

**CENTRAL ASIA:
WATER AND CONFLICT**

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CENTRAL ASIA: WATER AND CONFLICT

EXECUTIVE SUMMARY AND RECOMMENDATIONS

Competition for water is increasing in Central Asia at an alarming rate, adding tension to what is already an uneasy region. Agriculture is the mainstay of the region's economy, and thirsty crops such as cotton and rice require intensive irrigation. Water use has increased rapidly since the Central Asian states became independent in 1991 and is now at an unsustainable level. Irrigation systems have decayed so severely that half of all water never reaches crops, and several years of drought have cut available water by a fifth even as demand continues to soar. Efforts to rebuild Afghanistan will now put yet more strain on supplies.

The problems of increasing demand and declining supplies have been compounded by the failure of the region's nations to work together. Under the Soviet Union, water and energy resources were exchanged freely across what were only administrative borders, and Moscow provided the funds and management to build and maintain infrastructure. Rising nationalism and competition among the five Central Asia states has meant they have failed to come up with a viable regional approach to replace the Soviet system of management. Indeed, linked water and energy issues have been second only to Islamic extremism as a source of tension in recent years.

An annual cycle of disputes has developed between the three downstream countries – Kazakhstan, Turkmenistan and Uzbekistan – that are all heavy consumers of water for growing cotton, and the upstream nations – Kyrgyzstan and Tajikistan. The downstream countries require more water for their growing agricultural sectors and rising populations, while the economically weaker upstream countries are trying to win more

control over their resources and want to use more water for electricity generation and farming.

Tensions focus on the two main rivers of the region that both flow to the Aral Sea – the Syr Darya from Kyrgyzstan through Uzbekistan and Kazakhstan and the Amu Darya from Tajikistan through Uzbekistan and Turkmenistan. The Amu Darya and its tributaries form part of the border between the Central Asian states and Afghanistan.

This report identifies four key areas of tension among the Central Asia nations:

- ❑ lack of coherent water management;
- ❑ failure to abide by or adapt water quotas;
- ❑ Non-implemented and untimely barter agreements and payments;
- ❑ uncertainty over future infrastructure plans.

Water management has suffered from the Soviet legacy of top-down control and general rivalries between the states. The Interstate Coordinating Water Commission (ICWC) that was set up in 1992 has failed to take into account changing political and economic relations. It is an inter-governmental body with little transparency that focuses almost exclusively on the division of water. There is no representation from agricultural or industrial consumers, non-governmental organisations or other parties. Management is dominated by officials from Uzbekistan, leading to suspicions that it favours that country's national interests. This has contributed to a lack of political commitment by other countries to the commission, resulting in a serious shortage of funds. In the meantime, the individual countries have done little to contribute to the maintenance of water systems that benefit the region.

Western donors have started to develop other management systems such as the Global Environment Facility (GEF) program, in coordination with the International Fund to Save the Aral Sea (IFAS). The UN-backed Special Program for the Economies of Central Asia (SPECA) is also working on water management. However, none of these initiatives have made much headway in dealing with the key political obstacles, particularly the unwillingness of the states to cooperate.

Shortly after independence, the five countries agreed to maintain the Soviet-era quota system, but this has become unworkable. The civil war in Tajikistan and the decay of Kyrgyzstan's economy has meant that water-monitoring facilities have fallen into disrepair. Control and enforcement mechanisms no longer function and the various countries now often accuse each other of exceeding quotas. Turkmenistan is using too much water to the detriment of Uzbekistan, which in turn has been accused by Kazakhstan of taking more than its share. Kyrgyzstan and Tajikistan say that the three downstream countries are all exceeding quotas. Even within Uzbekistan, provinces have accused one another of using too much water.

Some of the most serious tensions have centred around barter agreements and payments. The upstream countries trade water to Uzbekistan and Kazakhstan for energy in the form of gas, coal or power. Since energy deliveries have been unreliable, Kyrgyzstan has responded by releasing more water through its hydropower dam in winter, which results in downstream flooding and less water for summer irrigation. Attempts by Kyrgyzstan to demand payment for water have been resisted by the downstream countries.

As each country has started to view the problem as a zero-sum game, it has taken steps to increase control over water, often to the detriment of the others. There is increasing uncertainty in Central Asia over plans to build new reservoirs and dams or to expand irrigation. There has been little consultation over most of these projects, leading to intensified suspicions between states. Since the fall of the Taliban in November 2001, there has been concern about the implications of efforts to rebuild agriculture in Afghanistan. Currently that country uses very little of the water from the Amu Darya but reconstruction of irrigation systems will put additional pressure on the river.

Tensions over water and energy have contributed to a generally uneasy political climate in Central Asia. Not only do they tend to provoke hostile rhetoric, but they have also prompted suggestions that the countries are willing to defend their interests by force if necessary. Uzbekistan has carried out exercises that look suspiciously like practice runs at capturing the Toktogul Reservoir. The gas shortages and winter flooding that Uzbekistan and Kyrgyzstan have inflicted on each other have a direct and widespread impact on the peoples of those countries and have the potential to inflame ethnic tensions in the Ferghana Valley. Competition for water can only increase, and tensions will rise unless better mechanisms are put in place to manage the problems.

A multifaceted regional approach is needed that addresses energy, agriculture and demographic aspects of water use. Thus far, emphasis has been on bilateral agreements that lack political weight and cannot resolve what is a regional problem. Management of water must be reformed to increase accountability and transparency as currently the public, NGOs and the media have little access to information or the decision-making process. Efficient water management requires quotas that are sustainable and are backed up by enforcement mechanisms and sanctions against violators. The Central Asia nations still approach the issue purely as an engineering problem rather than one of managing multiple political, social and economic factors.

There is considerable scepticism in Central Asia about foreign involvement in resolving the water issue. Donors have favoured technical rather than political solutions, and funds have been earmarked for the repair and replacement of inefficient irrigation installations. Technical solutions will only have a limited impact, however, if not accompanied by political measures.

RECOMMENDATIONS

To The Governments Of Central Asia:

On Water Management:

1. Reform the Interstate Coordinating Water Commission (ICWC) by:
 - ❑ making its decision-making, budgets and policies more transparent and accountable;
 - ❑ widening participation by including water users associations and NGOs;
 - ❑ broadening the mandate from water division to include agricultural and energy issues;
 - ❑ providing it with powers to enforce quotas, close facilities and impose sanctions; and
 - ❑ Reforming the management structure to make it more representative of country-members.
2. Enhance the monitoring capacity of the ICWC by:
 - ❑ granting visa-free access to all officials to all member states;
 - ❑ expanding funding for monitoring equipment, particularly automated systems; and
 - ❑ providing diplomatic status for officials to limit pressures on them from local authorities.
3. Reform the Basin Water-Management Authorities (BWAs) for the Amu Darya and Syr Darya by:
 - ❑ giving them authority to enforce quotas;
 - ❑ making them more inclusive;
 - ❑ changing senior management structures to reduce suspicions of Uzbek dominance.
4. Negotiate an agreement on payments for infrastructure maintenance that takes into account:
 - ❑ the burden on upstream countries to maintain dams and reservoirs; and
 - ❑ the urgent need to improve water productivity in downstream nations.

5. Draft national water codes and support the expansion of local water users associations as a way to:
 - ❑ introduce new technology;
 - ❑ reduce consumption;
 - ❑ maintain existing infrastructure; and
 - ❑ minimise risk of local disputes.

On Quotas:

6. Revise existing water quotas considering:
 - ❑ current low water supplies;
 - ❑ rising demand in upstream countries;
 - ❑ the balance of water distribution within countries; and
 - ❑ the need to tackle pressing environmental problems.

On Barter Agreements:

7. Move ahead with establishment of water and energy consortia as a way to boost regional cooperation. In particular:
 - ❑ negotiate a new agreement on the Syr-Darya, taking into account infrastructure issues, and moving towards monetary exchanges; and
 - ❑ negotiate a similar agreement for the Amu-Darya, taking into account the energy needs of Afghanistan and Tajikistan.
8. Boost trust in existing barter agreements by:
 - ❑ working out a schedule to reach agreements before energy shortages in winter cause problems;
 - ❑ establishing a monitoring and adjudication system for barter deals; and
 - ❑ improving infrastructure to deliver gas.
9. Move towards market pricing for water and energy to allow fairer exchanges, and recognise the diverging pace of economic reforms.

On Future Infrastructure:

10. Stop construction of the Lake of the Golden Century in Turkmenistan, the reservoir system in southern Uzbekistan and the Rogun Dam in Tajikistan; end speculation over possible diversion of Siberian rivers to Central Asia.

11. Establish an independent regional commission to assess the impact of planned projects, and adopt a planning code of conduct to reduce tensions.
 12. Use the joint commission to come up with a common position on future water use in Afghanistan.
- TO INTERNATIONAL DONORS:**
13. Expand funding for political and technical activities related to water, including:
 - ❑ drafting of agreements on quotas, barter agreements and infrastructure;
 - ❑ support for the formation of water and energy consortia;
 - ❑ establishment of water users associations and monitoring and environmental NGOs;
 - ❑ automated and other monitoring of water supplies;
 14. Promote regional cooperation by:
 - ❑ water-use reduction programs;
 - ❑ local conflict prevention initiatives; and
 - ❑ research on local water management.
 15. Provide technical and financial help to the Central Asian states and the government in Afghanistan to work out a common position on future water use from the Amu Darya and Panj rivers.
 - ❑ funding projects designed and implemented regionally; and
 - ❑ pressing governments to drop infrastructure projects that will harm their neighbours.

Osh/Brussels, 30 May 2002

CENTRAL ASIA: WATER AND CONFLICT

I. INTRODUCTION

Central Asia has been consuming water at an unsustainable rate for decades, but since independence in 1991 water use has soared yet further. Although the region has sufficient water to meet its needs, crumbling infrastructure and poor management mean the countries are now consuming 1.5 times what they should. Demographic pressures and expanding agriculture have meant more water is being used every year.

Since the Nineteenth Century, the focus of agricultural policy in Central Asia has been on increasing the output of cotton and rice so that Russia, and later the Soviet Union, could reduce reliance on imports. Investment in farming and irrigation was aimed at expanding the cotton area, disregarding the environmental or social impact. Likewise, rice was expanded even though Central Asia is on the edge of the crop's ecological limit.

The cash strapped new nations, stripped of their subsidies from Moscow after independence, have increased production further. In Turkmenistan and Uzbekistan, cotton is at the heart of a system of political and social control that operates in a manner almost unchanged from Soviet days. As cotton is vital for foreign exchange and political patronage, the sorts of reforms needed to reduce water use – particularly privatisation of farming and realistic pricing of water to encourage conservation – have never got off the ground.

With the expansion of agriculture, the two major rivers in Central Asia have become a focus for growing competition among the five nations. The Syr Darya, which rises in the mountains of Kyrgyzstan and flows through Tajikistan, Uzbekistan and Kazakhstan to the Aral Sea, has been a particular focus of tensions. The Amu

Darya, which flows from Tajikistan through Uzbekistan and Turkmenistan also to the Aral Sea, is likely to become a locus of disputes as governments compete for its water, and Afghanistan starts to take its share.¹

This report identifies four key sources of tension both among and within the countries of Central Asia:

- ❑ lack of coherent water management;
- ❑ failure to abide by or adapt water quotas;
- ❑ tension over barter agreements and payments; and
- ❑ uncertainty over future infrastructure plans.

These tensions have so far been contained without conflict, but all parties have shown a willingness to put their interests first even when this might have serious consequences for their neighbours. Mechanisms for managing both the technical and political aspects of water have seized up as the states have withdrawn their cooperation. Rhetoric has already taken some alarming turns. "Uzbekistan, Tajikistan and Kazakhstan will defend themselves with whatever means necessary" if water supplies from the Syr Darya are cut, one Uzbek official told ICG.² In 1996 a report suggested that Uzbekistan would be willing to use military force to seize the Toktogul Dam in Kyrgyzstan if its water security was threatened.³ Such rumours are difficult to

¹The Syr Darya takes its course in northern Kyrgyzstan, crosses into Uzbekistan, then on to Tajikistan before re-entering Uzbekistan. After crossing southern Kazakhstan, it ends its course in the northern part of the Aral Sea. The Amu Darya makes up the Tajik-Afghan and then the Uzbek-Afghan borders, continues into Turkmenistan, then runs along the Turkmen-Uzbek border before crossing into Uzbekistan and ending up at the southern end of the Aral Sea.

² ICG interview, Tashkent, February 2002.

³ Stuart Horsman, "Water in Central Asia", Roy Allison, Lena Jonson (Eds.), *Central Asian Security: The New International Context*. (London. RIIA. 2001), p. 76.

confirm, but it would be surprising if Uzbekistan's defence planning did not include consideration of military action to protect its water supply. Due to their reliance on agriculture, Uzbekistan and Turkmenistan view irrigation as a key security issue.

Relations between Uzbekistan and Turkmenistan have always been tense, partly because of the animosity between their presidents, and there have been few substantive bilateral talks over water issues. Water issues were rumoured to be behind a military stand-off at the border in 1995, and Uzbekistan seems likely to take a very strong line against further unilateral decisions by Turkmenistan to increase its water take from the Amu-Darya.

Although Kyrgyzstan and Tajikistan account for only 20 per cent of the territory of the Aral Sea Basin⁴, some 80 per cent of the area's water resources are generated on their territory.⁵ Kyrgyzstan controls the flow of water along the Syr Darya through the dam and reservoir at Toktogul. Tajikistan plans to develop a similarly huge reservoir at Rogun on the Vakhsh river, which is one of the main tributaries to the Amu Darya. To counter this increase in upstream control, the downstream countries have outlined plans to build their own reservoirs, further complicating the development of a coherent regional system of management.

Repairing or replacing outdated irrigation systems could do much to reduce water use and improve crop yields but such solutions are expensive. About half of all water used for irrigation is lost en route or through filtration and evaporation.⁶ Only 28 per cent of irrigation

canals were lined to stop filtration in 1994, and since then the condition of infrastructure has declined.⁷ The Central Asian countries lack the funds – up to U.S.\$16 billion – necessary to modernise irrigation systems.⁸ The absence of either private farming or a market pricing system for water means there is little incentive for farmers to invest in improved systems. The donor community has been unwilling to provide the vast sums necessary for this sort of technical solution, which in itself would not work without much broader reforms of water management and use.

Resolving water problems in Central Asia would require a comprehensive program of political, economic and social reform, particularly in Turkmenistan and Uzbekistan. These countries would have to loosen the state's grip on their people that cotton facilitates and end the systems of patronage and corruption paid for by export earnings from the crop. A region-wide plan to adopt low water-use irrigation systems would have to be implemented at considerable cost. Agriculture would have to be reformed to substantially reduce reliance on thirsty crops, such as cotton and rice. Realistic market water pricing would need to be introduced so that private farmers had a financial incentive to use less water and invest in better technology.⁹ If privatisation were to occur, it would have to be regulated so that it did not cause new rounds of local conflicts as it has elsewhere.¹⁰

The Central Asia states would have to develop a renewed sense of regional cooperation to pay for renovations to their crumbling infrastructure and build new systems to reduce water loss. They would also have to submit to the authority of a supranational system of water management that

⁴ The Aral Basin comprises an area of 1,760,000 square kilometres. See, *IFAS Regional Report "Integrated Land and Water Management in the Upper Watersheds"*, International Fund for Saving the Aral Sea, Executive Committee, Vol. B. Aral Sea Basin Program 6 (Almaty/Bishkek/Dushanbe/Tashkent, 1997), p. 4.

⁵ ICG interview with Diushen Mamatkanov, director of the Institute of Water Problems and Hydropower of the Kyrgyz Academy of Sciences, Bishkek, 20 February 2002. See also *IFAS Regional Report*, p. 6.

⁶ In Tajikistan, some 70 per cent of irrigation water is lost through evaporation and filtration. ICG interview with Tursun Abduzhabarov, Deputy Minister of Reclamation and Water Management, Dushanbe, 13 February 2002. Only 69 to 80 per cent of the water reaches fields in

Uzbekistan and less than 50 per cent gets to the crops. Yuri Egorov, "*Perspektivy neuteshitelny*" [The perspectives are not soothing], *Nezavisimaia gazeta*, 12 July 2001.

⁷ Philip Micklin. *Managing Water in Central Asia* (RIIA. London, 2000), p. 29.

⁸ Estimate by Philip Micklin, based on World Bank studies. *Ibid*, p. 40.

⁹ Those users that do pay, only cover a fraction of the true cost of the water. A water users association in Syr Darya Province (Uzbekistan) was paying 0.11 som a cubic metre against a cost estimated at 0.9 som. See Karl Wegerich. *Water User Associations in Uzbekistan and Kyrgyzstan*. Occasional Paper No.32. Water Issues Study Group, School of Oriental and African Studies (London. August 2000), p. 14.

¹⁰ Sandra L. Postel and Aaron T. Wolf, "Dehydrating Conflict", *Foreign Policy*, September/October 2001.

could set quotas and punish countries that did not stick to them. Decision-making would have to be opened up to those currently excluded from the process including: water users, energy producers and users and environmental groups.

Given the current state of relations among these countries and the slow pace of reform, none of the fundamental measures are likely to be introduced soon. Realistically, all that can be expected is a series of incremental reforms to what is essentially a Soviet-era system of management trying to cope with expanding demand for water and reduced cooperation among the states.

Although donor countries should not abandon the aim of promoting deeper reforms and broader regional cooperation, they should recognise that resistance runs deep among Central Asian states. This report aims instead to focus on ways to reduce tensions inherent in the current system as a way of reducing one aspect of conflict risk as soon as possible.

II. BACKGROUND

A. WATER IN CENTRAL ASIA

The agricultural sectors of downstream countries Uzbekistan and Turkmenistan are almost completely dependent on water from the Syr Darya and the Amu Darya. Southern Kazakhstan also depends on the Syr Darya. A majority of the population in all the Central Asian countries except Kazakhstan live in the countryside.¹¹ In Uzbekistan agriculture accounts for 28 per cent of GDP,¹² and irrigation is used in the production of 95 per cent of crops.¹³ More significantly, in Uzbekistan, Turkmenistan and Tajikistan, one major export crop, cotton, accounts for a large proportion of hard currency earnings. Thus, for both Uzbekistan and Turkmenistan, water supply is at the heart of their perceived national security interests.

Between 1995 and 2000 irrigated land increased by 7 per cent throughout Central Asia,¹⁴ and all the countries have plans to expand this area further. Turkmenistan intends to add 450,000 hectares in the coming years,¹⁵ Kyrgyzstan to increase land under irrigation by 230,000 hectares by 2005,¹⁶ and Tajikistan to add 500,000 hectares of irrigated land by

¹¹ In 1987, 42 per cent of the Kazakh population, 52 per cent of the Turkmen population, 58 per cent of the Uzbek population, 60 per cent of the Kyrgyz population and 67 per cent of the Tajik population lived in the countryside. See *Tsentrálnaia Azia: novye tendentsii v ekonomike*, RAN (Moskva, 1998). [*Central Asia: New Economic Tendencies*, Russian Academy of Sciences], p. 21. The rural proportion of the population in all these countries has increased since the collapse of the USSR as the industrial sector has shrunk.

¹² *Human Development Report*, UNDP (Tashkent, 2000), p. 15.

¹³ Philip Micklin. *Managing Water in Central Asia*, p. 55.

¹⁴ Iskandar Abdullayev, "Water Management and Prospects of Water Division in Central Asia", *The Times of Central Asia*, 3 November 2000, at <http://www.times.kg>.

¹⁵ ICG interview with Diushen Mamatkanov, Director, Institute of Water Problems and Hydropower of the Kyrgyz Academy of Sciences, Bishkek, 20 February 2002.

¹⁶ All this land is located in the Syr Darya basin – i.e. in Osh, Jalalabad, Batken and Naryn Provinces. Each hectare requires an average 10,000 cubic metres of water for irrigation. ICG interview with Kadyrbek Beshekeev, First Deputy General Director, Department of Water Management. Ministry of Agriculture and Water Management. Bishkek, 21 February 2002.

2005.¹⁷ If projects like this are implemented, pressure on limited water resources will increase massively. The ground water table is also likely to rise as a result of irrigation, making land unfit for agriculture elsewhere.¹⁸

Rapid population growth¹⁹ has raised demand for land, and the problem has been compounded by the collapse in industry that has forced many people back to farming. Although Uzbekistan and other downstream countries have emphasised food self-sufficiency in agricultural programs, the pressure to grow cotton remains high. It is a key foreign currency earner but is also a particularly thirsty crop that requires heavy irrigation.²⁰ Turkmenistan plans to triple cotton production by 2010. Other countries are also expected to expand cultivation,²¹ meaning an enormous rise in water use and wastage.²² Privatisation of agriculture has not reduced cotton growing in southern Kazakhstan. High prices have meant farmers

have devoted even more land to the crop and have intensified use of water and fertilisers.²³

There is enough water to go around in Central Asia, and with good management of systems, the tensions over distribution would diminish. But massive and rising overuse and inter- and intra-state tensions over distribution, will ensure that water remains a cause of competition rather than cooperation.

B. WATER AND CONFLICT

Water is one of the most politicised of all resources, a factor in at least 42 violent conflicts world wide since the start of the last century, according to one scholar.²⁴ As countries push against the limits of water availability and experience unprecedented levels of water stress, there is rising concern that conflicts could erupt over the resource. From UN Secretary General Kofi Annan to the U.S. National Intelligence Council, numerous leaders and reports have warned of this emerging problem.²⁵

In this context, Central Asia is a focus of concern for a number of reasons:

- ❑ Regional water systems were closely woven together by Soviet design and management. Now they must be managed by five often fractious countries with little willingness to cooperate.
- ❑ Central Asian economies are highly dependent on irrigation for much of their economic output. Irrigated crops provide the elites with

¹⁷ ICG interview with Ahad Akhrorov, Chief Hydraulic Engineer, Ministry of Reclamation and Water Management of the Republic of Tajikistan, Dushanbe, 16 February 2002.

¹⁸ Kyrgyzstan has expanded irrigated agriculture in the South, causing problems in Rishtan District in Uzbekistan's Ferghana Province as the water table there has risen.

¹⁹ Annual population growth in Tajikistan is 3 per cent. Uzbekistan's population grows by 2 per cent a year. Kyrgyzstan's is lower at 1.5 per cent, but is higher in the southern regions where pressure on land and water is greatest.

²⁰ According to UN figures, rice uses an average of 30,000 cubic metres per hectare, cotton 12,000, and wheat just 5,000. See Karl Wegerich. "Not a Simple Path: A Sustainable Future for Central Asia", Occasional Paper No.28, Water Issues Study Group, School of Oriental and African Studies (London. February 2001), p. 2. Although cotton prices are falling, it is still more profitable to produce that crop than grain. The price of one ton of cotton equals five to six tons of grain. ICG interview with Makhmud Hamidov, Director, BWA Syr Darya, Tashkent, 1 February 2002.

²¹ National Development Plan 2010, quoted in *Human Development Report*, UNDP (Tashkent. 2000), p. 9.

²² To illustrate this problem, it may be useful to look at water use in Uzbekistan: an average of 55 cubic kilometres for irrigation. Only 38 to 44 cubic kilometres, however, reach the fields. And only 25 to 26 cubic kilometres reach the crops for which they were intended. Yuri Egorov, *Perspektivy neuteshitelny* [The Perspectives are not Soothing], *Nezavisimaya gazeta*, 12 July 2001.

²³ ICG interview with Bakhyt Ramankulov, deputy head of the South Kazakhstan Province Department of Agriculture, Shimkent, 1 March 2002.

²⁴ Peter Gleick, "Water Conflict Chronology 2000", Pacific Institute for Studies in Development, Environment and Security, 2000. However, Gleick's chronology includes the use of water as a means of waging war such as bombing dams or poisoning wells. It is harder to find a case of two countries going to war over water; indeed the last time this occurred may have been 4,500 years ago when the Mesopotamian cities of Lagash and Umma fought. On the other hand between 805 AD and 1984, governments signed more than 3,600 agreements on water. See Sandra L. Postel and Aaron T. Wolf, "Dehydrating Conflict", *Foreign Policy*, September/October 2001, who argue that "the history of cooperation, creativity and ingenuity [over water] is infinitely more rich than that of acute conflict".

²⁵ Postel and Wolf, "Dehydrating Conflict", op. cit.

the money and control of patronage that keep them in power.

- Poor water management and massive over use has left the area vulnerable to droughts and the sort of catastrophic environmental damage already seen around the Aral Sea.
- Central Asian countries are increasingly adopting “zero-sum” positions on resources and other issues while stepping up consumption at unsustainable rates.
- The downstream countries are more powerful militarily and economically than the upstream countries, an imbalance that has been present in most water conflicts.

The interdependency and high reliance on water that flows across borders also means, however, that countries have a lot to lose by fighting over supplies. Going to war is a very expensive way of controlling resources, and most governments prefer agreements. “The tendency ... even where water conflicts have been deemed an imminent risk is to trade water for peace and structural changes in water use”, writes one specialist. “The emerging consensus is well summarised as ‘water is a trigger for conflict but a reason to make peace’”.²⁶

Water plays a key role also in internal conflict. Indeed, one expert on the subject argues that the risk of violence becomes more intense the smaller the scale of the dispute, an idea supported in Central Asia where local conflicts have been more serious than wider ones.²⁷ Water is contributing to a broad sense of unease across the region. Concerns over water are one strand of a complex web of tensions including drugs, Islamist extremism, ethnic rivalries and border disputes.²⁸ None of these issues may have led to all out war but problems among the Central Asian states are hindering economic development, fuelling

extremism and occasionally resulting in violence. Degradation of agricultural land and shortages of water also mean many young men have few economic opportunities, making them more likely to join militias or extremist groups.

Water and energy disputes have already had an impact on large numbers of people, particularly in sensitive areas like the Ferghana Valley where Uzbeks have endured winter floods and summer droughts due to Kyrgyzstan’s release of dam water for electricity generation. The Kyrgyz in turn have shivered through winters when Uzbekistan failed to deliver gas due in exchange for irrigation water.

On a local level, water disputes have been on the rise and have resulted in violence. There have been frequent tensions between Kyrgyz and Tajik villagers on the border between the two countries over access to contested water supplies. Disputes over resources risk provoking wider ethnic conflict as happened when land disputes led to inter-ethnic riots in Kyrgyzstan in 1990 that left hundreds dead. Rising costs, poorly maintained water systems and privatisation of utilities will only add to strains in local water systems. Water affects the poorest sectors of societies, which end up paying the largest proportion of their income for the resource. Problems with irrigation, drinking water, floods and declining soil quality are additional burdens to people already coping with economic turmoil and rapid social change.

²⁶ Leif Ohlsson, “Water Scarcity and Conflict”, in *Security Challenges of the 21st Century* (Bern/Frankfurt, 1999).

²⁷ Ibid.

²⁸ See ICG Asia Report N°14, *Islamist Mobilisation and Regional Security*, 1 March 2001 (Osh/Brussels); ICG Asia Report N°25, *Central Asia: Drugs and Conflict*, 26 November 2001 (Osh/Brussels); and ICG Asia Report 33, *Central Asia: Border Disputes and Conflict Potential*, 4 April 2002 (Osh/Brussels).

III. REGIONAL WATER MANAGEMENT

Independence came as something of a shock to the five Central Asian Republics. There was little domestic pressure for them to leave the Soviet Union and no real history as independent nations within their current borders. There was little shift in their rulers – in four of the five countries former Communist Party chiefs continued in power under a different political guise. Although now five sovereign states, they were closely woven together economically; indeed there is a widespread belief that Soviet planners deliberately divided resources and investment among them so none would be self-sufficient. Under the Soviet model it did not matter as the borders were nothing more than boundary markers, and most important economic decisions were taken in Moscow.

Immediately after independence, the five nations had little choice but to continue with many of the management systems put in place by Moscow. This did not account, however, for the divergence of economic interests and political views that accompanied growing nationalism. Disputes were no longer settled by ministries in Moscow but there was little willingness to find local solutions. Although the leaders of these countries were willing to mouth the rhetoric of regional cooperation, they rarely followed up with action. What was left was a system that was Soviet in its ambitions, scale and mentality but unable to adapt to Central Asia's evolving political and economic systems.

A. SOVIET ERA MANAGEMENT

The shrunken Aral Sea is the starkest legacy of the Soviet Union's management of water resources. What was once the world's fourth largest lake is now the sixth largest and half its former size. Since the 1960s the level of water has dropped between 13 and 18 metres. Some 400,000 square kilometres of land around the lake, home to four million people, have become a toxic wasteland.²⁹ The salinity of the water is now eight times the level in 1960. Salt and poisonous dust from the exposed sea bed are

carried on the wind and have made large areas unfit for agriculture.³⁰ The salt has also caused serious health problems and is even believed to have had a dramatic impact on the region's climate, which is becoming hotter and dryer.

Even Soviet attempts to save the Aral Sea were controversial. One scheme planned to divert water from the Ob and Irtysh Rivers in Siberia to Central Asia. This project, however, had to be abandoned in the late 1980s due to fierce opposition from newly empowered scientists, writers and environmentalists.³¹ Another scheme called for nuclear weapons to be used to melt glaciers in Central Asia that would then refill the lake.

Such ideas reflect Soviet views of nature as something to be marshalled and directed by elaborate engineering. Moscow spent billions of rubles building dams and canals across Central Asia without considering the views of those who would use them. The bias was also towards increasing the area of irrigated land, even if it meant environmental damage. In some cases just one crop was grown before farmers had to abandon the land due to salination.³²

Although water was delivered in a wasteful manner with little consideration for long term environmental impacts, the system did work within its own logic. Quotas were set and followed under the firm guidance of the Ministry of Land Reclamation and Water Management in Moscow – in close coordination with the Ministry of Energy.

The centralised nature of Soviet water management, however, paved the way for the water disputes that have emerged among Central Asian countries. Water quotas fixed by Moscow favoured the downstream cotton-producers – Uzbekistan, Turkmenistan and

²⁹ Philip Micklin, *Managing Water in Central Asia*, p. 7.

³⁰ The basic problem was a growing lack of water since the 1960s owing to over-irrigation upstream. The Aral Sea is at the lower end of the Amu Darya and the Syr Darya. Most of the water from these rivers is used upstream for irrigation. Little water, therefore, reaches the Aral Sea zone and the water that does has a very high salt-content, causing secondary salinisation of the land and a decrease in agricultural output. Philip Micklin. *Managing Water in Central Asia*, p. 18.

³¹ The idea was resurrected by some circles in Russia and Uzbekistan in 2001. See below.

³² *Report to the 16th Plenary Sessions of the Uzbekistan Communist Party Central Committee*, quoted in Iwao Kabori and Michael H. Glantz (Eds.), *Central Eurasian Water Crisis: Caspian, Aral and Dead Seas*, (United Nations University, Tokyo), 1998.

Kazakhstan – at the expense of mountainous and less developed Kyrgyzstan and Tajikistan. Restrictions were imposed on irrigated agriculture in the latter two to maximise cotton output in their neighbours.³³

Kyrgyzstan and Tajikistan, which have only limited gas and coal deposits, were keen to develop their hydropower potential. This, however, was not compatible with ensuring that sufficient water was available downstream for irrigation during spring and summer, which required that the reservoirs on the Syr Darya and Amu Darya be allowed to fill up in autumn and winter – when electricity demand peaks in Kyrgyzstan and Tajikistan.

To satisfy domestic energy consumption, Kyrgyzstan and Tajikistan received huge amounts of Turkmen and Uzbek gas as well as coal and mazut (a heavy fuel oil made from refinery residues) from Kazakhstan. In return for the electricity they produced to power irrigation pumps in summer, Kyrgyzstan and Tajikistan also received electricity from their neighbours during the winter months.³⁴ Moscow covered the costs of operating and maintaining the dams, reservoirs, canals and irrigation pumps.³⁵

B. MANAGEMENT STRUCTURES

On 12 October 1991, the water ministers of the Central Asian states agreed that they would stick with the Soviet allocations of water, an agreement that was formalised in February 1992 with the signing of the Almaty Agreement.³⁶ The Interstate

Coordinating Water Commission, (ICWC),³⁷ was established to facilitate the implementation of quotas, with decisions on key issues to be made by consensus of the five member states.³⁸ The ICWC also runs a Scientific Information Centre (SIC)³⁹ and trains water officials, organises courses and round-tables, and operates a comprehensive database that can be accessed by its member countries.

The ICWC sets quotas, and its executive bodies – the Basin Water-Management Association (BWA) Amu Darya and the BWA Syr Darya⁴⁰ – monitor the their implementation. The associations also have the right to adjust the quotas up or down by as much as 15 per cent. All these bodies are located in Uzbekistan – the ICWC and BWA Syr Darya in Tashkent and BWA Amu Darya in Urgench. The SIC is also in Tashkent, although the rather weak ICWC secretariat is based in Khojand (Tajikistan).

To address the problems of the Aral Sea and to provide social, economic and other assistance to people living in the area, an Interstate Council for the Aral Sea Basin (ICAB) and the International Fund to Save the Aral Sea (IFAS) were set up in 1993 and then merged in 1997. IFAS is headquartered in Tashkent, although its executive committee rotates around the Central Asian countries and in 2002 was in Dushanbe.⁴¹ Each country has two representatives on the executive committee that implements IFAS Board decisions through national branches.⁴² The major task of IFAS is to generate funding for and implement an action

³³ ICG interview with Diushen Mamatkanov, Director, Institute of Water Problems and Hydropower of the Kyrgyz Academy of Sciences, Bishkek, 20 February 2002.

³⁴ During the Soviet period, Kyrgyzstan, Uzbekistan, Tajikistan, Turkmenistan and the five southern provinces of Kazakhstan (the northern provinces of Kazakhstan were part of the Russian energy grid) were all part of the United Central Asian Energy System, which was managed by the USSR Ministry of Energy. ICG interview with Iskandar Ametov, Chief Dispatcher for “Energy”, United Dispatch Center of the Central Asian Power Systems, Tashkent, 31 January 2002.

³⁵ ICG Interview with Nabi Nazirov. Chairman of the SIC ICWC Tajikistan, Dushanbe, 17 February 2002.

³⁶ *Soglashenie o sotrudnichestve v upravlenii ispolzovania i okhrany vodnykh resursov iz mezhgosudarstvennykh istochnikov* [Agreement on Cooperation in the Management

of the Use and Protection of Water Resources from Interstate Sources].

³⁷ Interstate Coordinating Water Commission, ICWC [*Mezhgosudarstvennaia Koordinatsionnaya Vodokhoziaistvennaia Komissia, MKVK*].

³⁸ The ICWC has five members – one from each country – and meets on a quarterly basis.

³⁹ For a more detailed description of its tasks, see the information leaflet *NITS MKVK*, which can be obtained from the ICWC.

⁴⁰ The Basin Water-Management Association (BWA) Amu Darya (*Basseinovie Vodnoe Obedinenie Amu Darya*) and the BWA Syr Darya (*Basseinovie Vodnoe Obedinenie Syr Darya*).

⁴¹ Prior to moving to Dushanbe, the Executive Committee was headquartered first in Tashkent, then in Almaty and more recently in Ashgabat.

⁴² For a description of IFAS activities, see *Action Program on the Regional Water Partnership Organisation in Central Asia*, ICWC.

program⁴³ endorsed by the Central Asian leaders in Nukus in January 1994.⁴⁴

All these bodies coordinate their activities closely with the ministries responsible for water management in each Central Asian country – the Water Resources Committee of the Ministry of Natural Resources and Environmental Protection (Kazakhstan), the Ministry of Reclamation and Water Management (Tajikistan), the Ministry of Water Management and Agriculture (Uzbekistan), the Ministry of Water Management and Agriculture (Kyrgyzstan) and the Ministry of Reclamation and Water Management (Turkmenistan).

C. FLAWS IN THE SYSTEM

Imposing a half-hearted version of Soviet central planning on the fractious Central Asian states has not proved a recipe for success. Indeed, the current management system has failed to deal with rising tensions over resources. The most significant reasons for its failure have been:

- inability to recognise that the new nations would not necessarily be satisfied with the economic roles previously assigned to them by Moscow, and the Soviet-era water quotas that went with them;
- lack of reliable data on the flow of water in the Syr Darya and the Amu Darya;⁴⁵

- the ICWC's lack of transparency and the non-involvement of NGOs, Water Users' Associations (WUAs) and other interested parties in its decision-making process;⁴⁶
- the ICWC's narrow focus, with emphasis very much on water division, to the exclusion of agriculture and energy – the major users of water;
- the institutional structure of the IFAS and the ICWC, in which decisions are made by consensus, resulting in paralysis as the interests of the countries have diverged;
- location of the IFAS and ICWC, which has raised concerns that Uzbekistan is favoured;⁴⁷
- lack of political commitment to the organisations by the member states and the accompanying shortage of funds (only two countries keep up their payments);⁴⁸ and
- failure to recognise the need for collaborative maintenance arrangements: maintenance of the Toktogul Reservoir cost U.S.\$25 million a year in the early 1990s, a sum Kyrgyzstan could ill-afford, yet it received no help from the downstream beneficiaries.⁴⁹

⁴³ *Programma konkretnikh deistvii po uluchsheniui ekologicheskoi obstanovki v basseine Aralskogo moria na blizhaishie 3-5 let s uchetom sotsialno-ekologicheskogo razvitiia regiona* [Program of Concrete Actions to Improve the Ecological Situation in the Aral Sea Basin over the next 3-5 Years in Conjunction with the Socio-Ecological Development of the Region].

⁴⁴ All the legal acts and agreements related to interstate water management in Central Asia can be found in *NITs MKVK. Polozhenia i ustavy mezhgosudarstvennykh organizatsii basseina Aralskogo moria. Iuridicheskii sbornik N3* [Charters and Statutes of the Interstate Organisations of the Aral Sea Basin. Legal Digest No 3] (Tashkent, NITs MKVK, 1998).

⁴⁵ The average annual flow of water in the Amu Darya is 75 cubic kilometres. The Syr Darya has an average flow of 36 cubic kilometres. The water flow varies significantly from year to year. Due to the civil war in Tajikistan and a lack of funds in both Tajikistan and Kyrgyzstan, hydrological posts have either disappeared or fallen into disarray. It is therefore very difficult for hydrologists to produce precise predictions on water flow. The General

Director of the Kazakh Kazhydromet put it as follows: "the ICWC distributes water not knowing how much water there is to distribute". ICG interview with Dr. Tursynbek Kudekov, Director-General of Kazhydromet, Almaty, 26 February 2002.

⁴⁶ The Soviet vertical ICWC-Ministry of Agriculture and Water Management-Provincial Water Management Department – District Water Management Department has not been replaced. In an interview with ICG, one water expert described the ICWC as a "club for water officials" that makes no real decisions.

⁴⁷ As most of them are Tashkent based, the Kyrgyz, Tajiks and to some extent Kazakhs have accused the ICWC and the IFAS of serving the interests of Uzbekistan. ICG interviews with Sirodjidin Aslov, Transboundary Water Monitoring Component Director, IFAS, GEF-project, Tashkent, 21 January 2002, and Diushen Mamatkanov, Director of the Institute of Water Problems and Hydroenergy of the Kyrgyz Academy of Sciences, Bishkek, 20 February 2002.

⁴⁸ According to the SIC ICWC, only Turkmenistan and Uzbekistan keep up their payments to the two bodies. The IFAS receives only limited funds from the member states, and international funding has not been forthcoming on the scale anticipated at the time of its establishment. ICG Interview, SIC officials, Tashkent, 31 January 2002.

⁴⁹ Since 1993, Kyrgyzstan has several times demanded that Uzbekistan and Kazakhstan, which benefit from the water at Toktogul, share the cost of maintaining the reservoir. The

Although it is the task of the BWAs to monitor the use of water across the region, this has proven difficult. An Uzbek water expert, for instance, accused the Kyrgyz Ministry of Energy of undermining the work of the BWA Syr Darya, saying that as the Kyrgyz Ministry of Energy regulates Toktogul water reservoir by itself “what is there then left for the BWA to do?”⁵⁰

The Associations face a number of technical and administrative problems including:

- lack of unfettered access to all countries; although they have staff everywhere, some countries require visas for visits by senior officials, which prevents surprise inspections;
- lack of funding and equipment for monitoring; and
- lack of powers to close facilities or impose fines when quotas are exceeded.⁵¹

Field staff are vulnerable to pressures from local authorities. Staff at the BWA Syr Darya are often pressured by the police and tax officials into exceeding the water quotas fixed by the ICWC. According to a BWA official, “Our people exceed water quotas when we are not present. It is difficult for me to say by how much. This is happening not through the fault of our staff. They are the victims”.⁵²

But the greatest problem is the inability of states to agree on workable bilateral or regional water management structures. If the terms under which the BWAs are working are not accepted politically by upstream countries, it will be impossible for them to work as multilateral institutions for the interests of the whole river basin rather than for national interests. Hence the need for an

overarching strategy that includes all countries of the region and represents compromise between the aspirations of upstream and downstream states.

D. REGIONAL WATER STRATEGIES

So far none of the Central Asian states has developed a national water strategy, though work has begun in Kazakhstan, Kyrgyzstan and Tajikistan. Regional strategies have also lagged, mainly because of political differences and an approach to water resources based largely on national interest.

Despite problems reaching functioning inter-state agreements, the Central Asian countries realise that it is in their interests to achieve reach some kind of understanding on the Syr Darya and Amu Darya. As a result of the failure to pass water quotas acceptable to all, a number of bilateral and multilateral agreements regulating the water flow have been signed – most notably the 1998 agreement among Kyrgyzstan, Uzbekistan and Kazakhstan. This was for a period of five years, with exact terms negotiated annually. It provides for the exchange of water from Kyrgyzstan for gas from Uzbekistan and coal and mazut from Kazakhstan.

Further multilateral initiatives included an agreement on measuring water flows and one on joint operation of energy systems, signed in June 1999. Uzbekistan and Turkmenistan signed bilateral agreements in 1996 to divide water from the Amu Darya below Karshi in southern Uzbekistan equally.

Kyrgyzstan and Kazakhstan signed a deal in January 2000 on water use from the Chu and Talas Rivers in northern Kyrgyzstan. They are also negotiating to establish a consortium on the Syr Darya that would implement regional water and energy programs. There has been some talk of a similar consortium for the Amu Darya.

There are also agreements, renewed annually, linking water and energy use, particularly between Tajikistan and Uzbekistan, but many of these have been implemented poorly. Much continues to be done informally rather than on the basis of legal documents and open agreement. Far more accords are signed than implemented and even the best plans in the region have been stymied by national interests.

demands have been turned down by Uzbekistan and Kazakhstan in the past, although there was some hope of an agreement in 2002. ICG interview with Saidazim Mirzaev, Chief, Water and Land Resources Main Department, State Committee for Nature Protection of the Republic of Uzbekistan, Tashkent, 16 January 2002.

⁵⁰ ICG confidential interview, Tashkent, February 2002.

⁵¹ ICG interview with Yusup Kamalov, Chairman, Union for the Defence of the Aral Sea and the Amu Darya, Nukus, 23 January 2002.

⁵² ICG interview, Tashkent, 1 February 2002.

E. INTERNATIONAL INVOLVEMENT

Water has been a favourite issue for donors.⁵³ The emphasis of projects has been on technical rather than political or economic solutions. Given the inefficiency of water management in Central Asia and the poor condition of infrastructure, this approach has reaped some results, particularly in small projects. However, unless technological solutions take account of local conditions, they often have little impact. An Israeli scheme to introduce low water irrigation sprinklers to Uzbekistan in 1996 failed because farmers found it was expensive to pay for maintenance and energy. Since the heavily subsidised water supply was cheap, they were unconcerned about wasting it.⁵⁴

Efforts to tackle water from a political perspective have been fraught with problems. A lack of willingness of the Central Asian states to cooperate has killed numerous regional initiatives. Others have been signed with pomp and ceremony but not left the drawing board. An effort by the Organisation for Security and Cooperation in Europe (OSCE) to organise a regional conference on water came to nothing in 2000 when Turkmenistan and Uzbekistan said they preferred to work bilaterally. Austrian Foreign Minister Benita Ferrero-Waldner – then

chairwoman of the OSCE – was unable to build support for the conference on a tour of the region. Uzbekistan's President Islam Karimov brushed off offers of outside assistance by saying that his country had handled the issue for more than a thousand years on its own.⁵⁵

Nevertheless, several major initiatives to resolve the water problems in Central Asia have been launched since 1991. One is being developed by the Global Environment Facility (GEF),⁵⁶ a world-wide financing body for environmental projects, in cooperation with IFAS, with most money coming from the World Bank. The three-year Water and Environmental Management Project, due for completion at the end of 2002, is designed to develop a new system of cooperation and to prepare inter-state agreements.⁵⁷

The GEF program was essentially a follow-up to the earlier World Bank Aral Sea Basin Program, a U.S.\$17 million project that achieved hardly any tangible results. IFAS and other bodies involved were managed by the old guard of water officials, who had little vision of how to affect change. The GEF program has also been beset by problems. Two years into the project, some parts seem to have achieved moderate success, but one expert close to a key component covering modelling for basin rivers suggested to ICG that “no useful results are in sight from this project”.⁵⁸

Part of the problem is the domination of water structures by a small group of Soviet-era officials, who are seldom open to new ideas or alternative opinions. This top-down management approach does not engender the atmosphere for open exchange of information that the project needs.

⁵³ Donor-funded projects have tended to focus on:

- ❑ improving water management at the Syr Darya and the Amu Darya;
- ❑ irrigation efficiency;
- ❑ creating water users organisations (WUAs);
- ❑ enhancing reservoir safety;
- ❑ rectifying the environmental, social and economic damage caused by the Aral Sea shrinkage; and
- ❑ provision of drinking water.

Several projects at the regional level are designed to improve water management. These have usually been collaborative efforts. Major projects include:

- ❑ Water and Environmental Management Project (GEF/IFAS with funding from the World Bank, the Netherlands, Sweden and the EU);
- ❑ Water Resources Management and Agricultural Production – WARMAP (EU-TACIS with SIC ICWC);
- ❑ Natural Resource Management Project – NRMP (USAID); and
- ❑ Regional Hydrometeorological Collaboration (Swiss Aral Sea Mission/Regional Centre for Hydrology).

⁵⁴ Karl Wegerich, “Not a Simple Path: A Sustainable Future for Central Asia”. Occasional Paper N°28. Water Issues Studies Group. School of Oriental and African Studies, London (February 2001).

⁵⁵ Roland Eggleston, “OSCE Seeks Agreement on Central Asia Water”, *Eurasianet*, 6 July 2000.

⁵⁶ See the GEF's website for more information www.gefweb.org.

⁵⁷ For further details, see *Proekt upravlenie vodnimi resursami i okruzhaiushei sredoi. Podkomponent A1. Upravlenie vodnimi resursami i soliami na natsionalnikh i regionalnikh urovniakh, Regionalnii otchet No 2, Otchet po faze III. Reziyume*. 15.II.01. [Project for the Management of Water Resources and the Environment. Subcomponent A1. The Management of Water Resources and Salts at the National and Regional Levels, Regional Report No 2. Report on Phase III. Summary].

⁵⁸ Personal communication to ICG, Dr Daene C. McKinney, Associate Professor, Department of Civil Engineering, University of Texas, May 2002.

Although GEF involves all five Central Asian states, there is little support in upstream countries because it is seen as focusing too much on agriculture and the interests of the downstream countries.⁵⁹ They have preferred a similar project launched in 1998 as part of the Special Program for the Economies of Central Asia (SPECA) – a scheme developed by Kyrgyzstan, Tajikistan, Kazakhstan and Uzbekistan in collaboration with the UN Economic Commission for Europe (ECE) and the UN Economic and Social Commission for Asia and the Pacific (ESCAP).

SPECA's aim is to "support the Central Asian States in developing their cooperation, creating incentives for economic cooperation and integration into the economies of Europe and Asia". The program contains four components,⁶⁰ with each country having the main responsibility for one. One of these components, "rational and effective use of energy and water resources in Central Asia", is being carried out by a working group attached to the Kyrgyz Energy Agency. But again tangible results are hard to find. Turkmenistan is not a party to SPECA, and Uzbekistan boycotts its meetings. It is doubtful, therefore, whether its water and energy program will ever be implemented.⁶¹

One international project that did produce some real benefits was the USAID-funded program that helped to bring about the 1998 Syr-Darya agreement on water and energy. In 1996 USAID staff assisted initiation of a round-table of water officials from Kyrgyzstan, Kazakhstan, and Uzbekistan. It resulted in an agreement in March 1998 that has helped lower tensions around the Syr-Darya. Consideration of a similar scheme for the Amu-Darya, also attracting Afghanistan to the round-table, would be a timely follow-up.

IV. WATER QUOTAS AND BARTER AGREEMENTS

There are two key areas of conflict between and within the Central Asian states over water. One is how the water of the Aral Sea basin should be divided, both among and within countries. The second is the functioning of various barter and payment procedures that bundle water and energy together to provide upstream countries with the latter, and downstream countries with the former. These issues – water quotas and barter agreements – will be at the heart of any new international agreement in the Aral Sea basin.

A. WATER QUOTAS

The 1992 Almaty Agreement set quotas for water use that were close to those established under the Soviet Union. Uzbekistan, Kazakhstan and Turkmenistan – the three richer Central Asia nations – received the largest quotas from the Amu Darya and the Syr Darya. The upstream countries were given much smaller quotas, reflecting their smaller populations, low cotton production and the Soviet era decision that agriculture would not be intensively developed in these republics.

That division almost immediately caused intense grievances. Kyrgyzstan and Tajikistan wished to expand irrigated agriculture but at the same time the downstream countries were expanding their farming sectors dramatically to compensate for a sharp industrial decline. This led to rapid expansion in water use in the 1990s. As noted, the Central Asian countries now use 1.5 times more water than recommended by water experts.⁶²

Water quotas are frequently exceeded due to inadequate monitoring, leading to shortages at the lower reaches of the Syr Darya and the Amu Darya. In addition to causing tension between the upstream and downstream countries, uneven water distribution also strains relations between provinces within countries. In Uzbekistan, for instance, the downstream Khorezm

⁵⁹ ICG interview with Diushen Mamatkanov, Director, Institute of Water Problems and Hydropower of the Kyrgyz Academy of Sciences, Bishkek, 20 February 2002.

⁶⁰ For further details, see www.unece.org/speca/tashkent.htm.

⁶¹ Kazakh Commercial Television, Almaty, 20 February 2002, 11:30 am.

⁶² ICG interviews with Yusup Kamalov, Chairman of the Union for the Defence of the Aral Sea and the Amu Darya, Nukus, 23 January 2002, and Ernazar Makhmudov, Director, Institute of Water Problems of the Uzbek Academy of Sciences, Tashkent, 21 January 2002.

and the autonomous republic of Karakalpakstan have blamed the upstream provinces of Surkhandarya and Bukhara for worsening their serious water shortages. Should Afghanistan demand more water from the Panj-Amu Darya,⁶³ the problem would be further aggravated.

Both adverse weather and seasonal use for energy have had a major impact on the amount of water available in rivers. The levels of the Syr Darya and the Amu Darya have dropped sharply as a result of four years of severe drought.⁶⁴ An increase in the production of electricity on the Syr Darya in Kyrgyzstan has also reduced the water available for irrigation in the summer in addition to causing severe flooding in Uzbekistan during the winter. Water quotas, however, have not been adjusted properly to reflect these changes.

Attempts at fixing water quotas that satisfy all countries in the region have so far failed. Uzbekistan uses 51 per cent and Kazakhstan 37 per cent of the water from the Syr-Darya⁶⁵ whereas most Amu-Darya water is consumed by Uzbekistan and Turkmenistan.⁶⁶ Uzbekistan and Kazakhstan are politically and economically much more powerful than Kyrgyzstan and Tajikistan. They also have much more to lose by reducing or putting an upper limit on their water quotas. Downstream countries have shown little understanding of demands by upstream countries to expand their water use.

B. BARTER AND PAYMENT MECHANISMS

In the Soviet system, the Central Asia republics exchanged water and energy under complex barter deals orchestrated by Moscow. As with the quota system, the barter system has come under serious strain in recent years and has probably

provoked more ill feeling than any other aspect of water management. At various times, most of the countries have reneged on barter agreements, often causing serious problems for large numbers of the population. Those who have become victims of alternating floods and droughts in Uzbekistan and citizens of Kyrgyzstan sitting without power in the winter months have begun to nurture grudges over the behaviour of the other country.

Immediately after the collapse of the USSR, Uzbekistan and Kazakhstan introduced world prices for their gas, coal and mazut. Kyrgyzstan could ill afford to pay and, therefore, increased electricity production at Toktogul during the winter to compensate for its lack of fuel. The country also saw a surge in demand for power. According to the state utility, Kyrgyzenergo, electricity demand in 2000 was 20 per cent higher than in 1991, mainly because of the decrease in gas provision, particularly in the South.⁶⁷

The increased electricity production at Toktogul caused considerable problems for Uzbekistan and Kazakhstan. Kyrgyzstan not only disrupted the flow of water in the Syr Darya but also reduced the water available to Uzbekistan and Kazakhstan for irrigation during spring and summer. This led to serious tensions in 1997 when drought further limited summer irrigation water available downstream.

All countries realised the need for a solution, and a framework agreement was negotiated in 1998. Detailed barter agreements are now concluded on an annual basis. These provide Kyrgyzstan with gas from Uzbekistan and coal from Kazakhstan for its thermal power stations in Bishkek and Osh, in return for water for irrigation during spring and summer. Kyrgyzstan still has to purchase gas for domestic consumption from Uzbekistan.⁶⁸

⁶³ According to an agreement signed between the USSR and Afghanistan in 1946, Afghanistan is entitled to use nine cubic kilometres (50 per cent) of water from the Panj River. At present, it only uses two cubic kilometres.

⁶⁴ Over the last two years, the amount of water in the Panj river – a major tributary to the Amu Darya – has dropped by 20 per cent as a result of drought. ICG interview with Tursun Abduzhabarov, Deputy Minister of Reclamation and Water Management, Dushanbe, 13 February 2002.

⁶⁵ IFAS Executive Committee. *Integrated Land and Water Management in the Upper Watersheds. Regional Report*, Vol. B. Aral Sea Basin Program 6, 1997, p. 14.

⁶⁶ *Ibid*, p. 13.

⁶⁷ AO Kyrgyzenergo. *Energeticheskie proekty na Velikom shelkovom puti* [Energy Projects along the Great Silk Road] (Bishkek, 2000), p. 9.

⁶⁸ Uzbekistan and Kazakhstan equally share on average 6.5 cubic kilometres of water released from Toktogul. About four cu km are used to generate Kyrgyz domestic summer electricity needs, leaving 2.5 cu km, which generates 1-1.1 billion kWh for each country from Kyrgyzstan from May to August. Uzbekistan pays 3.4 U.S. cents per kWh of electricity, whereas Kazakhstan pays one cent. Payment for the electricity is not made in cash, but by supplying Kyrgyzstan with gas, coal and mazut. In 2001, Uzbekistan provided some one billion cubic metres of gas, whereas Kazakhstan supplied some 500,000 tons of coal from the Karaganda coal field and roughly 10,000 tons of mazut. ICG interview with Iskander

The barter agreements have only been a limited success for a number of reasons:⁶⁹

- Timing, since they usually are only ready in the spring when the Uzbek and Kazakh fields are in dire need of water;⁷⁰
- lack of trust as a result of practical problems that prevent the parties from keeping their commitments in full;
- lack of control mechanisms;
- failure to help Kyrgyzstan with the costs for maintenance and operation of Toktogul; and
- failure to account for diverging economic systems as countries reform at different paces.

C. ENERGY AND WATER: THE SYR-DARYA

The Syr-Darya unites Kyrgyzstan, Kazakhstan and Uzbekistan in a complex array of barter agreements involving water use and energy provision. For the most part, these have been flouted, leading to tension among these states. A reappraisal of the agreements, possibly within a new Syr-Darya energy consortium, and a determination to make them stick, would significantly diminish tension around the key resources of the river.

1. Kyrgyzstan-Uzbekistan

Kyrgyzstan and Uzbekistan have had the most controversial history over water and energy. The

barter agreement of 1998 has been broken by both sides.

Uzbekistan's economy is still heavily state controlled, and it has thus had few problems getting energy suppliers to comply with its barter arrangements. Nevertheless the country still frequently fails to provide Kyrgyzstan with the negotiated amount of gas for other technical and political reasons.

Gas pipelines in Uzbekistan are in urgent need of repair, and, therefore, transfers around the country and to neighbours are often disrupted. In 2001 problems emerged in the gas line along the route Tashkent-Bishkek-Almaty. As a result, gas supplies to Kyrgyzstan were cut for one and a half months.⁷¹ Uzbekistan also produces very poor quality "wet" gas with a high water content. During the winter, the water can freeze, clogging the gas pipes. Although Uzbekistan has committed to providing gas to Kyrgyzstan, it actually does not have enough to meet its own domestic demand.⁷²

Experts in Uzbekistan estimate that gas fields currently in production could supply energy for another 30 years. Although several new gas deposits have been identified, most contain gas condensate, which requires expensive technology to exploit. Most new deposits are in remote areas with limited or no infrastructure.⁷³ Developing them will require substantial financing, which is unlikely to be forthcoming given the economic climate in the country and the reluctance of foreign investors.

Some Kyrgyz officials allege that Uzbekistan has used Kyrgyzstan's dependence on its gas to pressure it into concessions on political issues. Such pressure has in turn forced Kyrgyzstan to produce more electricity to cover increased demand at home – in turn leaving less water for irrigation in Uzbekistan in the summer.⁷⁴

Ametov, Chief Dispatcher, "Energy" United Dispatch Center of Central Asia Power Systems, Tashkent, 31 January 2002. Additional information provided by Dr Daene C. McKinney, Associate Professor, Department of Civil Engineering, University of Texas, May 2002.

⁶⁹ According to Iskander Ametov, Chief Dispatcher of the "Energy" United Dispatch Center of the Central Asia Power Systems, the barter agreement has only been properly implemented once – in the spring of 2001. ICG interview, Tashkent, 31 January 2002.

⁷⁰ If the barter agreements were ready before 1 January, Kyrgyzstan would have an incentive not to produce so much electricity during the winter months. Consequently there would be more water available for irrigation during summer.

⁷¹ Saparbek Balkibekov, Head of Fuel & Energy, Infrastructure and Communications Department, Office of the Prime Minister of the Kyrgyz Republic, Bishkek, 21 February 2002.

⁷² ICG interview with Aleksei Nikolaevich Silantiev, Vice President of Barqi Tojik [Tajik Electricity], Dushanbe, 13 February 2002.

⁷³ ICG interview with Utkur A. Tadzhiyev, Institute of Power Engineering and Automation of the Uzbek Academy of Sciences, 22 January 2002.

⁷⁴ The barter agreement only supplies Kyrgyzstan with gas for its thermal power stations in Bishkek and Osh. Gas for domestic consumption is purchased by Kyrgyzstan from

A major problem with the barter agreements is that they are usually delayed until the late spring or even early summer – the very time when the downstream countries need water for irrigation. Had the agreements been ready before the turn of the year, Kyrgyzstan would have had an incentive to produce less electricity. As it happens, Kyrgyzstan is not convinced that enough coal and mazut will be provided and so protects itself by producing electricity – thus triggering a vicious circle.

The regulation of the Syr Darya has intensified problems caused by the Kyrgyz run-off of water in the winter. Soviet engineers diverted the river in several areas, and parts of the previous banks and river-bed were used for farming, housing and factories. If more than 480-500 cubic metres per second is released from Toktogul, there is flooding downstream, which is exacerbated in winter by the freezing of the river.⁷⁵ Two reservoirs located below Toktogul can take only some of the excess water.⁷⁶ Kazakhstan is reluctant to release water downstream from the Chardara Reservoir in the winter and, therefore, releases excess water into the Arnesai Lake complex⁷⁷ in Uzbekistan. As a result, none of this water reaches the Aral Sea.

Some Kazakhstani officials believe Uzbekistan benefits from water released in the winter as it can be used for irrigation during summer.⁷⁸ According to Uzbek water experts, however, the salt level in the Arnesai is very high – in Tushan it is currently seven grams per litre and for the lake as such, 2.5-3.0 grams per litre. Though the water released

from Toktogul is clean, it cannot be used for irrigation once it has flowed into the Arnesai.⁷⁹

The large amounts of water released also cause the lakes to flood. Up to 350,000 hectares of land in Navoi and Jizzak Provinces have been flooded, and farms in Namangan Province are under threat.⁸⁰ Roads and electricity lines have been badly hit by floods. The total damage inflicted upon Uzbekistan is estimated by officials there at U.S.\$770 million.⁸¹

Uzbekistan and Kazakhstan have indicated that they will ask Kyrgyzstan to foot the bill for the damage already caused.⁸² The head of the Uzbek Association of International Law, R. Hakimov, said that if the problem is not resolved, Uzbekistan could take the case to the International Court of Justice. However, he also suggested that it might be possible to establish a permanent commission to adjudicate such problems.⁸³

Kyrgyzstan's position is that Uzbekistan and Kazakhstan are themselves to blame as they have developed the river-bed and changed the course of the river. Otherwise, the Syr Darya would not flood as a result of the water released from Toktogul, and the lower part of the river would not freeze.⁸⁴

Bishkek has also accused Tashkent of effectively causing the flooding as it does not stick to its part of the barter agreement – either by providing less gas than agreed, or by cutting supplies altogether. Still, when Uzbekistan in January 2002 requested that Kyrgyzstan reduce the amount of water released from Toktogul, Kyrgyzstan complied.⁸⁵

Uztransgaz. Due to the debts accumulated by Kyrgyzgaz, Uztransgaz has on numerous occasions turned off the gas. Kyrgyzgaz settled its debts in full in February 2002. ICG interview with Avtandil Sydykov, General Director, JSC Kyrgyzgaz, Bishkek, 20 February 2002.

⁷⁵ As a result of Toktogul, the water released downstream has been sharply reduced. The lower parts of the Syr Darya are covered in ice during winter, thus facilitating flooding.

⁷⁶ The Kairakkum Reservoir in northern Tajikistan and the Chardara Reservoir in Kazakhstan.

⁷⁷ The three lakes – Tushan, Adar and Arnesai – currently contain some 30 cubic kilometres of water and have, due to the large amounts redirected from Kazakhstan, merged.

⁷⁸ ICG interview with Bakhyt Ramankulov, deputy head of the South Kazakhstan Province department of agriculture, Shimkent, 1 March 2002.

⁷⁹ ICG interview with Ernazar Makhmudov, Director, Institute of Water Problems and Hydropower of the Uzbek Academy of Sciences, Tashkent, 21 January 2002.

⁸⁰ ICG interview with Zokir Jorayev, Deputy Chairman of the Uzbek Water Industry Republican Water Inspectorate (Ozsuv sanoat), February 2002.

⁸¹ Uzbek Television, Channel 1, 23 January 2002, 03:00 am.

⁸² Kazakh Commercial Television, 19 February 2002, 11:30 am.

⁸³ Uzbek Television, Channel 1, Akhborot. 13 February 2002, 15:30 pm.

⁸⁴ ICG interview with Diushen Mamatkanov, Director, Institute of Water Problems and Hydropower of the Kyrgyz Academy of Sciences, Bishkek, 20 February 2002.

⁸⁵ In the winter of 2001-2002 the Kyrgyz released some 650 to 700 cubic metres of water per second compared to the usual 480 to 500 cubic metres per second, according to Uzbek Television (Channel 1, 23 January 2002). Kyrgyz Radio reported that after 24 January the amount of water released

2. Kyrgyzstan-Kazakhstan

Several problems have emerged between Kyrgyzstan and Kazakhstan as a result of the barter deals. Kazakhstan has privatised its coalmines and can no longer order them to provide Kyrgyzstan with free coal. Kazakh officials say this is the major reason why the country has failed to keep its part of the agreement.⁸⁶ Kyrgyzstan is currently exploring the possibility of developing its own existing mines at Jergalan, Akbula and Kara-Keche as well as new coal resources to lessen its dependence on Kazakhstan. However, the quality of the coal is poor and production costs are high.

The two Kazakh provinces that depend on water from Toktogul for irrigation – South Kazakhstan and Kzyl Orda – have to purchase electricity from Kyrgyzstan as part of the barter agreement. As electricity from Ekibastus in Northern Kazakhstan is up to 30-40 per cent cheaper,⁸⁷ the two provinces are reluctant to do so. The Kazakh authorities have not been willing to cover the difference in price⁸⁸ for businesses forced to purchase the Kyrgyz electricity. To ensure that the Kyrgyz electricity is purchased, the province authorities provide local enterprises with quotas.⁸⁹

The problem is likely to cause further disruptions in 2002 as Kyrgyzstan has signalled that it plans to more than triple the price of electricity from one U.S. cent per kWh to 3.36 U.S. cents. The Kazakh side has refused to accept the increase,⁹⁰

from Toktogul was reduced from 700 cubic metres of water per second (the average amount is 600 cubic metres per second) to 480 to 500 cubic metres per second. (First Programme, 22 February 2002 at 14:00 pm).

⁸⁶ In 2001 Kazakhstan provided Kyrgyzstan with 470,000 tons of coal and 10,000 tons of mazut in return for 750 million kWh of electricity. ICG interview with Nesipkul Bertizbaev, Director, Department of Electricity and Solid Fuel, Kazakh Ministry of Energy and Mineral Resources, Astana, 27 February 2002. According to the agreement, however, Kazakhstan was to deliver 618,000 tons of coal that year. KTR, Program 1, Bishkek, 5 October 2002 at 11:00 am.

⁸⁷ ICG interview with Altynbek M. Meldebekov, Deputy Executive Director, International Aral Sea Rehabilitation Fund Executive Board, Almaty, 25 February 2002.

⁸⁸ 20 tin per kWh. Nesipkul Bertizbaev, Director, Department of Electricity and Solid Fuel, Kazakh Ministry of Energy and Mineral Resources, Astana, 27 February 2002.

⁸⁹ Ibid.

⁹⁰ Ibid.

and the Ministry of Energy has said that Kazakhstan does not need Kyrgyz electricity.⁹¹ Kyrgyz summer electricity is probably more disruptive to the Kazakh grid than useful, and any future agreement will need to find new markets for summer electricity excess.

Kazakhstan has requested that the exchanges shift from barter to normal purchases at market prices. However, before the introduction of the barter scheme, Kazakhstan purchased Kyrgyz electricity with cash. During this time (1995-97), Kazakhstan ran up a debt of US\$17.5 million. Kyrgyzstan is unlikely to agree to switch to cash purchases until this debt has been settled.

3. Kyrgyz Payment Law

In the early 1990s, Kyrgyzstan tried to persuade Uzbekistan and Kazakhstan to share the costs of maintaining and operating the Toktogul Reservoir. The cost of maintaining the reservoir is estimated at between U.S.\$15 million and U.S.\$27 million per year – a price Kyrgyzstan is not willing or able to pay. An Uzbek water expert told ICG that in his view Uzbekistan, by turning down Kyrgyzstan's request, missed an opportunity at reaching a settlement and increasing control over its water supply.⁹²

On 29 June 2001 the Kyrgyz parliament (Jogorku Kenesh) passed the "Law on the Interstate Use of Water Objects, Water Resources and Water Management Installations". It asserts that water has its own economic value and is owned by the state. Water resources created on Kyrgyz territory are the property of the country, and neighbours should, therefore, pay for it. The law also contains a clause, which states that neighbouring countries receiving water from Kyrgyz reservoirs and canals should pay for their upkeep.⁹³

Uzbekistan and Kazakhstan immediately criticised the law. All parties cite international law in support of their positions.⁹⁴ The issue is highly emotional.

⁹¹ Ibid.

⁹² ICG interview, Tashkent, January 2002.

⁹³ Article Three, *Zakon Kyrgyzskoi Respubliki o mezhdogudarstvennom ispolzovanii vodnykh obektov, vodnykh resursov i vodokhoziaistvennykh sooruzhenii Kyrgyzskoi Respubliki* [The Law of the Kyrgyz Republic on the Interstate Use of Water Objects, Water Resources and Water Installations of the Kyrgyz Republic], 29 June 2001.

⁹⁴ Excerpts from international laws and agreements referred to by the Kyrgyz in support of their own law can be found in T.

“Why should we pay? Because they get more snow than we do?” asked a senior water analyst in Uzbekistan.⁹⁵ Others indicated that Uzbekistan may – in response to the Kyrgyz law - demand that Kyrgyzstan compensate it for releasing water downstream during winter.

Tajikistan, on the other hand, has been less critical of the Kyrgyz law. Officially, Tajik representatives and water experts argue that it violates international legislation on transboundary rivers. In private, however, they say that Tajikistan is following events carefully, hoping that Kyrgyzstan succeeds in introducing payments for its water as this would allow Tajikistan to follow.⁹⁶ They are not too hopeful that Bishkek will succeed, however. As one official put it: “The Kyrgyz want to sell water and live in paradise. This will never happen”.⁹⁷

Kyrgyzstan is a small country with limited political influence in the region, and its leaders understand that it is in no position to force Uzbekistan and Kazakhstan to pay for water. They also know that Kyrgyzstan cannot stop the flow of the Syr Darya for long. It seems likely that the law was passed in order to push the neighbouring countries into negotiations regarding the costs of maintaining the Toktogul and other reservoirs. The law has been written, as Uzbek parliamentary

deputy Iskandar Kalandarov points out, in such a way as to leave the door open for negotiations.⁹⁸

It is worth noting that Kyrgyzstan has backed down from its original position. Whereas initially it demanded that Uzbekistan and Kazakhstan pay for all water they receive,⁹⁹ it now insists that they pay only for the water passing through Kyrgyz reservoirs and canals – in other words, share maintenance costs.

Kazakhstan has responded positively to the latest Kyrgyz move. The director of Kazgidromet, Dr. Tursynbek Kudekov, welcomed the change of language: “We should not pay for water but for the services rendered – i.e. for the use of the Kyrgyz water engineering system”.¹⁰⁰ As of 7 March 2002, Kazakhstan pays Kyrgyzstan for use of the interstate water facilities on the Chui and Talas Rivers.¹⁰¹ According to the OSCE in Almaty, the Kazakhs have agreed to pay Kyrgyzstan some US\$100,000 a year for the maintenance of these facilities.¹⁰² If a similar agreement could be reached also on the Syr Darya, a major obstacle to securing regular flow from the river would be removed.

Unlike the Kazakhs, the Uzbek response was initially hostile. However, in late March 2002 the Kabar News Agency reported that an agreement had been reached between Uzbekistan and Kyrgyzstan on the maintenance of the Toktogul Reservoir. Uzbekistan agreed to cover some costs in return for a guarantee that it would receive water for irrigation.¹⁰³ If implemented, this agreement will mark a major step forward in resolving water disputes in the region. It appears unlikely, however, that the agreement will work unless more attention is given to signing barter agreements on time and ensuring their provisions are properly implemented.

Kyrgyzstan has indicated that it is willing to cease producing electricity at Toktogul during the winter if

U. Usubaliev. *Zakon Kyrgyzskoi Respubliki o mezhgosudarstvennom ispolzovanii vodnykh obektov, vodnykh resursov i vodokhoziaistvennykh sooruzhenii Kyrgyzskoi Respubliki. Kyrgystanu, vsei Tsentralnoi Azii grozit globalnoe zagriaznenie radioaktivnymi otkhodami* [The Law of the Kyrgyz Republic on the Interstate Use of Water Objects, Water Resources and Water Installations of the Kyrgyz Republic. Kyrgyzstan and the Entire Central Asia are threatened by Global Pollution of Radioactive Waste] (Bishkek, Sham. 2002). Saule Seitembetova of the Kazakh Ministry of Foreign Affairs said that her ministry consulted with UN lawyers, who unanimously agreed that the Kyrgyz law violates international water legislation. ICG interview, Astana, 27 February 2002.

⁹⁵ ICG interview with Ernazar Makhmudov, Director, Institute of Water Problems of the Uzbek Academy of Sciences, Tashkent, 21 January 2002.

⁹⁶ Kyrgyzstan has more bargaining power than the Tajiks on this issue, however, as it to some extent controls the Syr Darya through the Toktogul Reservoir. As the Amu Darya is less regulated, Tajikistan is not in a position to cut water supplies to the downstream countries for very long. ICG interview with Alikhon Latifi, Regional Environmental Centre (Tajikistan Branch), Dushanbe, 18 February 2002.

⁹⁷ ICG interview, Dushanbe, February 2002.

⁹⁸ ICG interview, Tashkent, 22 January 2002.

⁹⁹ According to the law, Kazakhstan, Tajikistan and Uzbekistan would have to pay a total of U.S.\$14.8 million per year for the water consumed. A. Mukhambedyarova, “Water becoming a Commodity in Central Asia”, *The Times of Central Asia*, 11 October 2001.

¹⁰⁰ ICG interview, Almaty, 26 February 2002.

¹⁰¹ Kazakh National Television, Channel 1, Astana.

7 March 2002, 15:30 pm.

¹⁰² ICG interview with Armands Pupols, Economic and Environmental Officer, OSCE, Almaty, 25 February 2002.

¹⁰³ Kabar News Agency, Bishkek, 29 March 2002.

Uzbekistan and Kazakhstan compensate its losses.¹⁰⁴ Part of the reason for this is that the Toktogul Reservoir cannot sustain the production of electricity during the winter for long. Water levels have dropped sharply over the last few years, and water experts – in Kyrgyzstan, Uzbekistan and Kazakhstan – fear that unless the production of electricity is reduced, water levels will drop below the critical level in 2002 or 2003. This would lead to suspension of Kyrgyzstan's hydroelectric generation, and also of the agreements on summer water release. However, in May 2002 the general director of the Kyrgyzenergo joint-stock company, Bakiritdin Sartkazyev, announced that heavy rainfall had raised the level of Toktogul from the minimum permissible – 7.4 billion cubic metres – to 8.4 billion cubic metres and that summer irrigation water of 2.5 billion cubic metres would be supplied to Uzbekistan and Kazakhstan, as planned under the barter agreement.¹⁰⁵ But the unusually heavy rainfall of spring 2002 is unlikely to be repeated in subsequent years, and the contradiction between winter power needs and summer irrigation requirements will return unless a new agreement can be reached.

4. Syr Darya Energy Consortium

Poor implementation the 1998 Agreement on the Use of the Syr Darya has been not only disruptive to agriculture and industry in the region, but also highly costly. The construction of water reservoirs in the Uzbek part of the Ferghana Valley and on the southern plains of Kazakhstan are also likely to have a detrimental effect on the environment. It makes little economic sense for Kyrgyzstan to extract low-quality coal and exploit limited amounts of high-cost gas.

For these reasons the countries along the Syr Darya have been debating whether to establish a water and energy consortium.¹⁰⁶ Uzbekistan has opted out, but Kyrgyzstan and Kazakhstan are still talking.¹⁰⁷ If established, Tajikistan may join the consortium in the future

Kyrgyzstan believes Kazakhstan should share the cost of maintaining and developing hydro-engineering facilities in Kyrgyzstan from which it benefits.¹⁰⁸ Kazakhstan insists that these facilities – including Toktogul – be jointly managed if the cost is shared.¹⁰⁹ Kyrgyzstan would also have to provide Kazakhstan with a guarantee that the water reservoir to be built would be seasonal.¹¹⁰

¹⁰⁴ The Institute for Water Problems of the Kyrgyz Academy of Sciences – in collaboration with the Kyrgyz National Centre for the Development of Mountainous Regions and the International Institute of Mountains – has already elaborated a mechanism for how these losses could be calculated. See A.T.Asanbekov, D.M. Mamatkanov, K.I. Shavva and A.K. Shapar, *Ekonomicheskii mekhanizm upravleniia transgranichnimi vodnymi resursami i osnovnye polozenia strategii mezhgosudarstvennogo vododeleniia* [An Economic Mechanism for the Management of Transboundary Water Resources and the Major Premises of the Strategy of Interstate Water Division] (*Bishkek: Natsionalny Tsentrazvitia gornyykh raionov Kyrgyzskoi Respubliki, Mezhdunarodny Institut Gor, Institut Vodnykh Problem i Gidroenergetiki Natsionalnoi Akademii Nauk Kyrgyzskoi Respubliki*, 2002). Similar work has been undertaken by a national commission under the auspices of the Kyrgyz Ministry of Foreign Affairs. ICG interview with Chingiz Igemberdiev, Ministry of Foreign Affairs of the Kyrgyz Republic, Bishkek. 21 February 2002.

¹⁰⁵ “Kyrgyzstan to supply enough irrigation water to Kazakhstan, Uzbekistan in 2002”, Kazakhstan Today news agency web site, 13 May 2002, BBC Monitoring Global Newswire 14 May 2002.

¹⁰⁶ This idea was originally put forward by Kazakhstan. ICG interview with Ismail Dairov, Environmental Policy Manager, The Regional Environmental Centre for Central Asia, Almaty, 26 February 2002.

¹⁰⁷ On 15 and 16 December 2001 Kyrgyz President Akaev visited Kazakhstan and signed a preliminary agreement on joint funding for the project. ICG interview with Chingiz A. Igemberdiev, Ministry of Foreign Affairs of the Kyrgyz Republic, Bishkek, 21 February 2002.

¹⁰⁸ The idea to set up a consortium was Kazakhstan's. ICG interview with Saparbek Balkibekov, Head of the Fuel & Energy, Infrastructure and Communications Department, Office of the Prime Minister of the Kyrgyz Republic, Bishkek, 21 February 2002.

¹⁰⁹ ICG interview with Anatoly D. Ryabtsev, Chairman, National Coordinator of Water Sector Projects, Committee of Water Resources of the Ministry of Natural Resources and Environmental Protection of the Republic of Kazakhstan, Astana, 27 February 2002; ICG interview with Nesipkul Bertisbaev, Director, Department of Electrical Energy and Solid Fuel, Ministry of Energy and Mineral Resources of the Republic of Kazakhstan, Astana, 27 February 2002.

¹¹⁰ ICG interview with Nesipkul Bertisbaev, Director, Department of Electrical Energy and Solid Fuel, Ministry of Energy and Mineral Resources of the Republic of Kazakhstan, Astana, 27 February 2002.

The consortium would provide funds for the construction of Kambarata I and II – a hydropower complex to be located above the Toktogul Reservoir. These hydropower stations would allow Kyrgyzstan to produce electricity during winter, while at the same time collecting water in Toktogul for irrigation in the summer.¹¹¹ Kambarata I alone would cost an estimated U.S.\$1 billion. The hydropower complex would produce twice as much power annually as Toktogul¹¹² and potentially allow exports to China and Pakistan.¹¹³

Given the difficulties surrounding irrigation water and Kyrgyzstan's need for electricity, the Kambarata project would seem to make sense. However, there has been no real assessment of its possible environmental impact, and it faces serious problems in achieving financial viability. As noted above, Kyrgyz production of surplus electricity in summer is hardly welcomed by its neighbours. Building Kambarata I would exacerbate this.¹¹⁴ Plans to export electricity to Pakistan and China could resolve the problem and make the project commercially viable, but it is extremely doubtful whether they can be realised. Pakistan has apparently halted any discussion of purchasing electricity from Tajikistan in the near future, and it

is safe to assume that it will also not offer a major market for Kyrgyz electricity.¹¹⁵ Building a transmission system to China or further afield would be difficult given the terrain and high altitudes and would be very expensive.

Kazakhstan's initiative to establish a Syr Darya Water and Energy Consortium should be welcomed but serious questions have to be asked about the viability of the Kambarata I project. Any international feasibility studies should be sceptical about planned electricity exports, and the environmental impact also needs to be seriously discussed. A scaled-down Kambarata I or Kambarata II on its own could alleviate some problems, but financing would still have to be solved.

Kyrgyzstan's enthusiasm for new power generation capacity is understandable. There is little doubt that its energy sector is in crisis. Frequent Uzbek gas cuts and irregular supplies of coal and mazut from Kazakhstan have forced Kyrgyzstan to increase electricity production by some 20 per cent since independence. The Kyrgyz electricity grid needs repair, however, and Kyrgyzenergo apparently has no money for this purpose. Frequent electricity cuts have, therefore, become a reality for most Kyrgyz except those living in Bishkek. The southern parts of Kyrgyzstan also experience problems with domestic gas supplies.

To improve the state of the electricity grid, the Kyrgyz authorities in early March 2002 announced that electricity prices would be raised by 25 per cent as of 15 March 2002.¹¹⁶ Such price hikes put serious pressure on pensioners and poor people, and in an attempt to calm the population, it was also announced that social allowances would be increased by some 20 per cent and benefits raised for the poorest. Kyrgyz people have on numerous occasions taken to the streets to protest electricity price hikes and cut-offs. It thus appears that the timing of the price rise had been carefully considered in advance: during spring and summer people use less electricity than during the autumn and winter. The authorities probably hope that they will get used to the new prices before the cold weather, and that they will have enough time to introduce pension and benefit increases and thus prevent any major protests.

¹¹¹ Uzbek experts have also suggested that Kambarata II could be the only way in which Toktogul may revert to an irrigation regime. ICG interview with Iskander Ametov, Chief Dispatcher, "Energy" United Dispatch Center of Central Asia Power Systems, Tashkent, 31 January 2002.

¹¹² The total capacity of the hydropower station would be 2,300,000 kWh. ICG interview with Diushen Mamatkanov, Director, Institute of Water Problems and Hydroenergy of the Kyrgyz Academy of Sciences, Bishkek, 20 February 2002. According to Dr Daene McKinney, of the University of Texas, Kambarata I would produce 150 per cent of the present power generation at Toktogul, while Kambarata II would produce 30 per cent. Personal communication to ICG, May 2002.

¹¹³ ICG interview with Kubanychbek Ismailov, head of the Foreign Affairs Unit, Elektricheskaya Set, Bishkek, 21 February 2002. If the Consortium fails to materialise, Kyrgyzstan will look for funding elsewhere. Officials claim that Pakistan and India have promised to help, and talks are being undertaken with China. Diushen Mamatkanov, Director, Institute of Water Problems and Hydropower of the Kyrgyz Academy of Sciences, Bishkek, 20 February 2002. As noted above, these plans are unlikely to be fulfilled.

¹¹⁴ ICG correspondence with Dr Daene C. McKinney, Associate Professor, Department of Civil Engineering, University of Texas, May 2002, who has conducted significant research on the project.

¹¹⁵ ICG interview, May 2002.

¹¹⁶ In fact, a new calculation system means many people will face hikes of up to 100 per cent, but this has not been highlighted by the authorities.

Given Kyrgyzstan's dependence on electricity produced at Toktogul, the socio-economic consequences – were its capacity to be overstretched – could be disastrous. Once the water level at Toktogul reaches a critical level, Kyrgyzstan will neither be in a position to cover domestic demand for electricity during the winter, nor to provide Uzbekistan and Kazakhstan with water for irrigation during spring and summer. Uzbekistan and Kazakhstan would, therefore, not provide Kyrgyzstan with gas, coal and mazut during winter and as a result, Kyrgyz would freeze. Social unrest would most likely ensue. Although Toktogul is a useful bargaining card for Kyrgyzstan when negotiating with Uzbekistan and Kazakhstan, its utility cannot be stretched. Unless handled carefully, it could cause not only its neighbours but also Kyrgyzstan considerable damage.

D. DIVIDING THE AMU-DARYA

The Amu-Darya is much less regulated than the Syr-Darya, with fewer dams and hydro plants to cause potential problems with downstream flow. So far it has not caused the same tensions either but there is considerable discontent along the length of the river, as each downstream province or country accuses its upstream neighbour of taking more than a fair share of the water.

1. Uzbekistan-Tajikistan

The average annual flow of the Amu Darya is 75 cubic kilometres. According to the 1992 agreement on water quotas, Tajikistan is entitled to nine of these – or 12 per cent¹¹⁷ – a figure that Dushanbe regards as far too low.¹¹⁸ Agriculture was under-developed during the Soviet period, leaving the country vulnerable to food shortages. It also has one of the highest population growth rates in the region at more than 3 per cent. The country needs to provide for these people and says it

intends to expand agricultural output.¹¹⁹ Tajikistan's irrigation system is either completely derelict or in urgent need of repairs. As the country lacks funds to raise irrigation efficiency, the only way to increase output is by using more water.

Tajikistan plans to achieve this either by increasing its quota of water from the Amu Darya or by diverting the Zarafshan River for irrigation.¹²⁰ Although the latter would allow for irrigation of high-quality soil, it would be very expensive.¹²¹ It could also cause serious disputes with Uzbekistan, which uses 95 per cent of the river flow.¹²² If implemented, the supply to the city of Samarkand in Uzbekistan would be seriously impaired.

It is unlikely that Tajikistan could raise the required money, as donors are not keen on the project. Deputy Minister of Foreign Affairs Abdunabi Sattorzoda holds the view that this project will not be implemented without Uzbekistan's consent,¹²³ which is unlikely to be given. Tajikistan cannot afford to ignore Uzbekistan on water issues, as its economy is dependent on its neighbour for many imports. Trade has shrunk by half in recent years, and Tajikistan is desperate to reverse that trend.¹²⁴

On the other hand, increasing the water diverted from the Amu Darya is relatively easy and requires only limited investment. As the Amu Darya starts its course in Tajikistan, its neighbours can do very little to prevent Dushanbe from increasing its water quota. The downstream countries complain that Tajikistan

¹¹⁹ The problem is all the more urgent as five years of civil war (1992-97) took a heavy toll on the country's infrastructure and industry. A majority of the population is, therefore, engaged in agriculture and self-subsistence farming.

¹²⁰ Diverting the Zarafshan would allow Tajikistan to use 100,000 hectares of land for agricultural purposes. So far, Tajikistan has some 720,000 hectares of irrigated land. Another 800,000 hectares or so could be freed for irrigation. To provide its population with normal food supplies, Tajikistan needs to free some 500,000 hectares of land by 2005. ICG interview with Ahad Akhrorov, Chief Hydraulic Engineer, Ministry of Reclamation and Water Management of the Republic of Tajikistan, Dushanbe, 16 February 2002.

¹²¹ ICG interview with Viktor Boltov, First Deputy Minister, Ministry of Economy and Trade of the Republic of Tajikistan, Dushanbe, 19 February 2002.

¹²² Personal communication to ICG, Dr Daene McKinney, University of Texas, May 2002.

¹²³ ICG interview, Dushanbe, 19 February 2002.

¹²⁴ ICG interview with Abdurakhim Tuzhuraev, Economic Officer, Embassy of the Republic of Tajikistan in Uzbekistan, Tashkent, 17 January 2002.

¹¹⁷ ICG interview with Oleg Grigorevich Lyssenko, head of the Department of the Management of Water Resources, BWA Amu Darya, Urgench, 28 January 2002.

¹¹⁸ According to the head of the department of water management of the BWA Amu Darya, Oleg Grigorevich Lysenko, Tajikistan has requested that its quota be increased from nine cubic kilometres to eleven to twelve cubic kilometres per year. ICG interview, Urgench, 28 January 2002.

already takes more water than it is allocated by the 1992 agreement, although Tajikistan denies this.

Monitoring Tajikistan's water use is very difficult as much of the equipment was either destroyed or fell into disrepair during the civil war. Besides, staff from the BWA Amu Darya lack the resources to carry out frequent and unannounced inspections. They also have to apply for entry visas. Four years of severe drought has reduced the level of the Amu Darya. Even if Tajikistan were to increase its share of the water only modestly, it would have an immediate impact on agriculture downstream.

Tajikistan's water resources give it considerable hydropower potential. Currently the country produces fifteen billion kWh of electricity annually.¹²⁵ Some 80 per cent – twelve billion kWh – is produced by the Nurek hydropower station on the Vakhsh River.¹²⁶ This is not enough to cover domestic demand,¹²⁷ and Tajikistan depends, therefore, on imports of electricity and gas from Uzbekistan in winter. Uzbek gas supplies are unreliable,¹²⁸ and problems with the implementation of the Uzbek-Tajik electricity swap program have led to power rationing in many parts of Tajikistan.

No power grid line connects Northern Tajikistan (Sughd Province) with the central and southern

parts of the country, where most of its electricity is produced by the Nurek hydro plant. Uzbekistan provides Sughd Province with electricity, and in return Tajikistan provides power to Uzbekistan's southern provinces. The electricity exchanged is not enough to give consumers electricity 24 hours a day. Tajikistan, therefore, often requests that Uzbekistan switch off electricity supplies to Sughd Province to ensure that imports are kept within the agreed limit. If Tajikistan exceeds its limit, it pays a higher price.

Further, the Tajik electricity grid is in a poor state, resulting in frequent accidents during winter. In most districts and villages electricity is rationed: from six to eight a.m. and from six to nine p.m. According to the deputy director of Barqi Tojik, people understand why gas from Uzbekistan is sometimes cut but they are much less understanding about the shortage of electricity.¹²⁹ This decline in power infrastructure not only promotes social discontent but also is a serious obstacle to the kind of economic growth that Tajikistan requires if it is to improve living standards as needed to promote political and social stability.

Tajikistan is keen to develop its hydropower resources to break dependence on Uzbekistan and to export electricity to neighbouring countries.¹³⁰ Its own energy needs could easily be met by increased hydroelectric generation but this would not only require major investment, it would also have a negative impact on downstream access to seasonal water supplies and so create further potential discord among the Amu-Darya states.

2. Uzbekistan-Turkmenistan

Some eighteen million people in Uzbekistan and Turkmenistan live off the water of the Amu Darya. The two nations signed an agreement in 1996 to divide this equally. Officially Uzbek and Turkmen representatives say they are happy with implementation.¹³¹ However, Uzbek water experts

¹²⁵ Information provided by IFAS, Tashkent, 21 January 2002.

¹²⁶ Approximately five billion kWh are used by the Tursunzade aluminium factory alone. ICG interview with Aleksei Nikolaevich Silantiev, Vice-President, Barqi Tojik [Tajik Electricity], Dushanbe, 13 February 2002.

¹²⁷ The vice-president of Barqi Tojik, Aleksei Nikolaevich Silantiev, told ICG that domestic electricity production during the Soviet period covered 12 per cent of the country's energy needs, whereas currently it covers 38 per cent. People are more dependent on hydropower now than before because many small heating plants have been privatised, dismantled and sold. ICG interview, Dushanbe, 13 February 2002.

¹²⁸ Uzbekistan has on several occasions cut gas supplies to Tajikistan due to the latter's inability to pay. Supplies have also suffered from low pressure in the pipes used to export the Uzbek gas. The pressure has dropped from five to 0.9-1 atmosphere, which is not enough to facilitate the normal flow. Huge transit taxes levied on Turkmen gas by Uzbekistan has prevented Tajikistan from swapping gas suppliers. ICG interview with Aleksei Nikolaevich Silantiev, Vice-President, Barqi Tojik, Dushanbe, 13 February 2002.

¹²⁹ ICG interview with Aleksei Nikolaevich Silantiev, Vice-President, Barqi Tojik, Dushanbe, 13 February 2002.

¹³⁰ According to Tajik officials, Tajikistan ranks second in the world after Russia in potential hydropower resources. Only 12 per cent of these resources are being used at the moment. ICG interview with Aleksei Nikolaevich Silantiev, Vice-President, Barqi Tojik, Dushanbe, 13 February 2002.

¹³¹ ICG interviews with Iskandar Kalandarovi, Chairman of the Committee on Agriculture, Water Management and Food Production, Oliy Majlisi, Tashkent, 22 January 2002, and with

and politicians in Khorezm Province and the autonomous republic of Karakalpakstan complain that Turkmenistan takes too much.

Uzbek experts maintain that it is unfair to divide the water of the Amu Darya equally since fourteen million people depend on it in their country compared to four million in Turkmenistan. Besides, Uzbekistan has more land to irrigate, and water has to be transported over longer distances.¹³² In their view, demography, total area of irrigated land as well as water losses should be taken into account when fixing water quotas.

Uzbekistan also claims that the Turkmens are exceeding their quotas. Turkmenistan and Uzbekistan are each entitled to use some 22 cubic kilometres of water.¹³³ In reality, however, Turkmenistan is thought to use as much as 30 cubic kilometres.¹³⁴ Its use per capita is about twice Uzbekistan's due to very poor water administration. The Karakum Canal – the main water flow from the Amu-Darya to irrigated Turkmen lands – carries twice as much water as in Soviet times¹³⁵ but is poorly maintained, gradually silting up and becoming increasingly inefficient in terms of water loss and delivery. This can only be tackled in two ways: by implementing expensive rehabilitation work on the canal; or by drawing off increasing amounts from the Amu-Darya. So far, the latter approach has prevailed. In conjunction with potential Afghan demands for more Amu-Darya water and Turkmenistan's future reservoir

plans, it seems likely that Uzbek-Turkmen relations over water can only worsen.

3. Uzbek Internal Rivalries

The Uzbek water quota is divided into smaller quotas for each province. The Amu Darya runs through three Uzbek provinces – Surkhandarya, Bukhara and Khorezm – and finishes its course at the Aral Sea in the Autonomous Republic of Karakalpakstan.

Water experts, agronomists and politicians in Khorezm and Karakalpakstan say that the provinces further upstream – Surkhandarya, Navoi and Bukhara – take more water than they are entitled to. This is confirmed by official statistics, which show that upstream provinces regularly received 50-60 per cent of their allotted quotas. In comparison, Khorezm received only 6 to 8 per cent and Karakalpakstan no more than 7 per cent.¹³⁶ Nine of fifteen districts in Karakalpakstan have not received any water for the last two years.¹³⁷

The consequences have been very serious. Only 173,000 hectares of land were farmed in 2001 in Karakalpakstan, compared to 395,000 hectares in 1999, a drop of 44 per cent. The planting of rice, traditionally one of the major crops of Karakalpakstan and which requires considerable water, was reduced by almost 95 per cent, from 86,000 hectares in 1999 to 4,800 in 2001. The output of grain dropped by almost 80 per cent.¹³⁸

An official from the BWA Syr Darya told ICG that Uzbekistan, not Turkmenistan, is to blame for the country's water shortages: "poor planning [and management] are the major culprits, and to do away with the problem, the provinces must coordinate

Kurban B. Ballyev, Representative of Turkmenistan, Member of the Executive, IFAS, Tashkent, 15 January 2002.

¹³² ICG interviews with officials, Chembai, Karakalpakstan, 24 January 2002. Uzbekistan has 4,300,000 ha of irrigated land, whereas Turkmenistan has just over 2,000,000 ha. ICG interviews with Iskandar Kalandarov, Chairman of the Committee on Agriculture, Water Management and Food Products, Oliy Mailisi, Tashkent, 22 January 2002, and with Sirodjidin Aslov, Transboundary Water Monitoring Component Director, GEF Project, IFAS, Tashkent, 21 January 2002.

¹³³ ICG interview with Oleg Grigorevich Lysenko, Head of the Department of Water Resource Management, BWA Amu Darya, Urgench, 28 January 2002.

¹³⁴ ICG interviews, IFAS, Tashkent, January 2002.

¹³⁵ Stefan Klötzli. *The Water and Soil Crisis in Central Asia - a Source for Future Conflicts?* ENCOP Occasional Paper N°11. Center for Security Policy and Conflict Research Zurich/ Swiss Peace Foundation Bern (Zurich/Bern, May 1994).

¹³⁶ *Analiz vodozabora za period mezhvegetatsii pod urozhai 2002 g. po basseinu reki Amu Dary na 21 ianvaria 2002* [Analysis of the Water Extraction for the Intervegetation Period for the Year 2002 for the Amu Darya basin as of 21 January 2002]. The document is signed by the Deputy Minister of Agriculture and Water Management of the Republic of Karakalpakstan, U. Kalmuratov.

¹³⁷ ICG interview with Bekberian Bekturdiyev, First Vice Premier of the Republic of Karakalpakstan, Nukus, 24 January 2002.

¹³⁸ *Selskoe khoziaistvo Respubliki Karakalpakstan za 1999-2001 gody*. Minekonomstat Respubliki Karakalpakstan [The Agriculture of the Republic of Karakalpakstan from 1999 to 2001. Ministry of Economics and Statistics. Republic of Karakalpakstan].

planning in the water sector”.¹³⁹ A Karakalpakstan official put the blame on fellow officials from Uzbekistan: “Some of our officials have a couldn’t-care-less attitude. This is causing anarchy in water supplies: one province receives 60 per cent of its quota, whereas another province receives only 20 per cent”.¹⁴⁰

In January 2002, nine NGOs in Karakalpakstan sent a petition to President Islam Karimov urging him to look into the matter. They suggested that either Turkmenistan was exceeding its quota or the southern provinces were taking more than their entitlement. The petition acknowledged that Karakalpakstan accounts for a very small part of the Uzbek population and that its economic significance is limited. As the NGOs had no means to influence the upstream provinces directly, they appealed to the president to intervene on their behalf.¹⁴¹

The presidential administration passed the petition to IFAS, and the signatories later received a reply from the director of GEF-IFAS, Rim Ginniattullin, who did not respond directly to their points. Instead he referred to a report on Central Asian water issues prepared for the Global Water Forum at a conference in Almaty in late February 2002. Yusup Kamalov of the Union for the Defence of the Aral Sea and Amu-Darya took this as an endorsement of the views expressed in the petition. In his view “[Ginniattullin] agrees [with us] but can do nothing to change the situation”.¹⁴²

IFAS and other organisations have tried to introduce microcredits to the area. Money for this purpose has been allocated by Tashkent, and local IFAS branches in Nukus and Chembai are

responsible for implementing the scheme. As many people who bought cattle with microcredits have been forced to sell their herds to survive, Tashkent has extended the deadline for repayment. Given the lack of water, the poor condition of soil and numerous health problems caused by the Aral Sea disaster, however, microcredits are unlikely to have much impact. More wide-ranging measures are required as many peoples survive only on humanitarian aid.

When asked whether Karakalpakstan residents might take to the streets to protest, the deputy hakim of Chembai, Berdakh Aitmuratov, said that is not likely as “they are patient and put their hope in God and the President”.¹⁴³ Those who could, however, have left Karakalpakstan for Kazakhstan, Russia or other parts of Uzbekistan. Those not able to leave have sold their cattle and somehow managed to get by on these earnings. Several local people suggested that social tensions are likely to increase in 2002, as people have nothing more to sell and the money they receive from Tashkent is insufficient to cover their basic needs.¹⁴⁴

¹³⁹ ICG interviews with BWA Syr Darya, Tashkent, February 2002.

¹⁴⁰ ICG interview, Nukus, Karakalpakstan, January 2002.

¹⁴¹ *Prezidentu Respubliki Uzbekistan Karimovu, Islamu Abduganievichu* [To the President of the Republic of Uzbekistan, Karimov, Islam Abduganievich]. The document is dated 7 September 2001, though it was not sent until January 2002. It was signed by the following NGOs: The Union for the Protection of the Aral and Amu Darya, the Fund for Charity and Health, *Khaial khem Shanyrak*, *Eko-Klub “Sapar”*, *Eko-Priaralie*, *Eko-Klub “Semurg”*, the Association of Women Leaders, the Centre for Public Enlightenment and the Golden Heritage of the Aral [Sea].

¹⁴² ICG email exchange with Yusup Kamalov, 12 April 2002.

¹⁴³ ICG interview, Chembai, 25 January 2002.

¹⁴⁴ ICG interviews, Chembai, Nukus, January 2002.

V. FUTURE INFRASTRUCTURE

Tensions over quotas and barter deals have pushed Central Asian states into developing plans for more infrastructure that they believe will increase their control over resources. This reflects the Soviet legacy of mega-projects and a rising sense of frustration over the possibilities of regional solutions. Each project has raised considerable anxieties among neighbours, who are uncertain of the impact on their supplies.

Among the key areas causing concern are:

- the Rogun and Sangtuda hydroplants that would give Tajikistan almost complete control over the Amu Darya;
- Golden Century Lake, a vast artificial lake fed by agricultural run-off in the middle of the Karakum Desert in Turkmenistan;
- Afghanistan, plans for the renovation of whose irrigation and agriculture have raised worries across Central Asia as it is entitled to draw much more water from the Amu Darya and Panj Rivers than it now does; and
- diverting Siberian rivers, a huge Soviet-era plan scrapped in the 1980s but recently resurrected by Russia and Uzbekistan, that would divert water from the Irtysh and Ob Rivers to Uzbekistan.

A. ROGUN AND SANGTUDA DAMS

For the past decade Tajikistan has sought to attract foreign investment to complete the Rogun hydropower station on the Vakhsh River. This giant complex was first begun in the 1980s but halted when the Soviet Union collapsed and the Tajik civil war began. A massive flood in 1993 destroyed most of what had been already built. The 335-meter high dam – the highest in the world – would produce 3,600 MW of energy. Tajikistan is also planning to build a hydropower

station – Sangtuda – below Nurek, with a capacity of 670 MW.¹⁴⁵

Uzbekistan has responded favourably to plans for Sangtuda but is adamantly opposed to Rogun. Tajikistan already controls some 40 per cent of the flow of the Amu Darya through the reservoir at Nurek. Rogun would put it firmly in control of the river, allowing it to control the flow of water to Uzbekistan's Surkhandarya and Kashkadarya Provinces¹⁴⁶ while expanding irrigation at home.¹⁴⁷ The Uzbek attitude has not escaped the notice of Tajik officials, who talked of Rogun forcing Tashkent to take a new political stance toward their country.¹⁴⁸

To complete Rogun, Tajikistan would have to raise U.S.\$700 million to U.S.\$1 billion, amounting to about 7 to 10 per cent of GDP.¹⁴⁹ In 2001 work restarted at Rogun with funds from the state budget. Donor interest has been limited – donors nowadays run scared of dams, and the investment needed is vast. The Ministry of Economy and Trade maintains that Rogun is economically viable and could be completed in three to four years.¹⁵⁰

Uzbekistan is concerned that Rogun would allow Tajikistan to cut off water to its key agricultural areas. Tajikistan's Minister of Economy and Trade, Viktor Boltov, on the other hand, told ICG that the Tajiks see Rogun as benefiting the region as a whole. Tajikistan could supply Uzbekistan, Turkmenistan and

¹⁴⁵ ICG interview with Muzaffar Usmanov, Mission Advisor Tajikistan, EBRD, in Dushanbe. 15 February 2002.

¹⁴⁶ ICG interview with Ziyoradzho Ashurov, Director, Rogun hydropower station, Dushanbe, 15 February 2002.

¹⁴⁷ Some 100,000 to 120,000 ha of land in the Dangara District of Kuliab Province are irrigated with water from the Nurek Reservoir. ICG interviews with Ahad Akhrorov, Chief Hydraulic Engineer, Ministry of Reclamation and Water Resources of the Republic of Tajikistan, Dushanbe, 16 February 2002, and Aleksei Nikolaevich Silantiev, Vice-President, Barqi Tojik, Dushanbe, 13 February 2002. The Nurek Reservoir is designed to contain 10.5 cubic kilometres of water. Of these up to 4.5 cubic kilometres may be released downstream. In comparison, the Rogun Reservoir – if completed – would contain 13.6 cubic kilometres of water, nine of which could be released downstream. ICG interview with Aleksei Nikolaevich Silantiev, Vice-President, Barqi Tojik, Dushanbe, 13 February 2002.

¹⁴⁸ ICG interview, Dushanbe, February 2002.

¹⁴⁹ ICG interview with Aleksei Nikolaevich Silantiev, Vice-President, Barqi Tojik, Dushanbe, 13 February 2002.

¹⁵⁰ ICG interview with Viktor Boltov, First Deputy Minister, Ministry of Economy and Trade of the Republic of Tajikistan, Dushanbe, 19 February 2002.

Afghanistan with even supplies of water every year as Rogun would contain enough to compensate for dry years. This official view argues that the project should be regional in scale and jointly funded by major investors such as the World Bank, the Asian Development Bank and the European Bank for Reconstruction and Development (EBRD).¹⁵¹

In fact, most IFIs are extremely reluctant to put any money into Rogun, claiming that it would cost far more than any benefit it might offer. They are also aware that it would seriously strain relations between Uzbekistan and Tajikistan.¹⁵² A smaller plan, which would mainly generate electricity for the Tursunzade aluminium plant, is potentially more feasible. In any case, it seems inconceivable that Tajikistan could complete the Rogun and Sangtuda hydropower stations without prior Uzbek consent. The director of the Sharq independent research institute, Muzzafar Olimov, believes that Tashkent is lobbying donors to dissuade them from funding Rogun.¹⁵³ But even without Uzbekistan's attitude, it is increasingly unlikely that Rogun will be funded by the international community, forcing the government to rethink its energy and water policy and concentrate on more realistic, lower-cost alternatives that would gain wider regional support.

B. GOLDEN CENTURY LAKE

In October 2000, Turkmenistan began work on a huge artificial lake in the Karakum Desert, the Lake of the Golden Century. Turkmenistan has maintained that it is being built to collect drainage and run-off water from fields and that no water from the Amu Darya will be required to sustain its level.¹⁵⁴ Drainage water has turned large areas into swampland that, once the lake is completed, will in turn be drained and used for agriculture. Some

lake water may be used for irrigation.¹⁵⁵ There are rumours that a nuclear power station will be built nearby to use the lake as a cooling pond. Construction is to be completed within ten years.

The Lake of the Golden Century has raised concerns in Uzbekistan that water will be drained from the Amu Darya to maintain its level.¹⁵⁶ According to the Uzbeks, the lake cannot be sustained by drainage water only. Extreme heat in the Turkmen desert during summer will cause much evaporation. As the drainage water has a high salt content, the lake will gradually dry out and create a second Aral Sea unless supplemented by water from the Amu Darya. An estimated ten cubic kilometres of water will have to be diverted to the lake from the Amu Darya each year simply to compensate for evaporation and filtration.¹⁵⁷

Most international experts seem to support the Uzbek view that the lake will not be sustainable solely from drainage water, and that eventually it will either disappear or draw on the Amu-Darya.¹⁵⁸ Just as Kyrgyzstan's Toktogul Reservoir is a key security issue for Uzbekistan, so the Lake of the Golden Century risks becoming a source of conflict with Turkmenistan. There is also an ethnic dimension to the project – an estimated one million ethnic Uzbeks living in the Dashkhovuz Province of Turkmenistan

¹⁵¹ ICG interview, Dushanbe, 19 February 2002. The EBRD's office in Tajikistan has expressed interest in Rogun but argues that the risks involved in such an expensive project are still too high for the bank to provide funds. ICG interview with Muzzafar Usmanov, Mission Adviser, Tajikistan, EBRD, Dushanbe, 15 February 2002.

¹⁵² ICG interviews, Dushanbe, February 2002, May 2002.

¹⁵³ ICG interview, Dushanbe, 18 February 2002.

¹⁵⁴ Once full the lake would contain some five to six cubic kilometres of water and would irrigate an estimated 700,000 to 1,000,000 hectares of pasture. ICG interview with Turkmen officials, February 2002.

¹⁵⁵ Plans to build this lake were made in the late 1940s under Stalin. ICG interview with Kurban B. Ballyev, Representative of Turkmenistan, Member of the Executive, IFAS, Tashkent, 15 January 2002. If completed, the lake would cover an area of 34,000 square kilometres. ICG interview with Sirodjidin Aslov, Transboundary Water Monitoring Component Director, GEF Project, IFAS, Tashkent, 21 January 2002.

¹⁵⁶ The Lake of the Golden Century (Ozero Zolotogo Veka) is being built in a natural depression in the north-western part of the Karakum Desert. The depression covers 3,500 to 4,000 square kilometres and has a maximum depth of between 70 and 100 metres. Once completed, the lake would contain some 132 to 150 cubic kilometres of water. Drainage water is to be diverted to the lake from five provinces as well as the Uzbek province of Khorezm through two major collector-canals. Construction work started on 20 October 2000 and is projected to be completed in ten years. The cost of the project is estimated at U.S.\$6 billion. Official information from Turkmenistan given to the ICG from a confidential source.

¹⁵⁷ ICG interview with Yusup Kamalov, Chairman of the Union for the Defence of the Aral Sea and the Amu Darya, Nukus, 23 January 2002.

¹⁵⁸ Dr Daniel Linette, "Water resources management in Central Asia: Addressing new challenges and risks", *Central Asia and Caucasus Analyst*, 15 August 2001, www.cacianalyst.org.

are to be resettled to the Karakum Desert once the lake has been completed.¹⁵⁹

If Turkmenistan were to increase its use of water from the Amu Darya, the consequences for Uzbekistan would be serious. Downstream Urgench Province and Karakalpakstan would see their shortages worsen. "If the Lake of the Golden Century is built, we will be left without any water", said Berdakh Aitmuratov, the deputy hakim of Chembai, in Karakalpakstan.¹⁶⁰ The consequences would also be disastrous for the Aral Sea: in 2000 and 2001, the sea received no water from the Amu Darya and given the shortages in the area and increasing pressures on the existing resources, it appears unlikely to receive any in 2002.

Turkmenistan also plans to put another 450,000 hectares of land under irrigation over the next three years,¹⁶¹ which is causing considerable anxiety among Uzbeks. Tashkent has similar plans, and as the Amu Darya is already used to capacity, it is difficult to say where the water will come from.

C. AFGHANISTAN

In 1946 the Soviet Union and Afghanistan signed an agreement on the Amu Darya, according to which the latter was entitled to use up to nine cubic kilometres of water from the Panj River.¹⁶² At the moment, Afghanistan uses only about two

cubic kilometres¹⁶³ The Panj contains an annual flow of nineteen cubic kilometres, and experts warn that full use of Afghanistan's quota would radically change the water flow along the Amu Darya.¹⁶⁴

During the Soviet period, Afghanistan was rarely consulted on matters related to the Amu Darya and the Aral Sea. Moscow also sought to keep Afghan use of water from the Panj River to a minimum. This was done by assisting Afghanistan in developing irrigated agriculture in the South. The amount of land used for irrigated agriculture in the North is modest, in part because it is so mountainous.

Since independence, the Central Asian countries have sought closer relations with Afghanistan on the Amu Darya. When the International Fund to Save the Aral Sea (IFAS) was established in 1993, it was suggested that Afghanistan be invited to join.¹⁶⁵ Although it did not do so, information on the work of IFAS was sent to Kabul regularly. At its February 2002 meeting, SPECA agreed that Afghanistan should be considered an equal member of Central Asia's single economic space.¹⁶⁶

Following the U.S. intervention in Afghanistan, discussions soon surfaced on how to reconstruct the country. In January 2002, the Japanese Global Infrastructure Fund announced that it considered it impossible to save the Aral Sea. Therefore, it suggested, efforts should be made to maximise the benefit to agriculture from Syr Darya and Amu Darya water, with an emphasis on Afghanistan.¹⁶⁷ This issue was debated at the international donor conference on Afghanistan in Tokyo in February 2002 although no decisions were announced.

Tajik Deputy Minister of Foreign Affairs Abdunabi Sattorzoda had a relaxed attitude towards the

¹⁵⁹ ICG interview, Tashkent, 18 January 2002. People in Khorezm Province told ICG that ethnic Uzbeks living in Turkmenistan are discriminated against. Only people who can prove that they have lived in Turkmenistan for several generations can hold higher posts. This works against the Uzbeks as Dashkhouz Province was earlier a part of the Khiva Khanate. According to sources in Urgench, some ethnic Uzbek citizens of Turkmenistan wish to secede from that country and join Uzbekistan. This may be a reason why President Niyazov is planning to resettle them to the Karakum Desert.

¹⁶⁰ ICG interview, Chembai, Karakalpakstan, 25 January 2002.

¹⁶¹ ICG interview with Diushen Mamatkanov, Director, Institute of Water Problems and Hydropower of the Kyrgyz Academy of Sciences, Bishkek, 20 February 2002.

¹⁶² ICG interview with Makhmud Hamidov, Director, BWA Syr Darya, Tashkent, 31 January 2002.

¹⁶³ ICG interview with Anatoly Krutov, Operations Officer, Water and Environmental Management, World Bank, Tashkent, 1 February 2002.

¹⁶⁴ ICG interview with Altynbek Meldebekov, Deputy Executive Director, IFAS Executive Board, Almaty, 25 February 2002.

¹⁶⁵ ICG interview with Rim Ginniattullin, member of the IFAS Board, head of the IFAS Agency, Minister of the Republic of Uzbekistan, Tashkent, 30 January 2002.

¹⁶⁶ Kazakh Commercial Television, Almaty, 20 February 2002 at 11:30 am.

¹⁶⁷ *Vechemie Novosti*, 21 January 2002, 20:00 pm, sent to ICG by email from Yusup Kamalov, Chairman, Union for the Defence of the Aral Sea and the Amu Darya, Nukus, 26 January 2002.

statement, arguing that the international community would not be willing to divert the rivers for Afghanistan due to the high cost.¹⁶⁸ In downstream Uzbekistan, however, the idea met with astonishment. One expert referred to it as “politically irresponsible”, while the director of the BWA Syr Darya warned that any decision to increase Afghanistan’s use of water would further worsen the situation in Khorezm and Karakalpakstan. “When helping Afghanistan, the international community must not forget us”.¹⁶⁹ The first deputy chairman of Khorezm’s reclamation and water management department said he feared the consequences for his province: “God forbid that we should give water also to Afghanistan. What will then become of us?”¹⁷⁰

It seems unlikely that donors would assist Afghanistan to sharply increase its use of water from the Panj given the enormous resources required and the political and economic impact on Central Asia. However, it would be naïve to think that Afghanistan can rehabilitate its agriculture without increasing its intake from the Amu Darya.

It is, therefore, important that the Afghan authorities, in collaboration with the donor community, seek solutions to maximise efficiency and minimise the additional intake from the Panj. This would lessen the negative impact on downstream countries and prevent tension between Central Asian states and Afghanistan. Future water management initiatives in Central Asia will have to take account of Afghanistan’s possible demands. The best way of accommodating them is through truly regional negotiations including all Amu-Darya states.

D. THE SIBERIAN RIVERS SCHEME

A much celebrated scheme to divert water from the Ob and Irtysh Rivers in Siberia to Central Asia was abandoned in the late 1980s due to fierce opposition from scientists, writers and environmentalists but has crept back onto the agenda in 2002 as Uzbekistan seeks what seems to

be an easy way out of its water dilemmas, and Russia looks for further levers of political control in the region.

In theory the idea – to build a canal from Siberia across Kazakhstan to Uzbekistan – would solve the problem of limited water resources in Uzbekistan. In reality, it would probably prove ecologically destructive, have a negative impact on the geopolitical situation and prove more expensive than any benefit could justify.

In the late 1980s, much opposition was based on Russian nationalist objections to rerouting Russian rivers to help the Asian republics of the USSR. But there were also good scientific objections concerning the significant impact on the ecology of the Siberian river basins. Although these rivers frequently flood and thus give Russia some interest in reducing water flow along them, it is not clear that their flooding is a long-term problem or whether water diversion would reach levels that would have a negative impact on the lower reaches of the rivers.

In March 2002, the Russian Deputy Minister of Natural Resources, Valerii Roshchupkin, acknowledged the Central Asian interest in rerouting excess water from the Ob and Irtysh to the South, but cited need to study the possible environmental impact and said the project would be very costly. It is surprising that Moscow has any interest at all but some Russians will see the scheme as a potential geopolitical gain. It could ensure significant dependence in Uzbekistan and possibly Kazakhstan on Russian water and would immediately grant Moscow a new lever of influence. The potential disputes around any such scheme would add further fuel to an already difficult international environment.

The expense would also be impossible to justify. It is almost inconceivable that international institutions would pay, and none of the involved states have sufficient funds. Uzbekistan should instead seek realistic ways out of its water crisis through difficult but necessary negotiations with neighbours and changes to its own agricultural, water use and economic policies.

¹⁶⁸ ICG interview, Dushanbe, 19 February 2002.

¹⁶⁹ ICG interview with Makhmud Hamidov, Director, BWA Syr Darya, Tashkent, 1 February 2002.

¹⁷⁰ ICG interview with K. Babajanov, First Deputy Chairman, Khorezm Province Department of Reclamation and Water Resources, Urgench, 28 January 2002.

VI. CONCLUSION

Water will probably not lead to war in the near future in Central Asia. But it is an increasingly important factor in the strained relations among the five states and an important contributor to local conflicts. Shortages are already inhibiting economic growth and limiting opportunities in rural areas. Without a greater effort to manage and use their water more efficiently, the Central Asia states will find themselves struggling to improve their economies.

A broad long-term program to reform the economy, agriculture, political participation, land tenure and water use will be needed to overcome the legacies of Soviet water management and state-controlled agriculture. Given that the pace of economic reforms has slowed across the region, it is unlikely that governments will take the bold steps necessary. Given the water available in the region, there is no long-term reason why it should present any problems. Countries such as Israel run relatively efficient industrial and agricultural sectors on far less of the resource. Advanced technology can help but only when grounded in good resource management.

The basic principles that need to be followed are clear. In managing their relations among themselves the states need to:

- work out an equitable sharing of water;
- do no appreciable harm to others;
- protect ecosystems and minimise pollution;
- create inclusive systems of decision-making;
- disclose all planning decisions; and
- abide by a dispute resolution systems.

In establishing their domestic water regimes – which inevitably intersect with international systems in this region – they need to:

- establish participatory management structures such as water users associations;
- establish suitable monitoring;
- involve farmers, urban water users, industry, energy producers and environmental groups in the planning process;
- expand investment in maintenance;
- move towards full cost pricing;
- establish mediation mechanisms; and

- establish mechanisms for review and appeal of decisions.

Given the performance to date, it is unlikely much of this will be achieved soon but existing water management structures could be improved in a way that would reduce tensions between states. The Interstate Coordinating Water Commission needs an overhaul to broaden its mandate, increase its powers of enforcement and open up its workings to greater scrutiny. It needs to develop a voice in a wider range of subjects by bringing in discussion of agriculture, energy and industry.

Beside greater inclusion, the organisation needs to be more transparent, not least to dispel rising anxieties around the region that it acts mostly in the interests of Uzbekistan. The International Fund for the Aral Sea (IFAS) has a similar reputation and does not enjoy the trust of donors, who have generally preferred to carry out projects independently. IFAS and the international community should begin discussions to rebuild trust and look into possibilities of jointly funded projects. IFAS member countries must increase its budget to allow it to raise its profile and start projects that could have an impact. But IFAS needs to change management structures and approach to attract outside funding. The World Bank should make further financing of the IFAS/GEF program contingent on real management changes and improved accountability and transparency.

The Central Asian states could improve water management by upgrading the status and functions of the BWA Syr Darya and BWA Amu Darya. Both associations are currently headed by directors from Uzbekistan. Trust would be enhanced by replacing the current system with a rotating directorship or a co-directorship that would dilute suspicious management does not act in the interests of all the countries.

The associations must also be given power to implement sanctions against countries, provinces and districts exceeding water quotas. Finally, water monitoring must be made more efficient. This could be done by introducing automated monitoring and by providing the associations with high-quality technical equipment to make monitoring and unannounced inspections easier. They should also be given diplomatic status so they could travel freely and be protected from intimidation by local authorities.

Water quotas set under Soviet management have not been revised since 1991. A lack of reliable data

makes it difficult to predict annual changes in the flow of the region's rivers so quotas are not properly adjusted. Control mechanisms are inadequate, and the Central Asian states frequently exceed their quotas to cover an increasing demand for water. Quotas must be revised to take into account demography, agriculture, industry, energy and environmental sustainability.

Barter agreements that currently dominate exchanges of energy and water need to be reformed to have regard for different levels of economic development and the difficulty in providing some resources. Ultimately all the countries need to move towards a market system and financial exchanges that would facilitate the free movement of resources. The current hybrid of market forces and central planning is probably unworkable but could be improved in the short-term by working out contracts earlier to avoid problems with winter energy shortages, setting up mechanisms to deal with disputes and improving infrastructure for the delivery of gas and coal.

As each Central Asian nation tries to assert independent control over its resources, there has been a rash of plans for elaborate and potentially dangerous water projects. Most projects are likely to be costly, environmentally damaging and potentially destabilising and thus offer only short-term relief. Turkmenistan should stop construction of the Lake of the Golden Century, a pharaonic effort to build a vast man-made lake in a desert where most water will simply evaporate. Uzbekistan should also give up its plans to build four reservoirs on the Syr Darya. Plans in Tajikistan for the giant Rogun Dam also should be shelved, as the country cannot afford the project. And ideas to resurrect a plan to divert water from Russian rivers to Central Asia should be immediately shelved as environmentally dubious, hugely expensive and merely delaying much needed reform of the present system.

The international community, for its part, should take a more pro-active approach to resolving water problems in Central Asia at the regional political level. So far the focus has very much been on the national level and on technical rather than political solutions. Western standing has increased following the intervention in Afghanistan in 2001. The West – and the United States in particular – is, therefore, in a position to use more influence on this issue.

In 1998, USAID provided technical and other assistance during the preparation of a five-year agreement between Uzbekistan, Kazakhstan and Kyrgyzstan on the Syr Darya. Although the agreement has been criticised, most observers agree that it has had a stabilising effect in the region. The international community should encourage and actively support the signing of a new agreement. Similar initiatives should be taken on the Amu Darya. To the extent possible, the Central Asian states should be encouraged to address the problems of the Syr Darya and the Amu Darya in a complex fashion – that is, addressing not only water quotas, but also the technical maintenance of water-engineering facilities, energy issues and agriculture. Although there is still substantial political disagreement on water use in the region, a number of agreements signed recently give reason for some optimism.

Scientists argue that Central Asia has enough water to cover its needs. Up to 50 per cent of the water diverted for irrigation never reaches the crops for which it was intended, however. Improving the efficiency of irrigation in Central Asia could release some of the pressure on limited resources and thus also reduce political tension. The major international donors all operate projects aimed at promoting more efficient water use. Most of these are small, however, and have limited funding.

As international donors have different mandates and time frames for their projects, it is often difficult to pool resources in support of larger projects. Still, donors should work towards establishing priorities and carrying out cooperative projects. Regional projects could then be designed in such a way that organisations would be responsible for one particular component. To the extent possible, such components should be made independent to prevent the project from falling apart if a single organisation pulls out.

Attempts to establish regional water and energy consortia should be encouraged with political support, technical help and funding. Such consortia would aid in the development of regional solutions to water problems and reduce the risk of narrow national projects that cost more, can damage the environment and heighten tensions. If successful, the water and energy consortia could reduce tension by expanding economic collaboration and integration. The donor community and Western governments should support such consortia by earmarking funds for projects carried out within their framework. This

would provide the latter with an incentive to pursue regional rather than national projects.

When giving financial and technical assistance to Afghanistan, donors should take care to support solutions that would not have a detrimental impact on the Central Asian states. Water projects in northern Afghanistan and Central Asia should be seen in a regional rather than national context and proper coordination provided. The Central Asian countries should seek to integrate Afghanistan in regional water management schemes.

Without tackling water, there will be few long-term prospects for development in Central Asia. Alleviating rural poverty, reviving industrial production, reversing decades of environmental damage and reducing tensions will depend on the ability of these nations to work together. Without flexible, open, regional systems of management, there will be no way to achieve the levels of trust and cooperation necessary to reintegrate the water networks of Central Asia.

Osh/Brussels, 30 May 2002

APPENDIX A

MAP OF UZBEKISTAN AND CENTRAL ASIA



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APPENDIX B

GLOSSARY OF ACRONYMS

ACTED	Agency for Technical Cooperation and Development	NRMP	Natural Resources Management Project
ADB	Asian Development Bank	REC	Regional Environmental Centre
AKDN	Aga Khan Development Network	RFE/RL	Radio Free Europe/Radio Liberty
BWA	Basin Water-Management Association	RIIA	Royal Institute of International Affairs
ECE	United Nations Economic Commission for Europe	SIC	Scientific Information Centre
ESCAP	United Nations Economic and Social Commission for Asia and the Pacific	SPECA	Special Program for the Economies of Central Asia
GEF	Global Environment Facility	TACIS	The European Union's Technical Assistance to the Commonwealth of Independent States (former Soviet Union).
GDP	Gross Domestic Product	WARMAP	Water Resources Management and Agricultural Production
ICWC	Interstate Co-ordinating Water Commission	WB	World Bank
IDB	International Development Bank	WUA	Water Users' Association
IFAS	International Fund to Save the Aral Sea	UNDP	United Nations Development Program
kWh	kilo-watt hour	USAID	United States Assistance for International Development
MW	Mega-watt	USSR	Union of Soviet Socialist Republics
NGO	Non-Governmental Organisation		

APPENDIX C

ABOUT THE INTERNATIONAL CRISIS GROUP

The International Crisis Group (ICG) is a private, multinational organisation committed to strengthening the capacity of the international community to anticipate, understand and act to prevent and contain conflict.

ICG's approach is grounded in field research. Teams of political analysts are located within or close by countries at risk of outbreak, escalation or recurrence of violent conflict. Based on information and assessments from the field, ICG produces regular analytical reports containing practical recommendations targeted at key international decision-takers.

ICG's reports and briefing papers are distributed widely by email and printed copy to officials in foreign ministries and international organisations and made generally available at the same time via the organisation's Internet site, www.crisisweb.org. ICG works closely with governments and those who influence them, including the media, to highlight its crisis analyses and to generate support for its policy prescriptions.

The ICG Board – which includes prominent figures from the fields of politics, diplomacy, business and the media – is directly involved in helping to bring ICG reports and recommendations to the attention of senior policy-makers around the world. ICG is chaired by former Finnish President Martti Ahtisaari; and its President and Chief Executive since January 2000 has been former Australian Foreign Minister Gareth Evans.

ICG's international headquarters are at Brussels, with advocacy offices in Washington DC, New York and Paris and a media liaison office in London. The organisation currently operates eleven field offices with analysts working in nearly 30 crisis-affected countries and territories and across four continents.

In *Africa*, those locations include Burundi, Rwanda, the Democratic Republic of Congo, Sierra Leone-Liberia-Guinea, Somalia, Sudan and Zimbabwe; in *Asia*, Indonesia, Myanmar, Kyrgyzstan, Tajikistan, Uzbekistan, Pakistan and Afghanistan; in *Europe*, Albania, Bosnia, Kosovo, Macedonia, Montenegro and Serbia; in the *Middle East*, Algeria and the whole region from Egypt to Iran; and in *Latin America*, Colombia.

ICG raises funds from governments, charitable foundations, companies and individual donors. The following governments currently provide funding: Australia, Canada, Denmark, Finland, France, Germany, Ireland, Luxembourg, the Netherlands, Norway, the Republic of China (Taiwan), Sweden, Switzerland and the United Kingdom.

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May 2002

APPENDIX D

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