

# INTERPRETATION OF WATER MANAGEMENT OF AMIR TEMUR IN THE MODERN CONTEXT (HISTORY AND MODERNITY)

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## Abstract

Nowadays Central Asian countries face challenges with utilization scarce water resources on their agenda due to huge geopolitical economic changes after dissolution Soviet Union.

For better understanding and for providing optimal solution of contemporary water related problems, which became most debated issue among riparian's countries in Central Asia we will attempt to shed the historical light on overwhelming economic social legal diplomatic cultural aspects of water governance in the period of Amir Timur. The scope of our analytical framework focus on screening a feasible setting of water policy issue which is suitable to tackle current hardships related to usage of water control infrastructure for energy and irrigation purposes.

Considering hydro political complex nature of water governance after collapse Soviet union we will seek workable formula from the past which in turn might allow to develop capacity to build trust and unity in addressing their water and energy dilemmas for mutual benefits of sovereign countries in fragile Central Asia

Our attempts address on filling a gap in the body of literature on water governance history in general through providing scientific community with empirical findings concerning trans boundary water governance in the period of great Tamerlane empire (medieval ages/ over the period from 1370- 1405) .

The study of water governance in the Amir Timur empire will be based on the concept information through application of historical approach and overall case study by applying systematical literature review methods, historical case study, by applying theory of common pools theories, Study.

Particularly, this article considers state water management and governance in Central Asia in the era of Amir Timur. The author analyzes role and importance of water management in Central Asia in history and today. The author analyzes the Water Authority of Amir Timur. Amir Timur's empire consisted of 27 countries. The single hydrological system and management was established in the state. Water consumption based on the laws of that times and equitably distributed water resources in the empire. This article examines the level of development of water management in the period of Amir Timur and analyzes the practical importance of the irrigation of that time in the course of solution of modern contemporary issues.

**Keywords:** water management, ecology, Amir Timur, empire, state, water resources, Central Asia, the Middle Ages, Samarkand, Murghab, Caucasus.

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## Introduction

At the end of XX century due to the disintegration of Soviet country there were tremendous changes in the complex geopolitical and geo-economic situation in Central Asia which in 1991 led to the establishment of sovereign countries such as Kyrgyzstan, Tajikistan Turkmenistan Kazakhstan and Uzbekistan(Sorg, Mosello et al. 2013). Namely, recently their uniquely distributed natural resources common streams pool of the Aral sea with its large rivers (the Amudarya and the Syrdarya) with 18 trib governed once within single socio-economic political system become overnight trans boundary/cross border resources (Ziganshina 2009) by nature through shifting from administrative boundaries to national boundaries (Wegerich 2008). Water is crucial for socioeconomic development of Central Asia, where agriculture is impossible without irrigation particularly in arid zone, because the demand for water is very much different in CA than other locations in the world. These countries have different demand for water in the region which feeds more than 63 million population (World bank, 2013). About 90 % of water is generated in Tan Shan (the roof of World) mountains of Tajikistan Kyrgyzstan and Afghanistan (upstream countries) and the main consumers are Kazakhstan, Uzbekistan, Turkmenistan (downstream countries)(Rakhmatullaev, Huneau et al. 2012). Since these two countries are located in high mountains, they do not have much agricultural fields than the downstream countries. Every republic has its own interest on water resources in CA, i.e. downstream countries for agricultural production which is main income for their economy and Tajikistan and Kyrgyzstan for energy production to supply its population with heating from HP Plants in winter months. Therefore, demand for water in main rivers of Amudarya and Syrdarya are different seasonally.

Furthermore, the soviet time policy of enormous expansion of agriculture water mismanagement led into ecological manmade catastrophe-the shrinking of Aral Sea (O'Hara 2000, McKinney 2003), however nowadays the competing interests over usage of scare water resources for irrigation and hydropower posed osify tention over basic commodity((Zakhirova 2013). According The efficient use of hydropower resources arose in the agenda of Central Asia states and shortly became one of the most pressing issues to be addressed in order to ensure a peaceful and progressive development of Central Asian nations.

Due to the majority population income of Tajikistan, Turkmenistan and Uzbekistan are directly dependent on irrigated agriculture and 90 percent of the region's energy needs are due to hydropower, as a result these countries face challenges of limited water resources, increasing demand for water due to population growth and economic development, as well as competition and an increased risk of water conflicts between different water users. Like many regions around the world, Central Asia, looking for ways to best use of limited water resources, and integrated water resources management.

Historically, the Aral Sea basin has been “a home of highly developed cultures as well as extensive and sophisticated water exploitation over millenia”(Varis and Kummu 2012) because of their importance for the economic development of the region's population (Abdullaev and Rakhmatullaev 2013).

The problems and controversies/contradiction over increasingly pressure on scared water resource caused by economic development with population growth, climate change impact associated with severe extreme events (droughts severe cold winter and hot summer) draw a considerable attention of international organizations, external donors actors as well as water

governance scholars over last two decades. A focus on CA water management study are ranging from hydro psychology water diplomacy/hydro diplomacy hydro hegemony hydro policy international relation by applying interdisciplinary approach, however historical comparative assessment of water governance of CA are mostly neglected. From this historical perspective it is crucial to analyses the past roots of today's obstacle by following up 'the tracks of Tamerlane' empire lessons would be relevant(Burghart 2002).

Thus Central Asia countries is located in arid countries and irrigation operated by diversion lifting of cross border rivers mostly fed by mountains snow melt; the resolution of utmost important problems of studying water management of the period of Amir Temur is important for the study and have practical significance on several tasks at the current period.

During the reign of Amir Temur was a created the unified system of water management. It was spread not only in Central Asia and the Caucasus, but all over his empire. The works about him restoration works of old irrigation system, creation of new waterways and used methods are gives us positive results in general.

A lot of works which connected with the problems of agrarian relations at the period of Amir Temur's reign were studied. During the Soviet period the history of agriculture and irrigation has been partially explored by some scholars, such as V. V. Bartold(Bartold 1900, Bartold 1902, Bartold 1970, Bartold 1897), academician Yahya Gulyamov(Gulyamov 1957), A. M. Belenitsky (Belenitsky 1941), M.A. Abduraimov (Adbduraimov 1960) I. P. Petrushevsky(Petrushevskij 1960), R.G. Mukminova (Mukminova 1966)and etc.

Scholar N. Makhmudov(Makhmudov 1965, Makhmudov 1965, Makhmudov 1967) from Tajikistan in his research work "The History of agrarian relations in Central Asia, in the period of Amir Temur and his dynasty" investigate the problem of agrarian relations in the Soviet methodology, but the water issues were not specifically studied in this work.

Since gaining independence the study of research area has been fragmented and partly Explored, for instance the history of agriculture and agrarian relations has been little studied in the books "History of Amir Timur and Ulugbek"(1996) and "Amir Temur in the world history"(1996). Today, the hot debated issues of water resources management and protection of the environment has become a global problem in the region. A lot of efforts in the management of water resources are aimed to optimize the use of water and to minimize the environmental impact of water use on the environment. Central Asian states are collectively developing practical approaches to sustainable water resources management and the implementation of appropriate measures(GWP 2014).

## **Materials and Methods**

Historically, since the ancient times, man-made irrigation system played a significant role in the development of Central Asia. As a major branch of the economy was considered to agriculture since ancient times, which mostly was based on artificial irrigation. These specific features required from the government and rulers to set and provide a special water policy. At different stages of

history, we can observe the rapid development and decline in the economy. Consequently, that demonstrate and explained the reasons of failure and benefits of adopted water policy..

As a well-recognized expert-irrigator Amir Temur around Samarkand, Maverannakhr and other territories of his empire founded new irrigation systems. As a result of ongoing irrigation projects the majority of the towns and villages were formed during the reign of Amir Temur(Mukhammadjanov 1994). Additionally, the large irrigation systems were carried out in the main agricultural regions in the same valley of the Murghab.

In 1381 Temur ordered each of the generals and nobles to bring/dig out from the Murghab channel and laid the foundation of farming here. Thus, historian Bartold V.V. described this event as:"Hafiz Abru give the names of twenty channels: among them are the names of nine generals and dignitaries known in the history of Amir Temur; one channel was named after women: Kutlug Turkan Agha, who died in 1383 year. "(Bartold 1970).

Such irrigation works were carried out in the basin of Kabul too. Historian Giyassadin Ali evident that Timur on the way to Samarkand returning from the Indian military campaign (20th March, 1399) "His Majesty (Amir Temur) deigned to stay in Kabul for night at the mouth of the carriage the Joo-e-Nau, which is called Badam. This Badam is the Grand Canal/carriage, which was built thanks to the Khan's efforts."(Giyassadin 1958). Also new channels were digged out in the Caucasus region.

Another artificial hydrological structure was inherited from the Timur time is wellknown channel called 'the Nakhri Barlos' by length of about 70 km that currently located on the territory of Azerbaijan.. According to some findings documented, that once even the ships were sailed on this channel. Around these structures appeared huge agricultural areas, settlements and villages. In all major cities and towns built the sophisticated irrigation arteries . With an example of Samarkand region and its suburbs we can analyze the irrigation system of the Timurids .

The main important river for irrigation of Samarkand region as well as the city itself was the river Zarafshan which up to now has remained as an essential source of vital hydro resources.

Three main ditches were originated from the Varagser (a head dam):

1 Dargom

2 Abbas (later was named as the Yanghi ditch, and the Joo-e Nav)

3. Karaunnas (later he named the Kazan ditch "áryk") fed an area to the south from Samarkand. The largest of these ditches was Dargam. The length of the entire space from Varagsera to extremes Dargama constituted 10 farsahs. In this way Samarkand received water from the Dargama. The northern and eastern suburbs of the city were irrigated by the key ditches, the main important was Siab that Bobur call the Obi Rahmat The Abbas and Karaunnas ditches flow through somewhat south ditch Dargam and both were able to terminate at the village Misr built by Temur(Makhmudov 1966). Subsequently, the first one was called - Yangi ditch, or the Persian name the Jui Nau, the second is Kazan-ditch(Bartold 1914).

In Samarkand region after carrying out an extensive irrigation works was settled/formed new area called Angor. By significant in size Zaravshan ditches Fai and Pay flow through the north from Katta Kurgan (a district of Samarkand region) (Makhmudov 1966) and Bulungur irrigated areas of Aliabad. Both ditches existed till the era of Timur and the Timurids.

One of the most significant in the Middle Ages was considered the Iski-Angarskij channel.

Regarding to S.K.Kabanov's archaeological observations on the road of the Iski Angarskij channel the irrigation roads are divided into three parts:

- 1 An area of the Zarafshan Valley or the upper part of valley reached 45 km by the length from the head structure to Kesken Djar;
- 2 An mountain part or average area was 75 km by the length from Kesken Jar to Kara Tepe
- 3 And the area of the valley Kashkadarya is the length of about 60 km. the at Dargams steppe has been irrigated since the ancient times. The mountain portion of the channel from Kesken Jar did not exist before the time of Timur and was dugged out under his time(Kabanov 1959).

From findings of archaeological excavations, we can observe that in the sheds hot and cold water was circulated/run through ceramic pipes hot and cold water. This means that water management reached its peak in his empire.

During the Timur time as well as old times behind the fortress walls were constructed water protection channels for security purpose. Many sources provide information about these channels.

In the yard there were Mirabs who worked as water administrator (Uljaeva 2012). Mirabbashi were responsible for all water issues, because they were experts in irrigation and they distributed and allocated water by making decision about at what time, how much water are needed for sowing, as pouring as much as effectively it could be utilized in the territories of all the issues they worked. They developed methods of irrigation for individual territories by considering they surface the features and different crops. Like all masters and scholars of his time were gathered by Amir Timur in Samarkand and mirabs as well. And in Samarkand all irrigation and innovation skills were integrated, he draw attention of skillful irrigators from different regions of the empire .

From found materials it is concluded that during the Amir Timur there were specialized military irrigators for conquering fortresses. They usually sprinkled water on the clay walls and stormed afterwards. At the storming of the fortress Turshiz a troops Amir Timur saw a huge lake around the city walls. He gave orders to his irrigators to study a volume of water. As a result, the whole army dug a few ditches and wastes water. When it dried out, these places have been conquered successfully.

When Army of Amir Timur were not engaged in war they led structure of buildings, cities, and irrigation systems. Even the most seniors of officials Army were also actively involved in these processes. The Caucasus, the Murghab, in Khorasan and other fields irrigation systems were made with the forces and support of the army of Amir Timur.

During the reign of Amir Timur in the East for the first time in the gardening art used fountains. This was a new irrigation system in Central Asia. According the historical sources it is reminded about twelve gardens of Amir Timur created around Samarkand: Bagi-Dilkusho (garden, captivating hearts), Bagi Shimal (north garden)(Muminov 1993), Bagi-Buldu (garden of contentment), Bagi Nakshi Jehan (pattern of the world), Bugs-Chinar (plane-tree garden ), Bugs-

Bihisht (garden of Eden), Bagi Zogon (garden ravens), Bagi Balyand (High garden), Bagi Davlatobod (the seat of government), Garden Takht Karachi, Bugs Zhahonnoma (garden showing the world), and others (Uljaeva 2005). High-grade plants, flowers and trees were brought for these gardens from different countries. These were fabulous gardens of paradise. After transformation and integration was much changed pattern of flora and fauna in Central Asia.

Thus, in the Amir Temur empire time all sciences significantly developed all sciences, botany, biology and zoology, too. In order to maintain and took care of them it was needed to develop a solid body of knowledge. Also investigated new varieties of fruit, berries and flowers.

There is one story. So these gardens were large and close to each other. A shepherd lost his horse and was unable to find. After 6 months, he happened to see his adorable horse, which luckily was alive and well walking around the huge territories.

In addition, Amir Temur in Samarkand built 12 villages (Mukhammadjanov 1994). He called them the most major cities in the East: Misr, Baghdad, Iraq, Shom, Damashk, Shiroz, Sulton and others. They settled residents and conducted irrigation systems.

In Central Asia, depending on local conditions it was used the water intake systems of various types.

On the mountain rivers and small canyons with steep slopes and strong streams it was constructed the water taken ..consisting of large pieces of rock

On rivers with moderate stream it were built the fascine dams over, which is based on tree trunks and branches, sealed with clay mortar. On such rivers as the Amu Darya, there were intakes with numerous branch ducts. In some cases, large dams were built, for instances For example, the length of Chupanata dam was about 3 km, the base width - 4 m, height - 1.5 m.

The most common water intaken was Chygir, which was mounted on the rivers and canals. Usually chygir raised water to a he actuated hight of 4 m and above. For lifting water from deep ditches used draught chygir, where the thrust used horses, camels and donkeys.

By irrigation rulers of states attracted almost the entire population. Villages and settlements every year had sent a number of people for the construction of new canals and clearing ditches. Farmers and performed other duties they were required to supply free building material for dams. At any time, thousands of loaded carts were sent from villages to the place of irrigation works by delivering tens of kilometers brushwood, reeds, stone.

Despite the hard work in the field of irrigation, there was a shortage of water in some areas.

For Central Asia before and after of the height of summer or Saratan (chilla, 40 days most suitable hot time for irrigation and cultivation, starts from 25 June to 5 August), the water was most necessary for different localities and areas for irrigation.

There is a little information about the sources of the water distribution system for irrigation in the era of Timur and his successors. S.A. Azimdzhanova published document 989 AH (1581), which characterizes the rules of use of water for irrigation residents of eight villages of the Shavdar region of Samarkand province.

This document indicates the time water usage among different villages. According to the historical records it is documented that the water resources were distributed and allocated as well as utilised spatially among different settlements and temporally based on accepted rules. Namely, Azimdzhanova paid special attention on evidence where it was indicated a precise schedule of water allocation and usage between local actors, such as water resources could be utilized by the population of Diza and Yezd over 9 days, by the Djubarkat and Keravi settlements over 7 days, by the Oshii over 3 days and people of the Aziat over 3 days respectively (Azimdzhanova 1957).

## **Results and Discussion**

Administration of Amir Temur employed the legal method in the management of water resources in the region. These methods were based on fairness and accuracy. It was a single management system with the use of water resources in administration. Now we can see a similar organization of water resources in Central Asia - Interstate Commission of Water Coordination (ICWC).

Despite the establishment of administrative divisions in Central Asia of water use, these institutions do not work here, and, therefore, to take them into account is not required. In our view, Central Asian Republic policy should create another organization for the settlement of water resources in Central Asia. According to transparency it matches as during Amir Temur's reign.

During Amir Temur the local experts worked irrigators. As in his empire in each republic should work branches of these institutions. To address environmental issues the same time, Amir Temur deserves to us as an example.

Politicians need to work with the masses and influence people's world outlook for purification and water savings. People of Middle Ages always were seriously about conserving water; it was considered a sacred duty. They never throw water on the remains of dirty things. In such cases, these people were punished severely. In the Middle Ages and sewer districts they drank water directly from rivers and irrigation ditches, sometimes brought and stored in special places. Such places in Uzbekistan in the southern areas preserved. They called "sardoba."

First sewage also were built in the empire of Amir Temur.

It should be noted, to support the irrigation systems and overcoming pollution water, respecting the environment in the region it is needed to maintain separate clear water policy. This issue must be raised to the political level. It is a necessity and requirement of globalization. It should involve external economic and irrigation institutions of Central Asian countries, coordinators, experts, environmentalists, leading legal institutions, financial institutions and others.

Irrigation networks and water heritage of the peoples of Central Asia and each republic is fully was the equal rights of water use. Amir Temur parted the waters to the territories and population. Irrigators in different countries around the grounds and the number of people should alternate water use.

In addition, not only in international level, there are improper distribution of water resources and in the field, too, must clearly address this issue. One more take another and it destroys stability in the agricultural sector.

We have a huge problem of constructing water dams Rogun in Tajikistan. This project was made during Soviet Union for all the former Soviet republics. Now the system is not, and should not be too Rogun. After completion of the construction of Rogun collects a huge water within a few

years. If Rogun were built in many areas there water shortage for sowing. First of all, is suffering from Uzbekistan. We can raise for discussion the question of Rogun, it may not are we? The history of water management Amir Temur is the shining example for a fair solution to the problem.

## **Conclusion**

From the reign of Amir Temur in the history of water management began the new stage of development. As the new system of government he updated water management.

To the empire of Amir Temur joined 27 countries. We could say the water management in all areas empire was conducted by public policy. In the empire of a unified system of irrigation have been actuated for the Caucasus and Central Asia, as a whole empire, too.

When Amir Temur came to the throne he had to do everything again. During the invasion of the Mongols in Central Asia destroyed the main irrigation systems were destroyed large dams and canals.

During the reign of Amir Temur water management can be divided into two phases to determine:

1 Irrigation systems that were destroyed under the Mongols, but previously existing restored.

2 During Temur and his receivers were erected on a large scale new irrigation facilities.

As there were separation between the urban groups and groups of villages. Some lords buy whole row of shops in the city and arrange their caravans for international trade. As a result of establishing new rules, began the intensive development of commodity-money relations since that time.

Upon the above mentioned information we can conclude that from the earliest times in Central Asia it have been developed scientific approaches to irrigation. This branch was formed as a science, has evolved along with agriculture and has deep roots of existence. During Amir Temur water relations have played a major role in the development of the empire. Strictly organized deep water relations showed their results in the economy were formed new irrigation systems. Irrigators have accumulated a colossal experience for improving the economy.

Development and economic growth of the empire have been hung from a properly installed water management and then, well-organized agriculture. During the Empire's main income obtained from agriculture.

New areas as Ohangaran, Shoxruxiya, Boylakon and others were built at this time( Uljaeva 2012). The villages and the acreages were multiplied (Uljaeva 2011). There were quantitative and qualitative changes in the flora and fauna were formed the roots of ecology, zoology, botany, biology, too.

In the foreign trade the essential commodities have become agricultural products, as well as fresh and dried fruits. In this period a great Silk Road played an essential role (Uljaeva 2013). The huge territory led to the integration and enrichment of the agricultural product. Samarkand was the center of the new changes.

The huge experience and knowledge of water management in Central Asia, that was obtained by our ancestors has practical importance in the settlement and development of modern water relations.

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