Analysis of the Performance of Tahal Company in Implementing Irrigation Programs in the Qazvin Plain during the Pahlavi Era (1963-1973)

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Extended Abstract

The Qazvin Plain is one of Iran's most fertile alluvial plains, and it has historically struggled with water scarcity. This persistent issue has led the region's inhabitants to focus on strategically using available water resources. In 1962, following a devastating earthquake and the launch of Iran's Third Development Plan, the revitalization and development of the Qazvin Plain became a government priority. To achieve this goal, foreign experts were invited to assist. One of the most significant initiatives undertaken by these specialists was the development of water resources in the Qazvin Plain, a task assigned to a company named Tahal.

This study, based on Tahal Company archives, library resources, and academic journals, examines the company's activities and evaluates the outcomes and consequences of its work. The 1962 earthquake in Boein Zahra, located within the Qazvin Plain, caused extensive damage and motivated Prime Minister Ali Amini's government to implement long-considered development plans for the region. The goal was to rebuild and redesign the devastated area, primarily focusing on transforming the agricultural sector. The government aimed to increase arable land and improve farmers' income through modern irrigation methods.

Tahal, a prominent company known for its successful implementation of modern irrigation techniques in Palestine, was selected for this task. In 1963, Tahal undertook the irrigation project in the Qazvin Plain and sent a 70-member expert team to Iran. This team included geographers, geologists, meteorologists, water engineers, sociologists, and anthropologists.

The project coincided with the Third Development Plan (1962–1967), during which approximately 45.8% of the total budget was allocated to irrigation. Tahal's project was divided into two major phases:

A. Surface water management, groundwater exploration, and exploitation

B. Transfer of water from the Shahrood River to the Qazvin Plain

Initially, Tahal planned to increase water availability by drilling deep wells and utilizing previously untapped underground sources. They aimed to adjust the region's agricultural model based on seasonal rainfall patterns and water availability. The company promoted efficient water use through mechanized irrigation systems and chemical fertilizers. Consequently, extensive operations in geology, petrology, hydrogeological surveying, cartography, and well placement were initiated.

The company aimed to channel water from the Shahrood River into the Qazvin Plain in the second phase. This project officially began with a contract signed on October 9, 1968, between Tahal and the Qazvin Plain Development Planning Organization. The estimated duration of the project was 30 months, with an initial budget of $30 million.

Tahal’s efforts modernized the irrigation infrastructure, introduced advanced equipment, and made additional water resources accessible to farmers. Drilling deep, semi-deep, and artesian wells, training in modern irrigation techniques, and applying new technologies significantly boosted crop and orchard production, thereby improving rural living standards.

However, despite these advantages, the project faced several critical challenges:

- A decline in groundwater levels by 5 to 8 meters and the drying up of traditional qanats.
- High costs of drilling and advanced irrigation equipment, which many farmers could not afford.
- Disruption of the hydrological balance due to the use of deep well drilling rigs and suction pumps.
- Increased unemployment among traditional farmers, as the shift toward commercial agriculture and industrial-scale farming led to the loss of smallholder jobs. According to Tahal, these farmers were expected to transition to industrial factory work—an unwelcome change and ultimately ineffective.
- Excessive water availability led to shifts in crop patterns. Farmers began cultivating water-intensive crops such as cotton and sugar beets, which strained the already fragile water system.

In conclusion, the Tahal Company demonstrated significant success in constructing infrastructure and water transfer projects in the Qazvin Plain, as well as in transferring water from the Shahroud River. It notably effectively exploited groundwater resources in the Qazvin region and introduced the technology for drilling deep, semi-deep, and artesian wells. Drainage and canal construction were carried out precisely along expert-designated routes, providing new water resources to farmers.

In the short term, Tahal's initiatives markedly impacted irrigation in the Qazvin Plain. By transforming traditional agricultural methods, promoting modern irrigation techniques, and identifying new water sources, Tahal contributed to a profound and, in

some respects, unprecedented transformation. What Tahal achieved in the Qazvin Plain was based on its experience in the Lakhish region. Lakhish had been uninhabited prior to the implementation of irrigation projects, so the company encountered no resistance, and the settlers adapted to the newly created conditions.

However, the Qazvin Plain was not uninhabited; it was home to a population with its own distinct cultural structure, heavily reliant on traditional irrigation systems based on qanat functions. The modernization of irrigation, perceived as a governmental and imposed process, gradually impacted the residents' way of life and irrigation practices. Thus, despite introducing modern irrigation methods, Tahal failed to achieve its goals due to a lack of comprehensive understanding of the existing conditions and the local context of the Qazvin Plain.

Additionally, the Pahlavi government's development programs were entirely state-controlled, with minimal involvement from the private sector. As a result, any transformation in any sector of the economy depended on government action. The government's shift in focus during the Fourth Development Plan—from agriculture and irrigation to industry—can be regarded as another reason for this failure.

Ultimately, Tahal's irrigation and development plan in the Qazvin Plain was unsuccessful due to factors such as disregarding the traditional structure of Iran's agricultural society, the lack of alignment between education and the region's development process, excessive exploitation of water resources, the cultivation of high-water-demand crops for commercial and quick-profit purposes, and the conversion of farmlands into orchards producing fast-yield crops. All of these led to farmer dissatisfaction, facilitated the over-drilling of deep wells, and contributed to the depletion of the Qazvin Plain's groundwater aquifers.

Keywords: Tahal, deep wells, Qazvin plain, Taleqan dam, agriculture.

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