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A drop of Water is like a drop of gold

Water and conflict in Central Asia

Die Autorin argumentiert, dass das Erbe der Sowjetunion, mangelnde regionale Kooperation und ökologische sowie sozio-ökonomische Veränderungen die Allokation von Wasser in Zentralasien nachhaltig beeinflussen. Die ausgeprägte Interdependenz zwischen den zentralasiatischen Staaten erhöht dabei die Konfliktwahrscheinlichkeit. ag

Sarah O'Hara

In recent decades much has been written on the subject of "resource scarcity" and "resource wars" with many observers being of the view that competition for resources can result in individuals, groups of people, or states, fighting each other in order to secure access to those resources that are essential to their survival. Inevitably attention has focused on water with areas considered to be particularly vulnerable to water-related conflict being those where water is scarce, shared by more than one state, and where population and per capita demand for water is growing. Following the break-up of the Soviet Union in 1991, access to, and control of water resources, became an issue of considerable importance to the Central Asian Republics (CAR) of Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan (Karte siehe S. 12). Water is a key resource in Central Asia and contributes significantly to agricultural and energy production. But while the region boast substantial water resources they are both unevenly distributed and have been poorly managed. Consequently water is a highly contested resource and the competition for the Central Asia's water resources, could according to some authorities act as a catalyst for conflict at the intra- and inter-state level.

Stausee ausserhalb von Kabul.
Fotos: Albert A. Stahel

Central Asia's water resources

With the exception of Kazakhstan, the Central Asian States lie almost entirely within the Aral Sea Basin, a large internal drainage system with its terminus at the Aral Sea. The region is dominated by low-lying deserts, flanked by extensive mountain ranges to the south and south-east and has a marked continental climate. Annual precipitation is low, generally less than 200 mm in the desert lowlands and reaching a maximum of 800–1600 mm in the high mountain areas of the Pamirs and the Tien Shen. Evaporation varies accordingly from over 2250 mm in the most arid region to less than 500 mm in the mountainous zones. As a result much of the region experiences a significant moisture deficit and it is highly reliant on waters generated in the mountains of Central Asia.

Numerous rivers rise in the mountains of the Tien Shen and the Pamirs and compared to many other parts of the world Central Asia has abundant water supplies. Central Asia's largest river, the Amu Darya, originates in the highlands of Tajikistan and Afghanistan, flows through Uzbekistan and Turkmenistan (and back into Uzbekistan) before discharging into the southern Aral Sea. The other major river is the Syr Darya, which rises in the mountains of Kyrgyzstan. It has two main tributaries, the Naryn, which is fed by over 700 glaciers high in the Tien Shen, and the Kara Darya, which sources in the Fergansky and Alaysky Mountains. The two rivers merge in eastern Uzbekistan to form the Syr Darya and from there the river flows into Tajikistan before re-entering Uzbekistan and finally flows in to Kazakhstan where it discharges into the northern Aral Sea. Taken together, the Amu Darya and Syr Darya account for nearly 90% of the usable water in the Aral Sea Basin, which averages 125 km^3 per annum. The remaining 10% is derived from the region's numerous smaller rivers and streams such as the Murgap, Tejen, Zarafshen, Chu and Talas Rivers. These rivers have long being exploited by the peoples of Central Asia who for more than 7000 years have modified and diverted their flows for irrigation purposes. Consequently water management has long been an important component of Central Asia's way of life and became intrinsically entwined with social and political hierarchies. Water was viewed as a *"Gift from God"* which could not be owned or controlled by an individual and within central government the most important official was the *"mirab bashi"* who had considerable power being responsible for the highly important and often contentious decisions of water allocation and distribution. Indeed the success of political officials often hinging on their skill at managing water resources.

Maintaining the status quo: the division of Central Asia's water

The current agreement on water sharing within the Aral Sea Basin dates from the 1992 Almaty Agreement when representatives from the newly independent countries agreed to adhere to *"established pattern and principles of allocation"*. This agreement was made only a few weeks after the CARs found themselves unexpectedly cut loose from Moscow and was signed in haste with little if any thought of the long term consequences. By signing the agreement the CARs left Soviet determined allocations in place, which meant that the bulk of Central Asia's water is allocated to Uzbekistan, Turkmenistan and Kazakhstan who together receive 86% of withdrawals from

the Amu Darya and 89,6% from the Syr Darya. At the other end of the spectrum Kyrgyzstan is allocated less than 2% of the basin's water resources despite the fact that it contributes 25% of flows. Significantly, the Almaty agreement made no provision for Afghanistan, even though runoff generated on its territory represents a significant proportion of the Amu Darya's total discharge. It soon became apparent to the upstream states that their water entitlements are inadequate and there have been calls for the allocations to be revised.

Trockenheit in Afghanistan.

Maintaining the regional water distribution system

The maintenance requirements of Central Asia's water storage and distribution system is enormous and even at the best of times would be a huge financial undertaking for the republics. The precipitous decline of the region's economy, however, has made it an almost impossible task. This has raised the issue of who pays for the maintenance of those parts of the system, which benefit more than one republic. Kyrgyzstan has been especially vocal on this point and resents the fact that waters rising on its territory and flowing into the Syr Darya mainly benefits Uzbekistan and Kazakhstan, yet it must pay for the maintenance of many of the dams and reservoirs that regulate flows. In July 1997, the Upper House Assembly of the People's Representatives of Kyrgyzstan passed a resolution demanding that neighbouring states should pay them for the water they receive with the money going towards essential repairs. Then in July 2001 the Kyrgyz President Askar Akayev signed into law *"The interstate use of water objects, water resources and water-management constructions of the Kyrgyz Republic."* The law defines water from Kyrgyz water reservoirs as a commodity, that has a price, and created a legal base for Kyrgyzstan to sell water to its neighbours. Uzbekistan and Kazakhstan have condemned this move arguing that requiring downstream nations to pay for water is unprecedented in the international community. However, the 2001 law draws directly from the 1992 Dublin Statement on Water and Sustainable Development which states that *"water has an economic value in all its competing uses and should be recognised as an economic good"*. Kyrgyzstan has taken this to mean that while it is honour bound to provide downstream users with sufficient water to meet basic human needs it is not required to supply large-scale and highly wasteful irrigation schemes with water free of charge. This point is highly significant and will be used by Kyrgyzstan to push the downstream states for compensation to cover the cost of infrastructure upkeep for the waters they receive in excess of basic human needs. Tajikistan is now looking at the Kyrgyz model and is likely to present a similar argument to support their claims for greater help with infrastructure upkeep. If Kyrgyzstan (and with it Tajikistan and in the longer term possibly Afghanistan) can force the issue on water payments it means that the 1992 Almaty Agreement is no longer valid.

Afghanistan enters the picture

The situation has been further complicated by recent events in Afghanistan. Afghanistan borders three of the CARs, Tajikistan, Uzbekistan and Turkmenistan and shares a number of rivers with them, most notably the Amu Darya. Approximately 6-7% of the flows of the Amu Darya are generated on Afghan territory and the Afghans have long diverted water from the river for irrigation, although much of the system has fallen into disrepair because of the long period of civil unrest. Since the end of the US-led War on Terrorism in Afghanistan the international community has made a commitment to reconstruct the country. Considerable attention is now focusing on its agricultural sector and in late 2002 an Afghan official announced that one of the county's long-term goals is the development of the Khushtapa Project which will divert water from the Amu Darya River to irrigate lands around Mazar-i-Sharif. Although Afghanistan does not currently have the financing for this project it is working with the World Bank, the Asian Development Bank and donor nations to develop Afghanistan's water resources. If the Khushtapa project goes ahead there will be a significant increase in the amount of water Afghanistan withdraws from the Amu Darya with one authority suggesting that Afghanistan will increase its level of abstraction from its current level of 2 km^3 per annum to 9-10 km^3 per annum by 2020. Clearly such a development will have immense implication for the downstream state of Uzbekistan and Turkmenistan and could create significant tension in the Amu Darya basin.

Energy or agriculture?

Without Moscow's intervention the Central Asian states have also assumed the responsibility of negotiating how reservoirs are operated and this has proved extremely problematic. The old system, whereby the downstream countries provided those upstream with energy during the winter, collapsed in the early 1990s. The Kyrgyz response to this situation was to release waters from the massive Toktogul reservoir during the winter months so that its energy needs could be met. Disruptions in water supply caused considerable consternation in Uzbekistan and Kazakhstan, who argued that Kyrgyzstan's actions were irresponsible and had both serious economic and environmental consequences. In an effort to resolve the situation the three countries, prompted by international donor organisations, began negotiating various protocols and agreements on the use of water and energy resources in the Syr Darya Basin. Under such agreements the downstream countries agreed to deliver a specified amount of coal, electricity and gas to Kyrgyzstan in exchange for water releases in the summer. Although such agreements have resulted in improved co-operation between the three states they have not solved the problem entirely. In 1999, for example, Kyrgyzstan shut off water supplies to parts of southern Kazakhstan in an attempt to force that country to fulfil a promise to provide coal and as discussed now wants to replace barter agreements with cash compensation for water.

Steppe von Kohsan, Afghanistan (westlich von Herat, an der Grenze zum Iran).

Although energy production is important it is irrigated agriculture that remain the mainstay for much of Central Asia's society. Output from agriculture accounts for between 10 and 39% of GDP and nearly 45% of the population is directly employed in the agricultural sector.

More people, less water

Demographic pressures have, and will continue, to increase further the contested nature of Central Asia's water resources. Between 1959 and 1989 the population of the basin states increased by 140% and it is expected that it will increase by a third again by 2020. The relationship between population pressures and competition for limited access to water and fertile land has long been an issue in the region. Disputes between Uzbek and Kyrgyz in the Ferghana Valley, for example, are not uncommon with over 20 reported clashes between the two groups during the 19th century. Although tensions between the different groups were surpressed throughout much of the Soviet period, by the 1980s water shortages became acute and meeting targets set by Moscow became more difficult resulting in heightened tension particularly in more ethnically mixed areas. In 1990, for example, Uzbeks and Kyrgyzs fought over land rights in the city of Osh after a Kyrgyz co-operative was given official permission to use irrigated lands on an Uzbek Kolhoz to build residential buildings.

More recently there has been increased tension between Tajik and Kyrgyz in the Bakten region of Kyrgyzstan with the latter accusing the former had diverted all the water from the Andarak-Sai leaving them with no water for irrigating their garden plots, but more importantly for drinking. The Kyrgyz also accused the Tajiks of living on Kyrgyzstan's territory but of failing to share their water with the native population. At the same time the Tajiks accused the Kyrgyz of discrimination against them. The dispute was only resolved when an international donor paid for the construction of an additional pipeline to bring water to the downstream settlement.

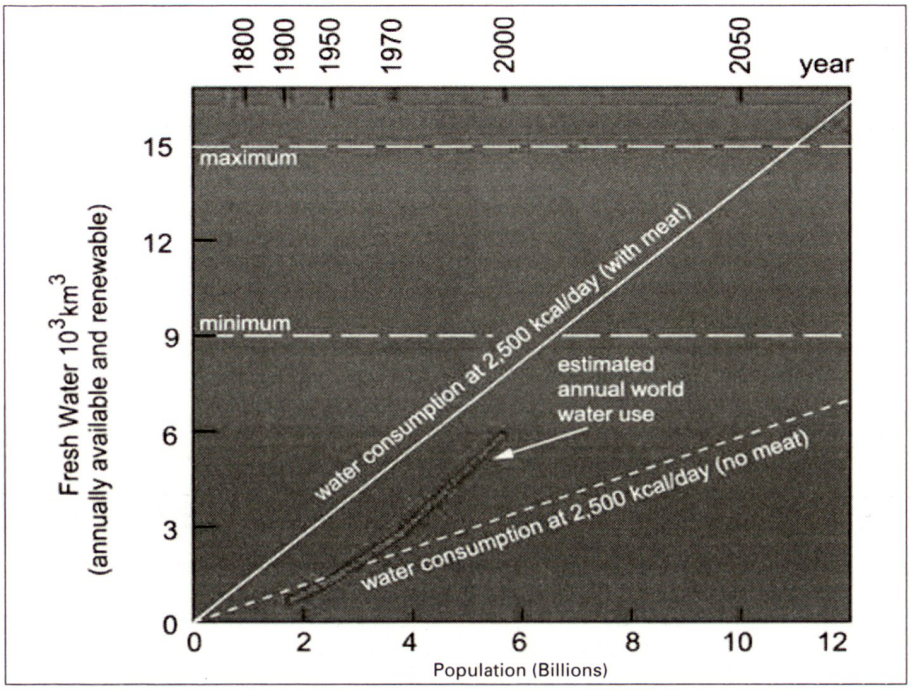
Further pressures will result from changes in the climate. During the 1990s, Central Asia experience climate conditions that were wetter than the norm and until the late 1990s the CARs did not have to deal with the consequences of major water shortages. But starting in 1998 dry conditions prevailed and the region suffered one of the worst droughts in decades. Within the Central Asian region, Tajikistan was hardest hit with the almost complete failure of rain fed crops. The chronic shortage of water not only had a devastating impact on agriculture but served to heighten tensions not only between the upstream and downstream states, but also between different regions and groups of people within a country and renewed speculation over regional security. Although the situation has now improved it is widely believed that over the medium to long term climate change will have a profound impact on water availability, with some reports suggesting that water shortages will become a typical occurrence for the Central Asian region. Much of the expansion in the irrigation system since the 1960s has been achieved by the use of non-renewable fossil water resources. But, as mountain glaciers begin to disappear, the volume of summer runoff will decline significantly. The consequences for downstream agriculture, which relies on this water for irrigation, will be immense with low- and mid-lying parts of Central Asia likely to change into more arid, interior deserts.

Increases in population alone will result in a significant increase in the demand for water and could result in water becoming stressed. One means of assessing whether a country is water stressed is the number of people per million cubic meters of water a year (MCM). When there are less than 100 people per MCM, water supply is generally not a problem, but at 600 people per MCM signs of stress begin to appear unless water supplies are efficiently managed. Chronic water shortage is said to occur at 1000 with extreme scarcity occurring above 2000 people per MCM. Based on present water availability there are currently less than 350 people per MCM of water in Central Asia as a whole, but with the predicted increases in population this figure will increase to 727 people by 2025 and efficient water management will be essential. A very different picture emerges, however, when the republics are considered separately. Based on existing water allocations there are 130 people per MCM in Turkmenistan and 500 in Kyrgyzstan. By 2010 these figure are predicted to rise to 184 and 883 people respectively, and in 2025 there will be nearly 1500 people per MCM in Kyrgyzstan compared to only 361 in Turkmenistan. Although not as severe as Kyrgyzstan, Tajikistan will also experience chronic water shortages, with the situation in Uzbekistan being stressed but not chronic. Thus ironically the upstream water-rich republics will experience severe water shortages, while the water-poor downstream republics will not, a situation that neither Kyrgyzstan nor Tajikistan is likely to tolerate.

Conflict or co-operation?

Given the importance of water to Central Asian society it is not surprising that water-related conflicts have emerged. Disputes have occurred at a number of levels although prior to the Soviet period these tended to be localised and were mainly concerned with gaining control over irrigated lands rather than water *per se.*

Following independence in 1991 there was much speculation over the possibility of water-related conflict in Central Asia. Certainly the activities of the CARs have done little to help the situation. The almost total lack of co-operation between the Central Asian governments particularly in respect to data and information exchange combined with a continuation of the Soviet mentality of output at any cost has heighten tensions in the region. The "tit-for-tat" actions of Kyrgyzstan, Uzbekistan and Kazakhstan over the allocation and use of waters from the Syr Darya has only served to highlight the issue. Similar problems are beginning to emerge in the Amu Darya basin, which until now has been relatively unproblematic. The fact that the two upstream countries want to make greater use of the waters that are generated

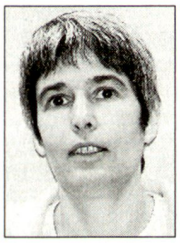


Zukünftige weltweite Verfügbarkeit von Wasser.
Source: Zehnder, Wasserressourcen und Bevölkerungsentwicklung, Nova Acta Leopoldina, 2002, NF 85, 323:399-418. Data: FAOSTAT (FAO) (2001) and World Resources Institute (WRI) (2001).

on their means that both the timing and the total availability of water to the downstream states will change, a situation that will anger Turkmenistan and Uzbekistan. Moreover as population increases and water availability decreases the situation is likely to deteriorate further. Reduced water availability will also have implications within the republics themselves especially in the more densely populated areas, such as the Ferghana valley, the lower reaches of the Amu Darya and the Zarafshen valley, with conflict at the local level creating instability within the individual countries themselves.

The management of water resources in the Central Asian region represents an enormous challenge and one that is becoming increasingly more complex. Such complexities are partly historical in nature and partly a result of the activities of the CARs since independence. The almost total lack of cooperation between the five states coupled with a failure to tackle some of the underlying problems of the water management sector mean that the situation is likely to deteriorate further and will effectively undermine the social, political and economic development of the entire region threatening regional security.

Literaturnachweise können bei der Autorin eingeholt werden. ■



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Cooperation or confrontation?

Sustainable Water Use, Property Rights and Transboundary Conflicts

Die Autoren gehen in ihrem Beitrag davon aus, dass das weltweite Wasserdefizit weiter zunimmt. Bleibt dieses Problem ungelöst, könnten gewaltsame Konflikte in den entsprechenden Regionen das Resultat sein bzw. sind es bereits. In diesem Zusammenhang wird auf die Fallbeispiele «Mittlerer Osten» und «Zentralasien» eingegangen. ag

Urs Luterbacher and Ellen Wiegandt

The Project Goals and Approach

"The world is incurring a vast water deficit. It is largely invisible, historically recent, and growing fast." Social conflict, food shortages, disease are all potential consequences of water scarcities. Vulnerability of water resources is a thus major challenge to the international community. The problem is even more pressing because questions of future quantity and quality of water are linked to other critical issues such as climate change, property rights, and economic development. Numerous regions of the world are particularly at risk of potential shortages due either to physical or social causes or because of uncertainties about access generated by rapid and far-reaching political changes. The Middle East immediately comes to mind because water shortages are invariably linked to the broader conflict in which water has become a weapon. Similarly, Central Asia, particularly the Republics of Kazakhstan, Kyrgyzstan, Tajikistan, and Uzbekistan, is of particular concern because property rights issues related to water have emerged and become acute since the dissolution of the Soviet Union. Unresolved, these issues may provoke deadly conflicts in this volatile region.

Water availability is largely governed by physical processes, but water use is intimately tied to population size and density, technology, and life styles. Confronting scarcities thus depends first on understanding the evolution of social, economic, political, and environmental conditions as they affect water use. In this context, Switzerland has a special role to play because of its long experience in managing the vast water resources held within its mountains and because of its historic role in conflict resolution.

In this spirit, the project that we have undertaken examines current water use in the Central Asian republics and examines how it will evolve under various demographic, economic, and environmental scenarios. The analysis of factors that will influence