CHAPTER IV

COOPERATION IN WATER, ENERGY AND TRANSPORTATION
CHAPTER-IV

COOPERATION IN WATER, ENERGY AND TRANSPORTATION

4.1 International Water Conflicts and Central Asian Scenario

Under international law, individual states are endowed with the right to control territorial resources. They may utilise rivers, lakes and aquifers in an equitable and reasonable manner.¹ Consensus, however, is difficult to reach on what constitutes an equitable and reasonable utilisation and when other state is adversely affected by such utilisation. In the past, different interpretations over the use of international freshwater resources have generated a great number of international conflicts in various parts of the world. Most significant have been the conflicts over access to water resources in arid region where there is not enough water available to meet all legitimate needs.

In order to further our understanding of such conflicts it would be appropriate to distinguish between conflict arising through use, and conflict arising through pollution. A utilization conflict, for example would be the construction of the power-station on the upper-course of a river. The possibility of conflict increases in such cases where this construction has harmful consequences for the lower-lying states, for example, polluted waste water. The situation becomes more pronounced when the lower-lying states withhold their consent for such construction because of fears of, for example, water shortages. This could include a situation where the construction of a dam on the upper course of a river, that not only serves the power needs but also the major irrigational works of the lower-lying states, threatens to stem the flow of water. A relative conflict of distribution would present itself where a disparity over the use of water exists between the upper and lower-lying states. An absolute conflict of distribution would exist when there simply is not enough water to satisfy all needs of the riparian states. As shown in Table-1 the distinction between the different causes of water conflict leads us to the supposition that conflicts arising from the use or pollution of a water resource would be easier to solve than those conflicts that arise from the distribution of a scarce and finite resource. In the first two cases there are contested costs which can be manipulated in

order to come to an agreement. In the case of a distributional conflict we are faced with a different scenario whereby a solution is only possible when the privileged state agrees to give up some of its advantages.

Table 1
Causes of conflict

<table>
<thead>
<tr>
<th>Conflict type</th>
<th>Conflict through use</th>
<th>Conflict through pollution</th>
<th>Relative distribution conflict</th>
<th>Absolute distribution conflict</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conflict causes</td>
<td>Water use</td>
<td>Water quality</td>
<td>Water distribution</td>
<td>Water distribution and availability</td>
</tr>
<tr>
<td>Example</td>
<td>Parana, Danube, Oder</td>
<td>Rhine</td>
<td>Euphrates, Nile, Ganges</td>
<td>Colorado and Rio Grande, Jordon</td>
</tr>
</tbody>
</table>


A protracted conflict that engaged the international community was the Brazilian-Paraguay dam project on the Parana near Itaipu. Likewise in the Danube region, an ensuing dam project triggered a heavy pressure upon the relationships between Slovakia, Hungary and Austria. These two are the examples of conflict based on water use. The river Rhine is also a river of discord between Switzerland, Germany and Netherlands and represents and examples of conflict through pollution. Euphrates, (Turkey and Iraq) Tigris (Turkey and Syria) and Ganges (India and Bangladesh) represent distributional conflict because of relative shortage of water and Colorado (Mexico and USA) and Rio Grande (Mexico and USA) represent distributional conflict because of absolute shortage of water. Most of these conflicts have been amicably resolved either bilaterally or under the aegis of UN convention of 1997 on trans-boundary resources. A feasibility study of these conflicts and their amicable resolution to the satisfaction of all the riparian states will go a long way in managing Central Asian water resources.

The transition from the unified, centralized, regional water management system of the former Soviet Union to incoherent, often disputed and piecemeal governance under the dispensation of five Central Asian countries has made the rivers an issue of discord. The problems with regard to water sharing in Central Asia mainly arise from six areas in the Amu Darya and Syr Darya delta. First of all, being mountainous region, Tajikistan and Kirgizstans have the privilege of possessing the river sources. From there, the two rivers flow to the other three republics, where the
users are many and water scarcity is widely felt. This natural divide between the upper and lower riparian countries has created a dichotomy between those who claim to be possessors of the rivers and those who consider themselves users. The possessors, like property owners, demand the levy of a tax on water released from their country, while the users refuse to pay. Of late the governments have realized that there exists no tangible solution, except a consensus to manage, share, distribute and administer optimal use of water resources of the two rivers and address all related issues in the wider interests of the region.  

Secondly, the region’s water resources are unevenly distributed among its republics. For instance, when Amu Darya flows through the sparsely populated region of the Sundukli sands through the Turkmen city of Chardzhou, it faces no problems. But a few 100 km away, traveling along the Uzbek-Turkmen border towards the Uzbek city of Nukus, when the river enters Uzbekistan, it triggers a dispute by its uneven spread of tributaries. Most of the tributaries and the Ilyaun irrigation canal are all to the advantage of Turkmenistan. Adding to the conflict is the demographic configuration of the region. The Turkmen part of the river is thinly populated and it has a cannal and many small forceful rivulets feeding Amu Darya, while the Uzbek part is very densely populated, requiring more water for human consumption than Turkmenistan. This has become the basis of an interstate dispute that is yet to be resolved.

Thirdly, the Karakkum canal in the desert of Turkmenistan is yet another hot spot. The canal joins Amu Darya with the river Murgab at Mary and from there meanders westward through Ashkhabad on Turkmen territory, while its major source of water remains Amu Darya. Uzbekistan complains about uneven water distribution and says that excessive use of the canal by Turkmenistan at the upper end of the river deprives it of water at the lower end. Karakalpakstan suffers from a perennial water shortage and the Aral Sea is dying. On the other hand, the Turkmens contend that they have been using what nature has endowed them with and that they cannot reverse the river flow to Uzbek advantage. This has created a tricky situation between the two neighbours.

---

Fourthly, there has not been an interstate or international accord on effective river system management in Central Asia. For example, numerous rivulets originating from the Kirgyz mountains that run to form the zigzagging Syr Darya, have no interstate control system. Passing through the fertile Ferghana valley, Syr Darya has two big reservoirs: Kayrakkum in upper Tajikistan and Chardara in Kazakhstan. Once again, both the reservoirs bypass Uzbekistan—the most populous republic in the region, although Kayrakkum borders Uzbekistan at one end and Chardara at both ends. This does not help Uzbekistan which is proposing a water-sharing system proportionate to the size of the population.

Fifthly, except at three cross sections, both Syr Darya, and Amu Darya bypass Uzbekistan almost entirely. Syr Darya, originating from Kyrgyzstan, cuts across Uzbekistan at two points—the Ferghana valley before it forms Kayrakkum reservoir and along the stretch of land between Khodzhand city and the Chardara reservoir on Uzbek-Kazakh borders. Neither of them flows through the vast landscape of Uzbekistan. Similarly, Amu Darya, sourcing itself from Tajikistan, goes past Uzbekistan at two points—along the Afghan-Uzbek border and the Turkmen-Uzbek border before it enters various cities in the Khorezmoblast between Turkmenistan and Karakalpakstan. As a consequence, it turns out that Uzbekistan suffers the most from the unevenness of the river flows. Having borders with four other central Asian countries, who are the prime beneficiaries of the exuberant water flow through their territories, Uzbekistan is in a state of discord with all its neighbours, and the differences with Turkmenistan and Kirgyzstan seem intractable.

And finally, over-exploitation of the river system has led to an ecological disaster which is widely felt across the region. Accentuated by the absence of a regulatory mechanism to control the river water distribution system in the region, the ecological damages are unlikely to be controlled. The old system is in place, but that cannot cut the rivers into five equal pieces to suit the needs of each republic. A new river control system is yet to be worked out; until then the disputes are likely to continue.
Located in the heart of Central Asia, the Aral Sea Basin comprises the drainage area of two large rivers, the Amu Daria and Syr Daria, the Aral Sea, and the Aral Sea’s natural surrounding region. Amu Daria originates from the northern flank of the Pamir mountain range. The Syr Daria rises in the Tien Shan Mountains about 500 km to the north. The rivers flow approximately 2,500 km through the high mountain countries of Tajikistan and Kyrgyzstan down to the plains of Uzbekistan, Kazakhstan, and Turkmenistan. The southern, larger river Amu Daria carries a flow of approximately 70-80 cubic km/year while the flow in the Syr Daria is about half this volume. The two rivers discharge into the Aral Sea in two separate deltas located in Uzbekistan and Kazakhstan.

These two rivers are the lifeblood of Central Asia, providing much needed water for irrigation in the downstream countries where annual rainfall is as little as 100 mm/yr. Currently, 90 percent of the water of the Amu and Syr Daria rivers is used for irrigation. The average annual precipitation in Kyrgyzstan, Tajikistan, Turkmenistan Uzbekistan, and southern Kazakhstan amounts to 120 to 250 millimeters per year. The Aral Sea used to receive up to 60 cubic km/year, but it now receives only 0 to 20 cubic km/year. The most heavily affected region on the

---

3 A.A. Bostandzhoglo and A.A. Tushkin, 1987, p.53.
Aral Sea is Karakalpakstan in western Uzbekistan, which was the Amu Daria river delta. Currently, the Amu Daria does not reach the Aral because of excessive water withdrawals upstream. In 1990, the decline in water was so drastic that the northern section of the Aral Sea, Maloe More fed by the Syr Daria, split from the Bol’ shoe More fed by the Amu Daria in the south.\(^4\)

The Central Asian states are in a socioeconomic transition and they can not reduce agricultural activities. Similarly they can not allow massive investment required to modernize irrigation practices. In addition, threats by upstream states to hold back water for hydroelectric power generation affect the volumes of summer water available for irrigation, and are a potential source of conflict between upstream and downstream states. The deterioration of irrigation systems and water management infrastructure has further compounded the problem, with the loss of precious water resources due to inefficiency. Water usage continues to rise, as states seek to maintain economies based on the export of a non-sustainable product. Agriculture accounts for between 23 percent and 35 percent of GDP, and for 24 percent of employment in Uzbekistan and 45 percent in Tajikistan.\(^5\)

During the Soviet era, cotton became the main commodity for the Central Asian states. The regions primary contribution to the Soviet economy was producing 90 to 95 per cent of the Soviet Union’s cotton. Cotton is a labour-intensive product which demands great quantities of water. In order to support irrigation, the Soviet constructed massive water management infrastructure projects. Dams were built upstream to conserve water in the winter that was needed in the cotton fields in the summer. Canal systems were constructed to distribute and channel water from the rivers, and irrigation systems were designed to provide the crops with water when needed. The Kara Kum Canal stemming from the Amu Daria is the longest canal in the world. It extends more than 1,300 km into Turkmenistan where it provides irrigation for over 850,000 hectares of croplands. These regionally integrated, massive infrastructure projects were maintained during the Soviet era through state subsidies. Centralized Soviet institutions coordinated management of transboundary regional infrastructure projects and water-sharing practices. However, after the Soviet dissolution, each state became responsible for its own portion of this


\(^5\) Asian Development Bank Estimates
integrated infrastructure, and substantial declines in water management capacity have resulted. Water seepages, leaks and diversions are commonplace, further straining the already diminished water resources of the Aral Sea Basin.

Since the collapse of the Soviet Union, water from upstream states is often hoarded by governments in need of hydropower and income, while crops in the downstream states wilt in the summer months. The lack of the barter trade agreements employed during the Soviet era is a main cause of this hoarding behaviour. Originally, upstream states held water in reservoirs during winter months in exchange for the transfer of energy resources from the downstream states. This allowed water to be released to the cotton fields during the growing season, and energy for heating to be transferred to upstream states in the winter months. This exchange no longer takes place, as the downstream states of Kazakhstan and Uzbekistan seek external markets for their energy resources. In response, Kyrgyz dams at the Toktogul reservoir on the Syr Daria are used for hydroelectricity generation during frigid winter months to provide heat to Kyrgyz residents. This deprives Uzbek and Kazakh cotton farms of water during the summer months. Kyrgyz officials maintain that Uzbeks should either pay for water held in the reservoir, or exchange water for natural gas. While a similar situation is possible on the Amu Daria between upstream Tajikistan and downstream Uzbekistan and Turkmenistan, it has not yet materialized. The major concern on the Amu Daria is the disrepair of the existing dams, which threaten the unregulated flow of spring water into the river basin. As Turkmenistan seeks to increase cotton revenues, it has raised the possibility of further extending the Kara Kum Canal, thus decreasing the Amu Daria flow to Uzbekistan. \(^6\)

Poor pollution control in Tajikistan and Kyrgyzstan puts further pressure on downstream water management. In Turkmenistan, the Kara Kum canal distributes the waters of the Aral Sea Basin almost to the shores of the Caspian Sea, literally carrying away the country's lifeblood. When it was built, the Kara Kum brought about huge socioeconomic changes to a desert, nomadic society. This crucial artery is subject to pollution from agrochemicals, municipal wastes, and industrial enterprises. It also suffers extensive leakage, reducing efficiency, causing

\(^6\) Boris Rumer and Stanislav Zhukov, 'Economic Integration in Central Asia: Problems and Prospects', in Central Asia: The Challenges of Independence (eds), Aakar Books, New Delhi, 2003, P. 131
waterlogging of adjacent land, and polluting ground water. Uzbekistan suffers from flow restrictions and pollution of its waters from the upstream states. It is the largest consumer of water in the basin as its economy and society are the most reliant on agriculture. Uzbekistan shares the shoreline of the Aral Sea with Kazakhstan and therefore has suffered huge socioeconomic costs due to the destruction of the Aral Sea and the decline in human health.

4.2 Regional Initiatives and Governance Challenges

The basic arrangements for water management at the national and regional levels are remnants of the Soviet era. The water management in Central Asia was strictly dictated by Moscow in the Soviet era, but, subsequently, the independent states have tried to work collectively to address the problem while also addressing other immediate demands.

Although some efforts were made during glasnost toward incorporating ecological sensitivity into water management schemes, they had their own limitations. Control over water in Central Asia is directly linked to political control, and after the breakup of the Soviet Union the new Central Asian states maintained the institutional inertia that had dominated water management in the region for decades. As a result, the interests that are served by current water management practices hold a distorted political power throughout the region, as was the case under Soviet rule. While some initial attempts have been made to reverse this, there is a view that the political stability of the region is better served by maintaining status-quo. 7

Despite these roadblocks, the governments of the Central Asian Republics recognized that they were in need of international assistance and used the ecological catastrophe of the Aral Sea as a means of attracting international aid. The states have moved to develop institutions that focus on regional cooperation. The basin states signed an agreement on 18 February 1992 to form the Interstate Commission for Water Coordination (ICWC) under which two river basin authorities were formed, namely, Amu Daria and Syr Darya. In 1994, the Aral Sea Basin Programme (ASBP), a partnership between the basin states and international funding agencies, was formed as a broad umbrella organization. The objectives of this organization

7 Timothy Turner, 2003, P. 59
were defined as (a) stabilizing the environment of the Aral Sea, (b) rehabilitating the disaster zone around the sea, (c) improving the management of the international waters of the basin, and (d) building capacity of regional institutions. The purpose was also to collectively adopt accepted principles of international water law, including the principle to use one's own water resources in such a manner as not to injure others who are also dependent upon these resources. However, an excessive focus on water management as a singular issue, at the expense of taking an integrated social, political, and economic approach to the region's challenges, has hampered the effectiveness of these institutions.

Agreements between the Central Asian states on annual water allocation are made through the ICWC. An agreement between Kazakhstan and Kyrgyzstan to supply fossil fuels in return for summer water releases has been signed, but it is unclear how far this agreement is being honoured. Recently, there has been a concerted effort by the international community to coordinate efforts, linking management with agricultural reforms and energy efficiency. Despite these changes, the countries still face many roadblocks to compliance. The imposition of new production costs for water usage threatens to aggravate the problems that already beset the agricultural sector. Evidently motivated by such considerations, in 1995 Uzbekistan established an assessment from agricultural producers that covered only half of the costs of providing water for their fields.

Unfortunately, the basin countries of Central Asia have failed to meet their obligations under the ASBP agreement and time frames have been stretched beyond the limits acceptable to the international organizations. These delays have led many in the international community to question the states' commitment to cooperation.

The compliance problems related to successful cooperative water management in the region at the state level stem from a lack of overall sectoral and intersectoral coordination. Though one ministry may be charged with management of water for agriculture, another may be charged with water management for energy purposes and yet another ministry charged with water oversight for environmental purposes. Furthermore, the lack of clear jurisdiction over the waters in the Aral Sea basin impedes effective governance. Although international water laws clearly state

---

8 Helsinki Convention, 1992
that the water used upstream must not harm those downstream,\textsuperscript{10} this is clearly not the case in the region. States that once worked together cooperatively under the Soviet system, with compounded rewards for regional development, were pulled apart by the new autonomy of the region. As each state set upon an independent path toward economic and political development, the regional benefits of collective action was not a concern. Rather, the use of water for independent development became a paramount concern, while injury to those downstream who are also dependent on these waters became an acceptable norm. The institutions and mechanisms for collective management are needed, to ensure that all consumers, including the Aral Sea and the environment of the Amu Daria and Syr Daria, are able to enjoy benefits. While this ideal appeals to many in the international community, the domestic policy makers have not yet realized the benefits in cooperation.

In order to more effectively support the mission of ICWC, with guidance from the World Bank, in 1994, the five states of Central Asia created the International Fund for the Aral Sea (IFAS) drawing resources from initial contributions by the participating states. But annual allocations amounted to just 0.3 percent of each country's GDP; as a result, by March 1997, the fund had accumulated only 2.12 million dollars. The only states to pay the full amount due were Kazakhstan, Turkmenistan, and Uzbekistan—that is, the countries that border directly on the Aral Sea. Tajikistan and Kyrgyzstan, by contrast, made no payments whatsoever.\textsuperscript{11}

In the same year, the Central Asian states established an Interstate Council for the Aral Sea (ICAS) under the broader umbrella of the Aral Sea Basin Programme. This organization had multiple branches, including the Interstate Commission for Socioeconomic Development and Scientific, Technical and Ecological Cooperation (ICSD, STEC), and the broader scoped International Council for addressing the Aral Sea Crisis. The World Bank, UNEP, UNDP and the EU broadly supported this organization. The seven main themes of the programme were to:

\textsuperscript{10} UN Convention on the law of the Non-Navigational Uses of International Watercourses, 1997.

\textsuperscript{11} Iaroslav Razumov, "V stolise Kazakhstana zavershil'sia sammit glav tsentral'noaziatskich gosudarstv po problemam Arala," \textit{Panorama}, no. 9, 7 March 1997, p.5.
• Develop a regional strategy for managing water resources and improving efficiency and sustainability of dams;
• Rehabilitate hydro meteorological services and regional environmental information systems;
• Manage water quality;
• Restore wetlands and conduct environmental studies;
• Improve clean water, sanitation and health;
• Integrate land and water management in upper wetlands; and
• Automate controls of the two basin-wide agencies for water allocation.

The European Commission launched TACIS (Technical Assistance for the CIS) that established a programme in 1995 to assist in water policy development issues, Water Resource Management and Agricultural Production in the Central Asian Republics (WARMAP) Phases I and II. The project focused on capacity building, legal assistance, and development strategies for managing water resources, the creation of a management information system, and improving water efficiency in agricultural sectors. The official terms of reference are “drafting of international (interstate) agreements on policies and strategies on water and land resources, their use, management, protection, and apportionment; the drafting of national and intergovernmental legal and normative acts based on interstate agreements."

TACIS WARMAP assisted in reforming the water codes of the Aral basin states to conform to international water law, and in harmonizing domestic laws across borders. TACIS WARMAP also seeks to address issues of overlapping jurisdiction among institutions and organizations regulating water management in the Aral basin. These contradictions often reflect politically motivated negotiations between states and with international organizations.

In order to encourage regional cooperation among the states, UNDP organized a conference on Sustainable Development in the region in 1995. The result was the “Nukus Declaration” in which the five regional presidents renewed their overall commitment to the Aral Sea Basin Programme. While the cooperation was largely symbolic in nature, the declaration was viewed as a precursor to further

international commitments in the region. However, this emphasis on regional cooperation may have led states in the region to replace Moscow with international organizations when it comes to direction in water management strategies. While this is problematic in terms of state autonomy, it does allow international involvement in one of the world's most visible environmental catastrophes.

Many bilateral aid organizations have also come forward to assist. The U.S. government has made independent steps in the region through a USAID program. This program focuses on water management as tied to energy. Independently of other international efforts, USAID has held a series of workshops for regional leaders that have eventually resulted in agreements. These agreements address payment for water through pricing policies and incentives. As a result, Kyrgyzstan has been continuing to hoard water in order to exact a price for its release or a barter agreement for energy resource exchange. This project involves very real concerns for energy and resource sharing in the region, and it counters the progress made by the Aral Sea Basin Program.

In addition to the above technical assistance projects, major investment projects in irrigation and drainage, worth at least $200 million, are being advanced by the World Bank and other donors in Kazakhstan, Kyrgyzstan, and Uzbekistan.

In general these international and bilateral assistance programmes attempt to address the plethora of problems facing water management in the region. However, there are obvious duplications of efforts, with state leaders bidding one organization off another in some cases and in others turning a blind eye to intersectoral competition for foreign assistance funds. The lack of coordination at the international level also wastes the support offered by the broader global community. As this occurs, agreements become less enforceable, especially when they are inconsistent with other agreements. This results in much lower levels of actual compliance than anticipated, insofar as it is often not clear which agreement takes precedence, causing a lack of concrete action. Throwing money into the situation cannot solve the problems of water management. It is critical that compliance with coordinated agreements is emphasized in order to achieve the concrete results that are desperately needed.
4.3 Framework Agreements on Water Use

Central Asia's water resources are of critical importance to the region's economy, people and environment. Due to the arid regional climate, irrigation water is an indispensable input for agricultural production. In 2003, agricultural output supported by irrigation accounted for eight per cent of GDP in Kazakhstan, 39 per cent in Kyrgyzstan 23 per cent in Tajikistan, 25 per cent in Turkmenistan and 39 per cent in Uzbekistan. In Tajikistan, Turkmenistan and Uzbekistan, agricultural products, particularly cotton, constitute 20 to 40 per cent of exports. An estimated 22 million people depend directly or indirectly on irrigated agriculture in these countries.

Water is also important for energy production, contributing more than 90 per cent of total domestic energy generation in Kyrgyzstan and Tajikistan. In the region's large cities, millions of people rely on water supplies, pump-lifted over substantial elevations, for domestic, industrial and commercial uses. Meeting the water and sanitation target Central Asia will also require special attention to the water sector.

Toktogul Reservoir, in Kyrgyzstan, is the largest in the Syr Darya Basin and the only one with multiyear storage capacity (14 bcm active storage volume). The reservoir was designed to operate in an irrigation mode with non-growing season (October-March) releases providing minimum electricity generation. Commissioned in 1974, the reservoir did not operate according to design until 1990, after the high water year of 1988-89 filled the reservoir to capacity for the first time. The irrigation release regime follows natural cycles, but the reservoir's to capacity for the first time. The irrigation release regime follows natural cycles, but the reservoir's large storage can be used to continue these releases in periods of drought.

Before 1991, surplus power generated by irrigation releases in the growing season (April-September) by the Toktogul system was transmitted to neighboring regions of the Soviet Union. In return, these regions sent electric power and fuels (natural gas, coal and fuel oil) for Kyrgyzstan's two thermal power plants for winter heating needs.

---

13 World Bank, World Development Indicators, Washington, Dc, 2005

128
This situation changed drastically in 1991, when independent states were established in Central Asia. Because of complications in intergovernmental relations and account settlements, introduction of national currencies, and growing prices of oil, coal, natural gas and transportation, the supply of fuel and electricity to Kyrgyzstan from the other Republic was reduced. This radically affected the structure of the Kyrgyz fuel-and-energy balance. Because of decreased production of fuel in Kyrgyzstan, the output and distribution of heat from thermal power plants decreased by half and organic fuel consumption fell, giving rise to increased electric power demand by the population for heating, cooking, and hot water supply.

Intensive use of water resources for power generation, along with changes in the Toktogul operating regime from summertime irrigation release to wintertime energy releases, created serious problems in the Syr Darya Basin in the winter. Downstream reservoirs were not able to store the increased releases, and, in order to prevent flooding of the lower reaches of the Syr Darya Basin, wasteful discharges into the Arnasai depression, in Uzbekistan, were required.

Beginning in 1995, to alleviate these problems, Kazakhstan, Kyrgyzstan and Uzbekistan signed interstate protocols and agreements on the use of water and energy resources in the Syr Darya basin. It specified the amount of compensatory deliveries of fuel and energy resources and releases from Toktogul reservoir. Based on these agreements, Uzbekistan and Kazakhstan receive excess energy from Kyrgyzstan generated by Totogul reservoir in the summer, and in winter they provide Kyrgyzstan with energy, respectively, by deliveries of natural gas and coal. To monitor this delicate arrangement, the Heads of State of the countries involved turned to their regional integration and development organization, the Executive Committee of the Interstate Council of the Central Asian Economic Community (EC CAEC). In 1996, the EC CAEC formed a Water and Energy Uses Round Table, to develop a framework agreement addressing the Syr Darya Basin riparian Republics competing uses for water. The work of the Round Table resulted an agreement that created a framework agreement addressing the Syr Darya Basin riparian Republics competing uses for water.
energy and agricultural production in the Basin.\textsuperscript{15} Compensation is associated with a water release schedule that takes into account both upstream winter energy needs and downstream summer irrigation water demand.\textsuperscript{16}

Appropriate management of water resources is a basic prerequisite for preserving the region's environment. Water-related environmental problems include increased salinity and water logging due to poor irrigation practices and drainage management. The vanishing Aral Sea and the horrendous human legacy that it has left behind is a particularly extreme example of the environmental damage caused by inappropriate water management.

While major issues of cross-border water, energy and environmental resource sharing and management prevail in many parts of the world, the complexity of these issues in Central Asia is exceptional. This stems not only from geography, but also from the relatively recent creation of national borders and the lack of precedents for international negotiations over resource sharing. And of course, the regional water and energy infrastructure, created during Soviet days without any attention paid to the Soviet republics' borders, forms today's regional resource management systems. In straddling international borders, these by their very nature require regional cooperation to be sustained.

The Soviets left behind a lot of regionally significant water infrastructure. Especially prominent are a large number of dams and canals, many of which were developed as part of the Soviet programme of expanding irrigated agriculture and generating regional electricity resources. A majority of the major dams and canals are located on trans-boundary rivers, which implies that the benefits of their operation and maintenance accrue to the host and downstream users, and that the latter cannot be excluded. This makes the dams into a typical regional public good. Optimal provision of a regional public good requires cooperation in managing the regional infrastructure and in covering the costs of its operation, maintenance and investment.

During the Soviet period, the regional water infrastructure was managed centrally and its costs were mostly borne by Soviet Union-wide agencies. As the republics became independent, dam and canal management and maintenance

\textsuperscript{15} Agreement on the Use of Water and Energy Resources of the Syr Darya Basin, Bishkek, 17 March 1998, www.eurasianet.org
became the responsibility of the individual republics, and suffered from poor coordination and inadequate spending due to severe fiscal constraints and lack of regional cooperation. In the short to medium term, the infrastructure remains reasonably functional despite this systematic under-investment. In the medium to long term, the lack of maintenance increasingly undercuts the operational ability and safety of the dams and canals, and it increases the risk of disasters. The collapse of a dam can instantly release enormous water flows, with the resulting shock wave causing tremendous downstream damages to humans, animals and infrastructure, as illustrated by the threat posed by Lake Sarez in Tajikistan.

The Karshi Pumping shared by Turkmenistan and Uzbekistan consists of seven pumping stations-six of which are located on Turkmen territory. These pumps lift water from the Amu Darya to irrigate around 400,000 hectares of the Karshi Steppe in the Kashkadarya province of southern Uzbekistan and to provide drinking water for some of the main Uzbek cities. About two million people live in the area and depend on this water for their livelihoods.

The cascade was constructed in the early 1970s, and the equipment is now near the end of its lifespan, requiring significant investments in maintenance and refurbishment. A bilateral agreement concluded in 1996 specifies the condition for management of the irrigation and drainage facilities crossing the territories of the two countries and defines mechanism for resolving problems. According to this agreement, Uzbekistan is to operate the cascade in return for a yearly payment of about $12 million for leasing a narrow strip of land on which the cascade has been built (the amount also includes a lease for lands for the Amu-Bukhara and Tumayun reservoirs); and for diversion of about 10 per cent of the pumped water for the irrigation of some 25,000 hectares of irrigated land on Turkmen territory, free of cost to Turkmenistan. A major drawback is that this does not address issues related to the investments necessary for rehabilitating the Karshi Pumping Cascade. External assistance plans to fund a major rehabilitation project had to be stopped due to the inability of the Turkmen and Uzbek authorities to agree on how to resolve longstanding disputes relating to the management of the pumping station. Serious human security risks remain from a potential breakdown.

On 17 November 2004, President Karimov and Niyazov signed a declaration of friendship in Bukhara, and entered into new intergovernmental agreement on the joint use of water resources and cross-border travel. It is a significant step towards
normalizing the relationship between the two countries and making progress on the rehabilitation of the Karshi pumps.

The principle of regional public goods provision applies to many other aspects of regional water infrastructure, including major canals that have to be maintained for the benefit of more than one country (e.g., the Kairakum Canal, which supplies irrigation water for both Turkmenistan and Uzbekistan). Even pumping station can require at least bilateral agreements and cooperation, as has been the case with the Turkmen-Uzbek dispute over rehabilitation of the giant Karshi pumps.

But the most significant example of the need for cooperation relation to the ‘water-energy nexus’-the inter-sectoral and region-wide linkages, tensions and tradeoffs involved in the joint provision of water and hydropower from the two major rives in the region, the Syr Darya and the Amu Darya.

It is essential that the Central Asian countries and their neighbours succeed in improving regional cooperation in water allocation and infrastructure investment. But it is also essential that they pursue domestic reforms to enhance efficiency in their water and energy sectors. There is a widespread perception that there is an overall scarcity of water. While it is true that shortages do occur, they are often a direct consequence of inefficient and wasteful management of the region’s otherwise plentiful water resources. Put simply, water shortages are predominantly a management and incentive problem, not a resource problem. To illustrate, per hectare water consumption levels in Central Asia are 30 per cent higher in the Aral Sea basin than in countries such as Egypt and Pakistan. Unless more balance is brought to incentive structures, the outcome will be a ‘tragedy of the commons’, where Central Asian water resources continue to be wasted, rural economies contract and relations between the republics becomes further strained.

Since many of the consequences of poor water management are shared with neighbouring countries, regionally concerted action by all countries would achieve maximum benefits for everyone. This would allow for mutual learning of good practices, and help to establish and monitor benchmarks of conservation achievements. Four areas of national policy are particularly relevant: maintenance of irrigation infrastructure, water pricing, increased reliance on groundwater resources and the engagement of communities in water management.
Falling levels of maintenance in all the Central Asian states have led infrastructure to deteriorate and the distribution of water to become unreliable. In a regional field assessment carried out by the World Bank in 2002, villagers observed that irrigation systems had not been maintained for five years or more. Significant problems in operation and maintenance had already developed before the demise of the Soviet Union, but since 1991 Central Asian governments have scaled down the agencies that used to oversee irrigation infrastructure. Expenditure on operation and maintenance in Kazakhstan, for instance, dropped by a factor of 21 during the 1990s. Only 31 per cent of the required maintenance in Kyrgyzstan actually receives funding. At the local level, district irrigation departments now have very low salaries, small operational budgets and almost no equipment. Qualified staffs have left in large numbers.

Recognizing that cost recovery is necessary, governments have increasingly taken steps to introduce payments for water and establish cost accounting in district irrigation departments. The basic rationale behind introducing a price for irrigation is that this encourages efficiency because farmers have an economic incentive to minimize wasteful practices. Concerns that poor farmers may not be able to afford water charges are legitimate, however, ways to protect these farmers through subsidized irrigation infrastructure maintenance and investment should be explored.17

As in many countries with river-based systems of irrigation, groundwater has been neglected in Central Asia. Out of an estimated 31 cubic kilometres of annual available and usable ground water in the Syr Darya basin, for example, less than 10 cubic kilometres is presently used. While in many parts of the region groundwater is brackish or saline, this is not the case in the Fergana Valley. Here groundwater could provide a supplementary water resource that local users could control to mitigate seasonal shortages or unreliable delivery in the large-scale systems. Modest investments in groundwater management, combined with improved drainage, could improve the reliability of irrigation, increase incomes for local users, reduce the potential for local or cross-border community conflict and conserve regional water resources.

17 World Bank, "Irrigation in Central Asia: Social, Economic and Environmental Considerations." Europe and Central Asia Region, Washington, Dc. 2003b
Governments have started to divest themselves of the responsibility of maintaining secondary irrigation networks by encouraging farmers to organize themselves into water users associations. According to a recent report on privatization of irrigation management, some 300 associations have been established in Kyrgyzstan, operating over 40 per cent of irrigated areas. While some of associations have been successful, others have failed. The main reasons for negative experiences include an overly burdensome tax system, legal constraints on charging water management fees at the community level, lack of financing for even minimal investments in on-and off-farm improvements (such as the installation of hand pumps, maintenance of secondary canals, etc.) and excessive bureaucracy. Experiences elsewhere have demonstrated that water users associations, when properly supported, do have the potential for major sustained improvements in local irrigation system management.

Through these and other concerted water management measures to ensure more efficient irrigation and drainage management practices, along with better agricultural policies, Central Asian countries collectively could save an estimated $1.75 billion per year in lost agricultural yields. This amounts to 3.6 per cent of regional GDP. Tajikistan could gain the equivalent of over 10 per cent of its GDP. Over half of the estimated absolute savings would accrue to Uzbekistan.

4.4 Central Asia’s Energy Resources in a Regional Context

Energy is the most abundant and valuable natural resource of the countries of Central Asia. Kazakhstan has large reserves of oil and coal. Uzbekistan has significant reserves of gas. The Kyrgyz Republic produces significant amounts of hydroelectric power. These energy reserves form a basis for economic growth and development. With energy exports promising to generate foreign exchange revenues, Central Asia is poised to become a major world supplier of energy, especially in the oil and gas sectors.

The energy sector is a natural magnet for economic cooperation. But because of each government’s post-independence apprehension of being dependent on outside sources for energy, agreements are not so easy. Generally, national policies so far have favoured self-sufficiency and substitution even at the expense of trade

and rationalization of energy use. The failure to move to new agreements, based on market realities has left energy trade in a complex structure of state-to-state barter arrangements that often reflect the earlier Soviet mode.

Although Central Asia has abundant energy resources, these are unevenly distributed in terms of production among the Central Asian states. This uneven distribution of resources is shown in the table given below.

**Table 3**

<table>
<thead>
<tr>
<th>Energy Resources</th>
<th>Kazakhstan</th>
<th>Kyrgyzstan</th>
<th>Tajikistan</th>
<th>Turkmenistan</th>
<th>Uzbekistan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oil (bpd)</td>
<td>1,200,000</td>
<td>2000</td>
<td>Negligible</td>
<td>162,500</td>
<td>143,300</td>
</tr>
<tr>
<td>Gas (bcm)</td>
<td>11.6</td>
<td>.016</td>
<td>.05</td>
<td>58.57</td>
<td>63.1</td>
</tr>
<tr>
<td>Coal (mtoe)</td>
<td>43.2c</td>
<td>0.508d</td>
<td>.0127d</td>
<td>0</td>
<td>2.0959d</td>
</tr>
<tr>
<td>Electricity (billion kWh)</td>
<td>66.82c</td>
<td>11.72b</td>
<td>15.08d</td>
<td>11.41</td>
<td>47.7b</td>
</tr>
<tr>
<td>Primary Energy (mtoe)</td>
<td>49.6c</td>
<td>4.7b</td>
<td>3.5b</td>
<td>16.9c</td>
<td>51.7b</td>
</tr>
</tbody>
</table>


**Abbreviations**

- bpd- barrels per day, bcm-billion cubic meters, mtoe-million tons of oil equivalent, kWh, kilowatt-hours,
- a2001, b2002, c2003, d2000, eProduction, fConsumption, gEstimated

A commodity wise description of the Central Asian region is attempted below.

**Oil and natural gas**

Kazakhstan is the main producer of oil in the region, with current output of crude at 1,106,000 barrels per day (b/d). The country has proven oil reserves of 9 billion barrels, or 1.2 billion metric tons (Table1). Its surplus has reached 915,000 b/d, which is more than four-fold increase over 1995.

The main hydrocarbon reserve base is concentrated in western Kazakhstan's Guryev, Mangistau, Uralsk and Aktubinsk regions. The hydrocarbon resources of these regions are almost equivalent to those of Western Siberia within Russia in terms of explored and extrapolated petroleum and gas reserves. Substantial oil reserves are also suspected in Kazakhstan's offshore Kashagan field (Caspian Sea), an 80 km x 25 km field reportedly containing recoverable reserves of 7-9 billion barrels of oil equivalent, with further potential totaling 9-13 billion barrels using
secondary recovery technology. This makes Kashagan one of the largest confirmed oil fields in the world and the only one among the top five outside the Persian Gulf.

The Tengiz deposit, discovered in 1981, is located in the northwestern pre-Caspian area (Guryev District). Tengiz is a unique petroleum and gas deposit, unrivaled in the size of its reserves by any other known deposits in the world. Even though the deposit has been explored to a depth of only 5500m, according to Chevron Texaco, Tengiz could produce 700,000 b/d by the year 2010.

Kazakhstan operates three oil refineries—Pavlodar, Shymkent (formerly Chymkent), and Atyrau—with one each being located in the northern, southern and western regions of Kazakhstan, respectively. The refineries have a combined total crude oil refining capacity of 427,000 b/d, and capacity utilization of 95 per cent. They are mostly fed by indigenous crudes or oil piped from Russia. More specifically, the Pavlodar refinery is supplied with crude oil from West Siberia by means of the Omsk-Pavlodar pipeline and the Shymkent refinery presently uses oil from Kazakh fields at Kumkol, Aktyubinsk and Makatinsk, but utilization is low because it is unable to process other oils. The Atyrau refinery is fully supplied with local Kazakh crude oil from the northwest.

In terms of oil production, growth in Kazakhstan is expected to far outstrip increases in demand during the coming years. If present plans are realized, the contribution of Kazakhstan to the world’s oil supply by the year 2010 could be up to two per cent. This would place Kazakhstan among the leading oil producers and exporters of world.

Central Asia has proven gas reserves amounting to 6.6 trillion cubic metres—2.9 trillion cubic metres in Turkmenistan, 1.9 trillion cubic metres in Uzbekistan and 1.8 trillion cubic metres in Kazakhstan. This represents about one-tenth of the

---

known gas reserves of the CIS.\textsuperscript{23} Kazakhstan’s natural gas reserves which are estimated at 1.8 tcm are spread over eighty-three deposits. Out of which only 17 are exclusive gas reserves and the remaining are oil and associated gas reserves. Natural gas is unevenly distributed throughout the country. More than 40 per cent of Kazakhstan’s gas reserves are located in one field- the huge Karachagank field in the northwest part of the country.

Kazakhstan has two distinct gas distribution networks. One in the west which services the nation’s producing natural gas fields, and one in the south which primarily delivers imported natural gas to the southern consuming regions. Natural gas output has risen steadily since 2000, with current output (2005) at 12.9 billion cubic meters per year.

Kazakhstan’s primary oil pipelines, with a total length of 3384 km, were constructed at the end of 1960s and have now deteriorated. Kazakh crude is transported mainly to Russian refineries and exported via the Abut Volga and Black Sea pipelines. Two export pipelines transport the oil to refineries and export pipelines in Russia. Transportation of Kazakh oil also occurs by barge and rail to the Baltic, and by ship and rail to the Black Sea. In 2004, Kazakh oil was exported in three directions: northward (via the Russian pipeline system and rail network); westward (via the Caspian Pipeline Consortium (CPC) project and barge to Azerbaijan); and southward (via swaps with Iran)\textsuperscript{24} Since October 2001, the CPC transported roughly 250,000 b/d, or roughly one-third of Kazakhstan’s exports. Most of this oil came from the Tengiz field.

Turkmenistan, an important gas and oil producing republic of Central Asia, will play a critical role in future world energy markets, as it ranks 11\textsuperscript{th} in world reserves of gas, above Iraq. Some analyst place reserves amounts at much higher levels. Gas production in Turkmenistan has grown more than 25 percent from 2000. Yet, like its Central Asian neighbouring states, transportation bottlenecks may, if not resolved, limit longer-term hydrocarbons development.\textsuperscript{25} The value of Turkmenistan’s gas is determined in large measure by access to markets.

\textsuperscript{24} Dorian, J.P. “Central Asia: A major emerging energy player in the 21\textsuperscript{st} century”, Energy Policy, 34 2006, pp.544-555.
\textsuperscript{25} Dorian, J.P. 2002.
For this reason, a number of pipeline projects to carry Turkmenistan's resources are in planning or have been proposed, with most of them an alternative gas export route outside of Russia.

Uzbekistan is noted for being one of the few former Soviet republics that increased oil output consistently since becoming independent in 1991. State company Uzbekneftegaz boosted oil production to 7.6 million metric tons, or 175,000 b/d in 1996, achieving self-sufficiency in the same year. Consequently, the country stopped being a net importer. Since then, Uzbek output has stabilized at around 166,000 b/d, or 7.1 million metric tons, in 2003.

Uzbekistan has abundant oil and gas resources, with 60 per cent of the country's land area showing oil and gas potential. Uzbekistan contains modest oil reserves, estimated at 0.6 billion barrels, or 0.1 billion metric tons. The country could reportedly increase output relatively easily if a viable external market were identified. In five of the republic's proven oil and gas-bearing areas alone, potential (unexplored) resources are estimated at more than 5 billion metric tons of oil and condensate, and 5.5 tcm of natural gas. By 2000, the Uzbekneftegaz National Oil and Gas Corporation had identified and explored 171 oil and gas fields, 51 of which were already producing oil, 27 producing gas, and 17 producing condensate.26

Unlike some of their Central Asian neighbors, Kyrgyzstan and Tajikistan produce only small quantities of oil. Tajikistan in particular has insignificant reserves of petroleum and natural gas and relies heavily on imports from other former Soviet republics, notably Uzbekistan and Turkmenistan. Kyrgyzstan contains seven developed oil fields and two oil/gas fields but due to difficult geological conditions, recovery rates are low. Exploration continues in the favourable Naryn oblast area of eastern Kyrgyzstan, situated just across the border from China's Tarim Basin. Current crude oil production levels in Kyrgyzstan are at around 2000 b/d; consumption is 20,000 b/d.27

In October 1996, Kyrgyzstan's first and only oil refinery, Jalalabad, opened with a capacity of 10,000 b/d. Jalalabad remains mostly underused, however, with domestic output of crude at only 2000 b/d. The Jalalabad refinery is now operated by the Kyrgyz petroleum Company, a joint venture of the British firm Petrofac Resources International, Ltd. And Kyrgyzneftgaz, the state-owned oil company.

27 Energy Information Administration, 2005.
Negotiations are also under way with Uzbekistan to import gas condensate for processing into gasoline at the refinery. Nearly all oil and gas products are imported into Kyrgyzstan from Kazakhstan and Russia.

The countries of Central Asia are implementing or exploring substantial new investments in energy pipeline construction to meet high world demand and to reduce the historical dependence on Russia for oil and gas transit routes. For oil from Kazakhstan there are a number of potential options, including pumping through the existing Russian pipeline network to the Black Sea port of Novorossiisk; sending shipments via tanker across the Caspian Sea and via the recently opened pipeline from Azerbaijan through Georgia to the Mediterranean Sea port of Ceyhan in Turkey; pumping through a pipeline planned from Atasu to Xinjiang to the Western Chinese market, and striking oil swap deals with Iran. For gas, existing export routes include northward through Russia to markets in Europe; proposed pipelines to the Mediterranean through Iran and Turkey; and options to expand east into China, and south-east to India and Pakistan. Despite this potential alternative, resource-rich but landlocked countries face a number of difficulties in trying to access world markets for their energy products.

Coal

Kazakhstan is estimated to contain 120 billion metric tons of coal in Karaganda and other areas, but the quality is generally poor (Zhanseitov and Asanov, 1993), and the deposits are distant from major industrial locations. Limited rail capacity for transporting coal is a structural bottleneck to expanding the exploitation and use of this resource. Xinjiang, China possesses large amounts of high-quality coal resources, with reserves of approximately 3.03 billion metric tons. Kyrgyzstan is reported to have substantial coal reserves, but these are located

---

28 Yermukanov, Marat, “Sino-Kazakh Pipeline Project has demographic as well as economic dimensions,” Eurasia Daily Monitor, April 18, 2005.
in an inaccessible part of the country, with no rail and road to transport the coal to market.

Kazakhstan has 37 primary coal deposits. Since coal is inexpensive in the country, government officials are considering the possibility of constructing a plant for converting coal into synthetic oil to alleviate energy shortages in southeast Kazakhstan. Coal for this purpose is like to come from the eastern half of the country.

Notwithstanding limited coal reserves in Uzbekistan and Kyrgyzstan, and the low quality of coal in Kazakhstan, coal is an important energy source in Central Asia. Kazakhstan coal is regularly exchange for Kyrgyz electricity, and the coal industry is a major employer in Kazakhstan. Coal may play an even more critical role in the long-term energy industries of Kazakhstan and Xinjiang, China, providing fuel for electric power generation. Moreover, a dwindling supply of higher price coal from Russia has prompted increased reliance on local coal for power generation.

Transportation is the key problem for coal trade in Central Asia, given that great distances separate markets from reserves. Coal is a high-volume, low-value commodity, ideally suited to rail transportation. At present, Kazakhstan transports coal by railroad to its own internal markets, and exports coal by rail to Russia, Ukraine, Kyrgyzstan, and Uzbekistan. However, the infrastructure is limited and in poor condition. Negotiations are underway to sell coal to Turkey and Iran, but inadequate infrastructure is a stumbling block. Kazakhstan faces capacity constraints in shipping coal by rail, and railroads do not currently penetrate to the coal-producing regions of Kyrgyzstan.

Electricity

The Central Asian states' move towards self-sufficiency after independence led to a considerable reduction in the regional electricity trade, which fell by around 70 per cent between 1990 and 2000, despite a 80 per cent rise in consumption levels over the same periods. The electricity sector of Central Asia faces four major problems. First of all due to fiscal constraints, there has been little or no expansion of electric generating capacity in recent years. Even with a slowdown in economic activity in the five former Soviet republics, available power supplies are not keeping pace with development needs. Secondly, the lack of funds for needed renovations and modernization has led to a deterioration of power
generation stations and transmission lines. Thirdly, problems with payments due to insolvency and disagreements over energy and water prices among the former Soviet republics has led to confrontations and supply cutoffs. And fourthly, variability in rainfall has a significant impact on the stability of electricity in the interconnected Central Asian grid, and on the availability of electricity or export.

Despite these problems, governments in Central Asia understand that electric power is essential for economic development. The different countries of the region generate power by various means, depending on their own natural resource base. Kyrgyzstan, which has large hydro-electric potential, generates most of its electricity through hydroelectric power stations. Thermal power stations fueled by natural gas generate most of Uzbekistan’s electricity, although hydro-powered electric plants also do exist. The country also draws, significantly on hydropower produced from power stations in neighbouring Tajikistan and Kyrgyzstan. Kazakhstan depend primarily on coal to generate electricity.

Electricity shortages are a major problem in the region, particularly in Kazakhstan, in 2004, when it faced severe power shortages. Kazakhstan depended heavily on Russian coal imports and electricity from Uzbekistan and Kyrgyzstan to supply electric power and heat to its southern region, including the city of Almaty. Following the break-up of the Soviet Union, increases in coal and transportation, and the financial crisis in Kazakhstan, these imports declined sharply, causing frequent power shortages.

Although Kazakhstan has abundant oil and coal, it has not been able to overcome problems in the electricity sector. While the country technically generates enough power to satisfy is demand, the country has suffered from frequent power cuts since the 1990s due to the sectors dilapidated infrastructure, particularly in the south. Kazakhstan incurs very large energy losses during transmission and distribution over its 285,000 miles of distribution lines. A privatization programme aimed at rejuvenating the entire electric power industry was implemented in 1997, but stalled for a variety of reasons.

A regional electricity grid serving Uzbekistan, Kyrgyzstan, Tajikistan, Turkmenistan and five districts in the southern territory of Kazakhstan, was established in 1960. It's headquarter lies in Tashkent. This interconnected grid

consists of 220 kv and 500 kv power transmission lines, with a primary 500 kv line connecting the five capital cities, and with an installed capacity of 24,779 MW. It provides power to an area of 2 million km$^2$ and to a population of more than 35 million. The northern half of Kazakhstan is part of the Russian regional electricity network. Interconnecting the region's power system improved reliability and service quality under Soviet administration.

**Hydropower generation potential in Tajikistan**

In an attempt to reduce its energy dependence on Uzbekistan, Tajikistan is currently contemplating how it can exploit its huge hydropower potential—only 10 per cent of which has been developed. Tajikistan is actively pursuing the completion of two hydropower schemes initiated during the Soviet period. The less contentious option, Sangtuda 1+11, involves two run-of-river schemes (670 MW and 220 MW) at the incremental cost of $560 million. These could start partial operation as early as 2009 and would produce electricity at the low cost of 0.0197 $/kWh. This project may receive Indian and Russian financial support, and Uzbekistan has also responded favourably. However, considering Tajikistan's limited financial capacity and the uncertain market outlook for incremental electricity capacity in the country and beyond, the prospects for mobilizing the required funding remain uncertain.

The other project, Rogun 1+11 is a 3,600 MW storage scheme at an incremental cost of $2,455 million that could start producing electricity in 2014. Rogun 1+11 is considerably more controversial than Sangtuda 1+11, basically because it enables Tajikistan to control the flow of water to Uzbekistan's Surkhandarya and Kashkadarya provinces, while potentially expanding irrigation at home. Uzbekistan is strongly opposed to the completion of Rogun 1+11. International doors are also hesitant. The project has a favourable economic cost of 0.0283 $/kWh, but if pursued it could create exactly the type of upstream/downstream irrigation/hydropower conflict that plagues the Syr Darya.

**4.5 The Role of Regional Institutions in Water and Energy**

Regional cooperation in natural resource management in Central Asia requires strong institutional underpinnings as well as political motivation and engagement by both the authorities and civil society. External assistance can provide a political anchor, technical knowledge and financial resources for helping to
develop regional institutional capacities. Investments in regional public goods, such as dams, can provide a rationale for development aid, in addition to improving regional cooperation.

In the water sector, the need for a mechanism for regional water resources management was recognized early after independence. As has been mentioned above the Interstate Commission for Water Coordination was established in 1992 to determine water management policy for the region, allocate available water resources for different purposes, determine future water supply programmes and coordinate construction of major works. Supported by a secretariat located in Khodjent, the commission comprises officials (generally ministers or deputy ministers) from the Ministries of Water and Water Resources Agencies of all the member countries. Under it, the two basin water management organizations take responsibility for allocating water and monitoring water flows in the Amu Darya and Syr Darya rivers. The Center of Scientific Information provides scientific and information support at the interstate level.

In the electricity sector, the Central Asian power Council, composed of representatives from the electricity or electrical grid companies in the Central Asian states, formulates quarterly power exchange schedules. In Tashkent, the Unified Dispatch Centre, Energia, is responsible for maintaining the balanced and synchronized operation of the power transmission and distribution system, including the balance of irrigation and hydropower requirements.

Despite the efforts of these institutions to promote regional cooperation, they confront a number of limitations. The water commission focuses purely on water, with no representation from the energy or environment sectors. The basin management organizations and Energia lack an international character, consist almost exclusively of staff and officers of the nations where they are located, and do not give the impression of functioning impartially among the constituent member countries. None of these organizations have any power or mechanism to enforce regional agreements.

Given these limitations, the proposal to establish a Water and Energy Consortium under CACO is a welcome step. As envisaged, the consortium would

---

33 SPECA 2004
operate under a broad framework agreement, under which secondary level agreement, under which secondary level agreements would be developed for water use, reservoir operations, power trading, etc. The framework agreement would provide the overall institutional, legal and financing mechanisms, including the means for dispute resolution, a critical area that has been given insufficient attention in previous agreements. Ultimately, however, for the consortium to become effective, it will need to require member countries to focus much more on the mutual benefits of regional water and energy cooperation than solely on each country’s specific interests.

Several bilateral and multilateral agencies have provided assistance to Central Asian countries to study the issues and address the problems related to water and energy sharing. They include programmes covering Aral Sea basin environmental mitigation efforts, water resource planning, rational and effective use of water and energy, a comparative review of the riparian rights issues in a wide range of countries, and, notably, the USAID-funded water management issues study relating to the Toktogul Reservoir. Multilateral institutions are also actively supporting the creation of the Water and Energy Consortium. But in light of recent developments, notably the Uzbek decision to construct water regulating reservoirs, many multinational and bilateral donor agencies have refocused increasingly on national programmes for improved water and energy sector planning and management. However, it is important that these programmes be firmly embedded in a regional perspective of comprehensive water and energy management.

Economic and human development in Central Asia is greatly dependent upon the energy sector. Energy-related activities contribute directly to economic growth, employment generation and foreign exchange earnings. These benefits are reinforced through the energy sector’s contributions to other economic activities, such as irrigated cotton production in Kazakhstan and Uzbekistan, and aluminium mining in Tajikistan—both of which depend on electricity. The energy sector contributes directly to government revenues, thereby enabling social sector spending programmes that assist the population at large. Households benefit from the lighting

35 World Bank, “Central Asia Regional Electricity Export Potential Study.” Europe and Central Asia Region, Washington, Dc. 2004
and heating generated at Central Asian power and heating plants, especially during winter. A reliable electricity supply is also an essential input for the provision of many public services, such as the operation of hospital equipment, as well as a critical foundation for industrial development. More generally, improvements in living standards within a country over the long run require steady advances in labour productivity, which ultimately implies the replacement of human and animal power by electric power obtainable from primary energy resources such as water, oil and gas.37

As for water, the distribution of fossil fuel resources in Central Asia is highly skewed. Kyrgyzstan and Tajikistan have abundant hydropower potential but negligible amounts of commercially exploitable fossil fuels. In contrast, Kazakhstan has significant reserves of oil, gas and coal; Turkmenistan has substantial gas reserves and some oil; and Uzbekistan has large gas reserves as well as some oil and coal. Central Asia is, in fact, poised to become a major world supplier of energy, especially in the oil and gas sectors.38

Energy issues in Central Asia also have a strong regional dimension, because the republics are tied together by a web of electricity transmission systems, as well as oil and gas pipelines developed during the Soviet period. The legacy of regional economic specialization fostered an interdependence still partly reflected in today’s energy trading patterns. Energy systems were designed to take account of the location of various energy sources and resulted in the following configurations.39

- Oil refineries were located in the more significant oil producers (Kazakhstan, Turkmenistan and Uzbekistan) with refined products being transported into Kyrgyzstan and Tajikistan.
- The regional gas pipeline network was designed to allow delivery of gas from Turkmenistan and Uzbekistan to the southern portion of Kazakhstan, Kyrgyzstan and Tajikistan.
- Coal consumption was largely tied to local availability and the ability to use the rail network for coal transportation.

---

39 World Bank “Central Asia Regional Electricity Export Potential Study”. Europe and Central Asia Region, Central Asia Country Unit, Washington, Dc, 2004a
• The Central Asia Power System was designed as a regional power grid, using hydropower exports from Kyrgyzstan and Tajikistan and allowing interchanges of power among all the countries. The dispatch centre for this system is located in Uzbekistan.

These forms of specialization were underpinned by extensive investments in regional energy transport and transmission infrastructure, with continued operation requiring a strong degree of regional cooperation. Given Central Asia's land-locked location, an expansion of existing power grids and pipelines for energy exports will depend on additional cooperation with neighbouring countries inside and outside the region.

4.6 Water-Energy Linkages as a Basis for Regional Cooperation

Till recently, in Central Asia, a unified system of water and energy resources had existed. In the course of the last decade the countries of the region have had to work details for sharing these resources, while keeping their "national interests" in mind. Here the approach of the countries have varied. The upper riparian states, who have control over the water resources in the region, like Kyrgyzstan, prefer the policy of "user pays"; whereas lower riparians, like Uzbekistan have put forward the idea of the development of cooperation based on joint regional utilization of water resources.40

Uzbekistan's approach to cooperation is based on a number of significant factors. First, all the water management bodies in the upper riparians were built within one large and unified country, i.e. the former Soviet Union. There is no optimum arrangement for maintenance and operation in these systems by individual countries. Secondly, there is no single and unified system of calculating the price of water and there are no parallels in the world that could be applied in Central Asia. In the international practice of the use of water resources from across borders, payment for the use of water is not invoked in a number of cases. International law on inter state water disputes allow so in certain cases where the lower riparian state is unable to make the payment considering water as common heritage of mankind.41

Thirdly, the schedule of release of water from the main water reservoirs in the upper

riparian is not always rational. For example, an increase in the release of water and power generation during the winter months becomes the cause of water shortage during summer when more water is required for agriculture. Fourthly, joint effective use of water resources in the region requires the development of an integrated programme of rational water use within the country.42

The differences in the two approaches necessitated prolong negotiations to reach a compromise solution. In March 1998 Kyrgyzstan, Kazakhstan and Uzbekistan had signed an agreement on the joint use of water resources as well as payment of equivalent compensation for water generation losses by countries receiving the water. However, recently there have been conflicts about the amount of water released by Kyrgyzstan for downstream users Uzbekistan and Kazakhstan. Since independence Kyrgyzstan has been faced with economic problems because of shortage of energy supply which previously used to come from Russia and other republics. In order to make up for this shortfall, it has attempted to take advantage of its abundant water resources. The primacy of energy production over the needs of irrigation in the middle and lower courses of the river has created discord between Uzbekistan and Kyrgyzstan.

Needs for irrigation often do not correspond to needs for maximum utilization for energy use. In summer when demands for irrigation is high, water is sought to be stored in the reservoirs for winter when demands for energy is at a maximum. In the summer of 1993, for instance, Kyrgyzstan retained about 50 per cent of the water allocation granted to Uzbekistan in the Toktogul dam. Since the introduction of the national currency in Kyrgyzstan, Uzbekistan raised the prices of oil and gas for its neighbours. Kyrgyzstan, in its turn, tried to prevail on Uzbekistan to purchase hydroenergy as a compensation for the usually free amount of water flowing into Uzbekistan. Since Uzbekistan has sufficient fossil fuel resources of its own, it accused Kyrgyzstan of intending to sell water to its neighbours. In the winter of 1993, Kyrgyzstan was accused of dumping too much of water from the Toktogul dam down the Syr Darya. The extra water could not reach the Aral due to freezing of the lower Syr Darya but flowed into the Ayadarkul depression. On the other hand, Kyrgyzstan has complained of delays in compensation payment.

Uzbekistan and Kazakhstan as downstream states are dependent on Kyrgyzstan and Tajikistan for water. They frequently face problems with regard to ensuring adequate supplies for the growing season. In the winter of 2000 Uzbekistan had imposed an embargo on Kyrgyzstan in an attempt to coerce Bishkek into settling a territorial dispute raised by Tashkent and to exert pressure on Kyrgyzstan to pay off the $1.35 million of debts. To compensate for gas shortages, Kyrgyzstan diverted water resources into hydroelectric power and the resulting depletion in the reservoirs had raised the specter of crop failure the succeeding summers.

This is reflective of a growing tension between upstream and downstream countries who are locked in relationships of mutual dependence. Kyrgyzstan and Tajikistan, the upstream countries possess more water than they need for domestic use and consume more power than they can produce themselves. The downstream states Kazakhstan, Uzbekistan and Turkmenistan, lack water but have abundant supplies of natural gas and oil. This should have ideally produced mutually beneficial arrangements but has actually given rise to discord. This problem is reflective of a mismatch between physical infrastructure and the desire of the states to foster economic self-sufficiency. Natural resources were, till very recently, centralised.

Having suffered severely during the winter months because of Tashkent’s gas cut-off, Kyrgyzstan has remained less inclined to honour its irrigation commitments to Uzbekistan till date. During the energy blockade of 2001, Kyrgyz Prime Minister Kurmanbek Baikov, had warned his Uzbek counterpart several times that Uzbekistan’s hardline stance on the gas cut-off could force a large discharge of water from the Toktogul reservoir, with potentially harmful consequences for Uzbek cotton. Since independence, Uzbekistan and Kyrgyzstan have often clashed over water. Uzbekistan, whose irrigation systems are totally dependent on water flows from Tajikistan and Kyrgyzstan has suggested that water resources in the region be dealt with as a ‘common wealth’. However, Kyrgyzstan, like every other newly independent state, is now conscious of preserving its natural resources, and has not responded positively.

In the Uzbek-Kyrgyz case, authorities in Bishkek, would prefer to utilize water during the peak periods to satisfy local demands for heat. Meanwhile, Uzbekistan depends on a uniform supply of water for cotton cultivation. To reach an accommodation between the competing uses of water and power the countries have
developed an elaborate system of swaps. In the Uzbek-Tajik case, similarly, there exists some tension. Tajikistan has two electricity grids. One in northern Leninabad and the other in the southern part of the country.

Tajikistan has only limited natural gas and relies heavily on Turkmenistan and Uzbekistan for supplies. Tajikistan and Uzbekistan have been exchanging gas and electricity under terms of a barter arrangement that also sets a monetary value for the use of rail transport. The irony of the Tajik position is that it is a leader in world per capita production of hydropower and yet it must purchase electricity at international prices. Tajik officials are working to alter existing arrangements. Officials of the state owned electricity corporation Barqi Tajik are seeking developmental funds to bring into production the Sangtuda station, the fourth dam on the Vakhsh cascade.

In March 2001, Kazakh and Kyrgyz authorities signed a protocol under which Kazakhs agreed to settle a $21.5 million debt in order to facilitate negotiations on water supply. Kazakhstan has also promised to supply Kyrgyzstan with fuel and coal. Despite problems with implementing the Bishkek Agreements, a number of positive factors are evident. One of these is the functioning of the United Energy System of Central Asia (UESCA), which has ensured parallel functioning of the energy systems that had been created as one single system. With the transition of the energy sector to a market economy the issue of parallel functioning of the UESCA with the energy systems of Northern Kazakhstan and the united energy system of Russia has become crucial once again. Such approaches in coordination with national programmes of rational water-use would increased the efficiency of hydro-technical facilities of the upstream countries as well as provide for agreed irrigation schedules, coordination of decision on water releases, power generation and transfers and compensation of energy losses on an equivalent basis.

In August 2001 this was achieved when the Central Asian states signed a treaty forming a regional energy grid. The system derives its strength from the fact that it not only combines the national grids in Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan but also links with an energy network across Eurasia through Kazakhstan’s connection with Russia’s Unified Energy System. This new

---

system will use public tradable prices. Energy ministers have pledged to account for power costs as a function of supply and demand rather than political priorities. Each system carries a monetary value, which changes with demand for power and available resources. This would allow a more efficient production and distribution of power throughout the region.

A unified grid should foster efficient trading among the five states. In June 2001, just prior to the treaty signing, Kyrgyzstan, Kazakhstan and Uzbekistan agreed to settle their inter-state energy accounts through commodity swaps rather than cash payments. Under the agreement, in the years ahead, Kyrgyzstan will supply Kazakhstan and Uzbekistan with electricity. Uzbekistan will repay the debt with natural gas, fuel, turbine and transformer lubricants and fuel; Kazakhstan will provide coal and fuel oil. While this will ensure a more efficient system of distribution of energy, the other equally scarce resource, water is not a part of the agreement.

Water and hydro-based energy in Central Asia are inextricably linked especially in the Syr Darya river basin. The huge Toktogul Reservoir, constructed in the mid 1970s in the Kyrgyz region on the Naryn River (a major tributary of the Syr Darya), is a multi-year water storage facility to ensure irrigation of lands for cotton, fodder, wheat, rice, fruits and vegetables in Uzbekistan and the southern region of Kazakhstan. The operating regime called for the release of 75 per cent of the annual water flows from the reservoir in the summer months (April-September) and for restricting flows to 25 per cent during the winter season (October-March). Surplus electricity generated in the summer fed into the Central Asian Power System for use by the south Kazakh and Uzbek regions. Since the Kyrgyz region lacks significant fossil fuel resources, these were transferred from the Kazakh and Uzbek region to help meet the Kyrgyz winter demand for electricity and heat.

Upon independence, this regional cooperative arrangement came under great strain. Energy trade assumed commercial dimension, fossil fuel prices rose swiftly to world price levels, and demand grew for payments in hard currency. Customers quickly switched from expensive fossil fuel-fired heating to electric heating, thus increasing winter electricity demand. Kyrgyzstan could not afford to import fossil fuels and started to increase winter discharges of water from Toktogul to meet its power demand. It also reduced summer release to store water for the following winter. As a result, farmers in Uzbekistan and south Kazakhstan faced irrigation
water shortages. In winter, the frozen waterways and canals were unable to handle the large volume of water, some of which was diverted wastefully into the Arnasai Depression (a low-lying desert area). During 1990 to 2000, summer releases declined to 45 per cent and winter releases increased to 55 per cent of the annual discharges.

To address this problem, the Central Asian states had entered into an agreement in 1992 to maintain the Soviet-era arrangements. But this proved ineffective in arresting the increasing power production of the Toktogul operation. By 1998, Toktogul water storage had reached a record low level. The Central Asian states consequently entered into a new Long-Term Framework Agreement, which explicitly recognized that annual and multi-year irrigation water storage has a cost requiring compensation either through a barter exchange of electricity and fossil fuels or in cash. The implementation of the annual agreements made under the new framework, however, proved unsatisfactory, and the reservoir once again reached an unsustainably low level in 2002.

Contrary to a specific provision in the Framework Agreement, the annual agreements did not make any explicit compensation for an exchange of surplus summer electricity from Kyrgyzstan for an equivalent amount of fossil fuels in winter from Kazakhstan and Uzbekistan. Yet even when the agreed summer discharges were made, the supply of fossil fuels fell short of stipulated quantities and quality, forcing Kyrgyzstan to boost winter discharges. In wet years, downstream states did not need the agreed volumes of summer discharges. This affected the export of electricity and the compensating quantities of fossil fuel transfers to Kyrgyzstan, which was exposed to a serious risk in meeting its winter demand for heat and power. Regional cooperation efforts were dealt a further blow when the republics failed to conclude annual agreements in 2003 and 2004. This situation was partly a consequence of above average precipitation rates, which diminished the downstream reliance on irrigation water released from Toktogul, and partly a result of changes in the interests and approaches of water users.

While there are similar elements of the water energy nexus to be found in the Amu Darya river basin, the situation for now is less subject to cross border tensions. However, if in the future Tajikistan completes major new dams on the Amu Darya, the situation might well become more like the one currently prevailing in the Syr Darya basin.
It is important to understand national interest in order to appreciate the complexity of the Central Asian situation and the potential obstacles to regional cooperation on water and energy. Each county’s interests are primarily shaped by the following factors. Its geographical position, relative political power in the region, options for pursuing unilateral initiatives and natural resources endowment. An illustration can be made as to how these factors influence the three principal countries along the Syr Darya basin.

**Kyrgyzstan:** Due to its upstream geographical position, Kyrgyzstan can control the timing and availability of water downstream. In the absence of an agreement with downstream water users, it prefers to operate the Toktogul Reservoir in ‘power mode’ to maximize winter electricity generation. The extent to which this is tolerable to downstream water users determine their willingness to make side payments through annual barter agreements to secure increased summer releases. From the Kyrgyz perspective, one of the several problems with the barter agreement has been that side payments were not only unreliable, but also too low. The Kyrgyz demand for higher payments from Kazakhstan and Uzbekistan expressed itself in the 2001 Parliamentary Law, which declared that water resources created on Kyrgyz territory are the property of the country. Neighbours should therefore pay to use them. Kazakhstan’s and Uzbekistan’s objections to the law led to a softened Kyrgyz stance of demanding that the downstream users share the maintenance costs of delivering water rather than paying for water per se.

**Uzbekistan:** Despite a high demand for irrigation water, Uzbekistan has a limited direct ability to influence the timing and volume of cross-border water inflow because it is located midstream. In the short term, its best policy option is to cooperate over water and energy. Uzbekistan has followed this strategy in the past by participating in the annual barter agreements, although in recent years it has taken a deceive unilateral stance in not agreeing to these. Uzbekistan has objected to the Kyrgyz notion that water is a commodity that should be paid for and has referred to relevant international water agreements. Furthermore, Uzbekistan is trying to

---

47 “UNDP Country Background Study, Kyrgyzstan”.

152
achieve self-sufficiency in water by construing new regulating dams on its own territory. These dams could provide additional storage about 2.5 billion cubic metres within the next few years, which could replace the equivalent additional discharge from Toktogul in water and summer in years of normal water flow. Though they alleviate Uzbekistan’s problems in low-water years, albeit at considerable costs, the reservoirs do not appear to be sufficiently large enough to achieve Uzbek self-sufficiency in irrigation water.\textsuperscript{48}

\textbf{Kazakhstan:} As a downstream user of irrigation water, Kazakhstan depends not only upon Kyrgyzstan but also in the water withdrawal rate in Uzbekistan. It has potentially conflicting interests with both countries. In practice, however, Uzbekistan has generally preferred to respect Kazakh claims to summer water allocation as stipulated in the annual barter agreement. As the limitations of these became apparent during the 1990s, Kazakhstan contemplated a range of alternative options for providing cheap winter electricity to Kyrgyzstan—projects also aimed at covering the Kazakh winter electricity deficit. These plans were effectively shelved, however, when feasibility studies revealed that the hydropower produced at Toktogul was considerably cheaper than any of the Kazakh options. Kazakhstan has been exploring the unilateral option of building a three-billion-cubic-metre regulating reservoir at Koserai near Shymkent. But the Kazakh authorities also appear to agree with the notion of compensating upstream countries for water storage services, if not paying for water per se, as evidenced by the agreement it already has with Kyrgyzstan on the smaller trans-boundary rivers of the Chui and Talas.\textsuperscript{49} Kazakhstan has insisted that if it is to help meet the costs of maintaining and developing the Kyrgyz-hydro-engineering facilities from which it benefits, then these facilities should be jointly managed. Kyrgyzstan, on the other hand rejected this offer on the ground that it does not wish to surrender its sovereign control over Toktogul, which is one of its few sources of regional political influence.

The inability to agree on a cooperative solution for the Syr Darya basin has increased the relevance of alternative infrastructure investments, such as the construction of dams, and hydropower and thermal power plants. Such investments

\textsuperscript{48} Abbink, K., L. Moller and S.O’ Hara, “The Nexus Game-An Experimental Analysis of the Syr Darya River Conflict.” CEDEX Discussion Paper, University of Nottingham, Nottingham, 2005

\textsuperscript{49} World Bank, “Water and Energy Nexus in Central Asia: Improving Regional Cooperation in the Syr Darya Basin.” Europe and Central Asia Region, Washington, Dc, 2004
can contribute to addressing regional water imbalances, enhance region-wide welfare and reduce cross-border tension if they are optimally planned and managed from a regional perspective. For instance, if winter electricity generation could be increased by alternative means in Kyrgyzstan, this would lessen the need to store summer inflows in the Toktogul Reservoir and offer benefits downstream. If ways could be found to export surplus Kyrgyz electricity beyond the region during periods of low domestic demand, much needed revenue could be gained to pay for winter fuel imports.

The Kyrgyz Government is currently exploring the construction of two new dams and hydropower plants on the Naryn cascade, kambarata I+II, which will have a combined capacity of 2,260 megawatts. Since Kambarata I would be located upstream of the Toktogul Reservoir, water could be released to generate almost all of its annual power output in the winter, thus avoiding the release of water from Toktogul. The project could be completed by 2020, but the high capital cost of construction-$2.3 billion, which is 1.2 times the Kyrgyz GDP in 2003-and the resulting high economic cost of power (0.0717 $/kilowatt hour) are likely to put this project beyond the reach of the Kyrgyz Government unless it finds international partners. If secure export markets could be found, this would create a greater justification for such an investment. This option is further explored below.

An alternative projects to increase winter power generation in Kyrgyzstan and reduce the need for winter water releases from the Toktogul Reservoir involves the completion of a 400 megawatt thermal power plant, Bishkek II. At a cost of $200 million, or 0.0255 $/kwh, this project has better prospects of attracting external financial support. However, it would increase Kyrgyz dependency on Uzbek natural gas. Since the Kyrgyz Government has been pursuing a policy of energy self sufficiency-understandably perhaps, since Uzbekistan has in the past cut off gas shipments to Kyrgyzstan (e.g., in August 2005) it may hesitate to pursue this investment as its top priority.

With different country perspectives on water and energy-sharing arrangements and investment options, what could be the benefits from regional cooperation? Apart from the political payoffs, such as improved regional stability and the possibility of positive spillover to other issues, there could be tangible

---

50 World Bank, "Central Asia Regional Electricity Export Potential Study", Europe and Central Asia Region, Washington Dc, 2004a
51 Ibid
economic rewards, especially under an improved version of the annual barter agreements. The World Bank has calculated that Uzbekistan’s incremental benefit from the operation of Toktogul in irrigation instead of power mode is $35.8 million per year. Kazakhstan’s annual incremental benefit is $31.5 million, yielding a combined downstream benefit of $67.3 million per year. Since the annual incremental costs borne by Kyrgyzstan only total $35 million, the net basin-wide benefits of cooperation are $32.2 million per year. This cooperative surplus can effectively be shared by the three countries provided that those downstream compensate Kyrgyzstan with an amount in the range of $35 million to $67.3 million per year for its water storage services.

If the economic benefits of cooperation are so substantial, why do the Central Asian republics find it so hard to cooperate? This question has already been partly addressed in the analysis of national policies and interests. More fundamentally, however, national responses to existing cooperative opportunities are essentially driven by a policy of national self-sufficiency in energy and water. Upstream countries aim for energy self-sufficiency, and those downstream for self-sufficiency in irrigation. While one might appreciate the divergent objectives of policy makers in newly independent countries concerned about national security and safeguarding newly acquired national sovereignty, it is critical to understand that a policy of non-cooperation that minimizes reliance on other countries extracts a substantial cost from all. Effective trans-boundary water management requires more intensive regional cooperation and a willingness of downstream countries to compensate their upstream neighbours for the water-related services they provide. As long as self-sufficiency dominates the policy agenda, the benefits of cooperation will not materialize.

4.7 Transportation as an Integrating Factor

The mutual dependence of Central Asian states also drives from their interdependence in terms of the transportation infrastructure. The Central Asian countries inherited highly integrated transport networks, which were built with little regard for the administrative borders between the Soviet republics and were mostly oriented towards the Russian Federation. At the same time, transport infrastructure

---

links with neighbouring countries such as Afghanistan, China, India, Iran, Pakistan and Turkey were poorly developed, and were not allowed to flourish.

From the 1930s to the 1980s, the Soviet Union built virtually from scratch a network of highways and rail lines in Central Asia. Although it built this system within the framework of a centrally planned economy, military strategic needs often took precedence over purely economic considerations. That is because Soviet military doctrine treated Central Asia and Kazakhstan as a bastion to defend against China and the southern flank of NATO.53

As a result, the network of highways and rail lines are directed not toward the interior of the region itself, but to Russia, which thus became the main focus of foreign economic relations for Central Asia. Moreover, transportation links were often better developed between countries than within the country. For example, northern and southern Kyrgyzstan is linked by a single highway, and even that roadway is poorly constructed and remains a perpetual problem, especially in the winter. For all practical purposes, Gorno-Badakhshan Oblast of Tajikistan, so far as its infrastructure is concerned, is separated from the rest of the country. The transportation system of northern Kazakhstan is integrated with the contiguous areas of Russian Siberia, but has poor links to Central Asia.

Since independence, the Central Asian countries have sought to improve their transport links with countries outside the former Soviet state, often with the support of multilateral and bilateral development agencies. Most notably, railway connections have been established between Iran and Turkmenistan and between China and Kazakhstan. Kazakhstan, the Russian Federation and Turkmenistan have reached an agreement to build a railway that would connect the Russian Federation with Iran via Kazakhstan and Turkmenistan. Kazakhstan is making efforts to build missing segments of a railway that will link China with Europe via Kazakhstan, Turkmenistan and Iran.

With the financial and technical assistance of the Asian Development Bank, the Central Asian countries have carried out or are implementing several road projects to improve their transport links with East and South Asia, a step towards re-establishing themselves as a land bridge between Asia and Europe. These projects include rehabilitation of the roads from Dushanbe to the Kyrgyz border, Osh to

Irkeshtan, Osh to Bishkek, Bishkek to Almaty and Almaty to Astana. A railway that would connect Uzbekistan with China through Kyrgyzstan is under consideration, along with a railroad between Afghanistan and Uzbekistan. Central Asian countries have also been taking part in the EU's Transport Corridor Europe Caucasus Asia (TRACECA) Programme and in the UNESCAP Asian Highway and Trans-Asian Railway projects. Overall, however, a lack of financial resources and poor coordination of national transport infrastructure projects have been slowing down progress in integrating Central Asian transport networks into international transport networks.

At the same time, Central Asian countries have built a number of railways and roads primarily to avoid transit through neighbouring countries, as the emergence of national borders and the resulting border formalities increased transit costs and times. For example, Kazakhstan built the Kyzylasker-Kirovskiy road to connect the region south of the Chardara Reservoir with the rest of the country, bypassing Uzbekistan. Kyrgyzstan has upgraded the Jalal-Abad to Uzgen road at a cost of about $12 million to link Osh and Jalal-Abad without passing through Uzbekistan. Turkmenistan has built a new railway connecting Kerkshi in the Amu Darya valley to the country's rail network, bypassing Uzbekistan, which has, in turn, constructed the Uchkuduk-Misken-Karauzak railway at a cost of more than $10 million to connect Bukhara with Nukus via Navoi, bypassing Turkmenistan. While these new roads and railway detours have had some positive impact on the development of the countries that built them, their construction would not have been justifiable if the use of existing regional transport networks had not been beset by a lack of cooperation. A better use of limited financial resources would have been the development of international transport corridors, and rehabilitation and maintenance of existing networks, together with efforts to reduce obstacles at the borders.

Table 4

Transport Networks in Central Asian Countries, 2004 (in 1,000 kms)

<table>
<thead>
<tr>
<th>Countries</th>
<th>Railways</th>
<th>Roads</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kazakhstan</td>
<td>14.3</td>
<td>89.0</td>
</tr>
<tr>
<td>Kyrgyzstan</td>
<td>0.4</td>
<td>18.8</td>
</tr>
<tr>
<td>Tajikistan</td>
<td>0.5</td>
<td>12.5</td>
</tr>
<tr>
<td>Turkmenistan</td>
<td>2.6</td>
<td>13.5</td>
</tr>
<tr>
<td>Uzbekistan</td>
<td>4.0</td>
<td>43.5</td>
</tr>
<tr>
<td>Total</td>
<td>21.9</td>
<td>177.3</td>
</tr>
</tbody>
</table>

Figures in Table 4 illustrate that Central Asia now possesses an extensive transport network, which comprises a total of 21,856 kilometres of railways and 177,250 kilometres of roads. However, much of the network is in poor condition and requires rehabilitation. It is estimated that only 25 per cent of roads in Kyrgyzstan and 20 per cent of roads in Tajikistan are in good condition. The reasons include lack of maintenance due to inadequate financing; the Soviet standards under which most of these roads were built (which are inappropriate for the current level of traffic and modern trucks); and low-quality maintenance due to corruption and limited use of modern technology and equipment. Maintenance budgets are meager partly because fuel and other road user charges are low by international standards. In the case of Tajikistan, the civil war also contributed to the destruction of existing roads.

However, projects involving the infrastructure are capital-intensive and require a long period for return on the investments. Therefore, almost all the transportation projects in the region rely mainly on foreign loans and credits. Particularly noteworthy here is the contribution of Japan and the Asian Bank of Development to the improvement of the transportation infrastructure within individual countries. Thus, their credits have made it possible to modernize and complete construction of the railway junction “Druzhba” (Kazakhstan), to build a bridge over the Irtysh River (near the city of Semipalatinsk in Kazakhstan), and to construct a year-round highway linking southern and northern Kyrgyzstan. Moreover, the Asian Bank of Development is examining the possibility of financing a highway to link Alamty, Karaganda, Akmola, and Borovoe.54

In recent years, the creation of a pan-Asian and pan-European transportation corridor has been a subject of active discussion and debate. In 1993-95, a commission of the European Union allocated more than 30 million European Currency Units (ECUs) to develop regional programs for a transportation complex called “Europe-Caucasus-Asia,” which would include the construction of sea, railway, and highway systems in the Central Asia corridor.55

Inclusion of Central Asia in the global transportation network involves not only a latitudinal East-West but also a longitudinal North South dimension. The

Central Asian and, especially, the Russian press treats these essentially as competing, not complementary, lines of development. However, from the mid-term and especially the long-term perspective, both the latitudinal and the longitudinal should be seen as complementing one another. The leading world centers of economic activity could, as circumstances warrant, use the special advantages that each has to offer. For example, the East-West corridor gives producers and consumers in European Russia the shortest access to the Chinese market (through Petropavlovsk, Akmola, and the railway junction Druzhba). Meanwhile, the North-South axis provides the Volga region of Russia with its shortest access to the lively trade routes of the Persian Gulf. It is another matter that such links could isolate, in terms of transportation webs, areas like the Russian Far East and the Trans-Siberian railway.

In the final analysis, the choice of the most convenient and economically viable route will be taken amidst a fierce competitive struggle, and a decisive role in this will be played by shipping rates freight volumes, quality of service, and so forth. So far as the Central Asian countries are concerned, the critical issue is the sequence for realizing these global projects.

The first to be developed has been the latitudinal route—a railway line, opened in 1990, that links the railway junction at Druzhba (Kazakhstan) with Alakanchou (China). In 1995, this line carried 1.17 million tons of freight, and the following year that figure had risen to more than 2 million tons. The key points in the latitudinal East-West route include the Central Asian cities of Almaty, Bishkek, Dushanbe, and Ashkhabad.

The main nodes in the longitudinal North-South corridor include the following: Astrakhan (Russia); Makat, Beineu, Eralievo, and Bektash (Kazakhstan); Turkmenbashi, Gazandzhik, and Gyzyletrek (Turkmenistan); Turkmenistan and Azerbaijan); and, Gazandzhik, Tedzhen, and Serakhs (Azerbaijan, Turkmenistan, and Iran). In other words, a meridional route unites the railway lines and sea communications of Russia, Kazakhstan, Turkmenistan, Azerbaijan, and Iran. On 12 May 1996, the railway line Meshkhed-Serakhs-Tedzhen (with a length of 320 km) commenced operations, linking the rail system of Turkmenistan (and in turn the

56. S.E. Atymanov et al., October 1996, p.23.
entire Central Asian region) with that in Iran. Once this lines achieves full capacity, it will carry up to 7 million tons of freight per year.  

Of all the Central Asian countries, Turkmenistan is bound to profit from these projects, whatever their configuration, since it is strategically located on both the latitudinal and longitudinal axes. Kazakhstan and Uzbekistan represent a certain competitor for the latitudinal routes if Tashkent, in competition with Kazakhstan, succeeds in establishing a transportation route to China without passing through Almaty. This latter project involves a highway linking Andizhan (Uzbekistan), Osh (Kyrgyzstan), and Kashgar (China); running 940 km in length, the undertaking is more than half-finished. There are also plans to build a parallel rail line along the same route; such construction could not build on any existing lines and hence must be built from scratch. According to the original rough estimates, the volume of freight capacity can reach 10 to 12 million tons per year. Kazakhstan has responded to these plans with unconcealed envy and claims that this new branch will not help to reduce the line between Asia and Europe. The real backdrop to these differences is the ongoing struggle among states in this region to occupy the main points in the emerging network of global transit routes.

Nor is Kazakhstan especially interested in creating the so-called “Trans-Caspian Corridor” running through Tashkent, Ashkhabad, Baku, Tbilisi, and Poti. Nevertheless, in May 1996, the presidents of Uzbekistan, Turkmenistan, Georgia, and Azerbaijan signed an agreement to coordinate their efforts to build this new corridor. Almost simultaneously, Georgia announced that it was beginning construction to joint the Georgian and Turkish rail lines. For Uzbekistan, this new route runs approximately 3,000 km-about 1,000 km shorter than the traditional routing through Russia and Ukraine (with the port of Il’ichevsk). Although Tajikistan has been largely uninvolved in these plans for new transportation routes, it too is seeking to obtain direct access to Asia. In mid-1995, the Fnd of Akha Khan signed an agreement with Tajikistan to cooperate in building a highway to the Karokorum

highway, which links this region with China, Pakistan, and Afghanistan. In May 1997, Iran expressed its support for an analogous project and announced its willingness to invest 28 million dollars to construct a Kuliab-Kalaikhumb road if the Tajik government would provide matching funds.

4.8 Participation of Central Asian Countries in major Global Infrastructure Project

The TRACECA Programme

The TRACECA Programme is an European Union (EU)-funded technical assistance programme to develop west-east transport corridor from Europe across the Black Sea, through the Caucasus and the Caspian Sea basin to Central Asia. It was launched in May 1993 by the original eight TRACECA countries, namely, Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan.

By 2005, the TRACECA Programme had financed 39 technical assistance projects totaling €57.7 million and 14 investment projects totaling €52.3 million. Technical assistance helped to attract some large investments from international financial institutions. In particular, the EBRD has extended loans to Kazakhstan ($65 million) and Uzbekistan ($40 million) for rehabilitation of railways on the basis of TRACECA projects. The programme also provided co-financing for the border-crossing component of Asian Development Bank loans to Kazakhstan and Kyrgyzstan, with a total of $68 million going towards the rehabilitation of the Almaty-Bishkek road.

The Asian Highway and Trans-Asian Railway

In 1992, UNESCAP endorsed two Asia regional transport programmes: the Asian Highway and the Trans-Asian Railway.

The objective of the Asian Highway is to promote the development of international road transport in Asia; an intergovernmental agreement to that end was adopted in 2003. The agreement identified 55 routes with a total length of

63. Delovoi Mir, 13 May 1997, p.2
approximately 140,000 kilometres that crisis-cross the Asian continent and reach Europe. These include eleven routes (13,189 kilometres) in Kazakhstan, four routes (1,695 kilometres) in Kyrgyzstan, three routes (1,925 kilometres) in Tajikistan, five routes (2,204 kilometres) in Turkmenistan and five routes (2,966 kilometres) in Uzbekistan. Out of the 32 countries involved, 26 countries, including Kazakhstan, Kyrgyzstan, Tajikistan and Uzbekistan have signed the intergovernmental agreement. The remaining six countries, including Turkmenistan, were to sign it by the end of 2005, which they did.

The Trans-Asian Railway was initiated in the 1960s with the objective of providing a continuous 14,000-kilometre rail link between Singapore and Istanbul, with possible onward connections to Europe and Africa. Given the extent of the territory covered, and the differences in standards and levels of technical development among railways in the region, UNESCAP has adopted a step-by-step approach to define the network.

The challenge for the future for the TRACECA, Asian Highway and Trans-Asian Railway programmes is to convert plans into reality. This requires regionally coordinated planning, financing and construction. Moreover, institutional and technical bottlenecks have to be identified, and specific remedial measures defined and implemented.⁶⁴

Air transport in Central Asia

During the Soviet period, the Central Asian republics had extensive air connections with each other and other Soviet republics, but few direct air links with the rest of the world. After the Soviet break up, many flights were discontinued, while some direct flights between the Central Asian countries and the rest of the world were established. As a result, it is often necessary to go via a city outside the region to travel from one Central Asian city to another by air. For example, to get from Bishkek in Kyrgyzstan to Ashgabat in Turkmenistan requires flying through Istanbul. Or there may be a need to travel overland for part of the way, as for the trip from Dushanbe in Tajikistan to Tashkent in Uzbekistan.

The Central Asian countries inherited a relatively obsolete air transport infrastructure from the Soviet Union. Soviet airplanes did not meet international

standards for safety, comfort and environmental protection. Since independence, however, some of the Central Asian countries have made considerable progress in upgrading their fleets. Uzbekistan Airways, and Air Astana of Kazakhstan have both leased new airplanes.

Air transport has been commercialized and partially privatized in Kazakhstan. Nonetheless, the state-controlled airline, Air Astana still dominates the market. National airlines in the other Central Asian countries are entirely state-owned in addition to providing air transport services, they operate national airports and air traffic control. This dominance is a main reason for the relatively poor quality of air services in Central Asia. The lack of international standard airline connections seriously limits foreign investor interest, tourism and regional integration.

4.9 Transport Services, Transit and Border Management

The availability, quality and costs of transport services in Central Asia compare unfavourably with many other countries. In particular, international rail services for small cargo (i.e., cargo of less than one wagonload or five-ton container load) are either not available, or very costly with long booking and transit times. Shipments by road are fairly expensive and unreliable. While there is substantial overcapacity in basic vehicles, specialized vehicles, such as temperature-controlled ones, are in short supply. Inter-modal piggyback operations (i.e., trailers on rail wagons) are nonexistent. Airfreight services are underdeveloped and expensive.

Lack of competition is one of the main reasons for the low quality and high costs of rail and air transport services. State-owned railways maintain monopoly positions in rail transport and continue to perform both regulatory and commercial functions, although restructuring of railways has been underway in Kazakhstan and Uzbekistan, and is under consideration in Tajikistan. Likewise, state-owned airlines dominate the market for air transport services in all the Central Asian countries, including Kazakhstan, where major airports have been privatized and there are 47 private and only one state-owned air carrier. The lack of competition has resulted in inefficiencies in transport services and under-investment in transport infrastructure,

especially in rail transport. That is why a substantial proportion of railway tracks and rolling stock is in poor condition. 66

By contrast, competition is high in road transport, where state-owned enterprises and vehicles have largely been privatized and transport operators from Belarus, Iran, Russia and Turkey are active. However, this sector is mostly comprised of small and micro-sized firms, which lack financial resources and skills to expand their businesses, achieve economies of scale and improve the quality of services. Road transport operators also suffer from complicated and non-transparent transport regulations and border-crossing procedures, road permit quotas for entering foreign countries and difficulties with transit through neighbouring countries.

The limited availability of multi-modal transport operations and relatively high costs of international transport services for small cargo are due largely to the underdevelopment of logistics infrastructure and services. There are no modern logistics centres in any of the countries that could consolidate freight for the international market in sufficient volumes and allocate them to the most efficient transportation mode. 67 International logistics providers have largely stayed outside the region, citing the small size of the market, unfavourable regulatory environment and corrupt practices. There has been little FDI in logistics infrastructure and limited transfer of know-how in logistics services. Local logistics companies are mostly small, and lack the facilities and expertise to provide quality services.

Since the new international borders of the Central Asia republics are here to stay, a key challenge for the governments of the region is to create ‘borders with a human face’. Borders should facilitate the movement of people and goods, rather than hamper it with time-consuming and unpredictable red tape, and expensive official fees. People should not feel threatened, intimidated, exploited, harassed or subjected to extortionary and corrupt payment requirements. Today, borders in Central Asia are without a human face. This is especially true of borders between Uzbekistan and other Central Asian countries. Over half of 6,000 people who participated in the 2004 public opinion survey conducted by the World Bank said that borders between their countries and other Central Asian states had a negative or

very negative impact on trade, transport and transit. Almost 60 per cent of the respondents said the borders had a negative or very negative impact on their access to family members, friends or business associates. Border relations between Uzbekistan and the other three Central Asian countries covered by the survey were rated the worst.

Despite the apparent increase in difficulties with border crossings, the Central Asian countries have made some headway in modernizing their customs administrations over the last several years. Kazakhstan, Kyrgyzstan and Tajikistan have enacted new customs codes, which broadly conform to the international convention of the Simplification and Harmonization of Customs Procedures (known as the ‘Revised Kyoto Protocol’) and WTO standards (including the rules for customs valuation). Uzbekistan is in the process of revising its customs code in line with these. Kazakhstan has introduced a customs automated information system, and Kyrgyzstan and Tajikistan are developing such systems. Uzbekistan’s customs administration has made substantial investments in information and communication technology.

Nonetheless, clearing goods through customs can still be costly and time consuming. Customs procedures are complex and onerous with extensive documentation requirements. Modern information technology is not generally used to its full potential. Customs officers are paid low salaries compared to private sector employees and are not always well trained. Most customs declarations are subjected to physical checks of the consignment, delays in clearing goods are common, and unofficial payments are often needed for timely processing. The situation is exacerbated by excessive certification requirements and weak standards institutions, as well as a multiplicity of, and the lack of coordination among, various agencies operating at borders.

Aside from crossing borders to get from one country to another, the people of Central Asia depend on transit through their neighbours for international, regional and domestic trade. The anomalous situation of domestic trade depending on transit through neighbouring countries arises because of how the post-Soviet borders cut across inherited railways and roads in a jigsaw-like manner. In addition, Tajikistan, Kyrgyzstan and Uzbekistan each have enclaves in the territory of the other two.

68 Ibid.
Central Asian countries have tried to resolve their transit problems via multilateral, regional and bilateral agreements. All have signed the Customs Convention on the International Transport of Goods under Cover of TIR Carnets, the most important international convention covering transit by road (often referred to as ‘the TIR Convention’). Together with other CIS countries, they have also signed the Agreement on Transit through the Territories of the CIS Member Countries. Within the framework of the EEC, Kazakhstan, Kyrgyzstan and Tajikistan, together with Belarus and the Russian Federation, signed several agreement that aim to facilitate transit. Nine out of the ten ECO member countries, including Kazakhstan, Kyrgyzstan, Tajikistan and Turkmenistan, have signed the ECO Transit Transport Framework Agreement. The Governments of Kazakhstan and Kyrgyzstan have signed several agreements to facilitate the transit of Kyrgyz goods through Kazakh territory.

The results of these agreements have been mixed. While transit problems have not been acute for rail transport, they have remained serious for road transport. This is because the agreements concerning transit by road either have not been implemented at all or implemented only partially. The ECO Transit Transport Framework Agreement, for example, has not even entered into force, as only five countries have so far ratified it (six are needed for it to become effective). In the case of the TIR Convention, there have been a number of reports from the region that customs authorities have broken the seals and checked the cargos of trucks traveling under the TIR carnet, or required that they join a customs convoy. These actions contravene the convention. Furthermore, no separate streams for trucks traveling under the TIR carnet have been established at border posts, thus in effect slowing down TIR traffic along with the rest. 69

Central Asian countries need to ensure full implementation of the TIR Convention as a step towards becoming a land transit link between East and South Asia and Europe and fully integrating into the global economy. The TIR system has, however, a major drawback: its cost is prohibitively high for many transport operators in the region. The use of the system requires purchase of customs-secure vehicles or containers (i.e., expensive European manufactured units), membership in

69 Asian Development Bank, Background Paper for customs cooperation meeting, 9-11 October, Tashkant on “Transit Development Strategy and Action Plan for Regional cooperation in East and Central Asia”.

166
a national association, and purchase of the TIR carnets for each movement of transit cargo from the point of origin to the point of destination.

For intra-regional and some inter-regional shipments, such as shipments to and from other CIS countries, Afghanistan, China, Iran and Pakistan, a simplified and effectively managed regional transit system, similar to the TIR Convention but less costly, needs to be developed. Many components of such a system, including transport associations and a growing insurance industry, are already in place in the region. However, there is an inability or unwillingness at a regional level to combine these components into a workable mechanism. Given the difficulties in developing multilateral agreements, an effective way to establish such a system may involve progress initially on a bilateral basis, with these arrangements brought together under a multilateral arrangement at a later stage. The recent bilateral transit agreement between Kazakhstan and Kyrgyzstan and between Kyrgyzstan and Tajikistan represent a welcome step in this direction.

4.10 Regional Approaches to Improvements

The overall effects of the Central Asian countries’ remote and landlocked location; deficient transport networks; low-quality transport services; and weak border management, customs administration and transit systems are that transport costs are generally high, and transport times are long and unpredictable for international shipments, to and from the region. The figures show that the actual transport costs are much higher and actual transport times are much longer for shipments within, to and from Central Asia than those in the ideal world.

High transport costs and long and unpredictable transport times undermine the competitiveness of Central Asian countries’ exports in international markets, raise the costs of imports, impede international trade and deprive the Central Asian states of potential trade benefits. They also affect the direction and composition of trade in Central Asia by constraining trade with remote countries more than with neighbouring countries, and trade in perishable and high value-added products more than in non-perishable and low value-added products. This partly explains Central Asia’s limited reorientation of trade from the former Soviet countries to the rest of
the world, and the continuing dominance of primary commodities and low value-added manufactured products in exports.\(^70\)

Statistics also reveal that there is an asymmetry in transport costs for shipments between Central Asian countries and Europe. For example, it costs $8,500 to $10,500 to ship a truckload of cargo from countries like Belgium, Netherlands, and Luxemburg to Central Asia, and only $6,000 to $7,000 to ship in the opposite direction. In the ‘ideal world’, shipments would cost $5,500 to $6,000 in either direction. This is due to the particular commodity composition of trade between Central Asia and Europe, whereby exports from Central Asia to Europe mostly consists of primary commodities transported by rail and through pipelines, while imports from Europe to Central Asia mostly consist of manufactured products transported by road and air. According to estimates made for the Asian regional cooperation in trade, transport and transit, the total loss due to this problem is around $300 million per year.

There have been several regional initiatives aimed at reducing transport costs and times in Central Asia through transport and trade facilitation, and improvements in transport infrastructure and services. The major regional transport infrastructure programmes—the TRACECA, Asian Highway and Trans-Asian Railway programmes—have been discussed above. Five other initiatives can be highlighted. First, the CACO members have decided to establish a transport consortium to develop services in the region and improve links with other parts of the world. Second, the Transport Sector Coordinating Committee has been set up for the same purposes under the CAREC Programme, which was initiated by the Asian Development Bank in 1997 and includes Azerbaijan, China, Kazakhstan, Kyrgyzstan, Mongolia, Tajikistan and Uzbekistan. Third, the Customs Cooperation Committee has been established under CAREC Programme to promote concerted customs reforms in the member countries and regional cooperation in customs administration. Fourth, the Central and South Asia Transport and Trade Forum, which involves Afghanistan, Iran, Pakistan, Tajikistan, Turkmenistan and Uzbekistan, and is also supported by the Asian Development Bank, seeks to facilitate movements of goods and vehicles along two road corridors connecting the Central Asian countries with seaports in the Arabian Sea and the Persian Gulf via

---

Afghanistan. Finally, under the umbrella of SCO, member countries are negotiating a draft Intergovernmental Agreement on Facilitation of International Road Transport.

Of special importance are initiatives designed to support regional cooperation in facilitating border crossings. One outstanding example is the collaboration between the Border Management for Central Asia Programme (BOMCA) and the Central Asia Drug Action Programme (CADAP), financed by the EU and implemented by UNDP. The programmes assist Central Asian countries in improving their security situations and easing the legal flows of persons and goods across their borders. UNDP’s Silk Road Programme, which covers China, Kazakhstan, Kyrgyzstan, Tajikistan and Uzbekistan, strives to promote a favourable policy and legal environment for trade and transit, and to encourage greater private sector participation in trade and transport promotion.

Despite all these efforts, overall progress has been modest for three main reasons. First, regional cooperation has been limited so far due in part to the lack of interest and commitment by the countries in the region. Some give much higher priority to security considerations than trade and transport facilitation. Second, various regional programmes funded by external donors have not been well coordinated. Third, the low quality of institutions and the poor governance in Central Asian countries make it extremely difficult to reform border management and customs administration, and to separate legitimate security and safety concerns from excessive and often corrupt interventions in legal movements across borders.71 Creating 'borders with a human face' and promoting trade therefore requires great improvements in the way public institutions function.

---