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Transboundary water management challenges – current and future opportunities and constraints

The aim of this paper is to provide an overview over the state of the art on transboundary water management. The paper provides and overview over aspects relating to conflict and co-operation on international waters, discusses incentives and disincentives for promoting co-operation, it analyses water from a public goods perspective as well as discusses arguably new areas of importance in the sphere of transboundary waters such as the shared groundwaters and the analytical framework of hydro-hegemony. While the paper is discussing the insights and lessons learned on a global level as well as with a regional focus on the MENA region it is of relevance to the OSCE countries. Arguably there are yet untapped opportunities for closer collaboration on the issue of transboundary waters in the OSCE region and the collaboration between OSCE and UNECE could provide a venue for en even more coherent approach to the matters.

Introduction

International water issues have gained in prominence during the last decades, related as they are to the attainment of almost all of the Millennium Development Goals. Indeed water is a resource that is used to energise *all* sectors of society, ranging from basic food production to advanced industrial technologies. Naturally waters that crosses boundaries has also increasingly been a focus area for debate, research and international engagement. Trans-boundary waters are especially important to poor sections of societies in the developing nations, in part because these mostly rely on 'thirsty' agricultural activities for their survival and trade. In the African continent trans-boundary river basins account for 61% of the total area of the continent harbouring 77% of the population, and including an astonishing 93% of the total available surface water in Africa.

Conflict and Cooperation on Transboundary waters

In the international debate on transboundary water management during the last decades a lot of attention has been directed to the questions of whether states that share a water body, either a surface or groundwater, tend to engage in violent conflict or co-operative ventures. In the past, it was argued that water that crosses boundaries would be a source of conflict if not war. However, more recent research has shown that this is not the case and findings indicate that parties that share a water resource tend to find ways to cooperate for mutual benefits (see for example the transboundary freshwater database at Oregon State University; http://www.transboundarywaters.orst.edu/). Transboundary waters resources that are cooperatively managed can make significant contribution to global and regional peace and stability and to sustainable economic growth. Promoting cooperation on transboundary river

basins is to a large extent process related. This includes building collaborative structures and institutions, at both national and regional levels, building capacity in multi-sector use of water and building trust amongst the riparian states. This process is long term and resource intensive. *Process financing* is often what is needed to secure, deepen and improve water-related collaboration in transboundary basins where the parties have a low degree of other forms of cooperation. It shall be noted, however, that the establishment of institutions for the management of an internationally shared river basin is something that requires long-term support and persistence. Countries (with support from donors) should aim at building lasting institutions that are stable and with well-defined tasks. If this can be achieved the process of cooperation is made easier and transaction costs kept low. (Jägerskog, 2003 and Nicol *et al,* 2000).

From an equity perspective, the existence of power asymmetries between riparians (in terms of economic strength, military capability, or sheer size, for example) may detract from the possibilities for a just and sustainable agreement relating to their shared waters. This has given rise recently to the concept of 'hydro-hegemony', where a particular riparian maintains a dominating position within a basin, often receiving more than an equitable share of the available water resources. However, attaining a fair agreement is of the utmost importance, since quite apart from mitigating risks of conflict, this would have the potential to affect the process of economic and social equalization between (as well as within) the countries sharing a water body.

Benefit Sharing

The concept of benefit sharing has gained increasing attention in the discussions of transboundary waters as a means to move beyond the water and conflict discussions.

By approaching an international water course through a benefit sharing approach, say proponents, as opposed to an approach in which one focuses on water allocation and water rights, more peaceful and sustainable solutions are generated. The benefit sharing approach has in particular been developed through the pioneering work of David Grey and Claudia Sadoff and employed within and through the Nile Basin Initiative. An underlying hypothesis of the benefit sharing approach is that the existing cooperation over transboundary waters in certain river basins can be used to promote cooperation in other spheres, thereby potentially functioning as a conflict prevention mechanism. Other examples of benefits to be materialised could be hydropower, improved environmental stewardship, regional integration and increased trade as well as increased development, stability and peace. The UNECE convention provides a framework within which benefits that could be derived from the river could be shared. The benefit sharing perspective is not presently apparent in the framework convention, however through detailing for example research and development as important areas the conventions could provide a basis for discussions on how to move the debate on benefit sharing forward in this context.

While Benefit Sharing is often referred to it is generally hard to pin down what the concept actually refers to in reality. While some analytical work has been done much remains to be done to develop and conceptualise the approach. Increased understanding of the relationship between the technical level (where most of the actual water co-ordination and cooperation takes place), the political level and the development agenda is important in this regard. Some questions that should be dwelled upon are; is it reasonable to argue that there are, or can be, co-operative spill over effects as a result of the existing water cooperation on other political

questions and issue-areas in the region? What role could international water law play in this regard?[1] Can the existing cooperation over transboundary water in international river basins be used to promote cooperation in others spheres between the parties? Is it indeed feasible to think that water may be a catalyst for increased security, development and eventually regional stability and peace?

Transboundary water management as a Regional Public Good[2]

As pressure on water resources increases, in terms of both quality and quantity, and water resources systems are driven up against their natural limits, the reliance on water infrastructure and water management grows – not only to meet daily requirements, but also to provide security against extreme and variable hydrological events (droughts and floods). Water infrastructure, river basins and watersheds have in many developing countries been neglected and underinvested, and its impact on economic growth is often underestimated. There is a growing recognition that there is a huge need for increasing infrastructure financing to promote water resources management and development and related public goods. Furthermore, well functioning transboundary water management, including addressing sediment control problems and ensuring the well-being of the ecosystem will contribute to the protection of public goods such as lakes and rivers. Sustainable management of transboundary water resources represents in itself a *regional public good* but will also contribute to the achievement of private goods (Nicol et al, 2000). For instance, by jointly managing a river, riparians can generate public goods such as flood and drought protection, increased biodiversity and conservation, improved water quality, and even peace and regional stability. Not all of the public goods mentioned above, however, will necessarily be regional in nature. Care must also be given in managing transboundary water resources as to avoid the generation of public 'bads'.

The existence of *externalities* within a river basin is an important justification for promoting transboundary water management. According to Dorfman and Dorfman (1993) an externality is when "the activities of one person affects the welfare production functions or other people who have no direct control over those activities". James (2005) point out that externalities occur in transboundary water management due to a) hydrological linkages between upstream and downstream use of natural resources, and b) socioeconomic linkages across property boundaries and common lands. Since the activities within a transboundary watershed often spread local and external costs and benefits unevenly between states, regions and people this creates potential conflicts in a shared basin. Indeed the externalities in a watershed produce an inefficient situation in that the full costs of economic activity are not recognized by individual consumers or producers and the resulting outcome less optimal for society. Therefore, by promoting cooperative management, these externalities can be minimized. There exist positive examples of third-party involvement in the provision of regional public goods through the promotion of trans-boundary water cooperation. For example, in the development of cooperative structures between India and Pakistan on the Indus River, the World Bank invested both human resources as well as funds to facilitate the agreement on the Indus Treaty

[1] For example the UNECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes (http://www.unece.org/env/water/pdf/watercon.pdf) provides a legal framework for the OSCE area of interest.

[2] This section is taken from the SIWI paper (2007) "Transboundary water management as a regional public good – Financing Development – an example from the Nile"

(Kirmani and Le Moigne, 1997). The sustained cooperation through even violent conflicts is arguably a major regional public goods benefit.

Emerging issues

HydroHegemony

Drawing on the findings of Wolf's Freshwater Transboundary Dispute Database has enabled a shift in the global water policy from a 'water wars' paradigm to a 'water co-operation' paradigm. However, if the new water co-operation perspective is analyzed it has yet to address the questions of *why* and under *what conditions* such cooperation occurs. Also the *quality* of that cooperation is seldom thoroughly addressed. In many trans-boundary river basins (or aquifers), political power is asymmetrically distributed. Analysis conducted through the Framework of Hydro-Hegemony shows us that the most powerful riparian is able to determine the outcome of the interactions – for unilateral or collective good. Whether the main interests are allocations (more water), flood control (less water) or improved cooperation (benefit sharing (?)), the 'hydro-hegemon' can (will) lead the way. The power position of the basin hegemon (i. e. the stronger state(s) in a shared basin) implies that it can manipulate and steer outcomes on issues pertaining to their shared waters (and indeed other issue areas as well). The power of the hegemon in this regard is relating to factors such as economic, military as well as discursive power but also to the level of human resource capacity in the specific sector. This is important for those of us engaged in transboundary water policy because a) it provides diplomats and development practitioners a guide that goes beyond the shallow political analysis which are regrettably oftentimes made in the preparation of projects and programmes. This is done by way of increasing our understanding of the underlying power structures and the fact that what may seem like genuine co-operation may well be a rather "coercive" function and b) it further points to the need for international actors to work to 'level the playing field'.

Transboundary Groundwater

At SIWI as well as elsewhere we have increasingly noted that while transboundary water issues relating to surface water are often well addressed in academic and policy settings the issue of groundwater has been almost neglected up until fairly recently. The work performed by the International Shared Aquifers Resource Management (ISARM) is therefore welcome. In the work that SIWI does on the water issues in the Middle East we are increasingly focusing on groundwater as well.

The problematic political situation in the MENA region is compounded by the traditional challenges that face the water sector in the MENA region. Water governance in particular is hampered by a lack of coherent laws and seemingly incompatible political interests. The weak environmental legislation is not effective in preventing over-extraction and *pollution of groundwater resources*. Irrigated agriculture continues to consume water at a faster rate than it is naturally renewed. Pesticides, herbicides and industrial pollution combined with saline intrusion of the aquifers near the seas, resulting in serious groundwater quality concerns. Furthermore, the economic rewards of most irrigated agriculture may not outweigh the environmental costs. The increasing population of the MENA region together with urbanization and economic development create a steep increase in demand for water. The population is growing from around 100 million in 1960, through a present 311 million to a projected figure higher than 430 million by 2025. In 2004 the population growth rate in the

Middle East was 2.3% and in North Africa 2.1%. The average amount of water per capita in the region will continue to drop. A hidden problem is the use of groundwater, which many countries are over-extracting and polluting at unsustainable rates. Currently groundwater is not given much attention in the region, despite the serious issues associated with it. The governance of the region's groundwater is critical. The control of groundwater abstraction is usually organized with a permit system.

Rationale

While fairly large efforts have been made by the international community to address the transboundary surface water resources problems in the MENA region (still with a limited success) the shared groundwater of the region has been overlooked. Large portions of the water used in the MENA region are pumped groundwater (often used for irrigated agriculture). Most of the groundwater in the region is also transboundary. For example, the water dispute between Israel and the Palestinians mainly concerns their shared aquifers, Jordan and Saudi Arabia share the Disi fossil aquifer in which both sides are pumping at a fairly high speed and Jordan and Syria share the basalt aquifers which is currently being pumped at a non-renewable rate creating, among others, problems with the waters in Amman.

Central issues in need of being addressed are:

- Where are the key information gaps regarding the MENA region's groundwater resources?
- Is there a need for more coherent research on the groundwater in the region?
- What are the appropriate governance mechanisms for the MENA region's groundwater?
- What are the relevant initiatives for joint management of shared groundwater? What can we learn from them?

Conclusions

1. **Cooperative management of a transboundary river basin is an important source of public good benefits. UNECE transboundary water convention, forms a basis for advancement of these approaches**

2. **Developing and supporting transboundary river basin management are long term processes and requires process financing, could be an important catalysts for promoting economic growth and regional stability.**

3. **Riparians, donors and international organisations alike need to consider the issue of power relations between the involved parties to a much larger extent than has been the case previously. A thorough political analysis should be made in conjunction with a possible intervention**

4. **Donors and international actors can usefully support weaker parties as a means to 'level the playing field' in transboundary basins. The neutral role of OSCE could be usefully tapped in this regard, especially where the political momentum is weak or missing.**

5. **The concept of <u>"Benefit sharing"</u> is not utilised to it's full potential, Sharing of benefits of water instead of fighting over volumes of water can be a fruitful way forward, where there is a deadlock in negotiations**
6. **There is a need to further investigate and devote research financing to the issue of <u>transboundary groundwater</u>**

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