“Trickling down or spilling over?”

Exploring the links between international and sub-national water conflicts in the Eastern Nile and Syr Daria Basin

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Paper to be presented at the ECPR Joint Sessions of Workshops
Edinburgh, 28 March – 2 April 2003
Workshop 9: “Geography, Conflict and Cooperation”

Financial support of this work provided by the Individual Project IP7 "Environmental Change and Conflict Transformation" of the NCCR North-South "Research Partnerships for Mitigating Syndromes of Global Change", funded by the Swiss National Science Foundation (SNSF) and the Swiss Agency for Development and Cooperation (SDC) (see http://www.nccr-north-south.unibe.ch) is acknowledged by the authors.

ABSTRACT

This paper focuses on the linkages between international and sub-national water conflicts in the Eastern Nile and Syr Daria Basins. It follows the notion of "conflict system", to conceptualize dynamic linkages between different "water conflict arenas". These arenas are connected through the channeling of material (e.g. water) and symbolic resources (e.g. political legitimacy) from one level to another. The aim of our paper is to categorize possible linkages, describe examples and explore implications for water conflict mitigation, with the goal of a better problem-solving potential. The examples in our study indicate that once a countries' supply-side infrastructure is well developed, a policy shift has to take place to demand-side management of water resources. This transition involves conflicts when water is reallocated between sectors. Avoiding demand-side management in the long-term, however, is likely to lead to an escalation of water conflicts in the sub-national and international arena**.** The role of third parties, their financial support and potential to facilitate communication in international water conflicts is highlighted. Conflict parties and third parties can enhance their conflict management effectiveness by taking water conflict linkages into consideration, focusing on demand-side management in the long-run, and increasing the political participation of affected actors.

1. Introduction[1]

In the year 2000, 500 million people were living in countries suffering from water-stress or water scarcity, with less than 1700 m^3 water/capita and year. By 2025, 3 billion people in 48 countries will be in this category. There are 25 million environmental refugees, many stem from international river basins (UNFPA 2001). World wide 260 major river basins cross national boundaries, responsible for 85% of the earths run-off and draining about 45% of the earths surface (SEI 1997, Wolf et al. 1999). For countries that share the same river, competitive usage can accentuate the threat of running dry. [2]

Water conflicts in transboundary rivers systems have been the object of a growing literature and ongoing debates among scholars of political science, international relations and political geography. The subject is approached from two main angles: 1) If, how and under what conditions does water scarcity lead to conflict, violent conflict or even war? (Homer-Dixon 1999, Libiszewski 1999, Lonergan 2001, Toset et al. 2000)[3]; and 2) How can international rivers be managed and water conflicts be mitigated (Trolldalen 1992, Biswas et al. 1997, Wolf 2002)? There is a wide consensus that water scarcity is never the main reason for two countries to go to war. Violent conflicts over scarce water are more likely to be found on the sub-national level. Water scarcity may be a politically destabilizing factor that can lead to political tensions and hinder sustainable development: "...while "water wars" may be a myth, the connection between water and political stability certainly is not." (Wolf, 1998). Past empirical research has identified and studied a number of factors significantly influencing the dynamics of international river conflicts. These can be divided into context factors, that are harder to influence directly, and the more malleable proximate factors, directly influencing water relations between and within riparian states. Context factors include: the natural availability of water resources[4], the level of economic and political integration and existence of non-environmental conflicts in the region[5], the symmetry of power between riparian countries[6], the number of riparian states[7], the economic development of the riparian states and the world

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[1] This paper reflects "research in progress" in the framework of the Individual Project IP7 "Environmental Change and Conflict Transformation" of the NCCR North-South (see title page). It builds upon past and ongoing PhD research and field work by Simon A. Mason (Center for Security Studies, Swiss Federal Institute of Technology, Zurich) and Yacob Arsano (Department for Political Science and International Relations, Addis Ababa University) on cooperation between riparian countries in the Nile Basin. On PhD research by Christine Bichsel (Swiss Peace Foundation / Center for Development and Environment, Berne) on water conflict mitigation in Central Asia and by Tobias Hagmann (Swiss Peace Foundation, Berne) on local resource conflicts in pastoral Ethiopia. The authors would like to thank Dr. Eva Ludi and Elke Steinmetz for their helpful contributions.

[2] Our paper does not examine conflicts related to clean water, sanitation and hygiene, lack of which causes more than 3 million deaths per year world wide (UN 2002), an economic, political and infrastructure problem that lacks direct international implications. Our paper also does not look at the impact of war on water, see Fleming/Graz (1998).

[3] Examples of water conflicts and management events are listed in the databases: 1) Wolf (2000b) and 2) Gleick (2000).

[4] Water dependency is calculated as the percentage of internal renewable water resources of the total actual renewable water resources (AQUASTAT 2003), i.e. dependency on rainfall outside of a states territory.

[5] The more non-environmental conflicts, the more difficult it is to resolve water conflicts, as tensions between the countries are already sensitive. Examples are given in Mason/Spillmann (forthcoming).

[6] According to Homer-Dixon (1994) and Frey (1984), conflict is more likely if the downstream riparian state is highly dependant on water and is powerful in comparison to the upstream riparian state. Recent developments in the Nile Basin and Euphrates/Tigris basin contradict this argument, however. The downstream country is always geographically weaker. A powerful downstream country (economically, diplomatically and militarily) can partly compensate the geographical weakness. This may lead to power symmetry that can enable cooperation, as in the Nile Basin. An upstream country (e.g. Turkey), that is also economically more powerful than the downstream country (Syria, Iraq), has little incentive to cooperate, and the downstream country has little leverage to influence the upstream country.

[7] The more riparian states, the harder the coordination task. This is one reason why Egypt is interested in a unified Sudan.

market for agricultural products[8] (Durth 1996, Marty 2001, Allan 1997, Wolf 2002). Proximate factors include: 1) national policies affecting water management and water allocation to different sectors[9], 2) international policies, the institutional[10], legal setting in the river basin, and the form of extra-basin involvement, and 3) political participation of different actor groups on the sub-national and international level related to water management and allocation (Libiszewski 1999, Wolf 2000a, Wolf 2002, Delli Priscoli 1996, Trondalen 1997, Mason 2003).

While the debate over the environment, and especially water, as a cause of violent conflict continues (Diehl and Gleditsch 2001), there remains an urgent need for more insight into how water conflicts (violent and non-violent) can be managed with the consequence of a better problem-solving potential[11]. Competition over freshwater in international river basins affects two interdependent systems[12]. First, the natural river basin can be viewed as a system, where riparian countries of the same basin agree, dispute and/or negotiate over who gets which quantity and quality of water. Second, the riparian countries can be viewed as subsystems, where different sectors and territorial units compete for their share within these countries. In terms of conflict analysis, the allocation of water between and within countries raises the question how forms of cooperation (or conflict) on the international level reinforce conflict (or cooperation) on the sub-national level and vice versa. A central question is whether and through which pathways conflicts and cooperation over scarce resources are transferred - "shifted" - from one level to another. How does conflict related to freshwater use in transboundary basins "trickle down" or "spill-over"[13] between and within riparian countries and what are the implications for conflict mitigation?

For the analysis of these linkages between different levels of aggregation we use an explorative "process-tracing" methodology (Schwartz et al. 2001), based upon selected in depth case studies in the Eastern Nile Basin[14] and Syr Daria Basin[15]. We argue the following three points: First, linkages in the two regions/basins are mainly related to national policies in the agriculture and energy sector, specifically to the chosen strategies of supply- and demand-side management. Second, linkages are influenced by the degree of political participation of affected actor groups, i.e. the recognized legal and political, formal and informal opportunities for stakeholders to voice their interests and to become engaged in policy formulation and implementation on the sub-national, national and international level. On the international

[8] Arid countries with sufficient economic capacity can import "virtual water", i.e. water in the form of food. 1 kg of bread needs about 1000 litres of water to produce, it is easier to transport food than water (Allan 1997).

[9] Negative externalities resulting from industrial or municipal pollution are generally easier to mitigate than those resulting from irrigation, as water is consumed. A water treatment plant can improve the water quality, but water that is consumed in irrigated agriculture is lost through evapo-transpiration. Irrigated agriculture is responsible for 70% of the global water withdrawal, while the industrial sector consumes 20% and the municipal sector 10% only (SEI 1997). Water used for hydroelectric power production (HEP) can also lead to conflicts. Since water used for HEP is a question of timing and not one of absolute quantity, it is generally less contentious than large irrigation schemes.

[10] Wolf (2002:15) remarks that "…it is when the rate of change within a basin exceeds the institutional capacity to absorb that change when we find tensions".

[11] Similarly, while the debate on the causes of climate change is ongoing, the pragmatic stance is that humanity has to reduce its polluting habits; since by the time human induced climate change is proven, it will be too late for precautionary actions.

[12] A system is a set of elements interrelating in a structured way. The elements are perceived as a whole with a purpose. A system's behavior cannot be predicted by analysis of its individual elements. The properties of a system emerge from the interaction of its elements and are distinct from their properties as separate pieces. The behavior of the system results from the interaction of the elements, and the interaction between the system and its environment (System + Environment = A Larger System). The definition of the elements and the setting of system boundaries are *subjective* actions (RPR 2002).

[13] In the figurative sense, not referring to (neo-)functionalist theory.

[14] Based on literature research and 70 explorative expert interviews in Egypt, Spring 2000, Sudan and Ethiopia, Spring 2001.

[15] Based on literature research and first field trips to Uzbekistan, Spring 2002.

level non-state stakeholders are not involved in negotiations, but they can be active in mandating officials and being part of a consultative process. Third, international policies, institutions and agreements set the framework for international relations over water resources in a shared river basin. International policies also subsumes the involvement of extra-basin actors. These have an increasingly important role in international river basins, e.g. by setting political conditions for financial support or by intervening as third-party "mediators" or facilitators.

2. Linkages: transferring, transforming or escalating water use relations

Conflicts can be differentiated according to their intensity ranging from "competition" to "violent conflict" as well as a number of other criteria according to the outcomes, actors, level or scale, duration or the issues involved in conflict. While a number of definitions have aimed to grasp violent environmental conflicts (see Gleditsch 2001, Homer-Dixon 1999, Libiszewski 1992), we adopt a more generic and resource-centered definition. We define environmental conflicts as "conflicts over the use of natural resources, where at least one of the actor groups is negatively affected by objective and subjective divergences in positions and/or interests" (adapted from Trolldallen 1992). This follows a conflict analysis[16] approach, encompassing different levels of intensity between interdependent actors involved in resource use, in this case, freshwater in transboundary river basins. Resource use refers to the utilization of goods and services derived from renewable resource units such as land, water, flora and fauna from source to sink (Knoepfel et al. 2001; Ostrom 2000). These goods and services influence and structure natural resource use conflicts through their spatial (geographic perimeter of a specific renewable resource such as a river basin or a grazing land area), temporal (past, present and future use of resource flow) and social (different perceptions on the resource and its use) characteristics (GFEU 1995). Environmental conflicts consist of three sub-systems: at least two human systems (the conflict parties) and the environmental system (over which the parties have a conflict). When the adaptive capacity of at least one of the involved sub-systems is overtaxed, environmental conflicts may arise. The adaptive capacity of the environmental systems to human use has to be considered, since negative effects are difficult to foresee and prevent in time (e.g. degradation of the ozone layer[17]). Conflict is a "transforming agent for systemic change" inherent in all societies, manifest on all levels of social interaction (Lederach 1995:18).

Dyadic relationships between actors competing for water use in river basins are empirically observable on different, politically and historically constituted levels; namely in local, national and international arenas[18]. These "water conflict arenas" are characterized by the involvement of diverse actors, from intergovernmental bodies to local communities and by varying degrees of conflict intensity, from interstate tensions over water allocation to acute conflict over property rights between villagers.

[16] The goals of conflict analysis are a structured approach to conflict dynamics, a full understanding of the critical issues or "breaking points" that determine the course of conflict, the identification of optimal opportunities for intervention, the determinaton of adequate intervention steps, and the understanding of escalation and de-escalation phases (Fisher et al. 2000)

[17] The ozone layer will reach its original thickness only in the mid 21st century, although the chloro-flouro-hydrocarbons have been fully banned already in 1987 through the Montreal Agreement.

[18] To simplify we distinguish between sub-national and international water conflict arenas. The first includes non-state and state actors of the same national territory while the latter refers to conflict between different national governmental (and sometimes non-governmental) organizations.

From a conflict system's perspective, water conflict arenas are linked through resource transfer, and a number of institutional and political variables (McGinnis 1999). The term "watercourse" encompasses a system of surface waters and groundwaters with a physical relationship to each other (Convention 1997). A river basin, on the other hand, is the area of land from which all surface run-off flows through a sequence of streams, rivers and lakes into the sea at a single river mouth, estuary or delta (Directive 2000). All stakeholders in a watershed are related to each other in an upstream downstream relationship as they are dependent on the same water as it flows from source to river mouth. In addition to water as a material resource linking actors of different levels, the transfer of other material (e.g. finances, weapons) and non-material/symbolic resources (e.g. political legitimacy) relate these different levels with each other in an interdependent conflict system. On a more abstract level, these material and non-material flows are shaped by principles concerning *how* the resources are transferred from one level to another. Governance, for example, including policies, regime type and opportunities for political involvement, link the different water conflict arenas by structuring the behavior and strategies of actors groups. Such structuring factors influence actors confronted with the choice of adopting political or military means to defend their resource-related interests.

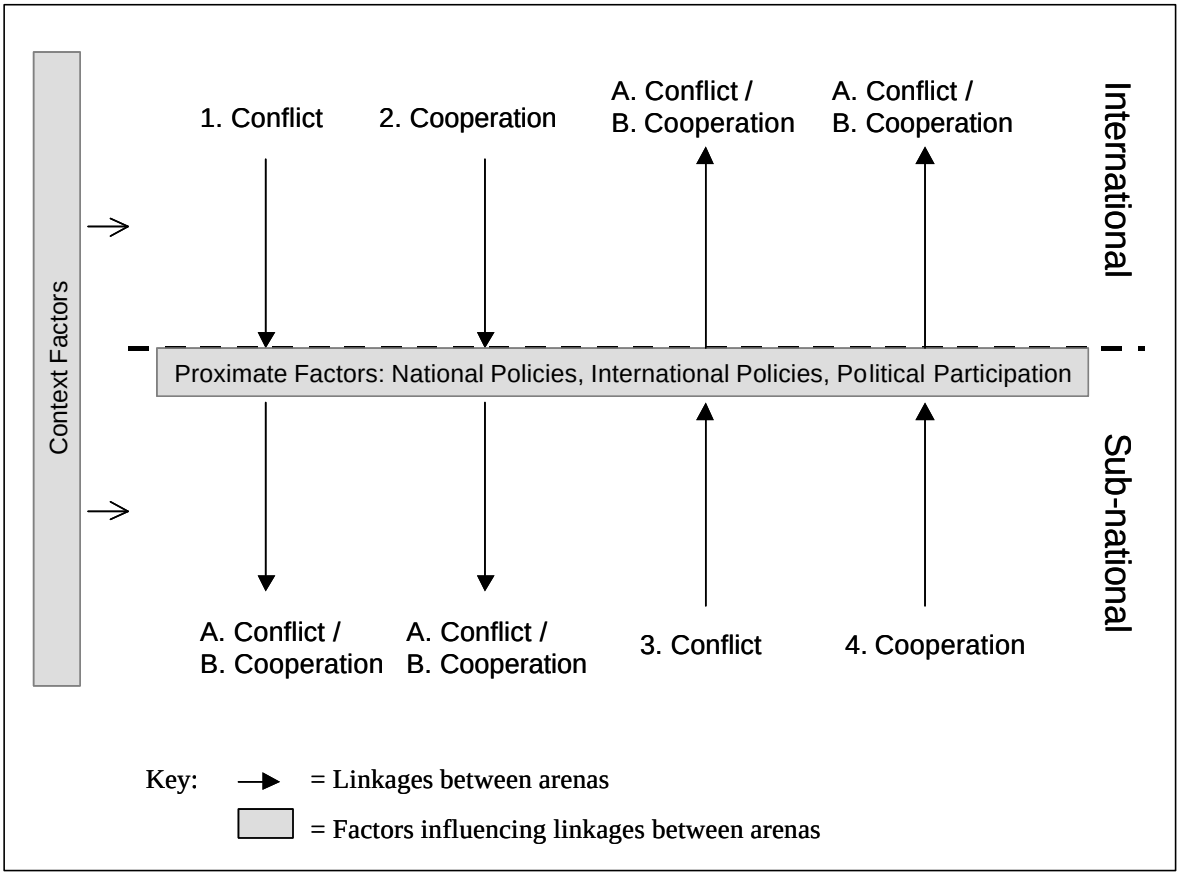

Figure 1: Conjectural water conflict and cooperation linkages between inter- and sub-national levels

Thus, the linkages between conflict and cooperation over water resources on the sub-national and international levels can be conceptualized as three distinct, yet often complementary key processes in an interdependent conflict system. Firstly, conflicts and cooperative relations between actor groups over

resources can be *transferred* from the sub-national level to the international level and vice a versa. A second form of linkage is when conflicts are *transformed* into cooperative relations[19]. A third form of linkage is when cooperative relations *escalate* into non-violent or violent conflicts. The linkages are not understood in terms of causal effects, but in terms of dynamic processes - transfer, transformation, escalation - leading to changes in the conflict system which in turn is shaped by a number of context and proximate factors.

All possible conjectural linkages between conflict and cooperation on sub-national and international levels in riparian states are featured in figure 1. These conjectural interactions include cases in which international conflict fosters intra-national conflict (1A) or cooperation (1B), international cooperation reinforces intra-national conflict (2A) or cooperation (2B), intra-national conflict leads to international cooperation (3A) or conflict (3B), and cases in which intra-national cooperation strengthens intra-national conflict (4A) or cooperation (4B). Table 1 gives indications on some of these dynamics linkages for the Eastern Nile Basin and Syr Daria Basin[20].

Table 1: Interactions between inter and intra-national water conflicts in the Eastern Nile and the Syr Daria basins

Code	Description	Linkage examples and scenarios
1A	International conflict contributes to intra-national conflict	*Documented*: International conflict between riparian countries in the Nile Basin prevents access to financial resources and hinders development of water resources as for instance in Ethiopia (Lemma 2001). Lack of development in its turn can lead to sub-national conflicts, mainly between different land use forms (pastoralists vs. farmers) or between environmental refugees and the local population (Baechler et al. 2002).
		Scenario: Kyrgyzstan, Ferghana valley: Non-cooperation in water and energy issues at interstate level in the Syr Daria basin could lead to increasing production of hydropower by Kyrgyzstan to cover the national energy demand, and thus result in a decrease of water availability during summer time in the Ferghana valley, where water is already a scarce resource. This could increase the potential for conflict within the Kyrgyz part of Ferghana valley between different user groups, formed often along ethnic lines, given the history of violent conflict and the present socio-economic conditions. (see Weinthal 2002).
1B	International conflict contributes to intra-national cooperation	*Unlikely*
2A	International cooperation contributes to intra-national conflict	*Documented:* In the Agreement of 1959 Egypt and Sudan agreed to construct the Jonglei Canal I, but some of the stakeholders in Sudan were not taken into consideration. The digging machine for the canal was one of the first targets of the Southern Sudanese opposition in 1983, when the second Sudanese civil war broke out (Collins 1990).
2B	International cooperation contributes to intra-national cooperation	*Documented*: Through international cooperation, countries gain access to international financial and political resources, that they can use in their countries to increase efficiency and cooperation between different stakeholders (e.g. through capacity building programs), or in regional development programs (e.g. Gambela) (NBI 2001b, 2001d)
3A	Intra-national conflict contributes to international cooperation	*Unlikely*

[19] Terminology refers to "conflict transformation" approaches (see Lederach 1995, 1998, Reimann 2001).
[20] The empirical validity of some of these linkages needs further investigation as some cases are future scenarios rather than well-documented ex-post analysis.

3B	Intra-national conflict contributes to international conflict	*Documented:* Unequal water allocation among provinces and users within Uzbekistan leads to occasional water scarcity and potentially to internal conflict (see Wegerich 2001d, ICG 2002b). According to the downstream country, Kyrgyzstan is fully to blame for water scarcity in Uzbekistan due to the quantity and seasonal allocation of its water release. Therefore, the conflict at international level might partly be a relegation of a sub-national conflict.
		Scenario: According to observers, local (water) conflicts in the border regions of the Ferghana valley are often not dealt with adequately due to lacking conflict mechanisms at this level. Due to an observed tendency of such conflict to separate the conflict parties along ethnic lines, there is a risk that they could be transferred to higher levels and even be instrumentalised in the ongoing international conflict.
		Documented: In Egypt the harvested area under rice and sugar cane (high water consumers) is restricted, but the policy is not enforced to avoid political unrest within the country (FAS 2002, Noeman 1999). The linkage of this to international relations in the Eastern Nile Basin is hypothetical, but Egypt may aim to increase international supply-side projects instead of reforming its water sector.
4A	Intra-national cooperation contributes to international conflict	*Documented*: Non-water related cooperation between the warring Southern Sudanese opposition (SPLA/M)* and the Government of Sudan may lead to peace (Machakos peace process). If this later leads to an independent South Sudan, conflict between Egypt and Sudan will result (Farag 2003).
4B	Intra-national cooperation leads to international cooperation	*Unlikely*

* Sudanese People's Liberation Army/ Sudanese People's Liberation Movement

3. Proximate factors influencing linkages

From the standpoint of conflict mitigation, proximate factors are of special interest to our analysis as they are less static than context factors and are (partly) explicative of the dynamics of conflict and cooperation in different water conflict arenas. The proximate factors we focus on are national policies, international policies and political participation.

National policies designate actions and strategic decisions directly formulated by the state influencing water use and management. Countries that suffer from water scarcity have to choose in which sector they invest their water resources. This depends specifically on their agriculture, energy, industry and water policy. These policies are confronted with a number of strategic choices, namely market oriented versus self-sufficiency policies, economic efficiency versus and considerations of social stability, and supply-side versus demand-side management strategies. National policies influence material flows (water allocation between and within countries) non-material flows (political participation of different actors in water management at different levels) and structural principles guiding these flows (basic economic and political orientation of a country) between the sub-national and international arena.

National policies dealing specifically with water management can be differentiated between supply-side and demand-side strategies. A society can ensure its water resources by augmenting the supply, or by reducing the demand (figure 2). Supply-side management refers to infrastructure projects to increase the basic availability of water. Augmenting the supply has physical and financial limits, however, as desalination of salt water is too expensive to use for producing food, and there are limited sites where dams can be built to minimize water lost to the sea, where swamps can be canalised to reduce the water

lost through evaporation, and rivers diverted to augment the water in a specific area. On a global scale, supply-side management can increase the total available renewable freshwater resources from a minimum of 9000 km^3/year to a maximum of 14000 km^3/year (Zehnder 1997). Demand-side management is defined as "Implementation of policies or measures which serve to control or influence the demand" (EEA 2001). It may be divided into efficiency gains within each sector, and efficiency gains achieved by reallocating water from one sector to another (SEI 1997: 24). In the agricultural sector the technology of drip irrigation uses water more efficiently than flood irrigation, an example of intra-sector efficiency increase. As water becomes more scarce, water may be reallocated between sectors according to its highest economic value, an example of inter-sector efficiency increase. Food is imported ("virtual water"), for example, compensating for water reallocated out of the agricultural sector (Allan 1997). This saved water can then be used in the industrial sector where it has a higher economic return value. A further demand-side management strategy aiming at increasing the availability of water addresses consumption habits. On a 100% vegetarian diet, for example, the earth's water resources could feed three times more people than on a diet where 20% of the calories are supplied by meat (Zehnder 1997). Demand-side management involves pricing, reduction of losses, allocation principles, re-use of treated sewage, or technological means of increasing efficiency (e.g. drip irrigation). In many countries, demand-side management is not yet a predominant strategy. Most countries supply free or subsidized water for irrigation as well as subsidized water infrastructure. Furthermore, few countries have well defined demand management policies and techniques (Arlosoroff 2002).

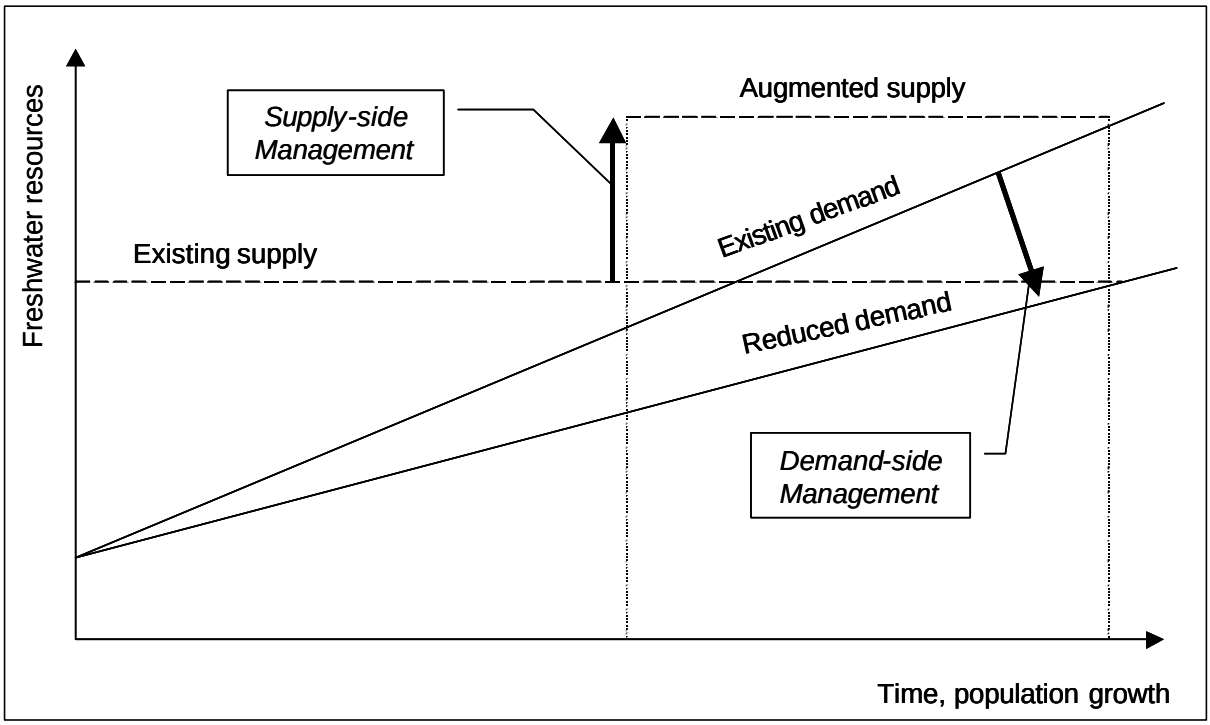

Figure 2: Meeting water needs through supply- or demand-side management. Physical and financial limits to supply-side management lead to demand-side management in the long term. According to Arlosoroff (2002).

According to Ohlsson (1999), water conflicts are related to supply- and demand-side management, and international conflicts over water resources are expected mainly on the supply-side. Dams that are built to increase national water resources potentially take these away from the downstream country. Demand-side management on the other hand decreases tensions between countries, according to Ohlsson, as the management strategies focus on the water users within the country, i.e. reallocating water between different users. According to this model, conflicts in relation to demand-side management are more likely to be found on the intra-national level. As water become more scarce and countries are forced into demand-side management, a shift from international water conflicts to intra-national water conflicts is to be expected (Ohlsson 1999) (In our diagram this would mean a transition over time from 1B to 2A).

Water scarcity can be viewed as a context factor when the natural availability of water resources is referred to. If water scarcity is understood to include how society deals with water, for example in the demand for water, then it can be considered as a proximate factor. We follow the latter understanding, and differentiate between four measurements of water scarcity: 1) internal renewable water resources (IRWR), 2) actual renewable water resources (IRWR plus inflow from upstream countries taking upstream abstraction into account), 3) total and sectoral water withdrawal as a percentage of actual renewable water resources, and 4) net import of water in the form of food (figures for our cases listed in table 2) (AQUASTAT 2003). A high dependency (little internal renewable water resources (IRWR)) on water resources outside of a states' territory may increase the international water conflict potential. Conversely, a country may have abundant water resources, but little infrastructure to use them (e.g. D.R. of Congo, Ethiopia), this may result in intra-national water conflicts (minimal water withdrawal). The degree of water withdrawal can be viewed as a rough indicator for how far the water infrastructure of a country is developed, i.e. how far supply-side management has been implemented.

International policies in the widest sense also includes the international food, fiber and energy market and therefore they influence the agriculture and energy policy of a country. The international cereal market is unstable and controlled by few major exporting countries. Arid countries therefore often grow cereals as part of a self-sufficiency policy, even if it would be more economic to import cereals ("virtual water") (Yang / Zehnder 2002). The self-sufficiency policy may exacerbate water scarcity in a shared river basin. If the self-sufficiency policy is given up, however, resulting in reallocation of water from water inefficient crops to high value crops or from the agricultural sector to another, civil unrest may follow. More specifically, international policies have an impact on the institutional capacity of a river basin management regime and legal framework for international water relations (Marty 2001, Wolf 2002). It lies out of the scope of this paper to deal with these issues here. In summary: there are no globally accepted legal principles for allocating water between different riparian states. Generally, upstream riparian states adhere to the "doctrine of absolute sovereignty" (state has absolute rights to water flowing through its territory), whereas downstream riparian states claim the "doctrine of absolute riparain integrity" (every riparian is entitled to the natural flow of a river system crossing its borders) (Trolldalen 1992). Both positions have hardly ever reached international acceptance. A more recent version of the same positions, is that upstream countries stress the principle of "equitable use" and the downstream countries stress the

importance of the principle of causing "no significant harm" (Convention 1997). The UN Law on the Convention of Non-navigation Use of Transboundary Watercourses gives some guidelines on what points need to be considered in a river basin legal framework, but since there are very few basins world-wide where all the riparian states of the same basin voted for the convention, its impact is limited (UN 1997).

Access to financial and political resources by different actor groups (state and non-state actors) shapes the "power" and strategies of interest groups to fulfill their aims. Extra-basin actors influence the access of state actors to financial resources. The "Operational Policy 7.50" (OP 7.50) of the World Bank, for example[21], calls on riparian states to come to an agreement over projects that have an effect on each other (World Bank 1994). As financial support is made dependent on cooperation, OP 7.50 creates economic incentives and motivates riparian countries to cooperate. International cooperation may lead to conflict or cooperation on the sub-national level, depending on how the interests of sub-national actors are taken into consideration. Conversely, conditions such as OP 7.50 can also hinder development of water resources, if downstream riparians veto projects upstream. When development is hindered, conflicts on the sub-national level may result. If multiple third-parties are involved, donor competition may increase the total available financial resources. Due to lack of coordination, however, many projects often run parallel, and conflict parties can instrumentalize the competing third parties (see characterization of third-party involvement in the Nile and Syr Daria Basin (below), and 14 examples of third party management efforts in environmental conflicts: Mason / Spillmann (forthcoming)).

The degree of *political participation* of different actor groups (state, non-state) in the policy or project formation, implementation and evaluation directly affects the acceptability and implementation of these national and international policies (Knoepfel et al. 2001). Opportunities for participation are for instance determined by the openness or closure of national governance and international regimes with regard to the demands of interest groups. Actor groups deliberately excluded from policy processes related to water use on the national or international levels are incited to use confrontational rather than deliberative strategies to pursue their interests. This is notably the case for national policies in which state actors focus their actions on exclusive beneficiaries (such as an industrial sector heavily reliant on hyroelectic power) without previously consulting other stakeholder groups affected by new forms of water distribution (such as farmers dependent on irrigated crops).Yet it also applies to interstate negotiations between riparian countries which are characterized by undemocratic state actors which do not take into account legitimate claims of their respective local communities. The report of the World Commission on Dams, jointly developed by NGOs and the World Bank, calls for more public participation of people directly affected by dam projects (WCD 2000).

[21] The same policy of requiring an agreement between riparian states in which they have to express their need for the project and the will to cooperate is applied by Asia Development Bank.

4. Evidence from the Eastern Nile and Syr Daria basins

This section examines water conflicts in the Eastern Nile and Syr Daria Basin, linkages between water conflicts on the national and international level, and how these are related to supply- and demand-side water management policies.

The two basins show similarities, such as the existence of non-environmental conflicts, low economic and political integration or limited political participation (table 3). Differences between the basins include the more limited natural water availability (table 2) and lower development in the Eastern Nile Basin (table 3). Tajikistan with the lowest Human Development Indicator (HDI) in the Syr Daria basin has a higher HDI than Egypt, with the highest HDI in the whole Nile Basin.

Table 2: Water resource use in the Eastern Nile and Syr Daria basins

Country	Dependency ratio % (a)	Total actual renewable water resources (m^3 per capita and year) (a)	Agricultural water use % (a)	Average annual net cereal imports 1995-99, kg / capita (or as water equivalent, m3 / capita) (b)	Sources of electricity, hydropower in % (c)
Egypt	97	859	78	139	20.8
Ethiopia	0	1749	93	8	87.3
Sudan	77	2074	97	14	53.0
Kazakhstan	31	6778	82	-225*	12.5
Kyrgyz Republic	0	4182	94	28	89.1
Tajikistan	17	2625	92	72	98.8
Uzbekistan	77	2026	92	45	12.5

Sources: (a) AQUASTAT (2003), (b) FAOSTAT (2000) (Conversion ratio is 1 kg of cereal to 1 m^3 of water; * Kazakh cereal exports), (c) World Bank (2000) (figures for 1997).

Table 3: Comparison of factors influencing water conflicts in the Nile and Syr Daria basins

Factors:	**Nile Basin (b)**	**Syr Daria Basin (c)**
Context factors:		
Natural availability of water resources (a)	water scarcity in 6 0f 10 basin countries (a)	relative sufficiency in all basin countries (a)
Level of economic and political integration	low	low
Existence of non-environmental conflicts in the region	given: -foreign support of internal opposition -regional hegemony -civil war (b)	given: -local border conflicts and tensions between ethnic groups in Ferghana valley -Islamist movements and repressive state reactions -strategic interests in oil and gas resources by extra-basin actors (c)
Symmetry of power (economic, geographical, political) between riparian countries	partially given	partially given
Number of riparian states	10	4
Economic and political development	low (HDI of countries between 0.327 (Ethiopia) and 0.642 (Egypt)) (d)	medium (HDI of countries between 0.667 (Tajikistan) 0.750 (Kazakhstan)) (d)
Dependency on world agricultural market	high (cereal import, cotton export)	High for downstream countries (cotton export)
Proximate factors:		
National policies affecting water use	-self-sufficiency goal -high importance of irrigation -relative importance of hydropower -demand and supply-side management, stress on demand-side management	-self-sufficiency goal -high importance of irrigation -relative importance of hydropower -demand and supply-side management, stress on demand-side management
International policies affecting water use	-extra-basin funding conditions -coordination of third-party (given)	-extra-basin funding conditions -coordination of third-party (low)
Political Participation affecting water management	limited: -Nile 2002 conferences -Nile Discourse	limited: -Numerous conferences

Sources: a) AQUASTAT 2003, < 1700 m3/capita and year = water scarcity, > 1700 m3/capita and year = relative sufficiency. b) If not specified otherwise: Mason (forthcoming), Arsano (forthcoming). The partial power symmetry between Egypt and Ethiopia is understood as a balance in the greater economic and political power of Egypt in relation to the geographically more powerful upstream position of Ethiopia. c) If not specified otherwise; ICG 2002, ICG 2002b, Micklin 2000, Interviews of Christine Bichsel with water experts in Kyrgyz Republic, Spring 2003. d) UNDP 2002. Human Development Indicators (HDI) of the year 2000. HDI include indictors for life expectancy, adult literacy, combined primary, secondary, tertiary gross enrolment ratio and Gross National Product per capita)

4.1 Eastern Nile Basin

General context

The Nile River is shared by ten countries (Egypt, Sudan, Ethiopia, Eritrea, Tanzania, Uganda, Burundi, Rwanda, D.R. Congo, Kenya, figure 3) and is home to more than 160 million people; population is growing by 2-3% per year. Measured at Aswan, the Nile River has a yearly flow of 88 km^3/year. 86% of the Nile's water at Aswan stems from the Ethiopian highlands in the Eastern Nile Basin, the rest originates mainly from the watersheds of the equatorial lakes (Waterbury 2002). Many countries in the Nile Basin are highly dependent on the Nile's water, as they are situated in an arid or semi-arid region. More than 95% of Egypt's water stems from the Nile, this means that it depends on rainfall outside of its territory. Egypt has therefore always closely observed Ethiopia's water development plans. Ethiopia's irrigation plans are of great concern since they could reduce the water flow in the Nile. Currently, Ethiopia's economic capacity does not yet allow full implementation of its irrigation plans. Rain-fed agriculture, upon which Ethiopia's food production depends at the moment, is unreliable because of the unpredictability of the seasonal rains. The irregularity in rainfall and water flow is a characteristic of the entire Nile Basin, but especially of the Eastern Nile Basin as this sub-basin does not have a large buffering reservoir similar to Lake Victoria, source of the White Nile[22].

There are four main development needs concerning water use in the Nile Basin: 1) water for irrigation, rain-fed agriculture and hydroelectric power production (HEP); 2) prevention of floods; 3) watershed management: minimization of erosion and siltation of reservoirs and water conservation; and 4) prevention of water pollution (NBI 2001a, Mason forthcoming). The national capacity to address these issues is limited. Eight of the ten countries of the Nile Basin (Egypt and Kenya are the exceptions) are among the category of the 47 "least developed countries" world wide (ECOSOC 2001). The civil war in Sudan, civil war in Ethiopia and the interstate war between Ethiopia and Eritrea during the second half of the 20th century are indications of the political instability in the region. On the international level, the absence of a basin-wide water agreement has caused tensions between the riparian states and hindered access to international development support. Egypt and Sudan uphold the validity of the 1959 agreement that was signed by these two countries (Agreement 1959); the upstream countries, however, do not consider it to be relevant for them. Many international development banks require the consent of downstream countries before financing development projects on international rivers, thereby protecting the geographically weaker downstream states. A lack of consent from the downstream states can hinder development upstream, one of the main concerns of Ethiopia (Lemma 2001)[23]. The conflict between Egypt and Ethiopia over water rights is at the core of the Nile conflict in the international arena. Sudan, the country between Egypt and

[22] The periodic fluctuations in the Nile's flow is demonstrated by the two extremes of 1916 with a water flow of 120 km^3/year, and 1984 with a flow of 42 km^3/year measured at Aswan (Collins 1990:402).

[23] "Although the need has always been there, Ethiopia has failed to develop its water resources to feed its needy population, mainly because of a lack of the required financial resources. Policies of international financial institutions like the World Bank, which have made it difficult for upper riparian countries to secure finance for development projects without the consent of the downstream riparian countries, have a significant contribution in this regard. (…) The downstream riparian states, therefore, have maintained the right to veto the development endeavors of the upstream states. As a result, upper riparian countries are naturally left with little choice other than to resort to a reciprocal measure of unilateralism" (Lemma 2001).

Ethiopia plays an important role in the Eastern Nile Basin, as it is dependent on good relations with both countries. Recent developments towards cooperation in the Nile Basin resulted from Egypt accepting a discussion on a basin wide legal framework, and Ethiopia accepting a start for cooperation on a project by project basis. The Nile Basin Initiative was launched by the Basin countries as a transitional forum to facilitate these cooperative efforts in Dar es Salaam in February 1999 (NBI 2002).

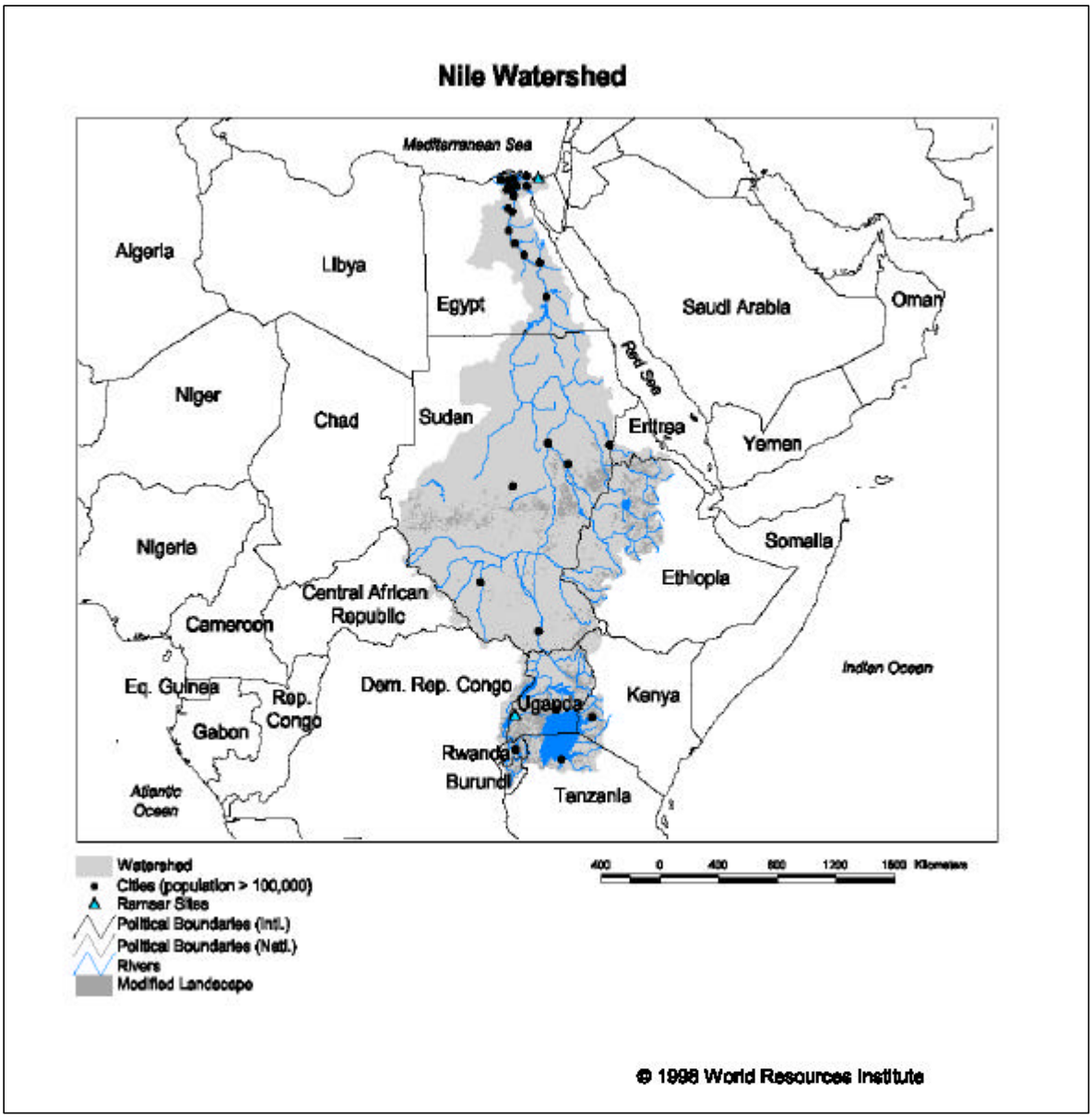

Figure 3: Map Nile Basin (WRI 1998)

Conflict linkages

Three linkages are discussed: 1) The case of the Jonglei canal, where international cooperation between Egypt and Sudan led to sub-national conflict over the Jonglei canal within Sudan (2A). 2) The Gambela project, where international cooperation between Egypt, Sudan and Ethiopia in the framework

of the Nile Basin Initiative may lead to sub-national cooperation in the Gambela region, if the lessons learned from the Jonglei Canal are considered (2B). 3) The Machakos peace process, where sub-national cooperation (even if not specifically over water resources) and rapprochement between the Sudanese Peoples Liberation Movement (SPLM) and the Government of Sudan (GoS) may lead to international tensions with Egypt, if this process results in an independent South Sudan (4A). Yet Egypt is very interested in a peaceful unified Sudan, as this would be a prerequisite for the completion of the Jonglei canal (2B).

CASE: INTERNATIONAL COOPERATION LEADS TO SUB-NATIONAL CONFLICT

Many plans to augment the total amount of water in the Nile Basin through supply-side projects hinge around the evaporation losses in the Sudd swamps[24] in Sudan or in the swamps of the Sobat, on Ethiopian territory. Through canals, the retention time of water in the swamps could be reduced, and less water would be lost to evaporation[25]. As part of the agreement of 1959 between Sudan and Egypt on the "Full Utilization of the Nile Water", the two countries decided to build the Jonglei Canal I and share the net benefit of 4.7 km^3/year water (3.8 km^3/year measured at Aswan) equally between each other (Collins 1990: 317). 267 km of the 300 km long Jonglei Canal were built, when the bucket wheel used to dig the canal was destroyed by the Sudanese Peoples Liberation Army in 1983, the year the second civil war broke out (Collins 1990: 401). War related deaths since 1983 are estimated at more than 2 million. Economic, political and historical disparities between the North and South, actor groups channeled by ethnic and religious differences, and competition over the access to water, land and oil are some of the factors fueling this war (Suliman 1999). John Garang, later to become head of the Sudanese People's Liberation Army, wrote his PhD at Iowa University on the Jonglei Canal, mainly criticizing the limited development strategies that would make it benefit Northern Sudan and Egypt, rather than the local populations where the project was to be implemented (Collins 1990: 383). The project did not have the support of many groups in South Sudan and it was also debated internationally, as the impacts on the environment and local population were unclear (Howell, Lock, Cobb 1988)[26].

CASE: INTERNATIONAL COOPERATION LEADS TO SUB-NATIONAL COOPERATION

In the framework of the Nile Basin Initiative, the "Baro-Akobo Multi-Purpose Water Resources Sub-Project" in Gambela, south-eastern Ethiopia on the Ethiopian-Sudanese border is planned (Arsano forthcoming). The three countries, Egypt, Sudan and Ethiopia seem to be agreeing on building a canal

[24] Depending on the year the size of the Sudd varies between 50'000 – 90'000 km^2, i.e. up to twice the size of Switzerland (Keddy 2000).

[25] Projects on the Upper White Nile to build canals through the wetlands of Sudan are estimated to be able to increase the total amount of available water by 18 km^3/year (Jonglei I: 3.8, Jonglei II: 3.2, Machar Marshes: 4, Bahr el Ghazal: 7; Whittington and McClelland 1992).

[26] Whittington and McClelland (1992) calculated the opportunity costs of the Jonglei Canal I project at 500 million USD per year or about 5 billion USD lump sum, suggesting that international agencies could pay for the upkeep of Europe's most important southern range for migratory birds.

through the swamps of the Baro-Akobo river, allocating the additional water to Egypt and Sudan, and allocating an equal amount from the Blue Nile river to Ethiopia[27]. It seems that some lessons were learnt from the Jonglei Canal experience, one of the main ones being that the project has to benefit the people directly effected. Thus besides increasing the water yield, the multi-purpose project aims at HEP, irrigation projects as well as enhancing the livelihood and income opportunities in the basin. Broad stakeholder consultation and involvement in the identification, planning and design phases are planned. The preparation of the project is estimated to cost 3 million USD, and the implementation to be more than 400 million USD (NBI 2001d: 25-26).

CASE: INTRA-NATIONAL COOPERATION LEADS TO INTERNATIONAL CONFLICT

If the Machakos peace process leads to peace and in a later stage to separation of the South from the North Sudan, the relations between Sudan and Egypt would be extremely strained (ICG 2000a, 2000c). The question of Sudan's unity is stated as an aim in the Machakos Protocol, July 20, 2002 (between the Government of Sudan and the Sudan People's Liberation Movement) (IGAD 2002)[28]. The agreement, however, also states that the people of South Sudan have the right to self-determination, thereby balancing the aim of unity (Part A, 1.3., IGAD 2002). The unity of Sudan is of greatest importance to Egypt, as 20% of the Nile arriving in Egypt flows through South Sudan, i.e. the White Nile from the equatorial lakes and the Baro-Akobo-Sobat from the Ethiopian highlands. Egypt expressed fears that the independence of South Sudan would increase competition and conflict over the Nile waters (Farag 2003, ICG 2000c). Furthermore, plans to increase the total amount of water though minimizing evaporation from the Sudd swamps in the South of Sudan by building a canal would be easier in a united Sudan[29]. Egypt's criticism to the Machakos Protocol and an eventual split-up of the Sudan following an interim period after which the South might opt for independence stems from its fear of losing control over Nile water. Furthermore the division of Sudan might entrench an Islamist government in the north. On the other hand, the Jonglei Canal project is not feasible without peace in Sudan. Egypt therefore supports a peace process that focuses on keeping a united Sudan. The Egyptian-Libyan initiative launched in 1999 advanced nine principles, among others that the unity of Sudan should be preserved in light of "the historic responsibility to preserve the unity, security and stability of Sudan." (IRIN 2001).

Supply and demand-side policies and their relation to conflict

According to the model developed by Ohlsson, as water scarcity increases, countries move from supply- to demand-side management and water conflicts shift from the international to the intra-national arena. This model may partially work for dams as a supply-side management strategy. For the diversion of

[27] Interview with an Ethiopian academic, Addis Ababa, April 2001.

[28] That the unity of the Sudan, based on the free will of its people, democratic governance, accountability, equality, respect, and justice for all citizens of the Sudan are and shall be the priorities of the parties and that it is possible to redress the grievances of the people of the South Sudan and to meet their aspiration within such a framework. (Part 1, 1.1, IGAD 2002)

[29] In an interview, (Khartoum 2001) a Sudanese academic said: "Egypt is in a difficult situation. It has been said that Egypt could intervene in Sudan militarily to keep unity if chaos and separation threaten, a form of peace enforcement."

water to reduce evaporation from swamps, however, supply-side management seem to also have the potential to foster cooperation, such as between Egypt and Sudan in the case of Jonglei, and between Ethiopia, Sudan and Egypt in the case of the Gambela project. Such supply-side projects can also cause intra-national conflicts such as in Sudan, contradicting the model of Ohlsson. The construction of desalination plants is a supply-side strategy that is more likely to ease international tensions than to cause conflict. Furthermore, negotiations – or lacking negotiations – to legally allocate water on the international level can be seen as a demand-side management approach that can cause conflict or cooperation, such as between Egypt and Ethiopia. On the intra-national level there are also examples of demand-side management that can lead to conflict as well as to cooperation. Sugar cane or rice farmers that have to change their crops, or farmers that have to leave their job because it is no longer economic, are examples of potential conflict in Egypt (FAS 2002, Noeman 1999, Mason forthcoming). Farmer cooperatives that are involved in the efficient management of irrigation water are examples of potential cooperation. In 1996, there were 5264 agricultural cooperatives in Egypt (Egypt 1996).

Ethiopia has little water storage capacity, therefore one of its main focuses is on increasing a seasonally stable water supply for HEP and irrigation (Hagos 2000). Demand-side management in a country without water infrastructure, plagued by famine, could lead to more suffering and conflicts. Egypt, on the other hand, has a stable water supply, primarily focusing on supply-side management in the form of desalination or groundwater use will not be able to satisfy Egypt's future water needs and may lead to conflicts, e.g. when fossil ground water resources run dry. Egypt's present shift in focus from supply- to demand-side management may therefore be seen as a form of preventing water related conflicts in the future (Elarabawy 2002, SEI 1997). Egypt recently adopted a national policy focusing on international cooperation, optimal use of available resources (demand-side management) and water quality protection (Egypt 2002: 2). Thus explicitly taking the linkages of water issues into consideration.

4.2 Syr Daria Basin

General context

Central Asia comprises two big river basins, the Syr Daria basin and the Amur Daria basin, both draining to the Aral Sea. The Syr Daria river originates in the high mountains of the Kyrgyz Tian Shan. The Syr Daria river flows through Uzbekistan, after Kyrgyzstan, leaving the country by crossing the Ferghana valley. It then goes across a narrow strip of Tajikistan, flows again through Uzbekistan and finally across Kazakhstan into the Aral Sea (Micklin 2000, figure 4). The demise of the Soviet Union in 1991 brought a fundamental change to the management of water in Central Asian countries, on the international as on the sub-national levels (ICG 2002b). The most difficult Soviet legacy faced by the governments in the region were the deliberately tight links between the regional water management systems which ignored the new political borders, and second the negative effects of environmental depletion and degradation as a consequence of the one-sided economic development of the Soviet Union, commonly known as the Aral Sea syndrome (Klötzli 1994 and 1997, WBGU 1997, Micklin 2000 and

Vinogradov 2002). The regional States are highly dependent on the use of water for economic activities, be it for irrigation of crop land (Kazakhstan, Uzbekistan, Turkmenistan) or for the generation of electricity (Kyrgyzstan, Tajikistan). Furthermore, Turkmenistan and Uzbekistan, and to a lesser degree Kazakhstan, are highly dependent on water that springs from sources outside their national territory (Libiszewski 1999).

With regard to the management of the two largest river basins in the region, the Syr Daria and the Amur Daria basins, disputes over water allocation came into view after 1991 between Kyrgyzstan, Kazakhstan, Uzbekistan, Turkmenistan and Tajikistan about the quantity and seasonality of water release, maintenance of related infrastructure and the economic value of water. In border regions such as the Ferghana valley, these problems are aggravated by scarcity of land and water, demographic pressure due to population growth and generally inconsistent border regulations, including the existence of enclaves (ICG 2002b). Conflicts in the Ferghana valley inhabited by Kyrgyz, Tajik and Uzbek populations can be understood as a complex combination of factors (economic hardship, Islamic militant groups, drug trafficking, border disputes, repressive state regimes and tense relations between ethnic groups), among which water scarcity constitutes an important driving force. During the last 15 years, the Ferghana valley experienced violent conflict several times (Rubin 1999, Tabyshalieva 2001, Bisig 2002, Slim 2002).

Regional water cooperation is fostered through the establishment of an institutional framework for water management consisting of a number of intergovernmental organisations and a series of agreements and draft agreements signed by the new states on bilateral and regional levels[30]. Although up to now, it has allocated water every year, the institutional framework on the whole is not perceived as efficiently managing the regional water resources. It has been criticised for its lack of clarity with respect to the functions of different organs of the same institution, for confusion between decision-making organs and executive organs, and for the duplication of functions between different institutions (Vinogradov 2002). Furthermore, the lack of binding power, co-ordinated implementation, finances, and a perceived lack of neutrality is problematic (Klötzli 1997, ICG 2002b). For domestic water management, Uzbekistan, Kazakhstan and Kyrgyzstan introduced the Water User Association (WUA) as a formal institution to replace state and collective farms with regard to the responsibility for water allocation and maintenance of related infrastructures. The development and successful implementation of these new structures varies greatly between the different states (see Burger 1998, Wegerich 2000 and 2001b).

[30] For overseeing the regulations, efficient use and protection of inter-state watercourses and bodies the Inter-state Coordinating Water Commission was established in 1991 (Micklin 2000). In order to maintain the momentum for regional cooperation, four other intergovernmental organisations with different functions were established between 1993 and 1995. These are namely the Inter-state Council on the Aral Sea Basin (ICAS), the Executive Committee of ICAS (EC-ICAS), the International Fund for the Aral Sea (IFAS), the Sustainable Development Commission (SDC) (Vinogradov 2001, Weinthal 2001). See Micklin (2000, pp. 43-48) for a more detailed discussion of the above mentioned organisations.

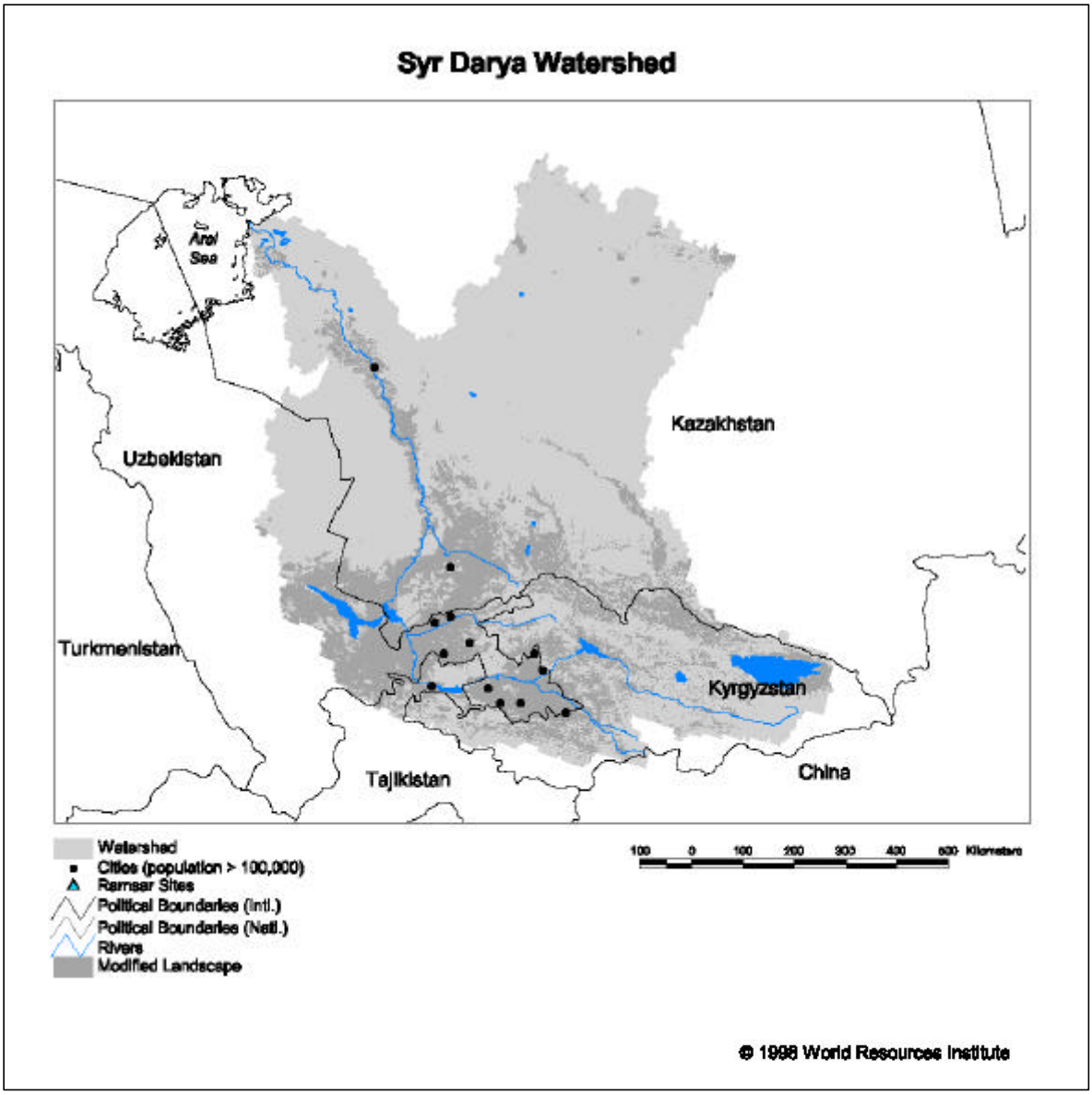

Figure 4: Map Syr Daria (WRI 1998)

Conflict linkages

Due to the hypothetical character of two of the three cases given above, only one case is discussed here in detail. It is the case of Uzbekistan, whose national water management politics contribute to the scarcity of water in the country, but the problem is viewed as an international one.

CASE: INTRA-NATIONAL CONFLICT LEADS TO INTERNATIONAL CONFLICT

Central Asia's independence resulted in the break up of state and collective farms and the introduction of private land holdings on the one hand, and in the decentralization of water allocation on the other hand (Wegerich 2001c). This led to a multiplication of water users and to unclear responsibilities concerning water allocation and the maintenance of related infrastructure which in turn destabilize cooperative relationships in the sub-national and international arenas. With the creation of the new states, differing national interests in water resources emerged, and each country developed its own discourse. In the case

of Uzbek-Kyrgyz hydropolitics, Uzbekistan is accusing Kyrgyzstan that by the current operation mode of the Toktogul reservoir, it is inflicting flooding in winter and water scarcity in summer on the downstream country. At least the latter is increasingly contested, since unequal water allocation among provinces and users within Uzbekistan might lead to occasional water scarcity within the country[31] (see Wegerich 2001d, ICG 2002b). It seems that the upstream provinces (Surkhandarya, Navoi and Bukhara) are taking more water than they are entitled to. As a consequence, the downstream provinces of Khorezm and Karakalpakstan do sometimes not receive any water at all (IGC 2002b). Sectoral allocation also plays a role: if water is allocated, it seems to go to cash and not to food crops as a priority. Water quota allocation in Uzbekistan creates tensions within the country, because the available water is not distributed equally among the users. Therefore, water scarcity in (parts of) Uzbekistan is not exclusively to blame on Kyrgyzstan and on drought (1999-2001), but on political and economic considerations of the national actors (Wegerich 2001d). Uzbekistan's alleged water scarcity is a case in point for this conflict linkage between sub-national and international water arenas. The sub-national conflict is not adequately tackled, and the problem is partly shifted to the international level by blaming the upstream country for water scarcity.

Supply- and demand-side policies and their relation to conflict

Supply side management still seems to be an important water management strategy in the Syr Daria Basin. There are new proposals in Uzbekistan to build reservoirs such as the Arnasay Reservoirs Project which would reduce the need for interstate cooperation over seasonal allocation. The World Bank is currently facilitating talks between Kasakhstan and Kyrgyzstan for a joint financing of the Kambarata I and II project, a hydropower complex located above Toktogul reservoir. These hydropower stations would allow Kyrgyzstan to produce energy in winter, while at the same time collecting water for the irrigation needs of the downstream countries in summer (see ICG 2002b). Kasakhstan as a downstream country would co-finance water infrastructure in Kyrgyzstan, an example of a supply-side project based on international cooperation[32]. With these measures, the conflict between the irrigation and the energy sector could be partially avoided. Another supply-side water management idea dating from the 1970s, the diversion of Siberian rivers for providing water to the Aral Sea, has again been taken up (Temirov 2003). However, in financial and ecological terms this project will most likely never be considered for implementation. Apart from supply-side projects, there are also demand-side programs aiming at increased irrigation efficiency, but given the scale of problems in operation and maintenance of the irrigation systems in Central Asia, progress is slow and substantial funding will be needed (see Thurman 2003). Long-term, the basin states will have to address the challenges of growing population and maybe a decreasing supply of water to the region. The effects of global climate change on the water supply of the Syr Daria Basin is still unclear, one estimates that extreme weather occurrences (droughts and floods) will

[31] Another possibility could be that the water scarcity results from the weakness of the River Basin Organisation (BVO), lacking the capacity to enforce and control the water allocations to the riparian provinces (compare Wegerich 2002).
[32] Interview with representatives of the Asia Development Bank, Bishkek, February 2003.

increase. Increased demand-side management will then become unavoidable, and the states will have to address the related political and economic questions that this brings.

5. International third-party interventions for conflict mitigation in the two basins

Attempts to foster cooperation in the Nile Basin

The main cooperative initiative in the Nile Basin, launched in 1999, is the Nile Basin Initiative (NBI). It is mainly supported by the "Nile Team" (the "third-party"), comprising the World Bank, UNDP and CIDA (Canadian International Development Agency)[33]. Their role has been to facilitate communication between the parties and enable financial support. The Nile Team has supported the ongoing transformation from conflict to cooperation in the Nile Basin, kicked off with the NBI. The NBI followed a succession cooperative initiatives, which never included Ethiopia as an active member, however. The "Nile Team" seems to be interested in preventing conflict, alleviating poverty and enabling a stable investment environment. The first NBI projects were presented to the international funding community in 2001 in the framework of the International Consortium for Cooperation on the Nile (ICCON), and 14 million USD were granted (NBI 2001b and 2001c). On the Non-governmental track, the "Nile Discourse" seeks to "keep an eye on the NBI". The first meeting was hosted by the IUCN, WWF and the World Bank in Geneva in 2001. The Nile Discourse has the objective of promoting a broad-based dialogue on issues concerning the development of the Nile Basin[34]. Remarkable about the third-party involvement in the Nile Basin, seems to be its high degree of coordination between the different third-party actors. The NBI serves as a channeling institution, albeit a transitional one, pending the development of a Nile Basin Comprehensive Framework (Mason forthcoming).

Extra-basin involvement in domestic conflicts prevalent in the basin has equally been substantive, notably in the long-lasting Sudanese civil war. The preparatory phase of the Machakos talks was marked by international pressure, mainly from the United States, to push the two conflict parties towards an agreement. An informal troika consisting of the U.S., Great Britain and Norway (and later on other States) used a carrot and stick approach to incite Garang's Sudanese People's Liberation Army/Movement (SPLA/M) and Khartoum to resume negotiations. While the peace talks are part of the recent Sudanese strategy to overcome international isolation and to access blocked donor funding (e.g. from the EU), the SPLA/M as the strongest – albeit not only – representative of Southern rebel groups is equally interested in obtaining political legitimacy and using political means for its struggle. The SPLA/M is interested in using political means as it is currently disadvantaged on the battle field due to the income that Khartoum generates with oil production and exportation, which goes to finance the war (Hagmann 2002).

[33] See Nile Basin Initiative website at http://www.nilebasin.org.
[34] See Nile Discourse website at http://www.nilediscourse.org.

Attempts to foster cooperation in the Syr Daria Basin

A number of international efforts have concentrated on the adverse effects of the Aral Sea Syndrome and on regional water management since the early 1990s (Klötzli 1997). External interventions in Central Asia generally show a low level of coordination despite many projects being similar, having similar foci and even sharing the same implementing partners. In the specific field of water, donors have focussed on technical rather than political and economic solutions (ICG 2002b). Much emphasis has been put on the drafting of water sharing agreements through the organisation of training activities, the establishment of working groups and the provision of advice by experts on international water law (Vinogradov 2002). Recent programmes also work at local levels, and support local water supply and drainage, and capacity building for local organisations to manage water allocations and to solve disputes (De Martino 2002). Observers assess the influence of extra-basin actors on water-related problems as being on the whole positive but limited. External actors have been unable to significantly influence the basic attitudes and approaches of individual riparian states.

A number of reasons explain this phenomenon: external actors have not maintained clear and consistent objectives, economic and strategic objectives often ran counter to policies that encourage collective regional behaviour. Confusion and competition between initiatives of different actors have also hindered the goal of cooperative water management (Horseman 2001). In addition, there is a considerable scepticism in Central Asia about foreign involvement regarding water management (Horseman 2001, ICG 2002b). Donors' political solutions are contested in particular by downstream countries, which fear that these solutions might strengthen the upstream countries' political position, and they therefore opt for bilateral agreements. The substantial sums granted by donors have led to competition between different ministries, for example in Uzbekistan[35]. Thus, from the Central Asian point of view, externally driven peace initiatives have brought not only funds but sparked new tensions on how to distribute these funds (Bošnjakovic 2001, De Martino 2002).

Weinthal (2001) argues that only a negotiation set including reforms in water, energy and agricultural policy will adequately solve the allocation disputes and environmental degradation of the Aral Sea. Past and current initiatives, however, focus mostly on water and energy. In Uzbekistan, water is mainly used for the production of cotton, and, to a smaller extent, for food self-sufficiency[36]. Cotton is a particularly "thirsty" crop that requires heavy irrigation. Cotton production also is at the basis of an important system of patronage and social control in Uzbekistan. Therefore, agricultural reform would threaten the foundations of the economic and political system, and particularly also of the system of social control which builds on the reciprocal relationships between the central leadership, the regional leadership and the heads of the large (state) farms. This might be one of the reasons why international organisations did not, or only to a small extent, tackle agricultural reforms in downstream countries (Weinthal 2001, 2002).

[35] Personal communication, senior official, Academy of Science, June 2002.
[36] It is important to note that in the current discourse about regional water management food scarcity is not a predominant issue. Considerations relating to economics and political stability are given priority.

6. Conclusions and outlook

A number of preliminary conclusions, steps for action and further questions result from the previous sections. Conflict linkages and the dynamics of transfer, escalation and transformation of water conflicts in multi-level arenas needs further investigation, yet it becomes clear that both the conflict parties in a basin as well as extra-basin actors (e.g. third parties) need to focus on these linkages. Why so? In the past conflict management efforts focused either on the international level (interstate negotiations between riparian countries over water use, legal agreements etc.), or on reform of national governance and policies or on community-based conflict on the local level. Such governance approaches included government reform programs in many developing countries of the world (Baechler 2001). By focusing conflict management on either the international, national or local level, the linkages between these levels are often ignored. Taking these linkages into consideration is one step in effectively preventing conflicts from escalating and supporting conflict transformation.

There are indications that national and extra-basin actors are becoming more aware of these linkages. One form of putting this awareness into action is through a multi-track approach involving official and non-official actors in water management issues on the sub-national and international arena (Mason 2003). Examples in the Nile Basin include conferences and workshops where officials and non-officials meet and exchange over water issues, e.g. during the nine Nile 2002 Conferences that took place between 1992 and 2002.

Coordination between different extra-basin actors is an important prerequisite for them to be successful in this endeavor, as it is difficult to coordinate others when one is not coordinated oneself. It seems that the Nile Basin Initiative with its Nile Team (World Bank, UNDP and CIDA) have been more successful in third-party coordination than the extra-basin actors in the Syr Daria basin. On the national level, there are also examples of national policies increasingly taking these linkages into account. Egypt's national water policy has two pillars: focusing on international cooperation, and focusing on demand-side management (water quality and optimal use) (Egypt 2002).

The model of Ohlsson (1999) concerning how supply- and demand-side management fits to international and sub-national conflicts proves to be a very helpful approach. Partly contradicting his model, the examples of the Eastern Nile and Syr Daria Basin indicate that conflict and cooperation are not linked to either supply- or demand-side management per se. It seems that conflict is rather linked to how far the policy of supply- or demand-side management fits the degree of water scarcity and water infrastructural development of a country. The financial, ecological and social costs of supply-side versus demand-side water management decide how far the management strategy may lead to conflict or cooperation.

Our study leads to the following research questions: A countries' water scarcity situation may be positioned on a continuum from water abundance to absolute water scarcity, and from limited water infrastructure (e.g. dams) to highly developed infrastructure. Water withdrawal as a percentage of actual renewable water resources (table 2) could serve as an indication of where a country is in this continuum. An indicator for supply-, demand-side management could be the respective financial allocation to various

projects (e.g. dams versus irrigation efficiency projects). The degree of water withdrawal and the degree of supply-, demand-side management, could then be compared with the occurrence of water conflicts on the sub-national and international level. With sufficient examples, a critical point in the water scarcity continuum may be detectable, above which supply-side projects, and under which demand-side projects are more likely to lead to conflicts. This threshold could be one structuring principle, helping to decide how material and non-material flows between arenas have to be shaped so as to transform conflict, prevent escalation and avoid conflicts from being transferred from one level to another.

The linkages between the sub-national and international arena are also likely to be valid for non-water conflicts. Water as a physical resource "trickling down" and sometimes "spilling over" these different arenas serves to demonstrates some of the questions involved, and point to some of the needed next steps: third-party coordination, multi-track conflict management and long term demand-side management of finite resources.

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