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Are Shared Benefits of International Waters an Equitable Apportionment? (with P. Wouters)

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Articles

Are Shared Benefits of International Waters an Equitable Apportionment?

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ABSTRACT

This brief article examines the case for applying a shared benefits strategy to the development of an international river basin as a substitute for the more traditional method of allocating a basin's water supply among riparian nations bordering an international river. The article traces the origin of the theory, articulates several objections, and examines two case studies of shared benefits. The concept of benefits sharing with respect to water is said to have originated in the negotiations over the Canada-United States Columbia River Treaty. We find that there are lingering doubts in Canada about the success of the treaty in allocating benefits to both parties; Canada's use of the Columbia continues to be primarily hydropower production for the United States. The second case

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study considers the Amu and Syr Darya basins in Central Asia. Benefit sharing has been adopted as the theory for basin development, but unrestrained unilateral action, unsustainable agricultural practices, and corresponding ecosystem degradation continue. Four possible problems with the substitution of benefit sharing for traditional allocation are identified and discussed, including buyer's remorse, the sacrifice of aquatic ecosystems for monetary gain, the construction of new dams of dubious benefit, and the failure to address the problems of adaptation to global climate.

I. THE SHARED USE OF INTERNATIONAL WATERS

This section summarizes existing customary international water law. We argue that although equitable sharing among states bordering an international river is the norm, unilateral use is too often the practice on the ground. To temper unilateral use, in recent years, commentators and others have argued that the emphasis should be shifted from allocation to the sharing of benefits among riparian states. This article articulates three possible objections to this shift: unequal bargaining among states; the premature "sale" of future use opportunities; and the increased risk of aquatic ecosystem degradation.

A. Theory versus Practice

Modern international water law seeks to balance the fair development and use opportunities of international watercourses among the riparian nations. The law's greatest challenge has been to encourage the actual sharing of these waters between states with differing capacities to impound and divert the waters. Geographic differences often manifest themselves in systematic imbalances among riparian states. Conflicts between headwater and downstream states are a classic example of the tension between geography and law.[1] Headwater states are often unable to put water to beneficial use before entrenched agricultural and urban

1. One of the leading forces in the development of the doctrine of equitable utilization reports that upstream–downstream conflicts were the impetus for the International Law Association's (ILA) development of rules and that there were sharp differences of opinion among upstream and downstream states. Charles Bourne, *The International Law Association's Contribution to International Water Resources Law*, *in* SLAVKO BOGDANOVIĆ, INTERNATIONAL LAW OF WATER RESOURCES: CONTRIBUTION OF THE INTERNATIONAL LAW ASSOCIATION (1954–2000) 3, 3–4 (2001); Patricia Wouters, et. al., *Sharing Transboundary Waters—An Integrated Assessment of Equitable Entitlement: The Legal Assessment Model*, IHP-VI Technical Documents in Hydrology No. 74 (2005).

economies develop downstream.[2] However, downstream states can also be victimized by powerful upstream states. The vibrant agricultural economy of the lower Tigris and Euphrates Basin has been jeopardized by Turkey's aggressive, more recent upstream development. China is another example of a headwater state with the capacity for rapid, preemptive development. Although China is not a party to the Lower Mekong River Treaty, it has the capacity to substantially influence river flows and the ecology of the Mekong basin by its construction of numerous hydroelectric reservoirs on the headwater's tributaries.[3]

There is a strong consensus among international lawyers that riparian states should agree to share fairly the waters of international rivers among their co-riparian states to counter the historic practice reaffirmed in The Lake Lanoux Arbitration.[4] States far too often unilaterally dam, divert, and degrade without regard to the impacts of these actions on other riparian states. The law generally rewards the first person—be it individual or state—to put water to productive use. Such priority protection can take many forms but the net result is that the principle, or the fear that it will be applied, can chill or foreclose development by slower-growing or less wealthy states. To counter the practice of states unilaterally taking action, international water law starts with the proposition that all riparian states have a right to the equitable utilization of the watercourse.[5]

International water law is derived from United States Supreme Court jurisprudence, ironically itself based on international law. The United States Supreme Court has the power to hear water disputes among riparian states and has posited that all states are entitled to an equitable apportionment of an interstate river. International water law has broadened this concept from equitable apportionment to equitable utilization, and makes the protection of prior uses an important but not

2. Afghanistan is a classic example of a very slowly developing headwaters state. *See* James C. McMurray & A. Dan Tarlock, *The Law of Later-Developing Riparian States: The Case of Afghanistan*, 12 N.Y.U. ENVTL. L.J. 711 (2005).

3. *See* EDITH BROWN-WEISS, STEPHEN C. MCCAFFREY, DANIEL B. MCGRAW, & A. DAN TARLOCK, INTERNATIONAL ENVIRONMENTAL LAW AND POLICY 765 (2d ed. 2006).

4. *See generally,* Judicial Decisions: Lake Lanoux Case (France–Spain), 53 AM. J. INT'L L. 156 (1959).

5. This principle is consistent with the modern characterization of international law as a system to promote distributive justice to scarce resources among the international community. In his seminal book, FAIRNESS IN INTERNATIONAL LAW AND INSTITUTIONS 74 (1995), Thomas M. Franck describes the Convention as an effort "to provide for distribution of scarce resources through the application of broadly conceived equity."

decisive factor.[6] International law recognizes that each state has an inchoate right to a fair share of the joint resource. All formulations of this principle are modeled after the 1967 Helsinki Rules.[7] Geography, hydrology, and climate of a basin, past utilization of the resource, the economic and social needs of a basin, and the availability of alternative sources of supply are among the relevant factors be considered in determining what is a reasonable and equitable use of the water.[8] The latest test is contained in the July 8, 1997 United Nations Convention on the Law of the Non-Navigational Uses of International Water Courses (Watercourses Convention), which is now open for signature.[9] Article 5 of the Watercourses Convention compels states to use watercourses in an "equitable and reasonable manner."[10] Article 6 lists seven non-weighted factors relevant to the determination of what is equitable and reasonable.[11]

B. Shared Use versus Shared Benefits

Two competing models of equitable utilization have emerged. The first is "classic apportionment." This is almost always done by treaty and allocates the dependable flow of the river among the riparian states. Firm rights to "water qua water" are created.[12] Each state is free to decide how

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6. Wyoming v. Nebraska, 325 U.S. 589 (1945).

7. Helsinki Rules on the Uses of the Waters of International Rivers, Aug. 20, 1966, 52 I.L.M. 484 (1967), *reprinted in* BOGDANOVIĆ, *supra* note 1, at 99. The Helsinki Rules have been superseded by the Berlin Rules on Water Resources. INTERNATIONAL LAW ASSOCIATION, FOURTH REPORT OF THE WATER RESOURCES COMMITTEE, BERLIN CONFERENCE: WATER RESOURCES LAW (2004), *available at* http://www.asil.org/ilib/WaterReport2004.pdf.

8. Helsinki Rules, *supra* note 7, art. V; Patricia Wouters, *Universal and Regional Approaches to Resolving International Disputes: What Lessons Learned from State Practice?*, *in* RESOLUTION OF INTERNATIONAL WATER DISPUTES: THE PERMANENT COURT OF ARBITRATION/PEACE PALACE PAPERS 111 (The International Bureau of the Permanent Court of Arbitration ed., 2003).

9. U.N. Convention on the Law of Non-Navigational Uses of International Watercourses, May 21, 1997, G.A. Res. 51/229, U.N. GAOR, 51st Sess., 99th plen. Mtg., U.N. Doc. A/RES/51/229 (1997), *available at* http://untreaty.un.org/ilc/texts/instruments/english/conventions/8_3_1997.pdf [hereinafter Watercourses Convention].

10. *Id.*

11. *Id.*

12. We are indebted to Professor Aaron T. Wolf for the phrase. Aaron T. Wolf, *Criteria for Equitable Allocations: The Heart of International Water Conflict*, 23 NAT. RESOURCES F. 3, 19 (1999). Professor Wolf notes that economists and others have called for the increased sharing of the economic benefits of rivers among riparian nations, but that most water treaties, with the exception of those allocating the hydroelectric

its share will be put to use. The historic assumption is that the state will dam and divert its share, although we now pay more attention to in-situ uses.

The second model of equitable utilization is "shared benefits." The model is derived from welfare economics. Water is valuable only as a scarce resource with alternative uses, some more valuable that others. The transcendental objective of efficiency requires that the resource be allocated to the most valuable suite of uses. This means that some nations will have to forego the actual use of wet water but are entitled to monetary compensation for allowing other states to put the water to its most efficient use.

This concept is usually associated with the 1961 Canada-United States Columbia River Treaty,[13] and has become a general principle of both international water law[14] and environmental law.[15] The United States and Canada each wanted to dam the mighty Columbia, primarily for power generation and flood control. Downstream dams would have deprived Canada of opportunities for power generation; Canada's planned dams would have provided substantial flood control benefits to the United States. The parties agreed to allow the major development in the United States but Canada was compensated for the compromise. This idea has been applied in other basins where upstream states can store but divert water and downstream states consume the flow. In recent years, there have been increasing calls to shift the focus of international disputes from allocation to benefit sharing.

On one level, the distinction between equitable utilization and benefit sharing is artificial. The object of any international river process is to ensure that all riparian states receive a matter of water justice. Justice can be obtained equally by sharing the use of wet water or by monetary compensation.

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generating capacity of a river, only deal with the rights of the respective countries to the shared use of the waters of the river rather than broader political and economic issues.

13. Treaty Between Canada and the United States of America Relating to Cooperative Development of the Water Resources of the Columbia River Basin, Jan. 17, 1961, 542 U.N.T.S. 244 (1964) [hereinafter Columbia River Treaty].

14. Richard Paisley, *Adversaries into Partners: International Water Law and the Equitable Sharing of Downstream Benefits*, 3 MELB. J. INT'L L. 280, 283 (2002).

15. United Nations Environment Programme, *Environmental Law Guidelines and Principles on Shared Natural Resources*, *available at* http://www.unep.org/law/PDF/UNEPEnvironmental-Law-Guidelines-and-Principles.pdf (last visited June 11, 2007).

C. Some Problems with Shared Benefits

Current enthusiasm for shared benefits over equitable utilization raises several concerns. First—with some notable exceptions such as China on the Upper Mekong—upstream, headwaters states cannot bargain equally with wealthier downstream states that need water and have the capacity to capture and consume it. Short-term monetary gains may come at the expense of foregone future uses. Second, shared benefits may not directly address problems of poverty alleviation, nor will it remedy the widely documented failure of many water resources projects to benefit those in the watershed of origin. Third, benefit sharing runs the risk that aquatic ecosystem integrity, which is slowly being factored into international water law, may not be adequately addressed.

The ecosystem integrity problem is exacerbated because, despite efforts to incorporate environmental values into international water law, there is little protection of the natural flow rule in practice.[16] Strictures against causing pollution could be one source of flow protection, but generally, rivers are protected only from serious episodes of pollution. The material injury rule, which is at the heart of equitable apportionment, allows upstream states to progressively use water. This creates the risk of environmental damage, but not legally cognizable damage. For example, upstream diversions may generally increase the salinity of rivers by allowing salt water to migrate upstream. In addition, pollution is often limited to serious, identifiable pollution rather than less visible, cumulative impacts from environmentally destructive watershed land use practices. The presumed remedy is post hoc mitigation rather than prevention.[17]

Nevertheless, the Watercourses Convention does contain several innovative new environmental protection rules that could provide a foundation for increased flow protection. For example, Article 20 requires states to protect the ecosystems of international watercourses, and Article 22 requires a state to take "all measures necessary to prevent the introduction" of alien species into a river system if the species "may have effects detrimental to the ecosystem of the watercourse."[18] This

16. Lake Lanoux Arbitration (France v. Spain), 24 I.L.R. 101 (1957), has been widely read to reject any right to the undiminished flow of an international stream. For a full exposition of the rise and fall of the theory, see Charles B. Bourne, *The Right to Utilize the Waters of International Rivers*, 3 CAN. Y.B. INT'L L. 187, 190–203 (1965).

17. *See* Toru Iwama, *Emerging Principles and Rules for the Prevention and Mitigation of Environmental Harm*, *in* ENVIRONMENTAL CHANGE AND INTERNATIONAL ENVIRONMENTAL LAW: NEW CHALLENGES AND DIMENSIONS 107 (Edith Brown Weiss ed., 1992).

18. Watercourses Convention, *supra* note 9.

standard comes from the objections that Canada lodged against the United States' Garrison diversion in North Dakota.[19] These precautionary duties are subordinate to the right of equitable development but they could be the basis for the incorporation of adaptive management regimes in specific basins.

II. THE PRACTICE AND LAW OF SHARED BENEFITS

This section examines the negotiation of the Canada-United States Columbia River Treaty and the ongoing efforts to allocate the waters of the Amu and Syr Darya basins in Central Asia in a fair and environmentally sustainable manner. The Columbia River Treaty is the origin of the concept of benefit sharing, and Central Asia represents one of the most important contemporary efforts to apply the idea.

A. The Columbia River Treaty

The 1964 Columbia River Treaty between the United States and Canada[20] is widely hailed as the model for benefit sharing and of bi-national cooperation between upstream and downstream states with substantial inequalities between them.[21] Canada traded hypothetical lost hydroelectric generating capacity and surplus flood control storage for money. Canada has only fifteen percent of the Columbia's drainage basin, but contributes thirty percent of the total Pacific discharge, and forty percent of the flow east of the Cascade mountain range, where most of the hydroelectric capacity lies. Starting in the 1930s, the United States began the multiple-purpose development of the Columbia River and had to negotiate with Canada. The negotiation was originally conducted within the 1909 Boundary Waters Treaty, which governs all boundary waters between the two nations. In 1951, the United State applied to the Canada-United States International Joint Commission (IJC), created by

19. *See* Charles M. Carvell, *The North Dakota Garrison Diversion Project and International Environmental Law*, 60 N. D. L. REV. 603 (1984).

20. It is more accurate to describe the treaty as between the United States and the Canadian province of British Columbia. Under Canada's federal system, British Columbia "owns" the waters of the Columbia River. British Columbia's sovereignty over its resources gave it a veto over the first version of the treaty signed by Canada and the United States in 1961.

21. The most exhaustive study of the treaty is JOHN V. KRUTILLA, THE COLUMBIA RIVER TREATY: THE ECONOMICS OF AN INTERNATIONAL RIVER BASIN DEVELOPMENT (1967). *See also* Patricia Wouters, *Allocation of the Non-navigational Uses of International Watercourses: Efforts at Codification and the Experience of Canada and the United States*, 30 CAN. Y.B. INT'L L. 43 (1992).

the Boundary Waters Treaty of 1909, to construct the Libby Dam on the Montana reach of the Kootenay for flood control and the release of water for planned and existing downstream hydroelectric dams.

The Libby Dam was of particular concern to Canada because the reservoir would extend into Canada.[22] As the upstream state, Canada had several desirable reservoir sites, but little domestic demand for electricity or flood control storage. Canada's population is only seven percent of the Basin and much of it in remote upstream valleys. British Colombia's population centers are out of the Basin along the Pacific Ocean. Nevertheless, the dominant player in Canada, British Colombia Hydro, planned to divert part of the flow of the Columbia into the Fraser River. The Libby Dam would change British Colombia Hydro's plans.

The Libby application is the origin of the idea of shared benefits.[23] The United States offered to compensate Canada for the costs of relocating people and infrastructure in the inundated land. It also offered not to charge Canada for augmented downstream flows which would increase hydropower generation in Canada. Canada responded by demanding a percentage of the hydropower output due to the increase in head contributed by Canada. When the United States submitted a second application, Canada requested the sharing of benefits from Canadian storage throughout the river downstream. When the United States rejected this expansive view of shared benefits, the chair of the Canadian section of the IJC, General McNaughton, played British Columbia Hydro's "out of basin diversion" card, which the United States feared would decrease the flow into Libby.[24]

Both the Canada and the United States advanced self-interested interpretations of the 1909 Boundary Waters Treaty. Canada argued that Article II allowed reasonableness, including a reduction of border run-off by twenty-five percent. Canada invoked the Harmon doctrine's principle of absolute territorial sovereignty. On the other hand, the United States made the classic downstream argument: the principle of riverine integrity requires the preservation of the natural flow. The United States also invoked the principle of historic use protection, hardening the argument by claiming that prior diversions and dams were vested prior appropriative rights.

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22. Canada is a downstream state for a portion of the Kootenay River. *See* U.S. Army Corps of Engineers, Columbia Basin Water Management Division, Columbia River Basin Clickable Map, http://www.nwd-wc.usace.army.mil/report/colmap.htm (modified Nov. 21, 2003).

23. KEITH W. MUCKLESTON, INTERNATIONAL MANAGEMENT IN THE COLUMBIA RIVER SYSTEM 9 (UNESCO Technical Documents in Hydrology No. 12, 2003).

24. *Id.*

The Columbia River Treaty authorizes Canada to develop 15.5 million acre feet of storage in three projects. Most of the storage is dedicated to flood control, and the Treaty assigns fifty percent of these benefits to the United States.[25] In return, the United States has paid Canada US$64.4 million dollars, primarily for the construction of Duncan and Arrow reservoirs. Canada has received US$254.4 million for the benefits that accrued to the United States for the generation of hydropower as a result of the 1964 sale of its entitlement. The Libby Dam was also authorized; Canada is not required to share the benefits it receives from the inundation of its territory and the United States does not share either the flood control or hydroelectric benefits that it receives from the dam and reservoir. Canada's entitlement expired fully in 2003; through 2024, Canada will take actual delivery of its power entitlement, but some will be sold in the United States.[26]

B. Shared Benefits in Central Asia

The Amu Darya and Syr Darya are highly stressed rivers that originate in Tajikistan and Kyrgyzstan respectively and historically emptied into the shrinking Aral Sea. Downstream diversions in Kazakhstan, Uzbekistan, and Turkmenistan created one of the world's most studied modern public health, economic, and environmental disasters. The withdrawal of water for irrigation along the Amu Darya to the south and the Syr Darya to the north—primarily for cotton and rice production—has substantially reduced flows into the sea.[27] The Amu Darya's flow completely disappears before it reaches the sea, and as a result the sea has divided into two smaller seas. The North Aral Sea is too saline to support any fish while the South Aral Sea supports the salt tolerant flounder. The reduced flows have also concentrated salinity levels due to run-off from agriculture in Uzbekistan and Turkmenistan. The fall of the Soviet Union in 1989 ended plans to restore the Aral Sea by the diversion of Siberian Rivers.[28]

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25. Columbia River Treaty, *supra* note 13, art. VIII.

26. UNITED STATES ENTITY, DELIVERY OF THE CANADIAN ENTITLEMENT, FINAL ENVIRONMENTAL IMPACT STATEMENT: SUPPLEMENT TO RECORD OF DECISION 2–3 (1996), *available at* http://www.bpa.gov/corporate/pubs/rods/1999/SupRODMar31.pdf.

27. *See* Eric W. Sievers, *Water, Conflict, and Regional Security in Central Asia*, 10 N.Y.U. Envtl. L.J. 356 (2002).

28. The World Bank has financed an $85 million dyke to prevent the Syr Darya from flowing into the North Aral Sea. Instead, it is now beginning to flow into the South Aral Sea and after the saline levels in the South Aral Sea have dropped, water will be permitted to flow into the North Aral Sea. Christopher Pala, *$85 Million Project Begins Revival for the Aral Sea*, N.Y. TIMES, Aug. 5, 2003, at D3.

In the Soviet era, the two upstream states, Tajikistan and Kyrgyzstan, served as the source of irrigation diversions and provided upstream water storage. Today, the two countries would prefer to maximize hydroelectric generation, meaning less water for irrigation. Decisions regarding allocation are also made from within a dysfunctional, ad hoc allocation regime, augmented by endless soft law declarations and agreements.

The root of the current problem can be traced to the policies followed by Lenin and Stalin toward the peoples of Central Asia. Prior to the formation of the Soviet Union, water use was controlled by a web of tribal customs. Individual entitlements were recognized, but water was regarded as a common resource to be distributed according to historic tribal records. Disputes were settled by the tribal chief.[29] As the Soviets did with all prior "feudal" practices, this allocation scheme was replaced by one of central control. All water was nationalized by a decree issued in May of 1924.[30]

The creation of five republics with no hydrologic logic further consolidated Soviet power. Soviet power was consolidated between 1924–26, and between 1925 and 1936 the former Tsarist administrative units were divided into the five republics. This division resulted in the Syr Darya and the Amu Darya becoming de facto and de jure transnational rivers; likewise, previously-built irrigation canals now crossed borders, making central control necessary.

The upstream states have had to try to trade lost power revenues for other money. Kyrgyzstan passed a law in 2001 that required downstream states to pay for water originating within its boundaries. However, in practice Kyrgyzstan has had to be content with the operation and maintenance costs of delivering the water and has rejected plans for the joint management of its reservoirs and dams.[31] Uzbekistan made annual barter payments to the two upstream states for lost power revenues, but in 2004 embarked on a water self-sufficiency plan. It is banking on the inability of Tajikistan to finance the reservoirs which would give it complete control over downstream flows.

The environmental condition of the basin continues to worsen, water shortages remain prevalent, and the five states have not reached

29. Olaf Caroe, SOVIET EMPIRE: THE TURKS OF CENTRAL ASIA AND STALINISM 152 (1954).

30. *Id.*

31. This section of the paper is drawn from Bakhtiyor Mukhamadiev, Application of the "Benefits Sharing" Concept to the Case of Transboundary Water Resources Politics in the Aral Sea Basin (unpublished paper submitted for LLM in International and Comparative Water Law, University of Dundee, on file with authors).

basic agreement on how the waters will be shared. A World Bank Report recommends that Kyrgyzstan manage upstream waters for downstream irrigation rather than power because the benefits outweigh the cost of storage maintenance for hydroelectric generation.[32] The other upstream state, Tajikistan, continues to pursue a unilateral strategy of hydropower development. Turkmenistan, the most closed of the five republics, also continues to pursue an aggressive strategy of increased agricultural return flow diversions and increased irrigated acreage.[33]

III. CONCLUSIONS: SOME LESSONS AND PROBLEM AREAS

Three possible benefits that can flow from an international watercourse have been identified: (1) better ecosystem management, (2) rivers services such as hydroelectric power, and (3) the achievement of regional water security through cost-sharing rather than inefficient duplicate development.[34] A brief survey of two of the most studied examples of shared benefits suggest that only the second claimed benefit, hydroelectric power production, defines the current practice of benefit sharing. There are several problems that were revealed through the survey of shared benefits.

A. Buyer's Remorse

Any international agreement will generate second guessing on the part of the states and will lead to the concern that they were out-negotiated by the other party. A leading Italian anti-Fascist diplomat characterized his objective in negotiating a post-World War I treaty between Italy and the newly created Yugoslavia as "that the causes of discontent should be equally divided between the two nations."[35] Water treaties are supposed to be win-win situations since both states gain the

32. WORLD BANK, IRRIGATION IN CENTRAL ASIA: SOCIAL, ECONOMIC AND ENVIRONMENTAL CONSIDERATIONS (Feb. 2003), *available at* http://www.untj.org/files/reports/Irrigation%20in%20Central%20Asia-Social%20Economic%20and%20Environmental%20Considerations.pdf.

33. Mukhamadiev, *supra* note 31, at 14–15.

34. Claudia W. Sadoff & David Grey, *Beyond the River: The Benefits of Cooperation on International Rivers*, 4 WATER POL'Y 389 (2002). *See also* Patricia Wouters, *Water Security: What Role for International Water Law?*, *in* HUMAN AND ENVIRONMENTAL SECURITY, AND AGENDA FOR CHANGE 166 (Felix Dodds & Tim Pippard eds., 2005).

35. COUNT CARLO SFORZA, ITALY AND ITALIANS 86 (1949).

certainty of a firmer right to water so that development can proceed. However, shared benefits often substitute for more comprehensive basin solutions, and the compensated state does not consider itself fairly treated. This is certainly the case of Kyrgyzstan. The Columbia River compromise illustrates that the focus of shared benefits tends to ensure that the downstream state will enjoy both the use of the water and the benefits it provides. The upstream state will receive money. British Columbia, which owns the treaty entitlement, initially sold it to the United States for thirty years. In 1998, it extended the sale another twenty years, until 2024.[36]

B. Money Rather than Water Not So Good for Fish

Both the Columbia and Aral Sea are environmental disasters. Salmon runs are close to extinction in the Columbia. Canadians, especially First Nations along with American Indian tribes, have long expressed unhappiness about both the low returns and the environmental degradation of the Columbia from multiple-purpose dam construction.[37] A recent United Nations Development Programme Report describes the Aral Sea Basin as "an environmental disaster" stressed by chemical pollution, drought, and inefficient use of water in the downstream states.[38]

C. New Name for Dam Building

The much heralded Nile Basin Initiative is designed to try and break the legal and political lock that Egypt has been able to assert over all upstream development. It is based on the sustainable development of the entire basin and "the equitable utilization of, and benefit from, the common Nile Basin water resources."[39] The current idea is to build 14 upstream dams along with other smaller watershed improvement

36. UNITED STATES ENTITY, *supra* note 26.

37. David Lemarquand & Anthony D. Scott, *Canada-United States Environmental Relations*, 32 PROC. ACAD. POL. SCI. 149 (1976).

38. JAKUB LANDOVSKY, HUMAN DEVELOPMENT REPORT 2006: INSTITUTIONAL ASSESSMENT OF TRANSBOUNDARY WATER RESOURCES MANAGEMENT 10 (2006), *available at* http://hdr.undp.org/hdr2006/pdfs/background-docs/Issue_Notes/Landovsky%20Jakub.pdf.

39. This shared vision statement was adopted in 1999 and, in theory, controls all subsequent cooperation among the basin states. *See* Nile Basin Initiative, Water Resources Planning and Management Project, http://www.nilebasin.org/wrpm/ (last visited Jun. 20, 2007).

projects.[40] The global record of large dams, as documented by the World Commission on Dams (WCD), reveals that poorly planned large dams can exacerbate problems of poverty, water inequity, regional tensions, and environmental degradation. Dam projects now underway on the Nile—Merowe and Kajbar in Sudan, Tekeze and Gilgel-Gibe in Ethiopia, and Bujagali in Uganda—are marred by serious social and environmental problems, corruption, secrecy, and human-rights violations, and do not instill confidence.

D. Shared Benefits Do Not Address the Problems of Increased Basin Stress from Global Climate Change

Climate change further complicates the picture, and the Nile is a prime example. At a time when global warming threatens to make Africa's rivers even less reliable for economically feasible large hydropower projects, and their waters more precious for other uses, donors and governments should be looking to diversify the energy mix.

> Already, more than half of Nile Basin Initiative states get more than ninety percent of their electricity from hydropower, while another three are seventy percent dependent on hydropower. Climate change experts believe that dry parts of Africa will see further reductions in precipitation. In the Nile basin, according to the Intergovernmental Panel on Climate Change, there has already been "a reduction in runoff of 20% between 1972 and 1987" and "significant interruptions in hydropower generation as a result of severe droughts." A 1995 study of climate impacts on several major rivers worldwide noted that the Nile experienced the most severe change of the rivers studied.[41]

In Central Asia, melting glaciers in the Pamir Mountains, headwaters of the Amu Darya, will increase winter runoff but decrease summer runoff, further threatening irrigation in the region.[42]

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40. *See* STOCKHOLM INTERNATIONAL WATER INSTITUTE, REPORT 20, TRANSBOUNDARY WATER MANAGEMENT AS A REGIONAL PUBLIC GOOD: FINANCING DEVELOPMENT – AN EXAMPLE FROM THE NILE BASIN (2007), *available at* http://www.siwi.org/downloads/Reports/Nile_Basin_Report_07.pdf.

41. Lori Pottinger, *Who Loses in the "Win–Win" Scheme to Dam the Nile Basin?* International Rivers Network Editorial on the Nile Basin Initiative, (Sept. 21, 2004), http://www.irn.org/programs/nile/index.php?id=040921nbi.html. *See also* CM Wong, CE Williams, J Pittock, U Collier, & P Schelle, *World's top 10 rivers at risk*, WWF International, (Mar. 2007), *available at* http://assets.panda.org/downloads/worldstop10riversatriskfinalmarch13_1.pdf.

42. LANDOVSKY, *supra* note 38, at 10.

Shared benefits have a role to play in the allocation of transboundary waters, but they must be seen as only one among a broad menu of policy instruments to promote the fair and efficient allocation of scarce waters. The object of the allocation and management of international basins is to promote development, social equity, and environmental protection in a fair and sustainable manner, and not simply to shift monetary resources within the basin.