



Journal Website:
<https://theusajournals.com/index.php/ijhps>

Copyright: Original content from this work may be used under the terms of the creative commons attributes 4.0 licence.

STUDIES ON THE DEVELOPMENT OF IRRIGATION FACILITIES IN KHOREZM OASIS

Submission Date: May 04, 2024, Accepted Date: May 09, 2024,

Published Date: May 14, 2024

Crossref doi: <https://doi.org/10.37547/ijhps/Volume04Issue05-03>

Sheripov Umarbek Atajanovich

Candidate of historical sciences, docent Urganch State Pedagogical Institute vice-rector for academic affairs, Uzbekistan

ABSTRACT

It should be noted that a number of studies have been conducted on the subject until today. It is appropriate to recognize that this situation has been studied more deeply since the time of the Russian Empire. Of course, the colonial government did some things towards its goals. From this point of view, it is necessary to analyze the historiography of the subject in a broader way from this period.

KEYWORDS

The Russian Empire, the colonial government, the historiography.

INTRODUCTION

During the study of research on the development of irrigation facilities in Khorezm oasis, a chronological approach was taken, and the obtained data were comparatively analyzed.

Results. Major General A.I. Glukhovsky, with his expedition, continued to study the ancient irrigation networks of Khorezm oasis and its surroundings during 1879-1882. As a result, the project “A continuous Amu Darya-Caspian-Volga waterway from the border of Afghanistan to St. Petersburg and the Baltic Sea” was created based on the measurements made in the area

of 58,000 km² of ancient agricultural fields covered by 3.7 mln ha sand dunes[1].

Although the scientific and technical importance of this proposal was recognized, it was opposed by supporters of the construction of the Caspian Railway, which began in November 1881. The project was awarded the Gold Medal at the World Exhibition held in Chicago, the USA in 1893. However, Based on the conclusion of the engineer of the Russian Railways Department, P.M. Lessar, it was sent to the archive [2].

After some time, in 1898, the German professor Johann Walter, who conducted geological research in the Balkhan Bay of the Caspian Sea, noted that he could not find the Amu Darya turbidity even at a depth of 35 m. As a result, he said: “The ancient river never flowed to the west – to the Caspian, it always flowed to the north - to the Aral Sea. He concluded that the Uzbay riverbed was formed as a result of rain and wind[3].

In 1899-1902, engineer V. Girshfeld created a map of the delta section based on the study of the hydrogeographic system of the Amu Darya for the next 50 years. As a result, it was concluded that the number of some tributaries and lakes in the Amu Darya delta decreased due to the relatively low level of the Aral Sea.

In 1899, the Turkestan branch of the Russian Geographical Society assigned the researcher L.S. Berg the task of exploring the Aral Sea. The research was completed by 1906, and in 1908, his data was published as a monograph on the theme “Аральское море. Опыт физико-географической монографии (The Aral Sea. Experience of Physical-geographical Monograph)”. By this time, the orientalist V.V. Bartold's work entitled “Сведения об Аральском море и низовьях Амударьи с древнейших времен до XVII века (Information about the Aral Sea and the Lower Reaches of the Amu Darya from Ancient Times to the 17th Century)” (1902) was intended to be published as an appendix to “Scientific results of the Aral Sea expedition”. However, an orientalist has published it as an independent monograph.

It became known that at the beginning of the 20th century, 5 special groups of hydrotechnical engineers conducted research in the Amu Darya basin, and the data of some of them were published. In particular, S.V. Kondrashev's book “Орошаемое хозяйство и водопользование в Хивинском оазисе (Irrigated

farming and water use in the Khiva oasis)”, A. Tkhorzhevsky's book “Материалы по гидрометрии в бассейне реки Амударья (Materials on hydrometry in the Amu Darya River basin)” were published. Climate scientist V.V. Cingerling was the ruler one of the research groups and in 1927, he published the 808-page book “Irrigation on the Amu Darya”. The author admits that the economic efficiency of the research carried out for 5 years was high, the first of the 3-part book was published in 1924 and quickly spread. It was a big deal that Iskandar Beglov placed the electronic version of this unique publication on the Internet.

Analysis and discussion. In the 30s of the last century, as a result of field investigations conducted by I.P. Gerasimovich, B.A. Fedorovich, A.S. Kes, S.P. Tolstov, it was confirmed that Uzbay was not the main riverbed of the Amu Darya.

In 1934, on the assignment of the Central Asian Institute of Water Management and Hydrotechnical Structures, the archaeological research of traces of irrigation structures in Khorezm was conducted by M.V. Voevodsky started. His main focus is on studying the history of irrigation dynamics of the lands between Davdan and Daryalik in the ancient period before the Mongol invasion. M.V. Voevodsky, who studied the ruins of Zamakhshar Castle and its surroundings, while returning by plane, drew a map of the remains of irrigation networks near the Chirmanyap canal, which brought water to these lands, and wrote a special manual on the methods of archaeological research in them[4].

Head of Khorezm archaeological-ethnographic expedition S.P. Tolstov (1907-1976)[5] and his comrade B.V. Andrianov (1919-1993) [6], the first Uzbek archaeologist Y.Gh. Ghulamov (1908-1977)[7] made significant contributions to study the history of irrigation works in Khorezm. Academician S.P. Tolstov,

who deeply studied the past of Khorezm oasis from the point of view of archeology and ethnography. also paid special attention to the study of irrigation facilities and the history of irrigation of the lands around the oasis. For this reason, he included in almost all his books and articles the details of his many years of research on the process of identifying the traces of the fields that were used for agriculture and the arnas[8] and ditches that were dug to irrigate them.

S.P. Tolstov first came to Khorezm in 1929 and studied the ruins of Kohna (old) Urganch. A little later, in 1932 and 1934, as the leader of the Central Asian ethnographic expedition, he got acquainted with information about the past of the fortresses and fortifications in Khiva, Turtkul and Chimbay districts. As a result, the young researcher is fully convinced that Khorezm has a special place not only in the country, but also in the historical and cultural relations of the northern part of Eurasia. Later S.P. Tolstov introduced the scientific expressions “Khorazmology” and “Khorazm – Central Asian Egypt” into science.

A large part of the scientific research carried out by S.P. Tolstov was connected with the four-year research work of the archeological expedition of the Institute of Material Culture of the former USSR Academy of Sciences. Its continuation was closely connected with the activity of the Khorezm archaeological-ethnographic expedition, which was established in 1937 and had been operating for more than 40 years [9]. Based on the collected information, S.P. Tolstov defended his doctoral thesis in 1942, wrote a number of monographs and scientific articles.

B.V. Andrianov, a researcher of the Institute of Ethnography named after N.N. Miklukho-Maclay, covered the results of the study of the remains of ancient irrigation structures from the Bronze Age in the Aral Sea region area in special monographs and articles

and summarized them and received the degree of doctor of historical sciences. Although the scientist studied the remains of ancient irrigation structures on an area of more than 5 million hectares in the Syrdarya basin, he also made a great contribution to clarifying the history of the early irrigation networks in the lower reaches of Amu Darya [10].

Academician Y.Gh. Ghulamov's contribution to the study of the history of irrigation works in Khorezm is immeasurable[11]. As a result of many years of tireless research, he defended his doctoral dissertation on the theme “The history of the irrigation of Khorezm”. Later, he completed his manuscript and published it in the form of a monograph in Russian and Uzbek languages [12]. The scientist's researches in the field of archeology and his efforts to scientifically analyze the findings – his works covering the period from the middle of the second millennium BC, when artificial irrigation began, to the 50s of the 20th century, made it possible to illuminate the history of the Motherland in a convincing manner.

Y.Gh. Ghulamov managed to clarify the history of the irrigation of the oasis on an objective and comprehensive basis based on a careful examination of the monuments in the Lower Amu Darya basin, the study of written sources and ethnographic data and their comparison in connection with the political and economic development of Khorezm. According to the scientist, the first agricultural works in Khorezm were carried out on the fertile soil that was created during the flood of the Amu Darya and settled near the banks. For this reason, farmers were forced to move along the riverbeds every year in search of fertile land.

In 1960, the monograph “The Lower Amu Darya, Sarikamish and Uzbay” by the members of Khorezm archaeological-ethnographic expedition was published[13]. It was said in it that the Uzbay flowed

continuously during the Neolithic (New Stone) period, but it became shallow during the Bronze Age, and then flowed only occasionally. In the Iron Age (1st century BC), a system of large and small lakes (Yakhsan, Togolak, Topiatan, etc.) appeared in the lands where the river bed crossed. In the Middle Ages, when the level of Lake Sarikamish rose to 52-53 meters, Uzbay, which received water from it, began to flow again towards the Caspian[14]. It is noted that at that time, the level of the lake was 11,800 km², the area was 150 km from west to east and 100 km from north to south and 75 meters deep[15].

The researches of Abdulla Satlikov are noteworthy in illuminating the history of irrigation and land reclamation works in Khorezm. He wrote a number of pamphlets and articles dedicated to finding a solution to this problem in the following years, in addition to defending his candidate's thesis based on the study of the history of irrigation works carried out in the oasis in 1920-1941. He tried to objectively analyze historical events in them[16].

Atamurod Koshjanov, who studied the history of agrarian relations in Khiva Khanate in the late 19th and early 20th centuries, also paid attention to water and irrigation problems. The researcher notes that the situation of the poor and landless peasants in water distribution was deplorable due to the injustice prevailing in the khanate[17].

Professor Ktaybek Saribaev studied the irrigation history of Karakalpakstan for 40 years. As a result of his research, valuable information was collected on the formation of farming culture and water intake from the Amu Darya in the right and left bank of Khorezm in the Middle Ages[18].

Since the 70s of the 20th century, serious attention has been paid to the study of the history of new land

acquisition, irrigation and land reclamation works in Uzbekistan. As a result, a number of scientific works were created on the history of the development of the Fergana Valley, Mirzachul, Surkhan-Sherabad, Jizzakh, and Karshi deserts and the development of irrigated agriculture. Among them, the dissertations of A.G. Abdunabiev, S.T. Tileukulov, T.A. Abdurahmanova and other scientists can be cited[19]. However, in the studies of the above authors, information on the history of irrigation of Khorezm oasis is hardly found.

In 1975-1980, a fundamental monograph consisting of 4 volumes and 1500 pages was written under the initiative of the Academy of Sciences of Uzbekistan and the Research Council of the Republic of Production Forces on the theme "Irrigation of Uzbekistan"[20]. Among its authors are academicians A.N. Askochensky, V.V. Poslavsky, Minister of Water Management S.M. Mamarasulov, heads of departments N.R. Hamroev, F.Sh. Shamsutdinov, V.A. Dukhovny and others were there. The editor-in-chief of the publication is the chairman of the Board of the Academy of Sciences of Uzbekistan, academician O.S. Sodikov and economist-academics K. Bedrintsev and major researchers such as B.D. Korjavin, archaeologist-academics Y.Gh. Ghulamov and A.R. Muhammadjonov participated together in the editorial board.

Volume 3 of the book "Uzbekistan Irrigation" focuses on the condition of irrigation facilities in the Amu Darya basin and the problems of their development, as well as on the work done in Khorezm region and Karakalpakstan located downstream of the river. Specialists such as U.K. Muhamadiev, Y. Ismailov, A.I. Bensman D. Mandarov, A.F. Dubkova from the regional water management department, H. Mukashev, V.V. Kalashnikov from "UPRADIK", K. Sapaev from "UPRADIS" participated in the preparation of information about Khorezm for the monograph.

In the 60s of the 20th century, the scientists of the Tashkent Institute of Irrigation and Agricultural Mechanization Engineers were involved in the solution of the problem of comprehensive research of irrigation problems in Khorezm and the proposal of effective methods. Among them A.A. Lyapin, L.A. Vartazharyan, H.A. Ahmedov, I.A. Buzanov, S.F. Beshpalov, S.Sh. Mirzaev, F.M. Rahimboev, A.A. Rachinsky, G.O. Horst, S.T. Altunin and others can be noted. In particular, Professor Kh.A. Ahmedov wrote a monograph entitled “Ирригация Хорезма (Irrigation of Khorezm)” in 1960-1962, based on the scientific and technical analysis of water management problems in Khorezm and Tashkhozuz regions[21]. Professor S.T. Altunin studied in depth the specific signs of floods and collapses in the Amu Darya[22].

Life stories about extensive works carried out in Khorezm in 60-80 years of the last century are included in the books of Madiyar Khudayberganov, who worked as a first-level leader in the region in 1968-1984[23]. They contain valuable information about a number of events related to the development of cotton cultivation, the development of new lands, water management, the construction of the Tuyamoyin reservoir and hydroelectric plant, and the danger of flooding.

The problems of coverage of the history of Khorezm by Arab tourists and scholars were researched by N. Ibrahimov. In the process of studying the the work “Sayohatnoma (Travelogue)” of the traveler Ibn Battuta, he showed some valuable information about the cities of Khorezm, Amu Darya and irrigation facilities[24].

The works of a number of experts who actively participated in the construction of canals and hydrotechnical structures in Khorezm are of great importance. Among them, the brochures and scientific

articles of Juma Atashev, Ivan Dukhno[25], Nikolay Mityanov[26], Akop Avanesov[27], Khudargan Khalliev[28], Khudaybergan Mukashev, Madrahim Vafaev, Kalandar Sapaev, Kazak Kholimbetov[29], Sultan Sherjonov, Amin Vafaev[30], Oktam Muhammadiev[31], Yuldash Khudayberganov[32], Jumaboy Otamov[33] and Ruzimbay Jumanazarov[34] should be noted.

Kh.Kh. Khalliev has a special place in covering the history of irrigation works in Khorezm. This specialist, who led the construction and management of water facilities, wrote several pamphlets based on his impressions[35]. In the book “Water restores the land” written by Kh.Kh. Khalliev's together with his colleagues I.I. Dukhno and T.Kh. Khalmuradov, there is a short story about the multifaceted works carried out in Khorezm oasis[36]. Due to the fact that the publication was made in Russian and the editor was unfamiliar with Khorezm words and place names, some mistakes were made.

The works carried out in the oasis were reflected in Yuldash Khudayberganov's pamphlet entitled “Amu jilolari (The reflections the Amu)”[37]. In the book, an attempt was made to highlight the creative works carried out by the creators of departments such as “Khorazmsuvqurilish”, “Khorazmsovkhozsuv-qurilish”, “Tuyamoyinsuvqurilish”.

In 2008, Abdulla Satlikov and Kamiljan Nurjanov wrote an article full of historical facts on the topic of “The Famous Mirab[38] of the Double Coast” for the collection of scientific articles, epics and fictions dedicated to the activities of the famous Mirob Muhammadkhaji Aminaddinov (1873-1938) from Khorezm[39].

Interesting details of development of new land for agriculture, water construction and struggles against

mining are found in the memoirs of labor veteran Amin Vafaev and books written about him. The author also gave good information about the people who lived and worked with him for many years[40].

The history of Khorezm oasis water management is reflected in the monograph co-authored by M. Mahmudov and N.A. Khudoykulova[41]. In the book, the authors dedicated a lot of space to explaining the irrigation and melioration activities during the Soviet period, as well as focusing on the activities that began to be implemented in the first years of the independence stage.

In 2015, one of the largest water facilities in Khorezm, the Kilich Niyazbay canal, turned 200 years old. In this regard, in the pamphlet “Kilich Niyazbay – a channel of friendship and cooperation”[42] written by local historian K. Nurjanov and historian U. Bekmuhammad, the attention was paid to the personality of Kilich Niyazbay, the waterway named after him, the life of the surrounding villages, as well as other general issues of the history of irrigation in Khorezm oasis.

Conclusion. In recent years, due to the expansion of information networks such as the Internet and ZiyioNet, there have been opportunities to obtain some historical information through them. In particular, rare publications that are disappearing, scientific works of scientists from far and near abroad, articles published in periodicals create new opportunities for the science of history. In highlighting the history of water management in the country and the current researches in this field on the Internet, it is necessary to observe the attempts by Doctor of Technical Sciences, Professor V.A. Dukhovniy[43] (MKVK), candidate of technical sciences I.F. Beglov (SANIIRI)[44], candidate of historical sciences V.A. Germanov (Institute of History at the Academy of Sciences of Uzbekistan Republic)[45]. “CAWATER-info-

net” site contains very unique information and countless rare works are collected in its electronic library.

Water problems have also attracted the attention of foreign scientists. Among them are R. Letolle, M. Mainquet, I. Kurtoğlu, E. Enger, B. Smith, B.S. Ichter, T. Petr, N.M. Novikova, K. Griffin, P.Ph. Miklin, R. Philip Pride, D. Kandiyoti, M. Spoor, P. Летай М. Менье, Q. Jiaguo, Evered, T. Kyle, O.B. Olsson and others and they paid attention to the characteristics of Central Asian reservoirs, their negative impact on the country's ecosystem, the role of large reservoirs in the development of the agricultural sector, and the history of agriculture and irrigation of Uzbekistan in their investigation works. While paying little attention to the history of Khorezm oasis, they objectively researched the extensive expansion of land under the influence of the cotton monopoly during the union period and the incomplete solution of water problems[46].

Acknowledging the researches of numerous authors, it should be noted that the development of new lands and increasing the productivity of previously used areas, the construction of irrigation and land reclamation, the heroic struggle against drought and floods in Khorezm region (especially after the Second World War and the years of independence) are still not fully covered. It is important to study and generalize the experience of our people's struggle for water, self-sacrifice in the implementation of irrigation and reclamation works as a separate issue.

REFERENCES

1. Соседько А.Ф., Батурин С.И. Водохозяйственные проектно-изыскательские работы в Хорезме и их эффективность. Проспект. — Т.: Фан, 1966. – Р. 3.
2. Engineer P.M. Lessar was sent to Great Britain as a representative of Russia in 1894 and was an



ambassador to China in 1901-1905. Based on the conclusion of Lessar, who is a supporter of the Back Caspian railway, which is being built between Krasnovodsk and Samarkand, General A.V. Glukhovsky's proposals were rejected, and he was declared as "open minded". However, by 1910, the young engineer F.P. Morgunenko found out that it is possible to develop lands in the old Konadarya delta of the Amudarya. As suggested by General A.I. Glukhovsky, the possibility of draining Amu Darya waters to the Caspian Sea through the Sarikamish lowland has been proved. For this purpose, a project was proposed to build a dam on the river near Takhyatosh and drain the collected water through the bed of the ancient Uzbay river, raise it using a hydraulic structure near the Koganak well, and deliver it to the irrigated fields and dump the surplus into the Caspian Sea... (See: Morgunenko F.P. Предположения об орошении юго-восточного побережья Каспийского моря зимними избыточными паводковыми водами Аму-Дарьи // Записки Русского технического общества, № 6-7. – СПб., 1915; Кунин В.Н. Каракумские записки. — М.: География, 1950. – 127 с.).

3. Кунин В.Н. Каракумские записки. – С. 122.
4. Manuscript fund 3 of the Institute of Archeology of the Academy of Sciences of the Republic of Uzbekistan, case No. 1, pages 66-67; Андрианов Б.В. Древние оросительные системы Приаралья. – С. 6.
5. Толстов Сергей Павлович (25.01.1907, Санкт-Петербург – 28.12.1976, Москва) – Former Corresponding Member of the All-Union Academy of Sciences (1953) and Honorary Academician of the Academy of Sciences of Uzbekistan (1976), "Honored Science and Technology Worker of Uzbekistan", "Honored Worker of Science and Technology in Tajikistan and Karakalpakstan",

Doctor of History (1942), Professor (1944). He studied the ancient history of Khorezm, the ethnic composition of its inhabitants and the past of irrigation facilities. Monographs such as "Ancient Khorezm" (1948), "In Search of Ancient Khorezm Culture" (1948), "In the Traces of the Ancient Rivers of the Oks and Yaksart" (1963), "The Called Castle – a Monument of Ancient Khorezm Culture" (1967), "Insular Scythians in Khorezm" (1960) pamphlet and more than 500 articles were published. (See: Abdullaev O.B. Хоразмлик тарихчи олимлар (Khorezmian Scientists Historians). – Urgench, 2007. – P. 20-22; Mahmudov M. Хоразм тарихи истиқлол кўзгусида (Khorezm history in the mirror of independence). – Urgench, 2003. – P. 92-94).

6. Андрианов Борис Васильевич (19.08.1919 – 16.09.1993, Moscow) – Leading researcher of the Institute of Ethnology and Anthropology of the Russian Academy of Sciences, Doctor of History (1971), cartographer, artist. In 1951, he defended his candidate's dissertation on the topic "Ethnic territory of the Karakalpak in northern Khorezm (18th-19th centuries)". More than 200 scientific works have been published. Including the monographs "Из истории земель древнего орошения Хорезмского оазиса" / in the collection: Памяти академика Л.С. Берга. – М.-Л., 1955. – С. 350-359; "Древние оросительные системы Приаралья. В связи с историей возникновения и развития орошаемого земледелия" (М., 1969), "Земледелие наших предков" (М., 1978). He studied in depth the remains of irrigation networks in the Aral Sea and Arololdi region (See: "Этнографическое обозрение". – Москва, 1994. – №6. – С. 169-170).
7. Ghulamov Yahyo Ghulamovich (18.04.1908 – 10.01.1977, Tashkent) – "Honored Scientist of Uzbekistan" (1958), Academician of the Academy

of Sciences of Uzbekistan (1966), Doctor of History (1950), Professor (1955). Organizer and first director of the “Archeology” Institute of the Academy of Sciences of Yzbekistan Republic (20.11.1956 - 25.10.1959). He published monographs such as “History of the irrigation of Khorezm: from ancient times to the present” (1957), “History of the irrigation of the Lower Zarafshan oasis” (1972), and he was the leader in the writing of such fundamental scientific works more than 150 pamphlets and scientific articles as “History of Uzbekistan” (R.N. Nabiev, together with M.F. Vahabov, and for the first time in Uzbek, 1959), “History of Samarkand” (2 volumes), “History of Bukhara”, “Primitive culture and irrigation in Lower Zarafsh”. "the history of the emergence of agriculture" (See: Karimov I.A. Юксак маънавият – енгилмас куч (High spirituality is an inexhaustible power). – Т.: Маънавият, 2008. – Р. 165-166; Muhammadjonov A., Yahyo Ghulamov. – Т.: Фан, 1986. – 52 p.; Abdullaev O.B. Хоразмлик тарихчи олимлар (Khorezmian historian scientists). – Urgench: UrSU, 2007. – Р. 22-25; Satlikov A. Устозга таъзим (Bow to the master) // “ХХ”, May 9, 2008; Mahmudov M. Хоразм тарихи истиқлол қўзғусида (The history of Khorezm in the mirror of independence). – Urgench, 2003. – Р. 94-100).

8. Kind of canal wider than ditch.

9. Толстов С.П. Древний Хорезм. Опыт историко-археологического исследования. — М.: МГУ, 1948; Толстов С.П. По следам древнехорезмийской цивилизации. – М.–Л., 1948; Толстов С.П. По древним дельтам Окса и Яксарта. – М.: ИВЛ Наука, 1962; Толстов С.П. Қадимги Хоразм маданиятини излаб (In search of Khorezm culture). Editor in chief – I.M. Jabbarov. – Т.: Фан, 1964; Толстов С.П. Приаральские скифы и Хорезм // “Советская этнография”. — М., 1961, №4; Толстов С.П. Древняя ирригационная сеть и

перспективы современного орошения (По исследованию древней дельты Сырдарьи) // “Вестник” АН СССР. — М, 1961, №11. – С. 59–66; Толстов С.П. О землях древнего орошения в низовьях Амударьи и Сырдарьи и возможности их освоения в современных условиях // “ОНУ”. – Т., 1961, №8 – С. 3–10; Толстов С.П. Об использовании данных исторических наук для практики народного хозяйства / В кн.: Земли древнего орошения и перспективы их сельскохозяйственного использования. – М.: Наука, 1969. – С. 9–21; Толстов С.П., Андрианов Б.В. Новые материалы по истории развития ирригации в Хорезме // Краткие сообщения Института этнографии АН СССР. – Т., 26. – М., 1957. – С. 5–11; Sergey Tolstov. Қадимги Хоразм цивилизациясини излаб (In search of the ancient Khorezm civilization). Prepared for publishing: U. Bekmuhammedov. – Т.: Янги аср авлоди, 2013. – Р. 340.

10. Андрианов Б.В. Из истории земель древнего орошения Хорезмского оазиса // В сб.: Памяти академика Л.С. Берга. – М.–Л., 1958; Андрианов Б.В. Древние оросительные сети Приаралья. — М.: Наука, 1969. – С. 3, 94-145; Андрианов Б.В. Проблемы происхождения ирригационного земледелия и современные археологические исследования / В кн.: История, археология и этнография Средней Азии и Казахстана. – М.: Наука, 1968; Андрианов Б.В. Задачи археологов в связи с перспективами освоения земель древнего орошения Средней Азии и Казахстана / В кн.: Земли древнего орошения и перспективы их сельскохозяйственного использования. – М.: Наука, 1969.

11. Гулямов Я.Г. К истории ирригации в Каракалпакии / “Бюллетень АН УзССР. — Ташкент, 1945. -№9-10; К возникновению ирригации в Хорезме в свете новых данных



- археологии // В сб.: Научная сессия АН УзССР. 9-14 июня 1947 г. – Ташкент: УзФАН, 1947; История орошения Хорезма с древнейших времен до наших дней. Автореф. дисс... докт. ист. наук. — Ташкент, 1949; Из истории ирригационной практики народов Средней Азии // Первая Всесоюзная конференция востоковедов. – Ташкент, 1957.
12. Гулямов Я.Г. История орошения Хорезма с древнейших времен до наших дней. Отв. ред. – проф. С.П. Толстов. — Т.: Изд-во АН УзССР, 1957. – 313 с.; Ghulamov Y.Gh. Хоразмнинг суғорилиши тарихи: қадимги замонлардан ҳозиргача (The history of Khorezm irrigation: from ancient times to the present). Editor in chief A.R. Muhammadjanov. — Т.: ЎзФАН, 1959. – 326 р.
13. Низовья Амударьи, Сарыкамыш, Узбой: История формирования и заселения. Под ред. С.П. Толстова и А.С. Кесь / Материалы ХАЭЭ. – Вып. 3. – М.: Наука, 1960. – С. 5.
14. Итина М.А., Левина Л.М., Неразик Е.Е., Раппопорт Ю.А. К 60-летию Хорезмской археолого-этнографической экспедиции // “Этнографическое обозрение”. – М., 1996. -№6. – С. 22. Although the Uzbay flew towards the Caspian, there are no reports of its waters reaching the sea.
15. Джаббаров И. Древний Хорезм... – С. 32.
16. Сатлыков А. История ирригационных и мелиоративных работ в Хорезме (1920–1941 гг.). Дисс ... канд. ист. наук. — Т., 1968; Satlikov A. Хоразм ирригациясининг равнақи (Development of the irrigation in Khorezm). — Т.: Ўзбекистон, 1989; Сатлыков А. Из истории строительства Ташсакинского канала / В сб. науч. трудов ТГПИ им. Низами. – Т. 215. – Т., 1977. – С. 47–58; Satlikov A. Тўққизинчи беш йилликда Хоразмда ирригация тараққиёти (Development of irrigation in Khorezm during the ninth five-year period) // “Ўзбекистонда ижтимоий фанлар” (“ОНУ”). – Т., 1978. -№3. – Р. 48-49.
17. Косчанов А. К истории ирригации в Хивинском ханстве в конце XIX – начале XX века // “ОНУ”. – Т., 1964. -№1. – С. 49-53.
18. Сарыбаев К.С. Из истории орошения в Каракалпакстане в конце XIX — начале XX века. – Нукус, 1965; Сарыбаев К.С. К истории орошения Каракалпакстана. — Нукус, 1971; Сарыбаев К.С. История орошения Каракалпакстана (с конца XIX века до наших дней). – Нукус: Каракалпакстан, 1995. – 352 с.; Утеев Л.У. Об ирригации Каракалпакской АССР. – Нукус, 1964. – 196 с. etc.
19. Абдунабиев А.Г. Деятельность Компартии по руководству развитием ирригации в Узбекистане в условиях победившего социализма и в период развертывания ком. стр-ва. Дисс. ... докт. ист. наук. — Т., 1971; Tileukulov S.T. Ўзбекистонда суғорма деҳқончиликнинг соқ-қайта қурилиши ва ривожлантирилиши (Social reconstruction and development of irrigated agriculture in Uzbekistan) (1917-1965). Abstract of doctoral dissertation of historical sciences. — Т., 1983; Абдурахманова Т.А. История развития ирригации в Узбекистане в период стр-ва соц-ма (1925-1937 гг.). Автореф. дисс. ... канд. ист. наук. – Т., 1972.
20. Ирригация Узбекистана. В 4-х томах. — Т.: Фан, 1975–1981.
21. Ахмедов Х.А. Ирригация Хорезма. — Т.: Узбекистан, 1965. – 80 с.
22. Алтунин С.Т. Борьба с дейгишами и наносами на Амударье. Рукопись // ГосАХО, ф. 41, оп. 1, д. 64, лл. 1-106.
23. Khudayberganov M. Хоразм пахтакорларининг ғолибона одими (Winning step of Khorezmian cotton harvesters). – Т.: Ўзбекистон, 1970. – 112 р.;

- The same author: Синовларда кечган умр (A lifetime spent in trials). – Т.: Мерос, 1997. – 192 p.
24. Ibrahimov N. Ибн Ботута ва унинг Ўрта Осиёга саёҳати (Ibn Battuta and his travel to Central Asia). — Т.: Шарқ баёзи, 1993. – 104 p.
25. Халлыев Х.Х., Духно И.И., Халмуратов Т.Х. Вода возрождает жизнь. – Т.: Меҳнат, 1986. – 120 с.
26. Митянов Н.Г. Водное хозяйство и меры по улучшению мелиоративного состояния земель (1956-1980 гг.). Рукопись.
27. Nurjonov K., Nodirov I.A. Хоразм фарзанди (Son of Khorezm). – Urgench: Хоразм, 1992. – Р. 32.
28. Khalliev Kh. Сув келтирган азиз (He is dear who carries water). – Т.: Ўзбекистон, 1981. – Р. 76; Khalliev Kh. Сув ҳаёт қўшиғи (Water is the song of life). – Т.: Ўзбекистон, 1984. – Р. 54.
29. Khalimbetov K., Eshchanova Sh. Хоразм мироблари шажараси (Family tree of Khorezmian irrigators). – Urgench: Хоразм, 2010. – 120 p.; Khalimbetov K. Tuyamuyin. – Urgench: Хоразм, 2010. – 100 p.; Khalimbetov K. Умумхалқ қурилишида. Туямуйин гидроузели қурилиши хотираларидан (In public construction. From the memoirs of the construction of the Tuyamuyin hydronode) // “XX”, January 7, 10, 14, 17, 21, 2004.
30. Vafaev A. Хотирамда жонланган ўтмиш (The past which became alive in my mind). – Т.: Истиқлол, 2013. – 112 p.; RAhmanov N. Ҳаёт синови (A. Вафоев ҳақида ҳужжатли қисса, шеърлар, қатралар) (Test of life (documentary story poems, verses about A. Vafaev)). – Т.: Истиқлол, 2007. – 104 p.
31. Ерларнинг мелиорациясини яхшилаш жараёнлари (Land reclamation improvement processes). – Khiva: Khorazm Mamun Academy publishing house, 2001. – 132 p.
32. Khudayberganov Y. Аму жилолари (Polishes of the Amu). (From the history of Khorezm region water facilities construction trest). – Urganch: Хоразм, 1994. – 86 p.
33. Utamov J., Muhammadiev U. Асп бошидаги синов (Test at the turn of the century). – Т.: Истиқлол, 2004. – 224 p.
34. Jumanazarov R., Sabirov A. Туямуйин ва туямуйинликлар (Tuyamuyin and people from that region). – Urgench: Хоразм, 2003. – 196 p.
35. Khalliev Kh. Сув келтирган азиз (He is dear who carries water). – Т.: Ўзбекистон, 1981. – Р. 76; Khalliev Kh. Сув ҳаёт қўшиғи (Water is the song of life). – Т.: Ўзбекистон, 1984. – Р. 54.
36. Халлыев Х.Х., Духно И.И., Халмуратов Т.Х. Вода возрождает жизнь. – Т.: Меҳнат, 1986. – 120 с.
37. Khudayberganov Y. Аму жилолари (Polishes of the Amu). (From the history of Khorezm region water facilities construction trest). – Urganch: Хоразм, 1994. – 86 p.
38. A servant or worker as irrigator.
39. Қўш соҳилнинг машҳур мироби (Famous irrigator of double coast). Scientific articles, epics, novels about Muhammad Haji Aminaddinov (1873-1938). – Т.: Янги асп авлоди, 2008. – 64 p.
40. Vafaev A. Хотирамда жонланган ўтмиш (The past which became alive in my mind). – Т.: Истиқлол, 2013. – 112 p.; RAhmanov N. Ҳаёт синови (A. Вафоев ҳақида ҳужжатли қисса, шеърлар, қатралар) (Test of life (documentary story poems, verses about A. Vafaev)). – Т.: Истиқлол, 2007. – 104 p.
41. Mahmudov M., Khudaykulova N. Хоразмнинг суғорилиши тарихи саҳифалари (Khorezm irrigation history pages). – Т.: Истиқлол, 2011. – 88 p.
42. Nurjanov K., Bekmuhammad U. Қилич Ниёзбой — дўстлик ва ҳамкорлик канали (Kilich Niyazbay is a channel of friendship and cooperation) / Editor in chief F. Ibrahimova. – Urgench: Олтин мерос, 2015. – 114 p.



43. История Аральского моря с древности до наших дней. Под ред. проф. В.А. Духовного и инженера Ю. де- Шуттера. – Т.: МКБК, 2003 // WWW.GAWATER-info.net.
44. Беглов И.Ф. Бассейновая водохозяйственная организация “Амударья” // WWW.Gawater.info.net.; Беглов И.Ф. Научно-производственное объединение "САНИИРИ" // WWW.SANIIRI@tkt.uz; <http://kaniiri.zzl.org>.
45. Германов В.А. Глас вопиющего в пустыни. Альянс диктатора и учёного // Культурные ценности. Международный ежегодник. 2000-2001 гг. – Санкт-Петербург: Европейский дом, 2002. – С. 13-34.
46. Letolle R., Mainquet M. The Aral. – Paris: Springer Verlag, 1993. – 358 p.; Kurtoglu I. Ekoloji, çerve kirliliği ve insanlar // Ipek Yolu. – Türkiye, 1995. -№17. – Pp. 9-11; Aral’i kurtalarım! // Ipek Yolu. – Türkiye, 1995. -№17. – Pp. 12-23; Enger E., Smith B. Environmental Science. A study of Interrelationships. Fifth edition. – USA: The McGraw-Hill Companies, 1995. – 432 p.; Richter B.S. Nature Mastered by Man: Ideology and Water in the Soviet Union // Environment and History. February 1997. – Vol. 3. -№1. – P. 69-96; Petr T. Inland fishery enhancements. – Rome: Food and Agriculture Organization of the United Nations, 1998. – 463 p.; Novikova N.M. “Contemporary plant and soil cover changes in the Amu Darya and Syr Darya river deltas” // “Ecological research and monitoring of the Aral Sea deltas”, UNESCO, 1998. – Pp. 100; Griffin K. Social Policy and Economic Transformation in Uzbekistan. – Turin: ILO and UNDP, 1996. – 172 p.; Miklin P.Ph. The Water Management Crisis in Soviet Central Asia. 1989, June. – 106 p.; Micklin Ph. The Aral Sea Crisis: Introduction to the Special Issue // Post-Soviet Geography. – 1992. -№5, May. – P. 269-82; Micklin P.P. The Aral Sea Disaster // Annual Review of Earth and Planetary Sciences, Vol. 35. – Chicago, 2007. – Pp. 47-72; Micklin Ph. The past, present, and future Aral Sea // Lakes & Reservoirs: Research and Management. – 2010. – Vol. 15. -№3, September. – P. 193-213; Micklin Ph. The future Aral Sea: hope and despair // Environmental Earth Sciences. – 2016. – No75, May. – P. 1-15; Philip R. Pride. Environmental Management in the Soviet Union. Cambridge University Press. June 28, 1991;