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Irrigational Projects Of Tsarist Russia In The Fergana Valley (Late 19th – Early 20th Centuries): A Scientific-Archeographical Review

S.Khusanov, Lecturer,
Fergana State University,
Uzbekistan, Fergana

Abstract: Background: In the late 19th and early 20th centuries, the Fergana Valley underwent a profound geopolitical and economic transformation under the colonial administration of Tsarist Russia, becoming a crucial raw material base for the empire's textile industry. This study explores how the integration of the region into global capitalist networks reshaped traditional agrarian frameworks. **Methods:** A rigorous scientific-archaeographical and comparative historical methodology was employed. Primary source materials were systematically gathered from the National Archives of Uzbekistan (NAU) and the Russian State Historical Archive (RGHA), complemented by comprehensive reviews of regional pre-revolutionary periodicals and statistical collections. **Results:** The investigation reveals the detailed parameters of major hydro-technical initiatives (proposed by Zhilin, Petrov, Sinyavsky, and Alexandrov) designed to dramatically extend the irrigated perimeter of the valley. Despite intensive topographical and hydrological engineering assessments, structural capital shortfalls and budgetary overruns led to the strategic suspension or absolute freezing of these projects. **Conclusion:** From a critical historical-source perspective, the aggressive imposition of a cotton monoculture system dismantled traditional localized agricultural self-sufficiency. This systemic reconfiguration catalyzed an acute food dependency crisis and fundamentally accelerated social stratification, transforming a significant portion of the independent peasantry into marginalized labor strata, specifically chorigor (exploitative sharecroppers) and mardikor (precarious day laborers).

Keywords: Fergana Valley, Tsarist Russia, Irrigation Projects, Cotton Monoculture, Archeographical Review, Archival Funds, Ulugnor Canal, Social Stratification, Chorigor, Mardikor.

INTRODUCTION

The second half of the 19th century marked a critical turning point in the socio-economic and geopolitical trajectory of Central Asia, driven by the military conquest of the region by the Russian Empire and the establishment of the Turkestan Governor-Generalship. For the rapidly expanding textile manufacturing centers of the metropoliya, Turkestan – and more specifically, the ecologically and climatically favored Fergana Valley – represented an invaluable geopolitical asset capable of supplying high-quality raw cotton. However, expanding the cultivation of American cotton varieties (such as Upland and King) and reclaiming extensive virgin lands encountered severe ecological boundaries dictated by the limits of the traditional indigenous artificial irrigation infrastructure.

The structural expansion of the regional agrarian economy was strictly contingent upon large-scale hydraulic engineering and the systematic expansion of canal networks. Recognizing this structural dependency, the Tsarist administration initiated extensive scientific, geological, and hydrographic expeditions along the basins of the Syr Darya, Karadarya, and Naryn rivers, leveraging the expertise of prominent Russian military engineers and hydrologists. While these measures injected substantial technological capital into the region, they simultaneously initiated the disintegration of the traditional, localized, labor-intensive natural economic systems, replacing them with a dependent colonial-capitalist framework. Crucially, the imperial state's hydraulic interventions were fundamentally driven by the structural demands of the metropoliya rather than the socio-economic advancement of the indigenous population.

METHODS AND MATERIALS

This study adopts a comprehensive historical-source and archeographical approach to analyze the primary and secondary evidence concerning colonial agricultural and hydraulic policies. The empirical core of the research draws heavily from primary documentary materials preserved within the National Archives of

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Uzbekistan (NAU) in Tashkent and the Russian State Historical Archive (RGHA) in Saint Petersburg. The research systematically cross-references administrative correspondence, classified gubernatorial reports, and localized budgetary files with contemporary pre-revolutionary periodicals (such as Turkestanskiye Vedomosti) and official imperial data compilations (such as the Obzor Ferganskoy Oblasti).

To contextualize economic metrics accurately, the study employs standard historical Russian units of measurement: the desyatina (equivalent to 1.09 hectares) for land area, and the pud (equivalent to 16.38 kilograms) for mass. The analytical framework relies on comparative historical analysis, allowing for the objective evaluation of how structural agronomic shifts directly translated into socio-economic stratification within indigenous agrarian communities.

RESULTS AND ANALYSIS

1. Hydro-Technical Expeditions and Engineering Projects

Extensive topographical and hydrological surveys conducted by imperial engineers produced several ambitious regional development frameworks. In the spring of 1878, an engineering expedition led by Engineer Zhilin undertook a systematic hydrological assessment of the ancient Ulugnor Canal. Prior to these modern engineering interventions, under the administration of the Kokand Khanate, the canal effectively irrigated an estimated 76.3 hectares (approx. 70 desyatinas). Following structural reconstruction and channel widening, its functional hydraulic capacity rose to accommodate between 220 and 240 hectares (200–220 desyatinas).

Technological modernization also manifested in the deployment of mechanical pumping systems along main river banks to draw subterranean and riverine water resources. By the late 1890s, out of 99 mechanical water pumps operational across the entire Turkestan territory, 78 were concentrated specifically within the high-yield zones of the Fergana Valley. By 1894, the Tsarist administration finalized three massive irrigation frameworks: the Uchkurgan steppe initiative targeting 1,240 hectares, the Ulugnor and Karakalpak desert project aiming at 170,050 hectares, and the Savay steppe infrastructure intended to oust drought across 27,250 hectares.

Despite their technical viability, the vast majority of these plans remained confined to administrative blueprints due to chronic capital shortfalls and imperial budgetary reallocations. For example, the Uchkurgan reclamation project began in 1896 but was completely halted in 1897 after expending 40,000 rubles. Similarly, the extensive Karakalpak and Ulugnor projects were suspended during review sessions in Saint Petersburg due to excessive cost estimations. The primary historical initiatives can be systematically structured as follows:

Table 1. Systematic Matrix of Key Tsarist Irrigation Projects in the Fergana Valley

Project Director / Agency	Chronology	Targeted Geographic Perimeters & Scale	Primary Operational Objectives & Outcomes
Engineer K.Petrov Project	1897	Karakalpak Steppe, left bank of the Syr Darya (170,000 hectares).	Designed a main canal originating near Mirovot village. Rejected by the Central Land Committee due to substantial budgetary overruns.
Moscow Irrigation Society	1909–1912	Syr Darya Basin, extensive peripheral zones (260,000 hectares).	Led by Muhandis K. Sinyavsky with foreign capital involvement (Pearson, Singh, etc.). Faltered due to imperial bureaucratic friction and geopolitical risks.
Prof. I. G. Alexandrov	1912–1918	Kokand Oasis and surrounding arid perimeters.	Developed the first mathematically rigorous and comprehensive scientific concept for systemic water optimization. Interrupted by the 1917 revolutions.

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2. Economic Reconfiguration and Cotton Monoculture Dynamics

The aggressive reorientation of the regional agricultural sector toward cotton resulted in dramatic production spikes. Over a single decade, Fergana's raw cotton output surged exponentially, outpacing the neighboring Syr Darya and Transcaspian governorates by a factor of 52, and the Samarkand region by a factor of 21. By the late 19th century, out of the total annual volume of 324,324,000 kg (19.8 million puds) required by the industrial mills of European Russia, approximately 144,144,000 kg (8.8 million puds) originated directly from Turkestan, with the Fergana Valley single-handedly accounting for 75–80% of that total. This dramatic re-allocation of fertile land stripped the region of its traditional grain independence, inducing a severe structural food vulnerability.

DISCUSSION

The structural pivot toward a market-driven, cotton-centric colonial economy induced severe price and tax imbalances that eroded the economic resilience of the local peasantry. While cotton generally yielded 3 to 4 times higher nominal profits than grain crops under stable market conditions, the systemic danger of this monoculture became apparent during the macroeconomic crisis of 1901. During this period, the price of 1 pud of imported wheat skyrocketed to 16 rubles, while 1 pud of local cotton plummeted to 7 rubles and 20 kopecks, leaving thousands of smallholders unable to purchase basic foodstuffs.

This economic vulnerability accelerated the collapse of traditional rural communities, driving rapid social stratification into highly polarized classes:

• Chorigorlik (Explositative Sharecropping): A system wherein landless peasants became debt-bonded tenants, forced to cultivate land in exchange for a minimal fraction (often one-fourth) of the final crop yield.

• Mardikorlik (Precarious Day Labor): The rural proletariat who, having completely lost their hereditary lands through debt foreclosures, survived exclusively by selling their physical labor on a daily basis.

This process of dispossession was further facilitated by exploitative credit networks and predatory lending systems. Historical financial data shows that promissory note (vaqti-veksel) debt reached its peak in the Andijan uezd at 3.6 million rubles, while property mortgage foreclosures peaked within the Margilan uezd at 3 million rubles. These figures underscore the destructive impact of usurious finance capital on local smallholders.

CONCLUSION

The primary source materials and archival documents examined in this study demonstrate that the hydro-technical and agrarian interventions of Tsarist Russia in the Fergana Valley were inherently extractive, serving the raw material demands of the metropoliya at the expense of regional food security. While these initiatives introduced modern mechanical irrigation technology and expanded the agricultural perimeter, they simultaneously dismantled traditional natural economic structures, induced widespread landlessness, and accelerated painful social stratification. Despite the ideological biases present in early pre-revolutionary and Soviet-era accounts, the empirical and statistical data preserved in these archival funds remains foundational for any objective reconstruction of Uzbekistan's economic history.

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