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The Amu Darya river – a review

Introduction

The Amu Darya, also called the Amu river and historically known by its Latin name, Oxus, is a major river in Central Asia. It is formed by the junction of the Vakhsh and Panj rivers, at Qal`eh-ye Panjeh in Afghanistan, and flows from there north-westwards into the southern remnants of the Aral Sea. In ancient times, the river was regarded as the boundary between Greater Iran and Turan.

In classical antiquity, the river was known as the Oxus in Latin and Oxos in Greek – a clear derivative of Vakhsh, the name of the largest tributary of the river. In Sanskrit, the river is also referred to as Vakshu. The Avestan texts too refer to the river as Yakhsha/Vakhsha (and Yakhsha Arta ("upper Yakhsha") referring to the Jaxartes/Syr Darya twin river to Amu Darya). The name Amu is said to have come from the medieval city of Amul, (later, Chahar Joy/Charjunow, and now known as Türkmenabat), in modern Turkmenistan, with Darya being the Persian word for "river".

The Amu Darya watershed

Name origin: Named for the city of Amul (now Turkmenabat)

Countries: Afghanistan, Tajikistan, Turkmenistan, Uzbekistan

Region: Central Asia

Tributaries - left Panj River - right Vakhsh River, Surkhan Darya, Sherabad River, Zeravshan River.

Primary source Pamir river/Panj river

- location Lake Zorkul, Pamir Mountains, Tajikistan
- elevation 4,130 m (13,550 ft)
- coordinates 37°27'04"N, 73°34'21"E

Secondary source Kyzyl-Suu/Vakhsh river

- location Alay Valley, Pamir Mountains, Kyrgyzstan
- elevation 4,525 m (14,846 ft)
- coordinates 39°13'27"N, 72°55'26"E

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Source confluence Kerki

- elevation 326 m (1,070 ft)
- coordinates 37°06'35"N, 68°18'44"E

Mouth Aral sea

- location Amu Darya Delta, Uzbekistan
- elevation 28 m (92 ft)
- coordinates 44°06'30"N, 59°40'52"E

Length 2,620 km (1,628 mi)

Basin 534,739 km^2 (206,464 sq m)

Discharge

- average 2,525 m^3/s (89,170 cu ft/s)
- max 5,900 m^3/s (208,357 cu ft/s)
- min 420 m^3/s (14,832 cu ft/s)

Description

The river's total length is 2,400 kilometres (1,500 mi) and its drainage basin totals 534,739 square kilometres (206,464 sq m) in area, providing a mean discharge of around 97.4 cubic kilometres (23.4 cu m) of water per year. The river is navigable for over 1,450 kilometres (900 m). All of the water comes from the high mountains in the south where annual precipitation can be over 1,000 mm (39 in). Even before large-scale irrigation began, high summer evaporation meant that not all of this discharge reached the Aral Sea - though there is some evidence the large Pamir glaciers provided enough melt water for the Aral to overflow during the 13th and 14th centuries.

Since the end of the 19th century there have been four different claimants as the true source of the Oxus:

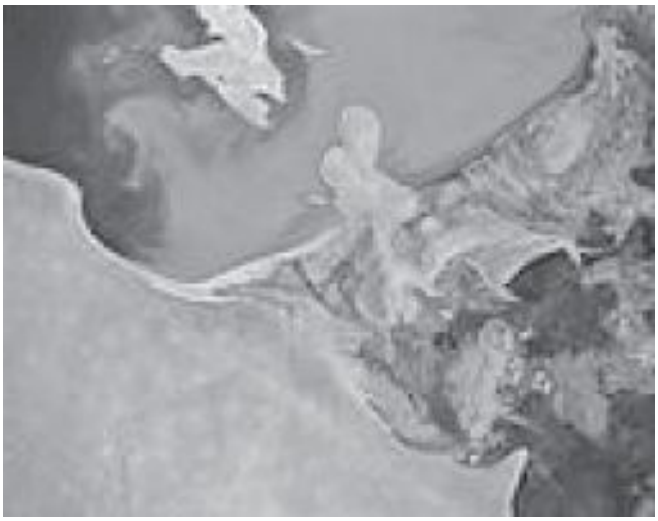
1. The Pamir river, which emerges from Lake Zorkul (once also known as Lake Victoria) in the Pamir mountains (ancient Mount Imeon), and flows west to Qila-e Panja, where it joins the Wakhan river to form the Panj river.
2. The Sarhad or Little Pamir river flowing down the Little Pamir in the High Wakhan
3. Lake Chamaktin, which discharges to the east into the Aksu river, which in turn becomes the Murghab and then Bartang rivers, and which eventually joins the Panj Oxus branch 350 kilometres downstream at Roshan Vomar in Tajikistan.

4. An ice cave at the end of the Wakhjir valley, in the Wakhan Corridor, in the Pamir mountains.

A glacier turns into the Wakhan river and joins the Pamir river about 50 kilometres (31 mi) downstream. Bill Colegrave's expedition to Wakhan in 2007 found that both claimants 2 and 3 had the same source, the Chelab stream, which bifurcates on the watershed of the Little Pamir, half flowing into Lake Chamaktin and half into the parent stream of the Little Pamir/ Sarhad river. Therefore, the Chelab stream may be properly considered the true source or parent stream of the Oxus. The Panj river forms the border of Afghanistan and Tajikistan. It flows west to Ishkashim where it turns north and then north-west through the Pamirs passing the Tajikistan-Afghanistan Friendship bridge. It subsequently forms the border of Afghanistan and Uzbekistan for about 200 kilometres (120 mi), passing Termez and the Afghanistan-Uzbekistan Friendship bridge. It delineates the border of Afghanistan and Turkmenistan for another 100 kilometres (62 m) before it flows into Turkmenistan at Atamurat. As the Amu Darya, it flows across Turkmenistan south to north, passing Türkmenabat, and forms the border of Turkmenistan and Uzbekistan from Halkabat. It is then split by the Tuyamuyun hydro complex into many waterways that used to form the river delta joining the Aral Sea, passing Urgench, Dasoguz and other cities, but it does not reach what is left of the sea any more and is lost in the desert. Use of water from the Amu Darya for irrigation has been a major contributing factor to the shrinking of the Aral Sea since the late 1950s. Historical records state that in different periods, the river flowed into the Aral Sea (from the south), into the Caspian Sea (from the east), or both, similar to the Syr Darya (Jaxartes, in Ancient Greek)

Looking at the Amu Darya from Turkmenistan

Map of the Amu Darya watershed



Amu Darya delta from space

Watershed

About 1,385,045 square kilometres (534,769 sq m) of land is drained by the Amu Darya into the Aral Sea endorheic basin. This includes most of Tajikistan, the southwest corner of Kyrgyzstan, the northeast corner of Afghanistan, a long narrow portion of eastern Turkmenistan and about half of Uzbekistan. Part of the Amu Darya's drainage divide in Tajikistan forms that country's border with China (in the east). About 61% of the drainage lies within Tajikistan, Uzbekistan and Turkmenistan, while 39% is in Afghanistan. Of the area drained by the Amu Darya, only about 200,000 square kilometres (77,000 sq m) actively contribute water to the river. This is because many of the river's major tributaries (especially the Zeravshan river) have been diverte, and much of the river's drainage is dominated by outlying desert and steppe.

The abundant water flowing in the Amu Darya comes almost entirely from glaciers in the Pamir mountains and Tian Shan,which, standing above the surrounding arid plain, collect atmospheric moisture which otherwise would probably

escape somewhere else. Without its mountain water sources, the Amu Darya would not contain any water-would not exist-because it rarely rains in the lowlands through which most of the river flows. Throughout most of the steppe, the annual rainfall is about 300 millimetres (12 in).

History

The ancient Greeks called the Amu Darya the Oxos. In ancient times, the river was regarded as the boundary between Greater Iran and Turan. The river's drainage lies in the area between the former empires of Genghis Khan and Alexander, although they occurred at very different times.

It is believed that the Amu Darya's course across the Kara-Kum desert has gone through several major shifts in the past few thousand years. Much of the time – most recently from the 13th century to the late 16th century – the Amu Darya emptied into both the Aral and the Caspian seas, reaching the latter via a large distributary called the Uzboy river. The Uzboy splits off from the main channel just south of the Amudarya Delta. Sometimes the flow through the two branches was more or less equal but often most of the Amu Darya's flow split to the west and flowed into the Caspian.

People began to settle along the lower Amu Darya and the Uzboy in the 5th century establishing a thriving chain of agricultural lands, towns and cities. In the 18th century, the river again turned north, flowing into the Aral Sea, a path it has taken since. Less and less water flowed down the Uzboy. When Russian explorer, Bekovich-Cherkasski surveyed the region in 1720, Amu Darya did not flow into the Caspian Sea anymore.

The first Englishman to reach the Oxus, William Moorcroft, visited about 1824.Another to reach the region in the Great Game period, a naval officer called John Wood, came with an expedition to find the source of the river in 1839. He found modern-day Lake Zorkul, called it Lake Victoria, and proclaimed he had found the source.Then, the French explorer and geographer Thibaut Viné collected a lot of information about this area during five expeditions between 1856 and 1862.

The question of finding a route between the Oxus valley and India has been of concern historically. A direct route crosses extremely high mountain passes in the Hindu Kush. Some in Britain feared that the Russian Empire, which at that time ruled and wielded great influence over much of the Oxus area, would overcome these obstacles and find a suitable route through which to invade British India – but this never came to pass.

The Soviet Union became the ruling power in the early 1920s and expelled Mohammed Alim Khan. It later put down the Basmachi movement and killed Ibrahim Bek. A large refugee population of Central Asians, including Turkmen, Tajiks and Uzbeks, fled to northern Afghanistan.In the 1960s and 1970s, the Soviet Union started using the Amu Darya and the Syr Darya to irrigate extensive cotton fields in the Central Asian plain. Before this time, water from the rivers was already being used for agriculture but not on this massive scale. The Qaraqum Canal, Karshi Canal, and Bukhara Canal were among the larger of the irrigation diversions built. In the 1970s, in the course of the Soviet war in Afghanistan, Soviet forces used the valley to invade Afghanistan through Termez.The Soviet Union fell in the 1990s and Central Asia split up into the many smaller countries that lie within or partially within the Amu Darya basin.The Main Turkmen Canal, a proposed project that would have diverted water along the dry Uzboy river bed into central Turkmenistan, was never built.

During the Soviet era, a resource-sharing system was instated in which Kyrgyzstan and Tajikistan shared water originating from the Amu Darya and Syr Darya rivers with Kazakhstan, Turkmenistan and Uzbekistan in summer. In return, Kyrgyzstan and Tajikistan received Kazakh, Turkmen and Uzbek coal, gas and electricity in winter. After the fall of the Soviet Union, this system disintegrated and the Central Asian nations have failed to reinstate it. Inadequate infrastructure, poor water-management and outdated irrigation methods all exacerbate the issue.

Siberian tiger re-population project

The AmuDarya's delta was suggested as a potential site for the Siberian Tiger Re-population project. A feasibility study was initiated to investigate if the area is suitable and if such an initiative would receive support from relevant decision makers. A viable tiger population of about 100 animals would require at least 5,000 km^2 (1,900 sq m) of large tracts of contiguous habitat with rich prey populations. Such habitat is not available at this stage and cannot be provided in the short term. The proposed region is therefore unsuitable for the reintroduction, at least at this stage.