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Material-Technical Base Of The Cotton Industry In the Surkhandarya Region In The Second Half Of The 20th Century

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Abstract: This article provides a comprehensive scientific-academic analysis of the formation, development, and contradictory consequences of the material-technical base of the cotton industry in the Surkhandarya region during the second half of the 20th century (1950–1991). The study covers the regional characteristics of Soviet agrarian policy, the expansion of irrigation infrastructure, the level of mechanization, the establishment of cotton ginning plants, transport and energy supply, as well as the reforms implemented during the years of independence. Based on archival sources, statistical data, and scholarly literature, the article assesses the material-technical potential of the region's cotton industry and demonstrates the economic consequences of its development dynamics.
Keywords: Surkhandarya region, cotton growing, material-technical base, irrigation, collective farms and state farms, cotton ginning plants, Soviet agrarian policy, mechanization, irrigation networks, independence reforms.

Introduction

The Surkhandarya region is located in the southern part of Central Asia, where its hot climate, valley areas, and water resources create favorable conditions for cotton cultivation. In the second half of the 20th century, within the framework of the Soviet Union's "cotton monopoly" policy, this region became one of the major cotton production centers [4]. In this process, the formation of the material-technical base (MTB)—including technical equipment, irrigation structures, processing enterprises, and transport infrastructure—played a decisive role.

The scientific relevance of the topic lies in the fact that for many years, the study of the cotton industry's MTB was often conducted from the perspective of political ideology, with less attention paid to objective economic analysis. During the period of independence, the need arose to re-examine this issue and provide an honest assessment of both achievements and shortcomings. Therefore, this study aims to examine the development dynamics during the 1950–1990 period and their continuity in the years of independence within a single framework.

The purpose of the study is to scientifically analyze the development dynamics, specific characteristics, achievements, and shortcomings of the material-technical base of the cotton industry in the Surkhandarya region during the 1950s–1990s. The research utilizes archival sources

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(Surkhandarya Regional State Archive, National Archive of Uzbekistan), official statistical data, and scholarly historical literature [1].

Regional Specificity Of Soviet-Era Agrarian Policy

Beginning in the 1950s, a Union-wide plan was implemented in the Uzbek SSR to dramatically increase cotton production volumes. The strategic importance of the Surkhandarya region was determined by several factors: first, its location on the border with Afghanistan and Iran gave it significant strategic importance; second, natural conditions existed for constructing hydraulic structures in the oases of the Amu Darya and its tributaries—the Surkhandarya and Sheroboddarya; third, there was an abundance of cheap labor resources.

Within the framework of the "Cotton Program" (1953–1964) adopted during Nikita Khrushchev's leadership, irrigated agricultural land in the region was significantly expanded [4]. While the area of irrigated land was approximately 180,000 hectares in 1950, this figure exceeded 270,000 hectares by 1975 [14]. The primary factor behind this growth was the construction of new canals and the reconstruction of existing irrigation networks. However, political goals took precedence over economic and environmental rationality, which later laid the groundwork for serious problems.

Development Of Irrigation Infrastructure

Irrigation networks occupy a crucial place in the MTB of the cotton industry, as the cotton plant requires intensive irrigation. Among the major irrigation projects implemented in the Surkhandarya region during the second half of the 20th century, the following were particularly significant.

Amu-Zang Canal (1957–1965). This canal, which played an important role in supplying water to the Denov, Shurchi, and Uzun districts, was considered one of the largest hydraulic structures in Central Asia (total length 126 km). Its construction led to the development of 45,000 hectares of new land.

Sherobod-Malik Reservoir Complex (1969). Located in the Sheroboddarya basin, it served as the main source meeting agricultural water demand. This structure, with a total capacity of 650 million m^3, was important not only for cotton but also for grain and vegetable crops.

Network of Pumping Stations (1970–1980s). A specific feature of the Surkhandarya valley's relief—the relatively high elevation of land suitable for agriculture—necessitated the construction of high-capacity pumping stations. By 1980, over 210 mechanized pumping stations were operational in the region, with a total capacity exceeding 320 MW.

However, the rapid development of irrigation infrastructure also gave rise to a number of serious problems. The technical condition of irrigation systems often did not meet standards: according to some data, 40–50% of water drawn for irrigation was lost along the way [6]. Due to insufficiently developed drainage systems, soil salinization increased, leading to declining yields. By 1985, moderate to severe salinization was recorded on approximately 25% of irrigated land in the region [14].

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Table 1. Development of Irrigation Infrastructure in Surkhandarya

Indicator	Soviet Period (1950–1990)	Independence Period (1991–2003)
Irrigated Land	180–270 thousand hectares	313.9 thousand hectares (national: 3313.9 thousand hectares)
Pumping Stations	Over 210	Reorganized
Water Loss Rate	40–50%	Measures taken for reduction
Soil Salinization	~25% of land (as of 1985)	Reclamation work continued

Mechanization And Technical Equipment

A significant component of the MTB of the cotton industry in the Surkhandarya region was the fleet of agricultural machinery. While cotton picking was primarily done by hand in the 1950s, subsequent decades saw the gradual introduction of mechanization.

Machine-Tractor Stations (MTS) served as the primary organizational form of technical support in the 1950s. After the MTS were disbanded in 1958, their equipment was transferred to collective and state farms. By 1960, the total agricultural machinery fleet in the region included over 4,200 tractors, more than 1,100 cotton picking machines (specifically models like the 17XB-2,4), and numerous other mechanisms [14].

Over the course of the 1960s–1980s, the machinery fleet developed both quantitatively and qualitatively: more efficient cotton picking machines (model 14KhVS-3,6) and powerful tractors (T-150K, DT-75, etc.) were introduced. In the 1980s, the number of tractors in the region exceeded 12,000, while the number of cotton picking machines surpassed 3,500 [14]. However, the level of equipment depreciation remained high: by the 1980s, 30–35% of the tractor fleet and over 25% of the cotton picking machines consisted of equipment that had exceeded their standard service life.

In 1997, under the new conditions of the independence period, 260 tractors and cotton picking machines were delivered to the Surkhandarya region [7]: including 170 tractors (TTZ-100 with Cummins engines), 90 cotton picking machines, and 6 case apparatus. This figure demonstrates the renewal of material-technical supply during the reform era. The supply of mineral fertilizers was also a crucial element of the MTB, with fertilizer application rates increasing from 40–50 kg/ha in 1960 to 350–400 kg/ha by 1980 [14]. However, excessive fertilizer use led to soil and water source pollution.

Table 2. Dynamics of Technical Equipment Levels

Equipment Type	1960s	1980s / Independence Period
Tractors	4,200+ units	12,000+ (1980); 260 new (1997)
Cotton Picking Machines	1,100+ units	3,500+ (1980); 90 new (1997)
Mineral Fertilizers	40–50 kg/ha	350–400 kg/ha (1980)
Mechanization Level	Low (primarily manual)	Increased, but depreciation persisted

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Cotton Ginning Plants And Processing Industry

Within the MTB of the cotton industry, primary processing enterprises—cotton ginning plants (CGPs)—hold a special place. In the 1950s, there were several CGPs in the Surkhandarya region, most of which dated back to pre-war construction and operated with outdated equipment. Between 1955 and 1975, large-scale construction of new plants and reconstruction of existing enterprises was carried out.

Termez CGP [1]. The most powerful enterprise in the regional center. Following reconstruction in the 1960s, the plant's annual processing capacity reached 80,000 tons of raw cotton. During the independence period, by a special resolution of the Cabinet of Ministers in 1998, this enterprise was designated as the only producer of fine-fiber cotton seed in the republic [1]. The enterprise employed over 500 workers, employees, and engineering-technical staff, with 77% of its products exported.

Denov (1968), Sherobod (1971), Shurchi (1974) plants were successively commissioned, serving various areas of the valley.

JSC "Jarkurgan Tola". Established in 1991, this joint-stock company began selling cotton fiber to companies in Switzerland, the United Kingdom, Italy, and Korea [9]—significant as one of the early examples of direct cooperation with foreign markets during the independence years.

By 1985, a total of 7 cotton ginning plants were operating in the region, with a combined annual capacity to process over 400,000 tons of raw cotton [14]. According to data from 1997, this number had risen to 12 [7]—plants located in the Uzun, Denov, Khayrabod, Shurchi, Kumkurgan, Surkhan, Jarkurgan, Termez, Muzrabot, Sherobod, Qiziriq, and Angor districts, with a total capacity allowing for the processing of 230,000 tons of fiber (700–710,000 tons of raw material) annually. However, due to the policy of ending cotton monoculture in 1997, the volume of raw material decreased, leaving 30–40% of the capacity at some plants idle.

Transport Infrastructure And Energy Supply

The MTB of the cotton industry consists not only of direct means of production—it also encompasses transport, energy, and communication infrastructure. The geographical remoteness of the Surkhandarya region from central areas made the transport issue particularly important.

Railway Transport. The Kagan-Termez railway line, constructed in 1916, served as the region's main artery. New branches such as Kurgan-Tepe, Sariasiya, and Sherobod were added in the 1960s–1970s.

Highways. During the 1950s–1980s, the length of paved roads in the region was increased from 620 km to 3,400 km [14]. This significantly facilitated the delivery of cotton products to processing plants and railway stations.

Electricity. In 1960, the amount of electricity supplied to the Surkhandarya region was 320 million kWh, whereas by 1985 this figure exceeded 2 billion kWh [14]. The Nurek HPS (fully operational from 1972) also played an important role in supplying energy to the region.

Collective Farms And State Farms: Organizational Structure And Social Infrastructure

In the Surkhandarya region during the 1950s–1980s, collective farms (kolkhozes) and state farms (sovkhozes) functioned as the primary organizational-economic units of the cotton industry.

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While there were about 280 collective farms in the region in 1950, the consolidation policy reduced this number to 105 large collective farms and 37 state farms by 1970 [5].

State farms, as enterprises based on state property, were technically better funded than collective farms. Particularly from the 1960s onwards, state farms established on newly developed lands were supplied with modern equipment—they had model cotton picking machine fleets, motor transport departments, and maintenance workshops. During the 1970s–1980s, a network of warehouses for storing raw cotton was created across the region, with a total capacity exceeding 250,000 tons [2].

From the perspective of social infrastructure, residential houses, schools, and medical stations were built in the centers of collective and state farms. Between 1965 and 1980, over 2 million m² of housing was constructed for the rural population [5]. However, this figure was insufficient to meet the population's needs, and the quality of life remained low.

MTB And REFORMS During The Independence Years (1991–2003)

Beginning in 1991, fundamental reforms began in the MTB of the cotton industry in the Surkhandarya region. The transition to private farms (*fermers*), land lease, privatization, and the introduction of market relations marked a new stage in MTB development.

Production outcomes also changed during this period: in 1990, the 11 existing cotton ginning plants produced 143.5 thousand tons of cotton fiber, while in 1991 this figure reached 145.4 thousand tons. In 1994, cotton farmers of the region fulfilled the annual plan by producing 380,098 tons of cotton. The open joint-stock company "Surxonpaxtasanoatsotish" exported cotton fiber worth 27,260.7 thousand US dollars [7].

Starting in 1996, due to a decline in world cotton fiber prices, processing volumes began to increase. New structures such as the joint-stock company "Surxontekstil", JSC "Jarkurgan Tola", and the private industrial-trade enterprise "CHUNG" emerged. In 2003, a large portion of the 39,837.9 tons of prepared raw material was distributed to and processed at the Termez, Jarkurgan, Angor, and Sherobod plants [7]. These reforms represented a significant step towards adapting the MTB to market demands.

Structural Problems In Mtb Development

Alongside the achievements in the development of the cotton industry's MTB in the Surkhandarya region, a number of deep-seated structural problems also manifested.

First, the phenomenon of monoculture: cotton crops occupied 65–75% of irrigated land [12], which reduced food production, increased excessive pressure on the land, and harmed agricultural ecology.

Second, equipment depreciation: within the Soviet economic system, mechanisms for timely equipment renewal were inadequate. By the 1980s, 30–35% of the tractor fleet and over 25% of cotton picking machines consisted of equipment that had exceeded their standard service life [8].

Third, soil degradation: intensive irrigation and fertilization, combined with insufficiently developed drainage systems, led to increased soil salinization. By 1985, moderate to severe salinization was recorded on approximately 25% of irrigated land, with yields declining by 15–20% [6].

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Fourth, the constraints of the planned economy: the centralized planning system often set overambitious plan targets detached from actual capabilities. This encouraged the falsification of reports and the exaggeration of cotton volumes. The famous “cotton affair” events of 1976–1983 were a manifestation of this problem [4]

Conclusion

The development of the material-technical base of the cotton industry in the Surkhandarya region during the second half of the 20th century is assessed as a contradictory yet significant historical process. On one hand, this period saw the creation of extensive irrigation infrastructure, an increased level of mechanization, and the construction of cotton ginning plants and transport networks—achieving specific economic results. On the other hand, due to the structural flaws of the Soviet planned economy—the policy of monoculture, neglect of environmental aspects, and deficiencies of the centralized management system—this development also led to serious negative consequences. The MTB of the region’s cotton industry was formed largely based on Union-wide interests rather than local economic needs. The reforms implemented during the independence years—the transition to private farms, construction of new plants, establishment of private organizations, and foreign cooperation—have served to gradually address these problems. For future research, the deeper study of regional archival materials, particularly documents from collective and state farms, materials from regional executive committees, and reports from cotton ginning plants, holds significant importance.

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