues. In this, special attention should be paid to the poor, to the role, skills and needs of women and to the vulnerable areas, landlocked countries and desertified areas.

<sup>11</sup> Leighton, above n 2.

<sup>12</sup> According to the World Bank’s *World Development Indicators 1997* between 1985 and 1993, 24 countries have seen their urban population’s access to safe drinking water *decrease*. These countries are: Colombia, Ecuador, Ethiopia, The Gambia, Guatemala, Guinea, Guinea-Bissau, Haiti, Jamaica, Jordan, Madagascar, Mali, Mauritania, Mozambique, Nepal, Nicaragua, Saudi Arabia, Tanzania, Togo, Trinidad and Tobago, United Arab Emirates, Uruguay, Venezuela, and Zimbabwe. Some thirteen countries have seen their rural population’s access to water decrease between 1985 and 1993. They are Bolivia, Botswana, Cameroon, El Salvador, Ethiopia, Gabon, Madagascar, Nigeria, Saudi Arabia, Trinidad and Tobago, Tunisia, Tanzania, and United Arab Emirates. *See, also*, Earth Summit Watch, Clearing the Water: A New Paradigm for Providing the World’s Growing Population with Safe Drinking Water, <http://www.earthsummitwatch.org/cwrtow.html>.

<sup>13</sup> This section draws on a range of sources including: Wolf, Aaron T., *Development and Trans-boundary Waters: Obstacles and Opportunities*: Report submitted to the World Commission on Dams, July, 2000; the material on the Trans-boundary Freshwater Dispute Database at [www.trans-boundarywaters.orst.edu](http://www.trans-boundarywaters.orst.edu), accessed September 2004; and Kraska, James., *Sustainable Development is Security: the Role of Trans-boundary River Agreements as Confidence Building Measure (CBM) in South Asia*. 28 *Yale Journal of International Law* 465. 2003.

international lake or river and they include successive water resources where an international river (or underground aquifer) flows from one sovereign state to another. There are two key reasons why international drainage basins are critically important. First, they are important because international agreements governing their utilization serve not only to protect and promote sustainable development but also affect security throughout an entire basin. International agreements governing the utilization of international drainage basins tend to stabilize and enhance security at the regional level and the security return generated is independent of the concrete ecological and economic benefits produced by such agreements.

Second, international drainage basins are important because nearly half of the world's population is located within one or more of the over 260 international drainage basins shared by two or more states.<sup>14</sup> Indeed, even more striking than the absolute number of international drainage basins, is a breakdown of each nation's land surface within these watersheds.<sup>15</sup> At least 145 nations include territory within international drainage basins. At least 21 nations lie in their entirety within international drainage basins including 33 countries which have greater than 95% of their territory within these basins. Nineteen international drainage basins are shared by 5 or more riparian countries. The Danube has 17 riparian nations. The Congo, Niger, Nile, Rhine and Zambezi are shared by between 9 and 11 countries. The remaining 13 international drainage basins have between 5 and 8 riparian countries.

Severe deforestation, soil erosion, salinization, toxic contamination, drought and flooding, and air and water pollution are just some of the environmental calamities that can increase international tension. Conversely, the very process of reaching accommodation while developing bilateral resources and environmental mechanisms for cooperation in a trans-boundary water context creates a stabilizing and more transparent atmosphere. The mere fact of negotiation usually widens political participation, builds political stability and spreads confidence between basin states. Even in cases in which riparians merely agree to share information and exchange data, while agreeing to disagree on substantive issues, increased confidence usually emerges.

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<sup>14</sup> International Bureau of the Permanent Court of Arbitration (ed.), *The Resolution of International Water Disputes: Papers emanating from the Sixth PCA International Law Seminar 08 November 2002*, Kluwer Law International, The Hague/London/New York, at xix.

<sup>15</sup> Wolf, above n 13.

According to Kraska:<sup>16</sup>

*“The role of trans-boundary river agreements in promoting sustainable development extends beyond simple economic and environmental factors. In South Asia, agreements have helped to strengthen political ties. The agreements have value as vehicles to ameliorate tension and reduce the likelihood of war. Although freshwater rivers, especially transnational ones, are frequently understood to contribute to international conflict, in South Asia the process and results of concluding trans-boundary river agreements have had positive ripple effect on the regional security environment.”*

Joint cooperation around trans-boundary watercourses essentially paves the way for regional cooperation in other domains of politics, economics, environment and culture.

Developing effective governance mechanisms for the management of water resources is both challenging and urgent. While this demands considerable effort at national levels, there is added complexity in creating institutional structures that span different national jurisdictions in trans-boundary water management. Policy and management of resources depend greatly on scientific input to develop coherent and feasible programs for resource use. The combined effects of climate change, increased pressure from population growth and development, and shifting societal values make trends in resource availability and use difficult to predict.<sup>17</sup> Climate change predictions indicate that the only real certainty will be one of ‘change,’ as there is little consensus regarding the extent of precipitation alterations, save that they will be markedly different.<sup>18</sup> Consequently, assumptions on

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<sup>16</sup> Kraska above n13 at 492.

<sup>17</sup> See, Holling, C. S. and S. Sanderson (1996). The dynamics of (dis)harmony in human and ecological systems. Rights to Nature: Ecological, Economic, Cultural, and Political Principles of Institutions for the Environment. C. F. S. Hanna, K.G. Mäler, and A. Janssen. Washington, D.C., Island Press: 57-85; Postel, S. (1999). Pillar of Sand: Can the Irrigation Miracle Last? New York, Norton & Company; Postel, S. and B. Richter (2003). Rivers for Life: Managing Waters for People and Nature, Island Press; and Regier, H. and J. Kay (2002). Phase Shifts and Flip Flops in Complex Systems. Volume 5, Social and economic dimensions of global environmental change, in Encyclopaedia of Environmental Change. P. Timmerman. Chichester, John Wiley & Sons, Ltd: 422-429.

<sup>18</sup> See, Bruce, J. M., H; Alden, M, Mortsch, L; Mills, B (2003). "Implications of climate change for Canada-US Boundary Water Agreements" Report for Natural Resources Canada Annex A, and Hamlet, A. (2003). "Effects of Climate Change on Pacific Northwest Rivers." Climate Change in the Columbia Basin Conference Proceedings, Columbia Mountains Institute of Applied Ecology, January 17-18, 2003. . Also Mote, P. (2003). "Twenty Thousand Years of Climate Change in the Columbia Basin: What's New This Time?" Climate Change in the Columbia Basin Conference Proceedings, Columbia Mountains Institute of Applied Ecology, January 17-18, 2003. There are often large disparities between the model outputs, with some models suggesting large increases in precipitation while others predicting large decreases. In one study (Bruce, 2003) different models run for the upper Columbia basin gave summer precipitation values ranging between -18% and +19% of current levels. Such differences in potential precipitation will

hydrologic patterns that have been used to make agreements, prescribe allocations, and permit consumption patterns, will alter likely making those agreements and allocations unrealistic.

Further population growth and raised living standards will ensure an increased pressure on water resources; particularly in the agricultural sector as greater requirements for animal protein translate to increased irrigation and food production. Shifting social values, such as environmental and cultural concerns, create new demands for water management. The challenge is to develop flexible institutional structures which match ecological and social processes that may operate at different spatial and temporal scales. Building a dam for hydropower generation in one local may have significant impacts in distant areas downstream and in the ocean. Moreover, the impacts of such a structure may manifest immediately, for instance in stopping fish migration, or over longer periods of time, such as decreasing nutrient input into the coastal zone. Efficient institutional frameworks must accommodate these geographical and temporal differences and address linkages between them.<sup>19</sup>

Real problem-solving and functional cooperation, critical to meeting the demands of this century with respect to international river management, requires a decision-making structure that is both adaptive in nature and integrated in scale and scope.<sup>20</sup> In short, cooperation among basin states will only grow in importance as new management arrangements become necessary. Indeed it would be proactive to promote cooperation before it becomes ‘necessary.’

## **Trans-boundary Water Cooperation**

The number of treaties and agreements that have been developed over the last century indicates a growing emphasis and acceptance of cooperative mechanisms in international drainage basin management.<sup>21</sup> Despite these

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make the task of dispersing water all the more difficult. Also, not only are annual variations expected to be different, but also potentially more importantly seasons variations will render many of our current consumption patterns unviable.

<sup>19</sup> See, Folke, C., L. Pritchard, et al. (1998). "The Problem of Fit Between Ecosystems and Institutions." International Human Dimensions Programme (IHDP). IHDP Working Paper No 2: [www.uni-bonn.de/IHDP/public.htm](http://www.uni-bonn.de/IHDP/public.htm) (accessed July 2004).

<sup>20</sup> See, Bernauer, T. (2002). "Explaining success and failure in international river management". Aquatic Sciences 64: 1-19, and Sadoff, C. and D. Grey (2002). "Beyond the river: the benefits of cooperation on international rivers." Water Policy 4(5): 389-403.

<sup>21</sup> Hamner, J. and A. Wolf (1998). "Patterns in International Water Resource Treaties: The Trans-boundary Freshwater Dispute Database." Colorado Journal of International Environmental Law and Policy. 1997 Yearbook: 157-177; Wolf, A. (1998). "Conflict and Cooperation Along International Waterways." Water Policy 1(2): 251-265; and Wolf, A. T., K. Stahl, et al. (2003). "Conflict and Cooperation Within International River Basins: The Importance of Institutional Capacity." Water Resources Update 125; Giordano, M. and A. Wolf (2003). "Sharing waters: Post-Rio international

developments, international law remains remarkably weak to remedy problems involving international rivers.<sup>22</sup> The 1997 *UN Convention on the Non-Navigational Uses of International Water Courses*, while overwhelmingly supported in the drafting stage, has not come into force,<sup>23</sup> and few institutional mechanisms between states cooperate in the optimal and sustainable utilisation of international water resources as called for in Article 5.<sup>24</sup>

General attention has often focused on the reasons for conflict and conflict avoidance *per se* as opposed to the promotion of cooperation. In a series of studies, Spector assesses the effect of “situational attributes” on international water negotiations with surprising results.<sup>25</sup> Inequality among riparian actors in a negotiation may actually assist cooperation. While the value of such inquiry is tremendous as an initial step, particularly in questioning accepted theories of negotiation, it gives little assistance as to understanding what can be achieved to promote international water basin cooperation.

It is usually beyond the control of negotiators and diplomats to rearrange the relative size or developmental levels of their respective countries to facilitate the development of an agreement. Focus should then be given to what we do have control over: the process attributes such as institutional mechanisms, transactional costs, third party intervention, stepwise processes, analytical information and dialogue, amongst others. Situational attributes may serve to assist in determining an appropriate ‘process,’ but it is the process attributes themselves that deserve greater attention and research. The greatest obstacles in international river management relate to political

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water management." *Natural Resources Forum* 27: 163-17; Krongkaew, M. (2004). "The Development of the Greater Mekong Subregion (GMS): real promise or false hope?" *Journal of Asian Economics* 15(5): 977-998; Bernauer, above at n 20; and Sadoff, above n 20.

<sup>22</sup> Weston, B., R. Falk, et al. (1990). *International Law and World Order, 2nd. Edition*, West Publishing Co. and Benvenisiti, E. (1996). "Collective Action in the Utilization of Shared Freshwater: The Challenges of International Water Resources Law." *American Journal of International Law* 90: 384-415.

<sup>23</sup> In 1997, the UN Convention on the Non-Navigational Uses of International Water Courses (hereafter ‘Convention’) was adopted by the United Nations General Assembly by a vote of 103 for and three against, with 27 abstentions and 33 members absent. It has since become the principal instrument with which states may negotiate and develop water resources along international rivers and through which international law may be applied. Though extremely holistic in content, taking into account the basin wide approach and the precautionary principle, the Convention has yet to be ratified by a sufficient number of countries to enter into force, and the ratification deadline of May 20, 2000 has passed.

<sup>24</sup> Article 5, UN Convention on Non-navigational Uses of International Water Courses, calls for “optimal and sustainable utilization of resources” May 1997.

<sup>25</sup> See, Spector, B. I. (2004). "Motivating Water Diplomacy: Finding the Situational Incentives to Negotiate." *International Negotiation* 5: 223-236. Building together data from several studies Spector conducts statistical analysis on numerous situational attributes that resulted on negotiated agreements from those that have not. This revealed surprising results that challenge accepted norms. While it is commonly assumed that homogeneity among actors facilitates negotiation he found the that inequality among the riparians favoured cooperation. Greater differences in geographic area, uses of industrial water, access to safe water, their human development index, and economic wealth suggested greater negotiation to agreement. Moreover, he found that multi-lateral, a larger number of actors, favoured bi-lateral negotiations to reach an agreement.

processes in which institutional arrangements are designed and implemented.<sup>26</sup>

In assessing the cooperative processes used to negotiate other international resource problems, Wilson strongly recommends the construction of institutional mechanisms to provide a cohesive framework for actors to engage cooperatively and effectively.<sup>27</sup> Effective institutional mechanisms channel energy and efforts to address actors' concerns through joint strategies as opposed to unilateral strategies which result in lost effort.<sup>28</sup> Although much has been written and researched regarding general principles for robust governance of localized common pool resources,<sup>29</sup> these principles are only somewhat applicable to large scale or global resource management issues which are more complex.

Few attempts have yet been made to develop explanatory models of institutional arrangements and evaluate them against the wealth of empirical evidence available from international water management practices. Much of the literature on international cooperation efforts over trans-boundary river management is either single case studies or small-number studies. In his analysis of literature "explaining success and failure in international river management," Bernauer concludes that "even the most sophisticated explanations suffer from substantial deficiencies." Lessons learned and best practices in one case or certain cases in one corner of the world may not be applicable in another part of the world where circumstances and needs or interests may be completely different. Here at the University of British Columbia, the Dr. Andrew R. Thompson Program in Natural Resources Law and Policy is currently developing projects to help assess the influence of process mechanisms on promoting cooperation in international water basins.

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<sup>26</sup> Bernauer, above at n 20.

<sup>27</sup> See, Wilson, Rick, 1984, Constraints on social dilemmas: An Institutional Approach, *Annals of Operations Research*, Vol. 2, 1. P 183-200. In looking at the example of acid rain as an example of a social dilemma requiring cooperation, he concludes that many contemporary political and economic problems have attributes of social dilemmas. These dilemmas are simply characterized as settings in which individuals have a dominant strategy to not cooperate in collective action. Where cooperation is absent, this problem has been described as an *n*-person prisoner's dilemma. However, this choice results in a Pareto-inferior outcome. When a cooperative dominated strategy exists it results in a Pareto-superior outcome; thus increasing overall benefits

<sup>28</sup> *Ibid.*

<sup>29</sup> See, Ostrom, E. (1990). *Governing the Commons: the Evolution of Institutions of Collective Action*. Cambridge, Cambridge University Press. In her seminal work Ostrom laid the foundations of much further research into institutional resilience and effective governance of common pool resources by identifying the design principles illustrated by long-enduring CPR institutions as: clearly defined boundaries; congruence between apportionment and provision rules; collective-choice arrangements; monitoring; graduated sanctions; conflict resolution mechanisms; minimal recognition of rights to organize, and nested enterprises (when part of larger systems). See, also the work of Agrawal, A. (2002). *Common Resources and Institutional Sustainability. Drama of the Commons*. E. Ostrom, T. Dietz, N. Dolsaket al. Washington D.C., National Academy Press: 41-86 and Dietz, T., E. Ostrom, et al. (2003). "Struggle to Govern the Common." *Science* **302**: 1907-1912. Where they suggest that analytical dialogue, institutional nesting and variety seem to be particularly relevant for larger scale management resources.

One of the projects will use a ‘Case Survey Methodology’<sup>30</sup> to determine the process attributes that are statistically significant in promoting cooperation. The study will do this through the development of sets of variables, or attributes, relating to context, process and results. As it is assumed that the context, or situation, may indeed influence the process a bivariate analysis will be performed. While it is interesting and potentially very useful to provide ‘statistical’ evidence for mechanisms that promote cooperation, this is in fact secondary to the primary goal of developing a conceptual model that can be applied systematically to international basins to explain differences and similarities in their approaches to cooperation. This study has received the attention of the Global Environment Facility and is developing a project with the United Nations Development Program to apply the model on a larger scale.

Given the current analytical limitations of our knowledge for teasing out ‘lessons learned and best practices’ in international drainage basin management, in the following section, we highlight the major factors contributing to cooperation in international water basins by drawing on the most salient aspects of important global case studies. By focussing on the most salient, and what we believe are also the most consistent means of promoting cooperation, it is hoped that ‘lessons learned’ may be established that transcend the uniqueness of international river basins. The examples span several decades over which time the field of international water law and approaches to trans-boundary water management have evolved enormously.

### **1. Taking a basin wide approach to the conservation and management of international drainage basins**

Taking a basin wide approach can be a good starting point from which to develop a comprehensive assessment of the needs and water resource issues in an international drainage basin. The approach requires riparians to go beyond the perception of water as a commodity and emphasises the equitable allocation of benefits, including allocation of water. The principal advantage of this approach is that it facilitates the maximum generation of benefits from the optimisation of the resource. However, caution is suggested in applying this approach to areas of intense political conflict; the

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<sup>30</sup> Larsson, R., Case Survey Methodology: Quantitative analysis of patterns across case studies. Academy of Management Journal, 1993. 36(6): p. 1515-1546.

approach may have to be modified to address non-resource concerns, such as control issues.

The basin wide approach is an evolving method of managing international drainage basins. In the earlier part of the last century, for example, the Tennessee Valley Authority (TVA) attempted to optimise the water resources of a basin across numerous jurisdictional boundaries, placing ‘basin optimisation’ ahead of jurisdictional issues. While in present day terms the TVA neglected many social values such as habitat protection and provisions such as cleaning waste water, it remains a model for an integrative approach.

A similar approach was successfully utilized in negotiating the *Columbia Basin Treaty* (CBT), which allowed the United States and Canada to develop the waters of the Columbia River in a cooperative and cohesive manner, taking into account the physical and hydrological attributes of the basin as a single entity.<sup>31</sup> The primary interests at the time the Agreement was signed were flood control and power generation. ‘Optimisation’ was achieved through an innovative process of building storage dams in Canada which maximised power generation in the United States and provided the desired level of flood control.

Although the CBT did not incorporate fisheries, recreation, social and cultural needs, habitat loss and the environmental services of rivers into the values at the negotiation table, the Columbia represents an excellent example of what can be achieved by first developing the bio-physical elements of a basin and then turning to the question of boundaries to determine equitable benefits. An interesting example of the CBT’s basin wide approach is that it recognized the legitimacy of both the benefits in one country, and the costs in the other, without requiring a comparison of the two. The approach facilitated a flexible framework that enabled both countries to obtain an interest in joint development through a negotiation process in project benefit distribution.

While the *Columbia Basin Treaty* illustrates the cooperation associated with the ‘appropriation’ of water resources, the case of the Danube illustrates a basin wide approach regarding the ‘maintenance’ of water resources through collective action for pollution control and environmental management. The

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<sup>31</sup> Treaty Relating to Cooperative Development of the Water Resources of the Columbia River Basin (‘Columbia River Treaty’) Opened for signature 17 January 1961, United States–Canada, 542 UNTS 244 (entered into force 16 September 1964); Protocol to the Columbia River Treaty, in Secretary Martin to Secretary Rusk, ‘Annex to an Exchange of Notes Dated January 22, 1964 between the Governments of Canada and the United States Regarding the Columbia River Treaty’ [1964] Department of State Bulletin 202

Bucharest Declaration<sup>32</sup> reinforced the principle that the environmental quality of the river depends on the environment of the basin as a whole, and committed the riparians of the Danube River to a regional and integrated approach to water basin management. Accordingly, the riparian states of the Danube have established an integrated program for the basin-wide control of water. This is a tremendous achievement considering the recent histories of the riparian states and appears to be successful in both promoting cooperation and actively improving the water quality and environment.<sup>33</sup>

While optimisation of a basin's resources appears a logical departure point for negotiations, political differences and lack of trust or willingness to cooperate often make cooperation difficult. An interesting illustration is the management of the Jordan River where the basin wide approach to optimizing bio physical elements failed due to a lack of adequate political compromise. In the case of the Jordan, although a TVA style development was proposed between the riparians, it was ultimately rejected, as certain fundamental political needs were not addressed.

The same rings true in the attempt to develop a basin wide approach for the Indus Valley. Initially, the World Bank asserted that, "the whole system must be developed as a unit – designed, built and operated as a unit."<sup>34</sup> McCaffery quotes Lilienthal, one of the principal architects of the TVA who was brought in to assist with developing the waters of the Indus Valley: "while the [International Court of Justice] might decide the strictly legal issue (in favour of Pakistan) this would not solve the food problems of India nor would it prevent the waste of waters in the Indus River System." Consequently, it was felt that for maximum benefit, the system must be looked at as a whole.

The Mekong River has been more successful in implementing a basin wide approach, albeit only in the lower regions. In 1955-56 the United Nations Economic Commission for Asia and the Far East (UN-ECAFE) and the United States Bureau of Reclamation studied the development of water

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<sup>32</sup> Declaration of the Danube Countries to Cooperate on Questions Concerning the Water Management of the Danube (Bucharest Declaration) 1985, led to the development of the Convention on Cooperation for the Sustainable Use and Protection of the Danube River, Sofia 1994 which entered into effect on 1998. See, ENTRI web page at <http://sedac.ciesin.org/entri/treatyText.jsp> accessed December 13, 2005.

<sup>33</sup> Much of the material for the case studies on the rivers comes from material at the Trans-boundary Freshwater Dispute Database of Oregon State University <http://www.trans-boundarywaters.orst.edu/> (accessed in September 2005), and S. McCaffrey, *The Law of International Watercourses: Non-Navigational Uses*. Oxford Monographs in International Law, Oxford University Press, 2001. For more general information and background See, Hamner above n 22; and Wolf, A. (1998). "Conflict and Cooperation Along International Waterways." *Water Policy* 1(2): 251-265, and Wolf, A. T., K. Stahl, et al. (2003). "Conflict and Cooperation Within International River Basins: The Importance of Institutional Capacity." *Water Resources Update* 125. and information from the.

<sup>34</sup> S. McCaffrey, *Ibid* page 249.

resources among the lower four riparian states,<sup>35</sup> proposing a large scale hydro-power development on the main stem of the river in a style reminiscent of the TVA.<sup>36</sup> Cohesion between the four states has ebbed and surged over time; however, the last decade has seen a much more integrated approach to the management of the lower Mekong.<sup>37</sup> While the lack of participation of China and Myanmar means that the Mekong basin as a whole has not been able to adopt a true basin wide approach, the lower four riparians have exhibited a collective “Mekong Spirit” in its development.<sup>38</sup> They have achieved unanimous consent as to developing the resources on the lower Mekong, and they have actively solicited China’s inclusion in the agreement.<sup>39</sup> Moreover, the Mekong River Commission’s mandate is to optimise the multiple uses and mutual benefits of all riparians.

Past instances of international water basin negotiations have ignored the relationship between quality and quantity, and between surface and groundwater. This disregards hydrologic reality and may result in the need for subsequent negotiations. While there may be benefits to negotiating cooperation in stepwise fashion there are also usually advantages to looking at all related resources in a basin. This helps in determining what equitable use might look like.<sup>40</sup> In the Jordan valley, groundwater was not explicitly dealt with in the plan, and is currently the most pressing issue between Israel and Palestine. Likewise, tensions have flared over the years between Israel and Jordan over Israel's diversion of saline springs into the lower Jordan, increasing the salinity of water on which Jordanian farmers rely.<sup>41</sup>

A basin wide approach should therefore be seen as a goal, not a prescription. Ultimately, as the social value of water increases it will reach a point where a BWA based on sustainable use will supersede other considerations. In many basins it has not yet reached this level and political and social considerations are not to be ignored.

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<sup>35</sup> Laos, Vietnam, Cambodia and Thailand.

<sup>36</sup> Paisley, R. (2002). "Adversaries Into Partners: International Water Law and the Equitable Sharing of Downstream Benefits." *Mebourne Journal of International Law* 3: 280 – 300.

<sup>37</sup> There have been periods of a less cohesive nature following the Vietnam War and the collapse of Cambodia under the Khmer Rouge, however the signing of the 1995 Agreement on the Cooperation for the Sustainable Development of the Mekong River has entered a period of greater mutual trust and stability.

<sup>38</sup> Paisley, above at n 36. Also See, article 5 of the Agreement on the Cooperation for the Sustainable Development of the Mekong River, 1995.

<sup>39</sup> See, article 5 of the 1995 Agreement on the Cooperation for the Sustainable Development of the Mekong River Basin, also See, Browder, G. and L. Ortolano (2000). "The Evolution of International Water Resources Management Regime in the Mekong River Basin." *Natural Resources Journal* 40: 499-531.

<sup>40</sup> UN Water Convention Article 5 and 6.

<sup>41</sup> Wolf, above n 13.

## **2. Political and social issues usually cannot be separated from resource issues.**

Resource issues usually cannot be separated from political issues in an attempt to rationalise resource use. Rather, areas of common concern where parties may enjoy mutual benefits should be identified and promoted as confidence building measures. In highly politicised situations, it may be wise to initially focus on ‘maintenance’ issues, such as habitat protection, pollution control, flood control and navigation as opposed to ‘appropriation’ issues.

In the case of the Columbia River Treaty, which was negotiated in 1961, flood prevention and power generation were areas of common interest to the development of the region as a whole rather than the objective of only one party. However, current implementation of national laws, such as the *Endangered Species Act* in the United States, and the *Fisheries Act* in Canada, will undoubtedly alter the development of a new treaty on the Columbia when the current agreement is scheduled for possible renegotiation or termination in 2024 provided 10 years notice is given in 2014. Emerging political interests and social values will probably have to be incorporated into this negotiation process. To optimise power generation and flood control only would likely be to ignore the political and social realities of the present time. Optimisation must now take place within the context of a new set of value systems, which include the environment, fisheries and cultural heritage.

There are numerous examples of where separating resource issues from political interests proved to be an unproductive strategy. In the Jordan valley, Eric Johnston, a United States envoy in 1953, took the approach that the process of reaching a rational watershed management plan may: 1) act as a confidence-building catalyst for increased cooperation in the political realm, and 2) help alleviate the burning political issues of refugees and land rights.<sup>42</sup> The approach to peace through water, however, left several overriding conflicts unresolved.<sup>43</sup> The Johnston experience is also a lesson

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<sup>42</sup> *Ibid.*

<sup>43</sup> *Ibid.* Part of the issues surrounding the Jordan river plan failing were that The Arab states saw a final agreement with Israel as recognition of Israel, a step they were not willing to make at the time; some Arab states may have felt that the plan was devised by Israel for its own benefit and was 'put over' on the US; and the plan allowed the countries to use their allotted water for whatever purpose they saw fit. The Arabs were concerned that if Israel used their water to irrigate the Negev (outside the Jordan Valley), that the increased amount of agriculture would allow more food production, which would allow for increased immigration, which might encourage greater territorial desires on the part of Israel.

that regional stability through cooperative basin development assumption is an effect, not a cause, phenomenon as suggested by Kraska<sup>44</sup>

A similar scenario that highlighted the importance of political and resource issues played out in both the Nile and Indus river systems. The original Nile Projects Commission created a plan in which all the major storage facilities lay outside Egypt and was not acceptable to the Egyptians. A subsequent water commission took this into account and made recommendations that finally lead to the *Nile Waters Agreement* in 1929.<sup>45</sup> The Indus Waters Treaty, with its primary focus on allocation of supply with financial assistance from the World Bank, ended in a splitting of the Indus Valley rivers between India (Eastern rivers) and Pakistan (Western rivers).<sup>46</sup> While far from ‘optimum’ bio-physically, it was the only acceptable solution to all parties.

Agreements must necessarily address the political concerns of the states involved and, consequently, language as opposed to numbers is crucial. This is particularly true where agreements provide information on the process of decision-making bodies. Key to reaching an agreement in the Mekong was the seeming ability to find acceptable language that provided both a sense of good faith and cooperation, and the assurances that no party would be disadvantaged under its provisions in light of the doctrine of sovereign equality.<sup>47</sup> Furthermore, the historical events of the region, such as the war in Viet Nam, the subsequent socialist governments in Viet Nam and Laos, and the take over of Cambodia by the Khmer Rouge followed by the Vietnamese, all had to be taken into account when exploring ways to cooperate on the river.

### **3. Packages of Incentives**

Perhaps one of the most significant areas to be explored is the idea of a package of incentives, or a ‘basket of benefits’ for the states concerned. Interests beyond water resources can be accommodated in water negotiations, both within the basin and nationally. A viable incentive package understands the range of interests of all the riparian actors. Part of the key benefits Canada received as an upstream state in the Columbia Treaty was one half of the additional power generated in the USA as a result

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<sup>44</sup> Kraska, above n 13 at 492.

<sup>45</sup> Wolf, above n 13.

<sup>46</sup> McCaffery, above n 33.

<sup>47</sup> Paisley, above at n 36.

of the construction of various new water storage facilities in Canada as well as a lump sum for flood control. The deal further provided for the United States to help with the construction of the Canadian facilities that were, at the time, beyond the means of the British Columbian provincial government. The United States, for its participation, received flood control, increased power generation and extensive irrigation from the Libby dam that backed waters into Canadian territory.

In January 2000, the Governments of the Republic of Kazakhstan and the Kyrgyz Republic signed an agreement regarding water facilities on the Chui and Talas rivers that are shared by both countries.<sup>48</sup> Under the agreement, Kazakhstan has an obligation to reimburse Kyrgyzstan for part of its operation and maintenance expenses, as well as for rehabilitation of a number of dams and reservoirs which are located in the territory of Kyrgyzstan, but which supply water to Kazakhstan.

The package of incentives approach has also been used with the assistance of international donors in many international drainage basin agreements. The World Bank proposal for the Indus partially worked as the Agreement made it possible for India and Pakistan to increase the amount of available water to both states by the construction of new works.<sup>49</sup> Even though, both sides were weary with respect to the outcome of the agreement, in terms of political control over their water resources, the package of incentives in the form of increased available water and greater stability for water management outweighed their concerns.

Alternatively, incentives can be explored through the variety of uses of the water system. The Mekong Basin's water resources have the ability to support economic growth through irrigation, hydropower, navigation, water supply and tourism. Equitable sharing of the water resources and sustainable development of the natural resources in the basin become most critical during the dry season. Laos relies heavily on river transport, and the reduction of dry season flows could adversely affect navigation. Cambodia has the long-term potential for increasing its irrigated agriculture. Over the decades, Vietnam and Thailand have developed extensive irrigation systems that currently face dry season water constraints. Vietnam makes use of dry season flows for seawater repulsion and for irrigation. Thailand has recently been studying options for diverting water from the Mekong, and for inter-

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<sup>48</sup> Agreement between the Government of the Kyrgyz Republic and the Government of the Republic of Kazakhstan on using of water distribution facilities of interstate use at Chui and Talas rivers. Astana, 21 January 2000, vol 2196, reg. 38892, UNLS 2000

<sup>49</sup> McCaffery, above n 33 page 250.

basin diversion from Thai tributaries to the Mekong. Hydropower development in the Mekong Basin has also been gaining momentum in China and Laos.<sup>50</sup> Consequently, the 1995 *Agreement on the Cooperation for the Sustainable Development of the Mekong River Basin* (Mekong Agreement) strikes a balance between these various interests<sup>51</sup>.

During negotiations of the *Agreement for the Full Utilization of the Nile Waters* (*Nile Waters Treaty*), Egypt and Sudan also developed creative incentive mechanisms to balance interests. Despite the fact that the interests of other basin states were neglected, the measure for water allocations in the agreement is rather elegant, incorporating existing uses as well as providing a means for allocating surplus waters based on projected needs and population.<sup>52</sup> Additionally, interesting funding arrangements had Egypt agreeing to finance water enhancement projects in Sudanese territory, in exchange for the water that would be made available. Provisions were made for Sudan to pick up responsibility for up to 50% of costs in exchange for up to 50% of the water, when their water needs required.<sup>53</sup> Egypt was not unfamiliar with paying for upstream benefits. It had previously agreed to compensate Uganda for loss of hydroelectric power at the Owen Falls Dam so that the dam could operate to benefit flows in the lower Nile for irrigation purposes.<sup>54</sup>

#### **4. Data collection (hydrological and environmental)**

Part of any agreement should probably be mutual acceptance of the measuring stick used. Examples abound suggesting that basic provisions for

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<sup>50</sup> Paisley, above at n 36.

<sup>51</sup> Article 5 of the 1995 Mekong Agreement.

<sup>52</sup> Wolf, above n 13.

<sup>53</sup> See, Wolf, above n 13 and McCaffery, above n 33. Under the Niles Water Treaty: The total water was assumed to be 84 BCM/yr. with 10 BCM/yr for evaporation and seepage loss. Egypt's concern for existing needs was taken into account by allowing it 48 BCM/yr and Sudan 4BCM/yr. The remaining benefits of 22BCM/yr were to be split between Egypt and Sudan in a ratio of 7 : 14 respectively, favouring the anticipated growth of Sudan and allowing for population discrepancies during negotiations (Sudan felt their population was some 50% larger than Egypt believed). Any greater amounts were to be split equally and significant shortfalls would be taken up by Permanent Joint Technical Committee. As Sudan could not absorb all its water at the time, the treaty provided for a 'loan' of Sudanese water to Egypt of up to 1500 MCM/yr through till 1977 allowing for both countries to benefit from development of Sudan. All further funding for additional building would be split evenly, and Egypt compensated Sudan £E 15 million for flooding and relocation.

<sup>54</sup> McCaffery, above n 33 p 131. See, Exchange of Notes constituting an Agreement between UK and Egypt regarding the Construction of the Owen Falls Dam, 30 and 31 May 1949, Legislative Texts, treaty no. 9. P 108. While previous and even subsequent statements by Egypt as to the nature of the waters of the Nile has resonated with doctrine of absolute territorial integrity, in particular with regard to works on the Nile's upper reaches that may effect its lower reaches, in practice it has shown tolerance and is an active participant to develop a framework for the sustainable development of the Nile River Basin.

hydrological and environmental data sharing should be agreed upon as part of any ‘functional’ coordination or management of a river basin. The exchange of data generally serves to create a level playing field of information upon which the parties may engage, and is a confidence building tool to leverage trust.

Data exchange can develop as an organic process. The process may commence with the exchange of independent data, followed by standardisation of data and then joint collection and monitoring. Further along the continuum is the exchange of forecasting, water use plans, and eventually there may be common planning. Eventually, it is hoped that riparian actors come to agreement on equitable allocation of consumptive use, pollution and dispute resolution mechanisms; they will then have the framework in place for developing resources in one nation at the joint cost and for the joint benefit of several, coordinated administrative structures.

The case of the Columbia also suggests that emphasizing data collection and exchange in advance of any construction projects sets the hydrographical stage for more efficient planning and establishes a pattern of cooperation through relatively emotion-free issues.<sup>55</sup> The formation of a basin-wide unified monitoring and data exchange network was one of the first actions undertaken by the riparians of the Danube basin after having committed themselves to a regional and integrated approach to water basin management. The Bucharest Declaration reinforced the principle that the environmental quality of the river depends on the environment of the basin as a whole<sup>56</sup>. Data and hydraulic information exchange was also part of the initial process to engage the lower riparians on the Mekong. Cambodia, Laos, South Vietnam and Thailand proposed the Committee for the Coordination of Investigations in the Lower Mekong Basin (Mekong Committee) in 1957<sup>57</sup>.

The importance of accepting and agreeing on data collection methodology is illustrated by the difficulties that arose during the Nile Agreement. As late as 1959, Egypt and Sudan insisted on looking at different average flows for the river; they were basically conducting allocation agreements, but could not agree on the fundamentals of what to allocate<sup>58</sup>.

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<sup>55</sup> Paisley, above at n 36.

<sup>56</sup> Wolf, above n 13.

<sup>57</sup> Browder, above n 39.

<sup>58</sup> See, Wolf, above n 13. Egypt assumed a flow of 80BCM/yr and Sudan 84BCM/yr (the amount originally calculated by Nile Projects Commission in 1920's).

The exchange of hydraulic data and information appears to be an acceptable way to initiate cooperative work, even in some of the most contentious situations. There is a danger, however, that without a real interest in cooperation, the exchange may simply give an ‘appearance’ of cooperation. For example, data exchange has played a central role in the issues surrounding the development of the Ganges Water Agreement regarding the flow of water through the Farakka Barrage. In 1958, while India rejected the proposals of Pakistan to create a more integrated body for the Ganges, it did agree that water resource experts should exchange data on projects of mutual interest, and their meetings commenced in 1960.<sup>59</sup> The reluctance of India to delay ministerial level meetings until ‘full data was available’, which took from 1960 to 1968, and its continued insistence that a treaty could not be signed in the absence of full technical facts suggests that ‘lack of information’ can be used as a stalling tactic. This becomes more evident when, in the face of Pakistani concerns over the potential barrage, India began and completed its construction while ‘accurate’ data was still being determined<sup>60</sup>. Not until 1977, after the intervention of the United Nations (UN), did India and Bangladesh (Former East Pakistan) reach an agreement over the operations at the Farakka Barrage.<sup>61</sup>

While China and Myanmar are conspicuously absent in the coordination of the Mekong River under the Mekong River Commission framework, China has been participating as a ‘Dialogue Partner’ since 2002 and has even signed an agreement for data exchange.<sup>62</sup>

Information exchange can therefore be seen as a crucial step in promoting cooperation towards the collaborative management of a trans-boundary water resource. Indeed, it may often serve as an ‘ice breaker’ for further collaboration to the extent that it is available to assist decision-making and create trust.

## **5. Exchange of information exchange beyond hydrological and environmental data**

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<sup>59</sup> Wolf, above n 13. Note that Bangladesh was part of Pakistan until her independence in 1964. In 1958 then Pakistan proposed to request the advisory and technical services of a UN body, or that projects on the Ganges in the two countries be examined jointly by experts, or that they request the appointment of UN engineers to be part of meetings at the expert level. All these proposals for a more integrated body were rejected by India.

<sup>60</sup> *Ibid.* It should be noted that India began building the barrage while data was still being gathered and completed it in 1970. Even after its construction, India continued to be concerned about data accuracy while Pakistan was motivated to move towards “substantive talks on the equitable sharing of the Ganges”.

<sup>61</sup> *Ibid.* India completed the construction of the Farakka Barrage in 1970 and began diverting water from the Ganges to Calcutta in 1974.

<sup>62</sup> Browder, above n 39.

For sustainable development of international water basins, information transfer will necessarily include information on socio-economic issues as well as hydrologic data. This has already been established in the European Water Directive with the intent of bringing a variety of values to the table.<sup>63</sup> The inclusion of data on social aspects of development in the Mekong region was suggested as complimentary to technical data as far back as 1961.<sup>64</sup> The assumption is that the exchange of cultural, demographic, and other socio-economic information helps to provide a greater contextual understanding for actors in the basin and assists in defining values and potential incentives for cooperation. In a sense, it helps to develop a larger and more diverse basket of benefits.

In the Murray-Darling basin it was understood that many of the management changes needed in the Basin involved trading wealth between communities and individuals, and that in making trade-offs, there would be winners and losers. Under the Murray Darling Basin Initiative, a partnership between governments and the community, the Human Dimension Strategy was undertaken to better understand and consider the social, economic and environmental costs and benefits.<sup>65</sup>

Despite the fact that the *Nile Waters Treaty* of 1959 does not appear to take into account the needs of other riparians, other than to review claims, the treaty does stand out as one where social and economic factors helped to achieve an outcome.<sup>66</sup> Due to the inclusion of information regarding population growth and development aspirations, the final agreement actually gave Sudan more water and Egypt less water than Sudan had anticipated moving into negotiations in 1954.<sup>67</sup>

## 6. Involving the community

The global experience with traditional models of centrally administered technological regulation of rivers have been found to be ill-equipped to

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<sup>63</sup> See, Timmerman, J. and S. Langaas (2005). "Water Information: What is it good for? The use of Information in Trans-boundary Water Management." *Regional Environmental Change* (2005) 5: 177-187.

<sup>64</sup> Wolf, above n 13.

<sup>65</sup> See, Murray-Darling Basin Commission (MDBC) : <http://www.mdbc.gov.au>. (accessed June 2005).

<sup>66</sup> *Ibid.* Egypt's concern for existing needs and priorities, while not being fully satisfied is definitely addressed (Egypt wanted 51 and got 48 BCM/yr). Sudan's concern for the fact that its population was larger and had aspirations for growth and development were addressed by finally agreeing to receive a larger portion of additional flows. Sudan felt that the evaporation losses should be taken from Egypt's portion and the final agreement splits these evenly<sup>66</sup>. Indeed it is interesting to note that the final agreement actually gave Sudan more water and Egypt less water than Sudan intended moving into negotiations in 1954 (Final solution was 55.5 BCM/yr and 18.5 BCM/yr for Egypt and Sudan respectively. Sudan's initial position was 59 BCM/yr and 15 BCM/yr respectively, and Egypt's 62 BCM/yr and 8 BCM/yr respectively)

<sup>67</sup> *Ibid.*

address social and environmental issues of integrated water resources management. The importance of raising public participation has been highlighted by the United Nations as one of the key elements to enhance governance and the sharing of water resources.<sup>68</sup> The involvement of community as a best practice in integrated water resources management is a recognition of the fact that the task is not one that governments can fulfill on their own.<sup>69</sup> Another assumption is that local participation will render decisions that are fair to all parties, leading to an overall effective management.

The successful Environmental Program for the Danube River is one of the first basin-wide international bodies that actively encourages public and Non Governmental Organization (NGO) participation throughout the planning process. By diffusing the confrontational setting common in planning, this inclusion may help preclude future conflicts both within countries and, as a consequence, internationally.<sup>70</sup> The Murray Darling Basin Initiative is an exemplary institutional system that address public concerns through engagement, consultation and incorporation in decision-making structures. The Murray Darling Basin Agreement<sup>71</sup> was a recognition of the fact that no one government or group of people was able to deal with the Basin's emerging natural resource management problems and that the existing management arrangements were not able to cope with them.

## **7. Finance mechanism for transactional costs**

Efforts at managing international rivers will usually only succeed to the extent to which funds are available to develop, implement and operate resolutions.<sup>72</sup> This is almost an axiom as opposed to an observation. Data and information exchange may serve as starting points for cooperation over international drainage basins, but as more advanced developments take place, such as dam creation, pollution control, water diversions, and habitat protection, greater funds are required to implement resolutions. In fact,

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<sup>68</sup> See, UN (2006), Water: A Shared Responsibility, The United Nations World Water Development Report 2, See, Chapter 11 on Sharing Water.

<sup>69</sup> MDBC, above n 65.

<sup>70</sup> Wolf, above n 13.

<sup>71</sup> MDBC above n 65. The purpose of the 1992 agreement is "to promote and co-ordinate effective planning and management for the equitable efficient and sustainable use of the water, land and other environmental resources of the Murray-Darling Basin".

<sup>72</sup> See, Marty, F. (2001). International River Management: Problems Politics and Institutions. Bern, Peter Lang. p 344. Marty suggests that the four central resources needed for success in managing international rivers are scientific-engineering capacities, political skills, money for transactional costs of programs and infrastructure, and time.

significant funding is required in preparations prior to and during the process of bringing the parties to the negotiating table.

Generally, much of the negotiation that occurs over joint management of international water basins deal with allocation issues and the construction of dams which generally require large sums to finance. Consequently, much of the interest in cooperation depends on the availability of funds, which very often come from international arrangements. In the case of the Columbia River, Canada depended on American financing. Similarly, the World Bank moved to leverage funding for the Indus Valley projects.<sup>73</sup> The Marqarin dam project on the Jordan River, a joint project between Israel and Jordan, would have continued to stagnate were it not for the injection of funds from the United States in 1980.<sup>74</sup> The *Nile Waters Treaty* was apparently negotiated relatively quickly, following the rise to power of General Ibrahim Abboud in Sudan, in part because funding for the High Aswan Dam depended on a riparian agreement.

The initial funding for the Committee for the Coordination of Investigations in the Lower Mekong Basin (Mekong Committee) came from Europe, the United States and Japan.<sup>75</sup> Assistance from the United States stopped in 1975; however, the United Nations Development Program (UNDP) continued its efforts with assistance mainly from Nordic donors.<sup>76</sup> Efforts to promote sustainable water management in the Mekong River Basin, including protection of the environment, aquatic life and the ecological balance of the basin, subsequently received a major boost in the form of an \$11 million influx of funding from the Global Environment Facility (GEF) in 2000. The project aims to bring the four downstream nations together for improved and sustainable basin management.<sup>77</sup>

## **8. Concrete development goals and objectives including accountability**

Concrete goals and objectives, as opposed to statements of intent, seem to enhance the atmosphere for cooperation. Even if these goals are relatively banal, the mention of specific goals for cooperation, and preferably their

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<sup>73</sup> Wolf, above n 13. The Indus Basin Development Fund Agreement in 1960 was a consortium of financing from Canada, Australia, Germany, New Zealand, UK and USA along with the World Bank.

<sup>74</sup> *Ibid.*

<sup>75</sup> Browder, above n 39.

<sup>76</sup> *Ibid.*

<sup>77</sup> Paisley, above at n 36.

timeframe, is important. In 1991, the participants of the Environmental Program for the Danube River Basin, agreed that each riparian would:

- adopt the same monitoring systems and methods of assessing environmental impact;
- address the issue of liability for cross-border pollution;
- define rules for the protection of wetland habitats, and;
- define guidelines for development so that areas of ecological importance or aesthetic value are conserved.

In the Mekong the Water Utilization Project (WUP), funded by the grant (GEF), aims as one of its five major goals to support the Mekong River Commission in developing an integrated and comprehensive basin hydrologic modeling package, as well as a functional and integrated knowledge base on water and related resources and to establish "Rules,". These rules of the member states will establish guidelines for water utilization and for the protection of sensitive ecological systems, including wetlands and flooded forests<sup>78</sup>.

## 9. Third party assistance

A third party will often assist in promoting cooperation between different actors in a water basin. Third party involvement can be as an advisory body, as a financial leverage, as a mediator or facilitator, or even as a strong political proponent. In 1976, the UN General Assembly issued a statement encouraging India and Bangladesh -to urgently meet at the ministerial level to “arrive at a fair and expeditious settlement”<sup>79</sup> over equitable allocation of the flow of the Ganges river and its tributaries.

The involvement of third parties is rarely of a disinterested nature. In the case of financial institutions and development agencies, there is a vested interest in not only the successful conclusion of negotiations, but also in the substance of those negotiations, as they generally become a key party during the implementation stages. Hence, the role of mediator or facilitator is rarely purely objective. When the *Indus Water Treaty* concluded with the assistance of the World Bank, it was indicated that the “bank was not a

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<sup>78</sup> Paisley material

<sup>79</sup> Wolf, above n 13. Following serious problems in Bangladesh from 75-76 with respect to dry season flows from the Farakka Barrage, the UN General Assembly issued a statement on 26 November, 1976 encouraging the states to resume talks and come to an agreement. In less than 20 days re-negotiations started and an agreement was reached the following year. Ganges Water Agreement signed on 5 November 1977.

disinterested third force but rather one of the parties to what were actually tripartite negotiations, for it was known that it would have to be a participant in any programme of works and of financing that would be drawn up.<sup>80</sup>

In developing the agreement on the Chu-Talas system, the governments of Kazakhstan and Kyrgyzstan requested that UNECE<sup>81</sup> and UN ESCAP<sup>82</sup> assist in establishing the commission stipulated in their agreement in order to ensure the agreement's effective implementation. These organizations expressed their great interest in the initiative and agreed to provide assistance for the fund raising and project implementation as co-partners. On this basis, a project proposal was developed, funds were raised and the project partners are now implementing the project.

In the lower Mekong region, the lower riparians also benefited over time from third party involvement, initially through UN ESCAP, and then later through UNEP.<sup>83</sup>

Third party contribution and participation may also come in the form of regional inclusiveness. Consequently, including key non-riparian parties can be useful to reaching agreement. Conversely, excluding them can be harmful. In the Jordan River negotiations, Egypt was included because of its pre-eminence in the Arab world, despite its non-riparian status. Some partially attribute the accomplishments made during the negotiations to Egyptian President Nasser's support, thus emphasising the role of a regional 'champion.' In contrast, post negotiation pressure from other Arab states not directly involved in the water conflict may have had an impact on its eventual demise. Iraq and Saudi Arabia strongly urged Lebanon, Syria and Jordan not to accept the plan, and Lebanon subsequently said they would not enter any agreement that split the waters of the Hasbani River or any other river.<sup>84</sup> This example begs the question of who should be at the negotiating table. Too many non-riparian states might stall negotiations. However, their total exclusion may also hinder the process

### **10. Joint commission or trans-boundary overseeing bodies.**

Particularly useful for enhancing cooperative exchange and development is often the creation of a joint overseeing body to coordinate and facilitate

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<sup>80</sup> McCaffery, above n 33. p 116

<sup>81</sup> United Nations Economic Commission for Europe.

<sup>82</sup> United Nations Economic and Social Commission for Asia and the Pacific.

<sup>83</sup> Paisley, above at n 36. United Nations Environmental Program.

<sup>84</sup> Wolf, above n 13.

management of an international drainage basin. “There are three basic “design options” for a river basin agency – committee, authority, and commission. A committee generally coordinates high-level policy and strategy but has no role in daily operation. An authority is the strongest intervention absorbing all or most of water and related functions in the basin. And a commission generally deals with the following tasks – policy, strategy, planning, data collection and management, monitoring, specification of standards, and related matters.”<sup>85</sup>

The development of new institutional mechanisms, if done correctly, can greatly increase the efficiencies of efforts from riparian states.<sup>86</sup> In the Columbia River System, the International Joint Commission provides overseeing functions and, while not a control body, is able to make strong recommendations.<sup>87</sup> The *Columbia River Treaty* institutional mechanisms also include a Permanent Board of Engineers that reviews the operation of the facilities on the river system.

Similarly, the Murray Darling Basin Commission is charged to efficiently manage and equitably distribute water resources, improve and protect water quality, and advise the Ministerial Council on management issues.<sup>88</sup> The Danube, Chui-Talas, and lower Nile all have joint coordinating bodies that play a key role in research, administration and coordination for the effective management of these rivers.<sup>89</sup>

One of the more poignant examples of the utility of a joint commission can be seen from the remarkable history of cooperation in the lower Mekong region. The earliest efforts at setting up a joint commission in the region was developed by France in 1920’s leading up to the 1929 Franco-Thai Treaty that set up the Permanent Franco-Siamese High Commission. The Commission aimed to organize policing and the marking of the channel to

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<sup>85</sup> The World Bank, *China: Air, Land, and Water*, August 2001, pp. 65-66.

<sup>86</sup> Wilson above n 27.

<sup>87</sup> Paisley, above at n 36.

<sup>88</sup> MDBC above n 65.

<sup>89</sup> See, Wolf, above n 13. In the Danube basin, While the Commission of European Communities (G-24 Coordinator) has overall responsibility for coordinating the Danube plan, a Program Coordination Unit was established and given the task of supporting the Task Force, monitoring and coordinating Program Work Plan action, and providing support to the financing partners to implement funds made available. Two "expert sub-groups" were also established -- one responsible for establishing an early warning system for environmental accidents, and one for data management. Also See, the Chu-Talas web site. [www.chu-talas.org](http://www.chu-talas.org) (accessed September 2005). According to the Chu-Talas Agreement, a permanent bilateral commission is to be established in order to operate the water facilities of interstate use and define and share the costs for their exploitation and maintenance. See, McCaffery, above n 33. Under the Niles Water Agreement (1959) the States of Sudan and Egypt established a Permanent Joint Committee to resolve disputes and jointly review claims by any other riparian. It was also to determine allocations in the event of exceptional low flows.

ensure free and safe navigation in the lower basin.<sup>90</sup> In 1950, Cambodia, France, Laos and Vietnam established the Mekong Advisory Commission in 1950, and then the Commission of the Mekong in 1954. These commissions, which did not last long, were initiated solely with an interest in opening up the river to international commerce.

In July 1954, Vietnam, Laos and Cambodia became independent states through the Geneva Accord. This created a favourable political climate for the lower riparian states to seek a mutually acceptable arrangement for development of their shared water resources. On September 17, 1957, the four lower riparians adopted the Statute of the Committee for Coordination of Investigation of the Lower Mekong Basin. This statute established the Mekong Committee. From then on, some form of joint coordinating body has survived despite regional wars, the collapse of Cambodia in 1976, and the trepidation of the Thai government towards the socialist governments of Laos and Viet Nam.

The Committee was known as the Interim Mekong Committee from 1978 to April 1995, due to the absence of Cambodia. Cambodia submitted its request to rejoin the Committee in 1991. The recent and rapid economic and environmental changes in all four countries indicated the need for a new organization with an expanded mandate to cope with the countries' requirements. In response to this new context, the Mekong Working Group (MWG), consisting of representatives from the four countries, was formed to prepare for the establishment of a new Mekong cooperation framework. The MWG, under the Chairmanship of the United Nations Development Program, initiated the draft Agreement on Cooperation for the Sustainable Development of the Mekong River Basin at its final meeting in November 1994. The Mekong Agreement, signed on 5 April 1995, immediately established the Mekong River Commission (MRC) replacing the former Mekong Committee (1957) and the subsequent Interim Mekong Committee (1978). The MRC framework not only continues to attract active participation from the four member riparians and a host of international donors, China and Myanmar became "Dialogue Partners" in 2002.

## **11. Address all relevant actors (to the best possible extent)**

The development of agreements should bring into play the relevant players, or at least anticipate their interests and accommodate them within the

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<sup>90</sup> AD Burnett, "The Mekong and the Rivers of Southeast Asia", *International Rivers: Some Case Studies*, (Dept. of Geography, Indiana University, USA, 1965).

framework of a smaller agreement. Ignoring a riparian party can hamper success; even if it is one without political standing. For example, the neglect of Palestinian concerns was a major obstacle in attempts to reach a Jordan Basin agreement.<sup>91</sup> Further, interests in international agreements should not reflect only those at the state level. Along with political entities, many stakeholders affected by river management are most often excluded in negotiation processes. These include NGO's, public interest groups and environmental groups.

The Nile provides an interesting lesson of the price to be paid for historically not including the relevant parties during negotiation. Egypt and Sudan currently have to consider the needs of other riparians that were not considered in the Nile Agreement of 1959. While Egypt and Sudan have benefited from the full use of the water, they may have come to depend on it to such an extent that finding an equitable arrangement may be far more socially costly than had they considered other riparian needs in the beginning? Ethiopia, which had historically not been a major player in Nile hydropolitics, served notice in 1957 that it would pursue unilateral development of the Nile water resources within its territory, estimated at 75-85% of the annual flow. Suggestions were made recently that Ethiopia might eventually claim up to 40,000 MCM per year for its irrigation needs both within and outside of the Nile watershed.

The lower Mekong region has cooperated successfully. However, much of their future depends heavily on the aspirations of China and eventually Myanmar. China's participation in joint management of the Mekong river is extremely important not only for regional sustainable development as the most powerful riparian state and also because of downstream implications of its activities in the headwaters, particularly in the context of its ongoing, unilateral construction of a series of large dams in the headwaters. It is estimated that China generates about 16% of annual flow of the Mekong entering the South China Sea and 60% of low flow at Vientiane in Laos where continual navigation is a serious problem.<sup>92</sup>

Similarly, activities such as sediment transport to deltas in Viet Nam and reversal of Tonle Sap waters suggest that China will have a major impact on the lower part of the river. China currently has the role of observer and exchanges data, but greater cooperation and coordination between the upper

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<sup>91</sup> Wolf, above n 13. There was some concern over whether the Plan was designed to "liquidate the Palestinian refugee problem rather than to give the refugees their right of return." In fact, Palestinians were not addressed as a separate political entity.

<sup>92</sup> See, Milton Osbourne, *Mekong: Turbulent Past, Uncertain Future*, Allen and Urwin, 2000.

and lower Mekong region is necessary if all interests are to be addressed. It will be interesting to see how this cooperation evolves, particularly as it is difficult to envision China accepting many of the terms in the 1995 Mekong Agreement.

### **12. All water resources in the basin should be included in the planning process or acknowledged to avoid future problems**

Past instances of international water basin negotiations have ignored the relationship between quality and quantity, and between surface and groundwater. This disregards hydrologic reality and may result in the need for subsequent negotiations. While there may be benefits to negotiating cooperation in stepwise fashion there are also usually advantages to looking at all known resources in a basin. This helps in determining what equitable use' might look like<sup>93</sup>. In the Jordan valley, groundwater was not explicitly dealt with in the plan, and is currently the most pressing issue between Israel and Palestine. Likewise, tensions have flared over the years between Israel and Jordan over Israel's diversion of saline springs into the lower Jordan, increasing the salinity of water on which Jordanian farmers rely<sup>94</sup>.

In 1975, the riparian actors of the Mekong issued a Joint Declaration in light of the potential Pa Mong dam (20 km above Vientiane on the mainstream). Main streams, major tributaries and inter-basin diversions must now be agreed upon by all members<sup>95</sup>.

### **13. Cooperation can proceed over time (Stepwise Cooperation)**

A global trend is the evolution of a stepwise course of actions in international water management. While a preventative and forward looking all-inclusive framework for cooperation may be desirable at the onset, it is worthwhile to look at a process of functional needs as a way to create cooperative linkages and trust. For example, until recently, continued

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<sup>93</sup> UN Water Convention Article 5 and 6.

<sup>94</sup> Wolf material

<sup>95</sup> (Art 17, 18 of Joint Dec): Art 17 states, *The Basin State or States, whether territorial or not, which undertake the project shall present well in advance to the other Basin States for formal agreement prior to the project implementation a detailed study on all possible detrimental effects including short and long-term ecological impacts which can be expected within the territory of other Basin States as a result of the proposed mainstream project. The procedures and amounts of damages compensation shall be included in the above study.* Article 18 states, *The Project Agreement shall specify minimum and maximum rates of discharge from the Project which, so far as practicable will make available a rate of flow downstream not less than the average monthly flow during the previous dry periods, put to use prior to the construction of the Project and, on the other hand, will assure that, except in cases of force majeure, flows below the Project site will not exceed the flows which prevailed during previous wet periods.* Also Art 10 states mainstream waters are a resource of common interest and not subject to unilateral appropriation of any member. While this did not hold during the interim Committee it reappeared in the 1995 agreement for the MRC.

obstacles associated with developing a Nile Basin framework were associated with lack of urgency and functional necessity. However, now that other basin states, such as Ethiopia, wish to develop their water resources, there is a pressing need to cooperate. Consequently, the World Bank has undertaken initiatives to develop multi-purpose facilities on the waters shared by Ethiopia, Sudan and Egypt, and may also help to promote a framework that includes all ten riparians.<sup>96</sup>

The use of short-term agreements stipulating that the terms are not permanent can be useful steps in achieving long-term solutions. However, in the absence of a long-term agreement, a mechanism for continuation of the temporary agreement is wise. The Columbia Treaty is to continue after its termination in 2024 if either one of the parties gives notice in 2014 for its renegotiation. The agreements on the distribution of Ganges waters have been short in duration, providing initial impetus to sign, but creating difficulties when they lapse.

The Mekong is an interesting example of how cooperation and coordination can proceed over time as political, technical and social issues progress. Initially, the Mekong Committee was set up to promote hydrological development of the lower Mekong region, starting with an agreement to conduct data investigation and data exchange. The Mekong River Commission (MRC) now looks at optimising the basin's waters for sustainable development and includes social criteria. Although it remains concerned with only the lower riparian states, there have been moves to expand the Committee to include the remaining riparians, China and Myanmar. The MRC has approached China, who currently sits as an observer, to join.

## **Conclusions**

Developing effective governance and management mechanisms across scales for the management of international water resources is both challenging and urgent. The combined effects of climate change, increased

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<sup>96</sup> See, Global News Wire: Asia Africa Intelligence Wire, January 8, 2006 "Egyptian Sudanese and Ethiopian Nile Agreement". Egypt, Sudan and Ethiopia have agreed on setting up a project to generate electricity from water resources in the Ethiopian highlands. Minister of Irrigation and Water Resources Dr. Mahmoud Abu Zeid has noted that the draft of the agreement will be discussed in the next meeting of the ministers of the Nile Basin countries due in February in Addis Ababa. Also See, Africa News, January 17, 2006, "Water ministers from the Nile Basin countries meet next month to conclude a new agreement governing the use of the river's waters". Talks to have one agreement governing River Nile issues started in January 1997, and seven meetings have so far been held in different Nile Basin countries in a bid to formulate a single legal instrument for the Nile likely to be concluded in February 2006.

pressure from population growth and development, and shifting societal values demand adaptive and flexible institutional mechanisms in which functional cooperation will be essential. This is particularly vital in river basin management where the great majority of the 260 international river basins do not have adequate management regimes and global change may render many agreements obsolete for those that do exist. In terms of existing agreements, it is safe to conclude that monitoring and evaluation and a dispute resolution mechanism are key elements to providing stability. However, less can be concluded about 'how' to arrive at such agreements.

At this point, only broad brush strokes can be done to fill in the canvas of cooperation in international water management and there is a clear need to explore in greater depth the effects of process attributes. While, some observations such as third party involvement, seem to stand out as consistently important, the choice remains subjective.