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## **Transboundary Water Governance Institutional Architecture: Reflections from Ethiopia and Sudan**

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### ***Abstract***

Transboundary water resource governance is premised on equitable water and water-related benefit sharing. Using the case of the Blue Nile (Ethiopia and Sudan), we explore the conceptual issues that need consideration in the crafting of cross-border cooperation within the water sector. First, drawing on global experiences with transboundary water management, we evaluate how upstream and downstream concerns are addressed by transboundary water management institutions. Second, we explore the kinds of institutional design and the issues which need to be considered to result in 'win-win' scenarios for both upstream and downstream users, as well as the mechanisms of benefit sharing negotiated amongst different stakeholders. Third, we examine ways of addressing equity and livelihoods in transboundary institutional arrangements. Finally, we attempt to assess how transboundary institutions can address broader historical, political and economic issues and their implications for sustainable transboundary water governance. This paper raises key issues that need to be addressed in establishing transboundary governance institutions.

### **Introduction**

According to IWMI's 2006 Comprehensive Assessment Report, water scarcity (both physical and economic) is a major concern for developing countries in their effort to move out of poverty and meet the Millennium Development Goals (Molden 2007). The Comprehensive Assessment also argues that with the current global water demands and the increasing population, the demand for water will outstrip the available and potential water resources if the current water development model is continued. Furthermore, water resources do not coincide with administrative or political boundaries. Consequently, there is a need to go beyond national interests and engage in transboundary water cooperation. This paper is based on the ongoing upstream-downstream project which is being carried out by IWMI and its partners in Ethiopia and Sudan. This project covers the transboundary Blue Nile River, which is known as the Abbay in Ethiopia.

The concept of transboundary natural resources management is strongly related to 'bioregionalism', which views the world as consisting of contiguous but discrete 'bioregions' with the boundaries of each bioregion defined by nature rather than legislation or political expedience (cf. Wolmer 2003). According to Tessera "The Nile River Basin in general hosts problems which call for regional or sub-regional cooperation" (Tessera 2006: 44)" The severe erosion in the upper catchments of the Abbay/Blue Nile River Basins has impacts downstream within and across political borders. Since river basin problems cut across political borders, cooperation across the Nile River Basin is necessary. In river basin management, absolute sovereignty does not work since transboundary cooperation is needed. Sudan, for instance, views upstream reservoirs in Ethiopia as being an efficient way to control floods and an efficient way to store water as it reduces loss of water through evaporation in either Sudan or Egypt which have higher temperatures compared to Ethiopia. The Wall Street Journal adds that 'Engineers from both countries agree that dams in the cool and moist Ethiopian highlands, storing water in deep natural gorges, would lose far less water to evaporation than the Aswan Dam in the hot, dry Egyptian desert. They calculate the savings on evaporation could compensate for the amount of water Ethiopia proposes to use for irrigation' (The Wall Street Journal 23 November 2003).

The Nile Basin Initiative is an attempt to promote an Integrated Water Resource Management approach within the Blue Nile River Basin. This is based on the realization that sedimentation and siltation of dams and reservoirs downstream is a function of upstream land uses. The increased frequency and magnitude of drought in the Ethiopian Highlands has also affected the quality and quantity of water downstream in Sudan and Egypt (cf. Tessera 2006). The impact of environmental degradation is forcing countries to cooperate in order to address 'common dangers' which cannot be effectively addressed without the cooperation of other countries. Tessera (2006) notes that the impact of land degradation in the sub-basin can hardly be solved by any means other than cooperative watershed management. Silt accumulation in the Roseires Dam in Sudan is largely attributed to the upstream activities in the Ethiopian Highlands. The Atbara and Blue Nile are said to contribute 53% of seasonal waters but contribute 90% of the sediment in the Nile (Tessera 2006). Sedimentation is also negatively affecting the Sennar and Aswan Dams and the related irrigation schemes. The Upstream-Downstream project has found that total storage loss in Sennar due to sedimentation is 660 Mm<sup>3</sup> (i.e. 70% of its original capacity) since the dam was built in 1925 and for Roseires is 1,200 Mm<sup>3</sup> (i.e. 40% of original capacity) since the dam was built in 1964 (Field visit 22-27 February 2008). Despite sedimentation being bad for most dams and water reservoirs, in Egypt the building of the Aswan High Dam has further denied downstream farmers the rich silt which made the Nile valley very productive. This complicates assessment of costs and benefits of upstream downstream water users within a river basin.

Downstream impacts of sedimentation include reduced benefits from irrigation, hydropower, navigation, water quality, water quantity, flood control, fishing, and recreation. Poor water quality will result in more expensive water purification methods such as the special filters for the Khartoum water supply (Shapland 1997). Removal of

## Transboundary Water Governance Institutional Architecture: Reflections from Ethiopia and Sudan

sediment in Sudan's reservoirs and related irrigation schemes accounts for half of the operation and maintenance budget (cf. Ahmed 2000; Conway 2000). Sudan is further spending US\$800 million in flood mitigation measures. If mechanism could be put in place upstream which would result in the reduction of, say, the flood mitigation budget, Sudan may be willing to contribute financially towards sustainable upstream watershed management costs. The Payment for Environmental Services (PES) component of this study has found out that farmers are largely willing to pay in kind – rather than in cash for improved upstream land and water management which benefits the downstream dwellers (Alemayehu et al. 2008).

### **Steps towards transboundary cooperation**

Attempts at cooperation and benefit sharing within the Blue Nile Basin go back to the 1960s. The 1959 Water Sharing Agreement allocated the Nile waters as follows: Egypt 66%, Sudan 22% and surface evaporation and surface seepage at High Aswan Dam at 12%. Ethiopia was not included in this water sharing agreement, nor were the other basin countries (FAO 2007, p.8).

In 1967 the Hydrometeorological Survey of the Equatorial Lakes (Hydromet) was launched with the support of the United Nations Development Fund (UNDP), with the primary objective of enhancing the collection of hydro meteorological data. Hydromet operated until 1992. In 1993 the Technical Cooperation Commission for the Promotion and Development of the Nile (TECCONILE) was formed whose intention was to promote development (World Bank 2005). In 1993, the Canadian International Development Agency (CIDA) funded 10 Nile 2002 Conferences which aimed at promoting dialogue and cooperation within the Nile Basin. In 1995 CIDA supported the development of a Nile Basin action plan under the auspices of TECCONILE. In 1997 the Nile Basin Council of Ministers requested the World Bank to lead and coordinate their donor activities (World Bank 2005). In 1997, with UNDP support, the riparian countries also established a forum for dialogue on a 'Cooperative Framework' for the Nile Basin, with three representatives from each riparian country.

In February 1999, the Nile Basin Initiative succeeded the TECCONILE. The NBI was spearheaded by the Council of Ministers of Water Affairs of the Nile Basin states (Nile Council of Ministers or Nile-COM). 'The NBI seeks to develop the river in a cooperative manner, share substantial socioeconomic benefits, and promote regional peace and security. The NBI started with a participatory process of dialogue among the riparian countries that resulted in their agreeing on a shared vision: to achieve sustainable socioeconomic development through the equitable utilization of, and benefit from, the common Nile Basin water resources, and a Strategic Action Program to translate this vision into concrete activities and projects' (World Bank 2005).

### **Institutional Design Issues**

## Transboundary Water Governance Institutional Architecture: Reflections from Ethiopia and Sudan

Transboundary River Basin institutions must represent the interests of the member states without bias. This will result in the transboundary institutions acquiring legitimacy and the necessary support.

Enabling policies and institutions should be in place to be able to monitor and enforce compliance. The institutions carrying out this exercise must have meaningful powers but they must also be accountable to both the upstream and downstream water users, with higher level institutions having oversight powers only. It is important to recognize that the need to satisfy societal requirements has expanded beyond the objective of simply water supply. Increasingly a diversity of concerned parties and organizations seek input into water related decision-making processes. The downstream and upstream water users need to participate actively, not only in the first negotiation process, but also in the fine-tuning of the transboundary water management arrangements over time.

Transboundary water governance institutions must not be disconnected from local level institutions. This entails that there must be nested institutional arrangements where small local institutions form the building blocks, which come together to create larger management institutions. Thus multiple layers of management that link small-scale interactions to larger, and ultimately basin scale actions. Experiences elsewhere demonstrate that there tends to be a disconnection between the river basin management institutions and the water users who are supposed to be served by the transboundary water management institutions. For instance, at societal level, the Mekong River Commission remains far removed from the basin water users (Hirsch 2006).

Experiences from the southern Africa region through the Southern African Development Community (SADC) Protocol on Shared Watercourse Systems and its subsequent amendments has helped to de-securitize the issue of transboundary water management (Turton 2008; Ramoeli, 2002) and enabled Transboundary water management institutions to be viewed as part of regional integration.

An institutionalized transboundary knowledge database is an important component of sharing knowledge and resulting in confidence in the data used by the transboundary institutions. The data is available to all stakeholders. In the Nile River Basin – the Nile Basin Initiative is attempting to do that. The southern African countries have similar initiatives for the Limpopo and Zambezi River Basins (Turton 2008; Ramoeli 2002). The Volta Basin Technical Committee also includes all the six riparian countries in data collection and validation (Lautze et al. 2008).

### **Benefit sharing in transboundary water governance**

Whilst benefit sharing seems to have made significant strides theoretically, there are still a number of operational issues which need to be resolved in the context of benefit sharing in transboundary water governance. In this paper, benefit sharing is viewed as offering flexibility to riparians to separate the physical distribution of river development (where activities are undertaken), from the economic distribution of benefits (who receives the benefits of those activities.) This allows riparians to focus firstly on generating basin-wide benefits (a positive-sum exercise), and secondly on sharing those benefits in a

## Transboundary Water Governance Institutional Architecture: Reflections from Ethiopia and Sudan

manner that is agreed as fair (see Sadoff and Grey 2005; cf. Turton 2008). Research findings in the Upstream-Downstream study have to be juxtaposed to the wealth of global experience on benefit sharing (Sadoff and Grey 2002, 2005; Yu 2007). The Payment for Environmental Services (PES) results under the upstream-downstream project are an important move in that direction. Benefit sharing takes place at various scales and levels. In Ethiopia for instance, it may vary from a small watershed project, to regional government, which may or may not coincide with hydrological zones, going up to the transboundary level where international law and conventions begin to apply.

Who benefits and who loses from benefit sharing – some studies from Latin America are beginning to caution that benefits can potentially accrue to the most powerful whilst not addressing the needs of the poor and female headed households. An understanding of the power relationships at different scales will help inform the structuring of benefit sharing. In the Senegal River Basin, for instance, an artificial river flood is provided each year in order to support local livelihoods (UNESCO 2003).

How do you develop sustainable and targeted funding mechanism which will be used to ‘compensate’ those bearing the costs of watershed and transboundary river basin management? Selling electricity at a cheaper price to the upstream country might benefit the country as a whole – but not the specific watershed community. This might result in poorly targeted incentives which might not reward the poor upstream farmers who are bearing the cost of upstream river basin management. How are the payments going to be made? Should the reward be for only good management or also for actively improving the upstream areas within the river basin? Who pays and for what? (Poras and Grieg-Gran, 2007). Most current transboundary benefit sharing initiatives are largely funded by donors and non-governmental organizations.

Upstream-downstream cooperation delves into broader international relations and political economy issues. What makes transboundary basin level management successful? What is the power balance amongst the states that are involved (Hegemony, neo-hegemony or realisms in international cooperation)? Transboundary Basin Management in the Blue Nile seems to indicate power asymmetry that might be reflected in who shapes what is considered ‘knowledge’. Despite the establishment of ENTRO, ‘scientific’<sup>5</sup> data still seem to be contested and hardly shared (although this could be improving). Confidence building and establishing trust will need to take place first before detailed discussions on benefit sharing (cf. Sadoff and Grey 2005).

Transboundary benefit sharing presents different benefit sharing matrices in which water allocation need not be the only potential benefit. It is possible to share benefits from water without sharing the actual water (cf. Sadoff and Grey 2005). Within the Blue Nile this is still a contested issue which needs to be resolved especially in light of the 1959 Water Sharing Agreement between Egypt and Sudan. Any transboundary river basin management has to be grounded within the specific political and historical settings rather than being an imposition of blue print solutions (cf. Merrey et al 2007).

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<sup>5</sup> Scientific data especially concerning the Nile can easily be politically ‘tainted’ in order to reflect the various country positions?

Finally, transboundary benefit sharing is premised on the assumption that it's feasible to establish these costs and benefits. In most river basins good practices take a lot of time to produce results and this is further complicated by natural phenomenon such as climate change and changing rainfall patterns which also potentially contribute towards land degradation. Establishing causality in most river basins causes a lot of difficulties. 'Values' are also normative, and largely depend on the specific contexts and communities and it is often difficult to have a common understanding across sub-national level – let alone international boundaries. The physical size of the basin means that local level institutions dealing with local issues often find it difficult to acknowledge issues facing others in the basin, who may be located many hundreds of kilometers away, and for whom the key issues may be very different.

### **Conclusion**

While transboundary water governance is the way forward for an integrated approach to water management, there are number of issues that such an institutional architecture needs to address. For the fluid 'benefits beyond boundaries' to be meaningful to all the individual countries involved, the issue of benefit sharing mechanisms need to be critically reviewed in practice. Equity has also to be assessed at various levels from the transboundary to the local level. Will equity at the transboundary level necessarily imply equity at local level? How can all the stakeholders' maximize the benefits whilst minimizing the costs. Finally, transboundary institutional architecture has to be grounded in the water historical trajectories. How do you deal with past agreements on water sharing while moving forward with one shared vision on transboundary water management? This is a further complex equity issue which addresses the weight that needs to be given to existing water use.

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Transboundary Water Governance Institutional Architecture: Reflections from Ethiopia and Sudan

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