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Getting what you need: Designing institutional architecture for effective governance of international waters

Glen S. Hearn, Taylor W. Henshaw^{*}, Richard K. Paisley

International Waters Governance Initiative, University of British Columbia IAR, 1855 West Mall Road, Vancouver, British Columbia, Canada V6T 1Z2.

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ABSTRACT

Establishing and maintaining institutions that address functional necessities are critically important for good governance of transboundary waters. Form should always follow function. Institutional architecture is particularly highly dependent on political, social, economic and ecological drivers. These often competing drivers create a plethora of governance challenges. A one-size-fits-all approach to institutional architecture is neither desirable nor possible in the governance of transboundary waters. Drawing on lessons and experiences from the GEF/UNDP Good Practices and Portfolio Learning in Transboundary Freshwater and Marine Legal and Institutional Frameworks Project, this paper identifies various challenges associated with establishing and maintaining effective transboundary waters governance arrangements. This paper also identifies particular institutional architecture concepts that stakeholders and sovereigns should consider when designing governance institutions, which focus on how to balance incentives, reduce uncertainty, increase confidence and reduce costs. Further research and analysis is needed to identify more specific institutional architectures that are likely to lead to collaborative solutions to common problems in transboundary waters management. However, some preliminary observations and conclusions are presented.

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^{*} Corresponding author. Tel.: +1 6048229224.

E-mail address: taylor.w.henshaw@gmail.com (T.W. Henshaw).

1. Introduction

In establishing and maintaining institutions for good governance of transboundary waters you can't always get what you want but you just might find you get what you need. At the core of good governance of transboundary waters is institutional architecture that effectively coordinates sustainable economic development and conservation, promotes equitable use and heightens regional security. Specific institutional provisions “can help monitor behaviour, facilitate enforcement and resolve disagreements over treaty obligations, and boost the capacity of member countries” (Tir and Stinnett, 2010).

According to Eckstein (2009), there are “significant inefficiencies in the management and conservation of shared waters, as well as occasional conflicts, which, in turn, has detrimentally impacted economic development, the environment, human health, and international relations.” A 2008 United Nations-Water report indicates that about 160 of the world's 263 transboundary waters situations “lack any type of cooperative management framework” (UN-Water, 2008).

Mere establishment of a governance institution or institutional framework, however, does not guarantee specific transboundary waters challenges will be addressed (Giordano and Wolf, 2003). While a number of institutional frameworks appear to be working successfully, many appear to be missing the full package of what seems to be key design elements for good governance.

Effective governance is even more challenging when viewed in the light of climate change. Climate change is now considered to have marked impacts on surface water, groundwater and marine water resources (Arnell, 2003; Kundzewicz et al., 2008; Perry et al., 2005). And there is mounting consensus that conflict over natural resources can be linked to extreme events as envisaged with climate change (de Ville, 2008).

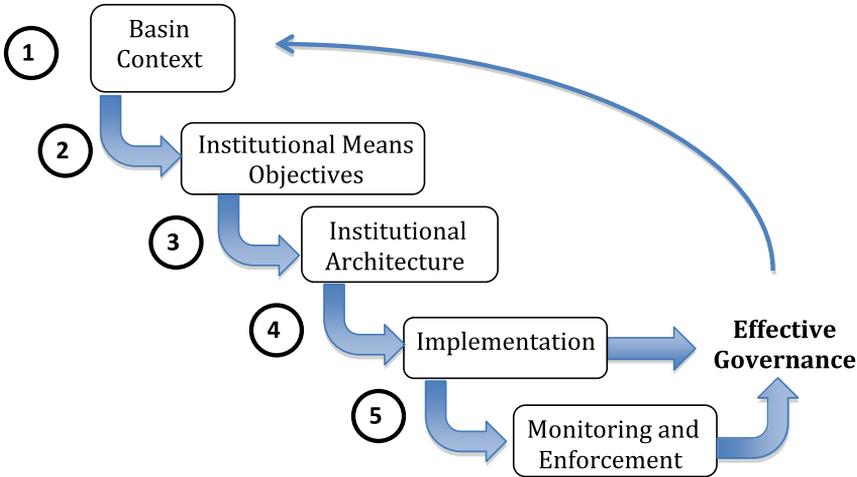
The Global Environment Facility (GEF) and United Nations Development Programme (UNDP) Good Practices and Portfolio Learning in Transboundary Freshwater and Marine Legal and Institutional Frameworks Project, an applied research study conducted from 2008–2011, included a large-scale critical review of the quality and efficacy of institutional designs in transboundary waters both within, and beyond, the GEF International Waters portfolio. Over 28 transboundary waters governance situations were identified and critically reviewed based on a common set of 18 criteria (White and Case, 2011).

Drawing on research and results from the project, this paper looks at the factors determining effectiveness of governance regimes in transboundary waters. It highlights the challenges inherent in reaching working agreements; identifies key means objectives in institutional design—balancing incentives, reducing uncertainty, building trust and confidence and reducing costs; and discusses specific institutional architecture concepts that transboundary waters stakeholders and sovereigns should consider when designing governing institutions. While additional research and analysis is needed to identify very specific institutional features that facilitate collaborative solutions to common problems in transboundary waters management, some preliminary observations and conclusions are presented.

2. Factors determining effectiveness of governance regimes in transboundary waters

Developing effective institutions for transboundary waters governance is viewed as a five-step process, as depicted in the schematic below. The basin situation or context must be analyzed and understood (Step 1) in order to develop appropriate institutional means objectives (Step 2). These will then drive the architectural design (Step 3) of the institutional arrangement for the governance regime. Following design is implementation (Step 4) and monitoring and enforcement (Step 5). If all the steps are conducted appropriately, an effective governance regime should emerge. Effective governance should include a periodic review of the basin context and of the institutional arrangements developed. This is important because the physical nature and resources of the basin or marine body may change and because the socio-economic values and drivers in the transboundary waters situation often change over longer periods of time. Ideally, this reflective mechanism should be built in at the architectural design step.

While the whole process is important to understand, this paper focuses on the first three foundational steps to effective governance. Steps 4 and 5 are relatively more dependent upon political will, technical capability and financial capacity, which should be taken into account during the institutional architecture step:



2.1. Basin context (Step 1)

Competing roles in transboundary waters, as both engines of regional economic development and as critical sites of biodiversity conservation, make good governance issues challenging. The utilization of transboundary waters can be a potential source of friction among basin states vying for scarce resources. These waters can also create intricate diplomatic challenges that often link states in asymmetric upstream/downstream relationships (Conca et al., 2006), or tragedy of the commons type behavior with marine resources.

There are no blueprints for institutional design. A framework must be tailored to the transboundary waters situation's characteristics and reflect its environmental, hydrological, political, economic, social and cultural circumstances (UN-Water, 2008). The nature and characteristics of the resource will drive institutional design (Pegram et al., 2009).

The approach to establishing an effective basin institution should begin with identification and understanding of the needs and interests of the basin stakeholders. Identifying these needs and interests requires both (a) defining the problem context in transboundary water situations and reaching working agreements and then (b) assessing the current situation of the particular basin in question.

Abstractly, the problem definition in a transboundary waters situation relates to the degree of homogeneity of maintenance and appropriation interests among parties—maintenance interests, for example, include water quality and aesthetics, and appropriation interests include water use for irrigation and hydropower (Barkin and Shambaugh, 1999). There may be nuances between these interests and a degree of overlap. When interests are heterogeneous, issues are more difficult to agree on than when interests are homogenous. For example, flooding in an upstream and downstream state is a homogeneous maintenance situation. This is the case in the Upper Rhine between Austria and Switzerland to control flooding, and similarly, on the Columbia River between the United States and Canada. In both situations, the common interest and benefits of cooperation were obvious. On the other hand, an upstream user of water, wishing to construct a dam and hold back water for hydropower purposes, may have interests that are in opposition to those of downstream users that wish to utilize these waters for irrigation purposes. This instance of heterogeneous appropriation is the current situation in the Syr Darya basin, where the four central Asian republics of Kazakhstan,

Kyrgyzstan, Tajikistan and Uzbekistan have been striving to develop a sustainable understanding regarding water and power generation in the region (see [Libert et al., 2008](#)).

Institutions can seldom be constructed from a completely clean slate, usually because some degree of cooperation or existing framework is likely to already be in place. However, it may be the case that existing relationships are dysfunctional or inefficient and there is a need to create new mechanisms to achieve institutional goals.

Ultimately, no institution will be successful if fundamental interests of the parties are not addressed. Understanding interests will help determine the relative importance of the institutional objectives that drive architectural development. This process is commonly called “interest-based bargaining”, where emphasis is placed on examining objectives as opposed to positions.

2.2. *Institutional means objectives (Step 2)*

Once the basin context is understood and interests of the various parties are clarified, the process of determining the objectives of the institution begins. Institutional objectives can be broadly categorized as (1) balancing incentives; (2) reducing uncertainty; (3) building trust and confidence; (4) reducing costs/maximizing financial gains. Note that reducing costs is seen as separate from balancing incentives, which may also include financial benefits, as it is a specific objective for the institutional mechanism being developed as opposed to the reasons for developing the institutional arrangement in the first place. Appropriate identification of means objectives will help ensure appropriate architecture is installed. Each of these objectives is discussed below.

2.2.1. (a) *Balancing incentives*

A truly viable and sustainable incentive “package” accounts for the range of interests of all the riparian actors. Developing a “basket of benefits” ([Paisley, 2004](#)) allows stakeholders to accept certain terms of an overall agreement that, individually, may not appear encouraging enough to reach agreement ([Stein, 1989](#); [Mostert, 2003](#); [Paisley and Hearn, 2006](#)).

Adopting a basin-wide approach and integrating resource use often increases the number of benefits in the basket. The Columbia River, shared by the United States and Canada, provides a good example where a basin-wide approach was adopted in negotiating the Columbia River Treaty. The approach enabled the countries to manage the upper Columbia in a cooperative and cohesive manner through developing and operating the basin as a single entity.

[Waterbury \(1997\)](#) argues, “Asymmetrical awards always classify the potential cooperation in international river basins.” Even in agreements such as the Columbia River Treaty, where interests are generally symmetrical, it often takes years to work out the financial and operating details.

One of the principal incentives for cooperation is the removal, or mitigation, of a specific problem. There are numerous transboundary waters conventions, such as the Caspian Sea,¹ Lake Tanganyika,² and the Black Sea³ that focus on problem mitigation. Problem mitigation will influence all aspects of institutional architecture, from defining the scope of the institution, to the information needed to facilitate decision-making, and rules and norms.

Linked to problem mitigation is ensuring equity, either in terms of benefit allocation (water for irrigation or hydropower) or in terms of costs (infrastructure, research, pollution control). For example, under Article 5 of the Lake Victoria Basin Commission (LVBC) Protocol, entitled “Equitable and Reasonable Utilization of Water Resources”, Partner States (Burundi, Kenya, Tanzania, Uganda, Rwanda) are to use the water resources of the Basin in their respective territories in an “equitable and reasonable manner”, and develop and use them “with a view to attaining optimal and sustainable utilization thereof and benefits there from, taking into account the interests of the Partner States”.

¹ Framework Convention for the Protection of the Marine Environment of the Caspian Sea (“Tehran Convention”), 4 Nov. 2003, available at: <http://www.caspianenvironment.org/newsite/Convention-FrameworkConventiontext.htm>.

² Convention on the Sustainable Management of Lake Tanganyika (“Tanganyika Convention”), 12 June 2003, available at <http://www.lta-alt.org/tanganyika-eng/view>.

³ Convention on the Protection of the Black Sea Against Pollution (“Bucharest Convention”), 21 Apr. 1992, available at http://www.blacksea-commission.org/_convention-fulltext.asp.

In determining what is reasonable and equitable use, the Partner States are to keep in mind “all relevant factors and circumstances”, including geographic and other natural factors, social and economic needs of the Partner States, the population dependent on the water resources in each Member State, the effects of the use of the water resources in one Member State on the other Member States, and the “comparative costs of alternative means of satisfying the economic and social needs of each Partner State.”

2.2.2. (b) *Reducing uncertainty*

Uncertainty is often one of the major obstacles to achieving successful agreements or decision-making processes (Clemen and Reilly, 2000). This includes the biophysical uncertainties related to the resource, as well as the costs of implementation, behaviour and commitment of other actors, and development needs and growth.

According to Drieschova and Fischhendler (2010), “failure to include equitable rules governing water use in transboundary water treaties aggravate the danger that existing uncertainties will result in undesirable outcomes such as increased water scarcity, resource degradation, and inequitable distribution.”

In situations where there is uncertainty around the resource, due to climate change or other factors, it will be essential to build high levels of information gathering and exchange into the institutional architecture. This process is illustrated in the multi-national scientific panel in the Bering Sea to assess annual catch.⁴

An increasingly important aspect of dealing with uncertainty is developing an institutional arrangement that can deal with change, either due to climate alterations or social factors. The key to changing effectively is possessing sufficient information to make appropriate management decisions around the resource and associated users, and ensuring flexibility and resilience is built into the institution (Hearn and Paisley, 2013).

2.2.3. (c) *Building trust and confidence*

In his study of 35 international waters basins, Mostert (2003) concludes that one effective method to reach agreement in a transboundary waters situation is to develop and maintain good relations among basin riparians. Agreements can be substantive—those dealing with concrete benefits, such as flood control and power generation; and diplomatic or procedural, which focus solely on enhancing good relations.

Building trust is not generally an explicit factor in developing an institutional arrangement, although in many cases it is incorporated into the final architecture. Trust can also be reflected in the substantive details of how resources are to be shared. For example, under the Indus River Treaty Pakistan and India share water resources. Pakistan has exclusive use of the three western rivers, including the Chenab, while India has exclusive use of the three eastern rivers in the basin.

In diplomacy theory, Confidence Building Measures (CBM) (see Harman, 2006) are mechanisms employed to build trust and promote dialogue between parties where trust must be developed before entering into a more substantive agreement. These can range from unilateral actions, such as self-declared moratoriums on resource extraction or reduction of development, to more interactive mechanisms, such as exchanging information, hosting ‘informal’ dialogue meetings to test policy options, and initiating exploratory talks (Djalal and Townsend-Gault, 1999). Another possible consideration for addressing confidence building is designing an institution that can evolve to take on additional aspects of transboundary waters governance as they develop, and not attempt to be everything to everyone at inception (Waterbury, 1997).

Negotiation theory supports incremental cooperation for building trust between actors (Ross and LaCroix, 1996). Negotiations should always “start with what you can agree on” to provide a point of success (Mostert, 2003). This can often be the conclusion of a single issue such as the process for

⁴ See “An Independent, Scientific Review of the Biological Opinion (2010) of the Fisheries Management Plan for the Bering Sea/Aleutian Islands Management Areas.” (2011) Available online at: http://wdfw.wa.gov/conservation/steller_sealions/final_fmp_biop_ind_sci_rev_08oct2011.pdf.

negotiation (Dorcey and Riek, 1987) or on what information is required (Thompson, 1991). A stepwise process is viewed as key in achieving goals and maintaining momentum in international resource negotiations, as illustrated in such regions as the Danube (see Linnerooth, 1990) and Palestine Aquifers (see Feitelson and Haddad, 1998).

Dispute resolution is often seen as an important measure to build confidence between parties. Systematic and effective dispute resolution mechanisms in transboundary waters agreements fulfil a number of key objectives including: (1) reinforcing proactive problem solving and dispute prevention; (2) delivering a remedy based on the facts; (3) resolving disputes and utilizing the human and financial resources of basin states as efficiently as possible; and (4) reducing the risks associated with cooperative management and investment and expanding the potential for mutual gain.

In addition to dispute resolution, an emphasis on building confidence can be expressed in the organizational structures and locations of secretariats; the transparency and openness of dialogue; levels of information exchange; clear norms and rules; and realistic monitoring and enforcement.

2.2.4. (d) Reducing costs

Reducing costs associated with cooperating or developing and implementing an institutional governance arrangement will be a concern for all parties involved, including those funding development. Parties are often drawn into arrangements that are beyond their financial and technical capacity to implement (Marty, 2000). This stems from a variety of factors, including a desire to address a broad number of issues that may be related to the development of, and cooperation over, the resource. Thus, ensuring focus and appropriate scope when developing cooperative regimes and institutional arrangements is essential (Waterbury, 1997). Appropriate scope needs to be weighed against expanding the “basket of benefits” to enhance the balancing of incentives to garner political will and fostering innovative financing mechanisms.

Often costs associated with infrastructure development or large capital costs are difficult to reduce if they are really needed. However, the transactional costs of cooperating can often be substantive and can more easily be reduced through thoughtful institutional design—the number of meetings held, the decision-making process, the way information is compiled and assessed, the secretariat structure and location, and the use of existing institutions all affect the transactional costs of implementing the institution. Waterbury (1997) and Marty (2000) note that implementation and transaction costs can be kept low by developing smaller water regimes within a basin and working to larger, more encompassing regimes.

2.3. Institutional architecture (Step 3)

Once the institutional objectives are recognized, attention shifts to the overall institutional governance framework. This requires careful consideration of specific governance tools that provide for effective and efficient planning and management and meet the defined institutional objectives. The effectiveness of the governance regime will be largely determined by how well the architectural design of the institution meets the institutional objectives.

2.3.1. (a) Effective organization and specificity in the focus of cooperation

The subsidiarity principle (the principle that a matter ought to be handled by the smallest, lowest, or least centralized authority capable of addressing that matter effectively) is an important organizing principle of institutional design. Klot and Shmueli (2001) suggest “small countries can effectively manage all aspects of water resources by a single centralized agency, but large countries need a more decentralized structure”. According to Vollmer et al. (2009), “constraints to concerted action have been identified as including institutional arrangements established in an overly top-down manner and without recognition of the context...”

Additionally, a clear mandate that outlines cooperation among the different national and transboundary organizations that participate in the institution is usually an important prerequisite for the formation of strong governing bodies (UN-Water, 2008). Gerlak (2007) distinguishes three intensity levels of transboundary waters cooperation: (1) shallow cooperation, or “loose institutional cooperation”

without official headquarters or formalized bureaucratic mechanisms of cooperation, such as joint committees, coordination teams, technical teams, task forces or partnerships; (2) intermediate cooperation, which is “a more sophisticated level of bureaucratic cooperation” with regular meetings between parties, permanent headquarters or a secretariat with independent staff but does not have financial dependence; and (3) deep cooperation, which is “characterized by a high degree of bureaucratic organization and financial independence” with institutionalized collective decision making and oversight.

Transboundary water institutions can broaden cooperation over time. For example, under the Convention for the Protection of the Mediterranean Sea Against Pollution, the geographic coverage has been extended under certain protocols and the objectives of cooperation has grown: from “prevent[ion], abate[ment], and combat” of pollution in the Mediterranean area, to “eliminat[ion]” of pollution and “enhance[ment] of the marine environment...” In addition, the Contracting Parties now foresee cooperation on matters involving risk to coastal development, including natural disasters and climate change.

2.3.2. (b) *Information*

To effectively govern a transboundary basin, basin states and institutions must almost always have “access to credible and reliable data and information regarding the state of the resource and, among other things, how it is affected by resource use and development, land use practices and climate change” (Gerlak et al., 2011; Paisley and Henshaw, *in press*; Grossman, 2006; Wolf, 2007; Bernauer and Kalbhenn, 2010). Establishing data and information exchange agreements and networks among common basin states and institutions helps maximize securitization in riparian regions by facilitating trust and building a shared vision for the resource (UN-Water, 2008). Absent such exchange, it becomes extremely difficult for basin states and institutions to manage water uses, formulate basin-wide policies, or take steps to minimize floods, droughts and pollution (Eckstein 2009). Data and information sharing is a precondition for data integration, joint modeling and common monitoring protocols—key characteristics of successful institutional arrangements for unified and adaptive water governance (Karkkainen 2006). Data and information exchange is not only accepted as being useful for effective international water management, the practice is also widely seen as a basis or starting point for more comprehensive cooperation regarding the shared resource (Chenoweth and Feitelson, 2001).

An example of data and information provisions built into an institution is the structure for Lake Tanganyika. Under the Convention on the Sustainable Management of Lake Tanganyika, Article 20 addresses information exchange between the Contracting States, directing them to exchange data and information concerning sustainable management of the Lake Basin and the implementation of the Convention. Contracting States are also directed to employ “best efforts” to provide data or information that is requested, but not readily available. The Convention additionally obligates the Contracting States to report periodically to the Lake Tanganyika Authority on certain measures relevant to the environmental management of the Lake Basin and the implementation of the Convention. Article 21 specifies that the Convention shall not affect the established rights or obligations of Contracting States to protect personal information, intellectual property, and confidential information. It also directs the Contracting States to respect the confidentiality of confidential information they receive.

2.3.3. (c) *Rules and norms*

2.3.3.1. *Voting and membership.* An effective institutional design should have clear provisions that include rules for the membership of the decision-making body, the levels of decision-making and the voting rules (Draper, 2007). Membership in the governance institution should be carefully defined. Normally, the rules will appoint specific representatives of the signatories who may interpret and modify the rules of the institution.

The rules should also describe voting procedures, such as when unanimity, consensus and majority voting is required. According to Draper (2007), “rules that require unanimity effectively give one party a veto in any decisions, but unanimous voting may be the only politically feasible option for certain decisions. Decisions requiring non-unanimous votes can be extremely effective for nonpolitically

sensitive decisions or those involving technical matters. The rules of decision can call for a simple majority or some higher percentage.”

By example, generally, substantive decisions under the Cartagena Convention and its Protocols are taken by consensus among the Contracting Parties, although the Contracting Parties have yet to agree on the terms of the decision-making rule. Article 20 of the Cartagena Convention specifies that the Contracting Parties are required to unanimously adopt financial rules and procedural rules to govern their meetings. Any amendment to the Cartagena Convention or its Protocols must be approved by a three-fourths majority vote of the Contracting Parties present at a conference of plenipotentiaries. After the amendment is approved, it will be submitted to the Depositary for acceptance by all of the Contracting Parties. Thirty days after three-fourths of the Contracting Parties of the relevant instrument have ratified the amendment, it will enter into force for the Contracting Parties that have accepted it. Under the International Commission for Protection of the Danube River meetings are held once a year, with extraordinary meetings convened by the President on the request of at least three delegations. Each ICPDR delegation has one vote, with special rules for EU voting. An ICPDR quorum exists when delegations of two-thirds of the Contracting Parties are present. ICPDR decisions and recommendations are adopted by consensus. If efforts are exhausted and consensus is still not reached, the ICPDR can adopt decisions or recommendations (except for decisions with financial implications) by a four-fifths majority of the delegations present and voting, unless otherwise provided by the Convention. Each decision is binding on the first day of the eleventh month following its adoption for “all Contracting Parties that voted for it and have not within that period notified the Executive Secretary that they are unable to accept” the decision.

2.3.3.2. Dispute resolution. Basins can continue to experience disputes even after a treaty is established and an institution is created.⁵ The disputes may involve differences in interpretation of the agreement's provisions or noncompliance with the agreement itself. Disputes may also arise because of changing conditions that alter the effectiveness of the agreement for one or more of the parties. Therefore, incorporating clear mechanisms for resolving conflicts is usually a prerequisite for effective, long-term management (Wolf, 2007). The institutional provisions should “provide for a process to resolve disputes quickly, effectively, and permanently” (ASCE, 2013). In other words, institutions should emphasize “a streamlined process of dispute resolution that minimizes costly, time-consuming litigation” (Draper, 2007). While mechanisms to settle disputes can be varied, the most common are “direct negotiations, non-binding mediation, or binding arbitration or adjudication by an international institution” (Berardo and Gerlak, 2012).

Under the Tehran Convention, dispute resolution is addressed in a cursory manner. Article 30 states: “In case of disputes between Contracting Parties concerning the application or interpretation of the provisions of the present Convention, the Contracting Parties will settle them by consultations, negotiations or by any other peaceful means of their own”. Bearing in mind the history of the region and the potential lack of trust between parties, the dispute resolution mechanism is seemingly inadequate. Other bodies of water, such as Lake Tanganyika, have dispute resolution mechanisms that are thought to be more functional, as they outline a process and timeline for resolution. Some basins utilize the International Court of Justice (ICJ) as part of their dispute resolution process. In the Senegal River Basin any dispute between the Member States regarding the interpretation or application of the relevant Conventions is to be resolved by mediation. If the Member States cannot reach an agreement, the dispute is to be submitted to the Commission of Mediation, Conciliation, and Arbitration of the Organization of African Unity (“Commission”). The Commission's decisions can be appealed to the ICJ.

Other agreements may use regional organizations. In the case of the Columbia River Treaty (CRT), Article XVI of the Columbia River Treaty provides that a dispute or difference that arises under the Treaty may be referred by either the United States or Canada to the International Joint Commission

⁵ Paisley, Richard Kyle and Alex Grzybowski. Lessons Learned from Recent Experience with Governance of International Freshwater, International Groundwater and International Large Marine Ecosystems: Dispute Resolution. Proceedings of Water Law: Through the Lens of Conflict: Colloquium of the University of New England and the Australian Centre for Agriculture and Law. International Journal of Rural Law and Policy (2011).

(IJC) for a decision. If the IJC does not render a decision within three months of the referral, or within another period agreed to by the United States and Canada, either country may submit the dispute to arbitration. The CRT mandates that arbitration must be by a tribunal composed of a member appointed by Canada, a member appointed by the United States and a member appointed jointly by the United States and Canada who shall be Chairman. If within six weeks of the delivery of a notice of arbitration, either country has failed to appoint its member to the arbitral tribunal, or they are unable to agree upon the member who is to be Chairman, either country may request that the President of the IJC appoint the member(s). Decisions of the IJC or of an arbitration tribunal (by a majority of members) are binding and definitive on the parties. The United States and Canada may agree, by an exchange of notes, to use alternative procedures for settling differences arising under the CRT.

2.3.3.3. Enforcement and monitoring. Once a treaty is signed, successful implementation is dependent not only on the actual terms of the agreement but also on an ability to enforce those terms. Appointing oversight bodies with decision-making and enforcement authority is one important step towards maintaining cooperative management institutions (Wolf, 2007). In other words, the institution must have “the clout to enforce its mandates” (Dellapenna, 1996). Formal mechanisms for monitoring a transboundary basin can provide early warning of violations, which will prompt quicker enforcement actions. Even when monitoring mechanisms do not track the actions of individual signatories, the range of information collected can raise the visibility of environmental problems and draw the attention of domestic actors to the consequences of non-compliance.

Tir and Stinnett (2010) suggest that formally specified procedures for enforcement can improve compliance in several different ways: they can reduce the transaction costs of punishing cheaters, thereby increasing the costs of non-compliance and deterring violations. They can also enhance the political acceptability of sanctioning. Sanctioning done according to the rules laid out in an international agreement will be seen as more legitimate than direct, unilateral retaliation by an aggrieved state. “When punishment is seen as legitimate, it will help prevent relations from collapsing in a spiral of retaliatory and counter-retaliatory measures” Tir and Stinnett (2010).

One approach to enforcing agreements is establishing a compliance committee. In 2008, the Barcelona Convention for the Protection of the Mediterranean Sea Against Pollution Contracting Parties established a Compliance Committee to consider, among other things, “actual or potential non-compliance by individual Parties with the provisions of the Convention and its Protocols.” The Compliance Committee consists of seven representatives of different Contracting Parties, on a rotating basis. The Compliance Committee sees its role as “[facilitating] implementation and compliance with obligations under the Barcelona Convention, taking into account the special situation of each of the Contracting Parties, in particular those which are developing countries.” The Compliance Committee will consider reports of non-compliance from one Contracting Party regarding another Contracting Party, inquiries from a Contracting Party regarding its own compliance efforts, and referrals from the Secretariat based on its national assessments, and will also, on its own, evaluate the biannual reports submitted by the Contracting Parties. The Compliance Committee must report its findings to the Contracting Parties, but may not apply sanctions. Instead, it may take steps to facilitate compliance, such as requesting an action plan and interim progress reports. The Compliance Committee will not act without consensus, except as a last resort. The Meeting of the Contracting Parties may act on the Compliance Committee’s report with further facilitative steps, including capacity building, and may publicize the conclusion that a Contracting Party is not observing its obligations. In cases deemed to be of serious, ongoing or repeated non-compliance, the Contracting Parties are obligated to consider and undertake any action that may be needed to achieve the purposes of the Barcelona Convention and the Protocols.

2.3.4. (d) Feasibility

Regardless of the authority granted to an institution, the absence of financial and other mechanisms to support and sustain the institution’s activities can render the institution ineffective and irrelevant. In other words, institutions must have the appropriate resources to carry out its mandate (Eckstein, 2009). This includes both financial and human resources as well as the political

capital necessary to carry out policies and implement projects that may be unpopular but necessary. Governmental support by all of the basin riparians must be secured and assured in order to allow the institution to formulate and implement effectively its responsibilities. Moreover, adequate funding for effective institutional management will help to establish more cohesion between parties and develop better resource management strategies, which in turn will help secure investment for large-scale infrastructure or development projects (Le Marquand, 1977).

For example, the budget of the Mekong River Commission (MRC) is drawn up by the Joint Committee and approved by the Council. The budget “shall consist of contributions from member countries on an equal basis unless otherwise decided by the Council, from the international community (donor countries) and from other sources.” The senior legal advisor to the drafters explained: the “operating or administrative budget” may be distinguished from the “program budget” in that the former pertains to the cost of the [MRC]... and the latter pertains to the development projects, program and activities of the [MRC] supported by donor and parties. The “equal basis” contribution of the parties pertains only to the administrative or operating budget of the [MRC] that is not covered by other sources, i.e. overhead, interest and donor contributions, unless the Council decides otherwise. For example, if there were “extraordinary” expenditures that exceed the planned and budgeted activities, i.e. special meetings of the Council or Committee, etc., the Council may vary the member contribution requirements. The MRC carries out formal consultation with the donor community through an annual Donor Consultative Group meeting.

In the Rhine, according to Article 13 of the Convention on the Protection of the Rhine, each Contracting Party is responsible for the costs associated with its representation in the International Commission for Protection of the Rhine (ICPR) and for studies and other actions it undertakes within its territory. The distribution of the annual operating budget costs between the Contracting Parties is set forth in Article 9 of the ICPR's Procedural Rules. Switzerland's share of the budget is 12% and the European Community's share is 2.5%. The remaining 85.5% share is divided between Germany (32.5%), France (32.5%), Luxembourg (2.5%), and the Netherlands (32.5%). The Executive Secretary is responsible for drafting the annual budget and managing the ICPR's income and expenditures. Prior to the Plenary Assembly, the Executive Secretary submits to the Contracting Parties' delegations: the draft budget for the next year, the non-binding budgetary planning for the following three years, and an annual statement of the accounts from the past year. The Plenary Assembly then adopts the budget for the next year. Afterward, the Executive Secretary notifies each Contracting Party of the amount of its required contribution, with payment due by February 15. If a Contracting Party does not pay its contribution in a timely fashion, the ICPR has the authority to charge the delinquent Contracting Party, in its assessed contribution for the following year, for the deficit it caused. The ICPR is also empowered to establish a reserve fund equal to 10% of the budget. During the course of a year, if the ICPR is confronted with new or higher than anticipated expenses, a supplementary budget may be drawn up and additional expenses covered by the reserve fund or additional supplementary contributions from the Contracting Parties. The ICPR also employs two auditors to manage bookkeeping.

2.3.5. (e) Adaptability

Wolf (2007) states that the most effective institutional management structures usually incorporate a certain level of flexibility, allowing for public input, changing basin priorities, and new information and monitoring technologies. Many basins lack the institutional flexibility and capacity to deal with anticipated changes due to climate change. Perhaps the most dynamic systems for altering an agreement is found in the Treaty between the United States and Mexico relating to the utilization of the waters of the Colorado and Tijuana Rivers and the Rio Grande (Hearn and Paisley, 2013). Here, the Agreement is extremely flexible in that the overarching accord can be modified and updated by allowing for significant decisions to be made by the International Boundary and Water Commission (IBWC) through the creation of Minutes, which have legal standing. In this way, modification, both socio-political, and environment, can be incorporated as needed. Significant decisions can thus reflect current and contemporary values while fundamentally maintaining the spirit and intent of the original accord. For example, Minutes have been utilized to adjust water allocations, as well as address salinity issues that have arisen since the signing of the Treaty in 1944. Recently, they have been

utilized to adjust the set delivery schedules of water allocated for Mexico due to infrastructure damage associated with an earthquake in April 2010. The ability of the IBWC to adapt, amend, and extend the institutional arrangement between Mexico and the United States is a powerful tool to develop a resilient form of cooperation (Hearn and Paisley, 2013).

2.3.6. (f) Openness

Participation as a governance objective falls within a spectrum, ranging from simply providing information to actors without expectation of involvement, to consultation, accommodation, co-management, collaboration, actual joint decision-making and accountability. The level of participation that appears to be necessary or desirable as a governance objective is a function of a number of factors, ranging from how much the affected parties are necessary or desirable to ensure viability, to whether, and to what extent, the affected parties can be really identified and appropriately engaged.

Changes in governance objectives may well require changes in participation. Participation is usually “fundamental to maximize agreement, enhance transparency and decision-making, create ownership and facilitate the acceptance and enforcement of decisions and policies. It is also a mechanism for gaining a better or common understanding between the various stakeholders on the nature of a given problem and the desirability of specific outcomes. Stakeholder participation strengthens integration, thereby contributing to conflict prevention, and risk reduction—all highly important in large infrastructure development projects” (UN-Water, 2008). Ultimately, openness is a balance between desirability to be open versus capability to be open (i.e. financial capability). The level of initial openness will likely influence what is prioritized at the institutional objectives stage, and thus what institutional architecture becomes.

3. Observations and conclusions

Institutional architecture is not a panacea for all that ails good governance of transboundary waters. Design remains more art than science (Bakker, 2009; Dombrowsky, 2008; Bernauer, 1997). However, some preliminary observations and conclusions as to what might facilitate good governance of transboundary waters from an institutional architecture perspective are:

(1) Form should always follow function.

“It is the pervading law of all things organic and inorganic, of all things physical and metaphysical, of all things human and all things superhuman, of all true manifestations of the head, of the heart, of the soul, that the life is recognizable in its expression, that form ever follows function. This is the law” (Sullivan, 1896). This is particularly true in the case of institutional design for the good governance of transboundary waters.

(2) One size does not fit all.

There is a wide range of institutional designs to govern transboundary waters. As each transboundary waters situation will have unique characteristics, there can be no single model or recipe for success in developing effective regimes (Elhance, 2000). Physical, social and political geography will determine constraints and opportunities in institutional design. While the means objectives of regime building, such as balancing incentives, and building trust will be present in all situations, their relative importance will vary in different contexts. Consequently, an institution should be as adaptive as reasonably possible.

While there is no single model to apply to the development of institutional architecture for transboundary waters governance, various key means objectives need to be addressed to develop effective governance regimes. More often than not it is political constraints, not technical constraints that hinder cooperation over transboundary waters governance (Bernauer, 2002). For example, in the case of the Danube River Protection Convention, progress was hampered by the limited ability of the commission members to influence the policy makers of the need to and benefits of cooperation (Dombrowsky, 2008). Paramount to all efforts will be garnering political will to the goals of the institution. Elhance (2000) concludes that “nothing will be done if there is not the political will to

pursue transboundary cooperation” and [Sadoff and Grey \(2002\)](#) suggest, “The choice between conflict and cooperation will in large part be determined by [political] perceptions of their relative benefits”.

(3) Flexibility and adaptive management are important.

Most institutional structures that deal with transboundary waters will have some higher-level authority for final decision-making, a mid-level group for more technical and scientific analysis (i. e., a joint management committee), and a secretariat for implementation. However there may be significant differences in how this broad tri-body structure is applied.

Built-in flexibility in the institution’s organizational structure can serve political as well as scientific interests, and encourage confidence building. The ability to invite observers to the Council and Joint Committee of the Mekong River Committee is to accommodate the participation of China and Myanmar and see them included in the discussions of the development of the Mekong. By attending the various meetings, China and Myanmar may become more comfortable with the goals and objectives of the Mekong River Committee. This facilitates the exchange of data and information, as well as assisting with possibly aligning the interests of the nations.

Adaptive management is a structured, iterative process of robust decision making in the face of uncertainty with an aim to reducing uncertainty over time via system monitoring. In this way, decision making simultaneously meets one or more resource management objectives and, either passively or actively, accrues information needed to improve future management.

(4) You can’t always get what you want.

One of the major trade-offs in developing institutions is balancing the operational needs and desire for minimum bureaucracy, with the need for building trust and equity. This is illustrated by looking at the different models of how and where a secretariat is operated and physically located. For the Lake Tanganyika Authority, the secretariat is in Bujumbura, Burundi, and meetings of the Council of Ministers are held in different states, with the Chair being from the host country. In the case of the Mekong River Commission, not only is there a clear tri-body hierarchy, but the secretariat is split between two locations: Vientiane (Lao PDR) and Phnom Penh (Cambodia). Having a split secretariat incurs greater costs, as some functions will be duplicated, and is relatively more bureaucratic. The choice of having a split secretariat was a conscious trade-off between a more efficient organizational structure and other needs, such as increased political equity. In the Caspian Sea Environmental Program, the secretariat rotated through the littoral states on the basis of alphabetical order. The choice to have a rotating secretariat, with all the additional work associated with relocation was deemed necessary to ensure equity and build trust within and between the states of the Caspian Sea.

Trade-offs also need to be considered in institutional architecture with respect to data and information exchange. In most circumstances, data is gathered at the national level and forwarded by each country to one another or through a central secretariat. In other circumstances, joint fact-finding may be conducted, as is the case of the Joint Technical Committee of the Bering Sea Pollock agreement. Not only how information is gathered, but how it is used, and how decisions are made, should ultimately be determined based on the importance of the means objectives of the institution. Trade-off and multi-attribute analysis, adaptive decision-making, and ecosystem-based management are all potentially important elements of institutional architecture and require thoughtful consideration in their design.

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