

**APPENDIX TO THE
TRANSBOUNDARY WATER POLICY OF AFGHANISTAN:**

Transboundary Water Issues

Draft

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Afghanistan provides the headwaters for four major rivers and a number of smaller rivers and seasonal streams that flow into other countries. Afghanistan uses only a small portion (about 30%) of the water that originates in the country. The primary source of water is snow melt in the Hindu Kush Mountains with runoff peaking in early summer.

Afghanistan lacks sufficient dams, reservoirs and flow control structures to adequately manage and control this runoff. As a result, the country is susceptible to both severe flooding and droughts, and has little control of water flow into neighboring countries.

Water is widely recognized as limiting Agriculture and rural economic development. Afghanistan is formulating plans for construction of dams and other structures and facilities for flood control, mitigate drought effects, electricity generation and irrigation expansion. While such projects are urgently needed, once implemented, such projects will impact the amount of water and timing of peak runoff for the downstream nations of Iran, Pakistan, Uzbekistan and Turkmenistan

Except for an agreement on the Helmand River, no treaties exist between Afghanistan and its neighbors on water allocation. The lack of international treaties on these rivers pose a significant threat of causing tensions that could affect regional stability and economic development.

The major transboundary rivers and their characteristics are as follows:

The Amu Darya

Location and General Description

- The Amu Darya river forms:
 - most of the border between Afghanistan and Tajikistan
 - the entire southern border of Uzbekistan with Afghanistan
 - the eastern portion of the south border of Turkmenistan with Afghanistan
- The Amu Darya River originates at Zar Kul Lake in Afghanistan and at Chakmatin Lake in Eastern Badakhshan Province, is 2400 km long, and terminates at the Aral Sea.
- Along the main watercourse, the northern portions of the Amu Darya in Afghanistan are referred to as the Wakhan, the Ab-I Pamir Rivers, and the Panj Rivers.

- the Pamir River runs along the border between Tajikistan and Afghanistan from Zar Kul Lake to the confluence of Gunt River (near Qareh ye Par Panj)
 - The Wakhan River runs from Chakmatin Lake to the Pamir River
 - the Panj River runs from confluence of the Gunt and Pamir Rivers to the confluence of the Kokcha River in Takhar Province
- As a result of a major expansion of irrigated cotton by the Ex Soviet Union in Tajikistan, Uzbekistan and Turkmenistan beginning in the late 1950's, in most years no flow reaches the Aral Sea, causing one of the planets most severe man-made ecological disasters

Characteristics

- Estimates vary, but most of the flow in the Amu Darya originates in Tajikistan (61%) and Afghanistan (30%)
- Combined, the downstream republics of Turkmenistan and Uzbekistan contribute only 9% to the total volume of the Amu Darya but use 52% of the total flow.
- Afghanistan currently uses less than 10% of its contribution (1.5-2 km³) and around 2 % of total discharge.

Average Water Generation and Use in the Amu Darya River Basin					
Country	Contribution to the Amu Darya (km ³ /year)	Percent of Total	Irrigated Land (million ha)	Water Allocation* (km ³)	Percent of Total Used
Afghanistan	24**	30 %	1.2	-	-
Tajikistan	49.0	61 %	0.5	9.5	15.4
Uzbekistan	4.8	6 %	2.3	29.6	48.2
Turkmenistan	0.82	1%	1.7	22	35.8
Kyrgyz	1.6	2 %	0.1	0.4	0.6

* based on Ex Soviet and Central Asian treaties that exclude Afghanistan (any allocation for Aral sea????)

** estimates for Afghanistan vary

Existing International Treaties

- Afghanistan has no treaties with the Central Asian Republics which stipulate how much water Afghanistan is entitled to from the Amu Darya. Contrary to certain reports, the 1946 treaty does not allocate specific volumes to Afghanistan.
- The treaties of 1946, 1968 and 1978 dealt with the border and cooperation issues; and treaty of 1958 and its protocol include provisions concerning joint management of Amu Darya River and its tributaries.

- These treaties do not provide any mechanism for water sharing in terms of quantity but do have provisions that established a framework for dealing with various water management related issues (floods, water quality, navigation, fishing, etc.).
- The 1958 treaty provides for cooperation between Afghanistan and Tajikistan on maintaining the course of the rivers, sharing the expense of doing so, preventing water pollution, exchanging data, and adoption of a flood warning system

Issues

- Additional water and hydropower development in Afghanistan would impact downstream users.
 - Peak energy demand in the region occurs in the winter, so hydropower development redirects flow to the winter months. Irrigation demand peaks in summer; irrigation dams store water for release during the irrigation season.
 - Tajikistan is studying the feasibility of building a major hydropower dam near Dasht-i-jun (or Jum with m???) (4000 mw) on the Panj River and a hydropower generation facility (1000 mw) on the Upper Amu River; both projects will require water agreements with Afghanistan.
- Northern Afghanistan is widely viewed as having the best potential for agricultural development and irrigation expansion.
 - Since 60 ies water diversion structures are proposed along the Amu Darya in Kunduz Province, since topography allows for gravity diversion and flow to a large area covering the Kunduz, Balkh, Jouzjan, and Faryab regions where there is acute shortage of drinking and irrigation water,
- Water is considered the most limiting resource in Turkmenistan and Uzbekistan.
 - Regional agreements on energy and other matters likely will need to consider water supply issues

Recommendations

- Encourage the approval of the Draft MOU on Water Resources between Afghanistan and Tajikistan which provides for cooperation at the technical level on project planning, data collection, and related activities. The MOU also provides for feasibility studies of the Dash-i-jum and Upper Amu Darya Dams.
- Establish on-going discussions with Tajikistan on water resources issues seeking a partnership in such matters between the two nations.
- Afghanistan should propose to join the Interstate Coordination Water Commission of Central Asia as an observer and then evaluate the desirability of

officially joining this organization if appropriate. It may be in Afghanistan's advantage to seek separate agreements with the downstream republics.

- Enter into discussions with the Central Asian republics on dams and other water control and management structures needed along the Amu Darya and joint financing thereof.
- Agreements with Turkmenistan will also need to include the Harirud River, the Murghab, and smaller rivers and seasonal streams that flow from Afghanistan into Turkmenistan.
- Establish an effective joint stream flow monitoring program on the Amu Darya and its major tributaries
- Estimate current Afghan water consumption from the Amu Darya and associated rivers, recharge into groundwater, and future demand for agricultural and economic development.
- Seeking benefit out extra water used by neighboring countries

The Helmand

Location and General Description

- The Helmand River originates from the western side of the Paghman Mountains northwest of Kabul and flows 1150 km to the border of Afghanistan and Iran. At this point, the river branches and flows into Lake Hamoun in Iran and into the Sistan Depression Wetlands in the Afghanistan-Iran border region near Zaranj in Nimroz province.
 - The river drains a wide region stretching from Bamyan to Nemroz Province, or 43% of the total land area of the country
 - The middle of the main branch of the Helmand in the delta region serves as the border between Iran and Afghanistan
- The Arghandab River which flows through Kandahar joins the Helmand River west of Lashkar Gah
- Two major dams were completed in early 1950's
 - Kajaki Dam on the Helmand River located 70 km upstream of Girishk
 - Dahla Dam on the Argandab 50 km northeast of Kandahar.
 - Kamal Khan Dam on the Helmand River located around 30 km upstream of Nahr-e Lashkary intake, (construction of this dam was not completed)
- Flow during non-drought years is about 7 km³ (estimates vary)

Existing International Treaties

- In 1973, a transboundary water allocation treaty was signed between Iran and Afghanistan approved by the Parliaments of both countries and signed by the Afghanistan President and Shah of Iran. The treaty allocates a discharge of 22 m³/s of Helmand river water to Iran and permits Iran to purchase another 4 m³/s in a normal average year

Issues

- Water availability is limiting the amount of irrigated land in the river basin. Additional dams, reservoirs and other control facilities could increase the amount of water available for irrigation and economic development.
- Some farmers claim that insufficient water supply for other crops causes them to grow poppies.
- In addition to the Helmand River, there are numerous smaller rivers and seasonal streams that flow into Iran and the Sistan Wetlands that are not covered by the existing treaty.
- The Sistan wetlands are world renowned, but have suffered greatly due to reduced inflows over the last decade years caused by drought and diversion for irrigation and groundwater depletion.
- Historically, Iran has complained about water flow from the Helmand into their country and has taken actions that have adversely affected water supply within Afghanistan and to the Sistan Wetlands.
- Reports are that during the Taliban rule, Iran entered Afghanistan and excavated 30 km of Helmand River resulting in increased flow into Iran and reducing flow to downstream Afghan irrigation schemes.
- Extensive groundwater pumping by Iran in the border region has affected water tables within Afghanistan which is reducing groundwater availability in Afghanistan and contributing to the drying of the Sistan Wetlands.
- Iran has not compensated Afghanistan for Helmand River water as provided in the 1973 treaty.
- The river lacks sufficient dams and reservoirs to control the flow of water to control and regulate during dry and wet years.
- Flow in the Helmand varies significantly during the year and from year to year.

Recommendations

- Afghanistan should examine all the rivers and streams that flow into Iran (including the Harirud) when considering new agreements with Iran.
- Iran should be required to pay any and all due compensation for water as stipulated in the treaty. An agreement on such compensation including overexploitation of ground water should be a condition of establishment of discussions on other water sharing agreements.
- Water agreements should also provide adequate water for base flow and environmental preservation include the Sistan and Gaood Zereh Wetlands. Consideration should be given to change the agreement from a required flow to annual water volume.
- The Helmand River basin should be evaluated for the need for additional dams and flow control and management structures.
- Establish an effective stream flow monitoring program on the Helmand River and its major tributaries
- Estimate current Afghan water consumption in the Helmand River Basin and associated rivers, recharge into groundwater and usage by Iran, and future demand for agricultural and economic development.
- The long-term sustainable flow in the Helmand needs to be established.
- Monitoring stations should be established to measure actual flow into Iran from the Helmand and other rivers. Groundwater monitoring should be initiated to determine the effects of pumping in Iran on water supply within Afghanistan and drying of wet lands on both sides.
- A water management plan to restore and protect the Sistan Wetlands should be developed and agreed to by both countries that includes both surface and groundwater.

The Kabul

Location and General Description

- The Kabul River and its tributaries flow into the Indus River in Pakistan, and is a major contributor to the flow in the Indus River.
- The Kabul river basin encompasses about 12% of Afghanistan, flows through or along the borders of 11 provinces with a population of over seven million, and account for about 26% of the total annual flow of Afghanistan
- The basin covers 53,000 km² within Afghanistan; and 14,000km² within Pakistan before the confluence with the Indus River
- The basin has numerous small rivers and seasonal streams.
- The river basin supports over 300,000 ha of intensively irrigated areas and high valued agricultural crops, including over 50,000 ha within Pakistan before the confluence with the Indus River.
- The river basin includes four major hydropower dams.

Issues

- There is no water sharing agreement between Afghanistan and Pakistan
- Water demand in Kabul City and within the river basin is expected to increase in the future.
- Feasibility studies on hydropower and irrigation diversion dams in the basin are being developed. Implementation of these projects will impact the flow reaching Pakistan.
- Pakistan has significantly increased its water use of the Indus River for power, municipal and agriculture during the last 30 years, and has higher water demand than can be currently met.
- Pakistan is benefiting from flows from Afghanistan but provides no financial support for flow control structures or management of the river within Afghanistan.
- The basin needs additional dams and flow control/management structures to improve water flow, supply, and management.

Recommendations

- Establish an effective stream flow monitoring program in the Kabul River Basin.
- Estimate current Afghan water consumption in the Kabul River Basin and associated rivers, recharge into groundwater, and future demand for agricultural and economic development. Develop separate water management plans for the upper and lower portions of the basin.
- Monitoring stations should be established to measure actual flows into Pakistan from the Kabul and other rivers in the border region.
- Establish a bi-lateral water working group to promote cooperation at the technical level for information exchange, flow monitoring, and water planning with Pakistan.
- A watershed management program should be initiated in the lower portion of the basin to improve water quality with cost-sharing provided by Pakistan.
- Any future agreements with Pakistan on the Kabul should also consider the other rivers, seasonal streams and washes in the border region like Gomal, Matun and Shamal.
- Join management and hydropower development of the Konar River should be sought with Pakistan.

The Harirud and Murghab

Location and General Description

- The Harirud originates in the western slopes of the Koh-i Baba mountains and flows generally west to the Iranian border, turns north and forms the border between Iran and Afghanistan and then between Iran and Turkmenistan before ending in the Qaraqum desert in Turkmenistan.
- The Murghab River flows from Afghanistan directly into the Qaraqum desert of Turkmenistan where along with the Harirud supplies irrigation water to the Mary and Tejen oases regions. Although the surrounding provinces are suffering from the lack of water, due to topographical conditions, Afghanistan can only use a limited amount of the water in the Murghab river.
- Generally, flow in the Harirud only reaches Iran and Turkmenistan during the peak runoff period/seasonal floods.

- A 547 million m³-capacity dam, the Bandi Salma, is currently under construction on the Harirud in Herat Province. Construction of this dam was started before war.
- The basin has numerous seasonal streams and washes, and flash flooding is a serious problem.

Issues

- Iran and Turkmenistan have continued to develop water storage and diversion facilities on the lower reaches of the Harirud.
- Water demand in Herat Province and in the Iranian border region are expected to continue to increase.
- The Harirud also recharge groundwater and supply numerous karezes in the region.
- The sustainable flow and future water demand have not been determined
- Additional dams and water control facilities are needed within Afghanistan to better manage the rivers and reduce flooding and related damage and effects of drought.
- Iranian continues to express concerns about the effects of the Bandi Salma dam on water storage and supply in Iran. Similar complaints about future projects within Afghanistan are expected.
- Little information is available on the groundwater aquifer in the border region, associated recharge from the Harirud River, and the effects that increased exploration of groundwater will have on the karezes in the region.
- Iran and Turkmenistan do not compensate Afghanistan for the water that flows into their countries, nor help pay for the cost of water management and dams, reservoirs and other flow control structures.
- Iran and Turkmenistan recently built a dam without consulting Afghanistan. Ex Gov of Afghanistan had protested on construction.

Recommendations

- Any water agreement with Iran and Turkmenistan should include joint financing of water control and management structures along the Harirud, the Murghab, and their tributaries.

- The rivers as well as the numerous washes and tributaries should be evaluated for the need for additional dams and flow control and management structures. Smaller structures in the washes and tributaries may be more cost effective and provide better flood control and water storage options.
- Establish bi-lateral or multi-lateral water working groups to promote cooperation at the technical level for information exchange, flow monitoring, and water planning.
- A watershed management program should be initiated in the upper portion of Morghab basin to improve water quality with cost-sharing provided by Turkmenistan.
- Morghab River benefit sharing with Turkmenistan,
- Establish an effective stream flow monitoring program on the rivers.
- Estimate current Afghan water consumption in the Harirud River Basin, recharge into groundwater, and future demand for agricultural and economic development.
- Monitoring stations should be established to measure actual flows into Iran and Turkmenistan from the Harirud and Murghab Rivers. Groundwater monitoring should be initiated to determine affects of pumping on water supply within Afghanistan.