

Problems and Solutions in Rice Production and Marketing in Takhar Province of Afghanistan

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Abstract:

Agriculture is a critical sector for Afghanistan. About 70 percent of the population lives in rural areas and works on farms. Naturally, the Afghan economy is focused on the agricultural sector. But the agrarian infrastructure encountered significant damage during the 30-year war. Before the war in the 1970s, Afghanistan was an international supplier of agricultural products and 48% of the export revenue was obtained from these products. Rice consumption is mainly dependent on rice imports to meet the growing demand of Afghanistan's growing population due to the livelihood and semi-subsistence rice farming and the continuity of low-quality of local rice varieties. On average, the country imported about 218 million tonnes of rice each year in the 2014-2017 period, accounting for about \$70 million (approximately 1.4% of the agricultural GDP). For Afghanistan to meet rice demand with domestic production, it is recommended to adopt highly productive seed varieties, relevant inputs, and sustainable farm management practices.

Keywords: Rice production, Agriculture in Afghanistan, Rice marketing.

1. Introduction

Agriculture plays an essential role in developing countries as it employs millions of people, produces the basic food needs, makes contributions to national income and exports, as well as stimulates the industrial sector providing raw material and creating demand for input producing industry [1]. The Afghanistan economy is based on agriculture and animal husbandry. However, it is challenging to find statistical data on reliable economic information about the financial situation in Afghanistan. Afghanistan is one of the poorest countries in the world, and there are no sea borders on all four sides. According to the United Nations Development Program (UNDP), Afghanistan ranked 174 out of 186 countries in the Human Development Report. In the last 15 years, Afghanistan's GDP has dramatically reduced due to labor and capital losses [2]. Because there are no suitable industrial areas, the economy of the country is predominantly based on agriculture, and this sector is affected by climate conditions. Since Afghanistan has no significant source of income, the economy is mostly depended

on the external sources and financial assistance. Establishing a sustainable agricultural sector, creating jobs for unemployed population, and preventing corruption can be reported as the preliminary issue of Afghan economy. According to a survey conducted in 2012, the inflation rate was 6.4%, and the GDP per capita was \$595 [3] [4].

Rice is one of the oldest crop cultivated in the world for human nutrition like other products. According to some studies, the first wild rice plants occurred in India. However, some other scientists and archaeologists reported that the sowing date of rice fossils found in China about in 3000 BC. To date, many wild rice species have been found in different parts of the world, including the United States and Europe [5].

Rice is a nutritious crop. More than half of the population of China, India, Japan, Burma, Korea, Thailand, Palestine, and Brazil are fed with rice. Approximately 93% of world rice is produced in the Far East. It is also produced in the United States of America, Italy, Spain, Egypt, and in many western and middle east countries [6]. In crop year 2015/2016, there were around 158.8 million hectares

of rice-cultivated area worldwide. In 2016/2017, India was estimated to be the leading global producer of rice and to harvest about 44.5 million hectares [7].

Baghlan, Kunduz and Takhar provinces of Afghanistan have the most extensive areas for rice cultivation. Weather and soil conditions of these provinces are very suitable for rice cultivation. Laghman, Nengerhar, and Herat are the other rice-farming provinces. The weather conditions of these provinces are also efficient due to hot summer and warm winter. There are various types of local rice varieties in Afghanistan. Some names of these rice varieties are Luangi, Sadeh, Dehdadi, Company, Niloofar Garma, Niloofar Sardeh and Amiri. The total paddy farming area of Afghanistan is approximately 213 thousand hectares. The paddy produced in this area is about 480 thousand tons per year. Afghanistan's average rice yield is 2253 kilograms per hectare, while the average rice production in the world is 2400-2500 kg/ha, but the highest rice yield occurs in some European countries which amount to 4-5 tonnes per hectare [8]. Being the primary food source of more than half of the people living in the world, rice has an essential place regarding nutrition.

This study aimed to examine the problems that have been occurred in rice production and marketing in Takhar province of Afghanistan for the last two decades. The economic status, trade, cultivation, and structure of the processing sector of rice will be examined along with adequate recommendations for developing sustainable rice cultivation in this province.

2. Materials and Methods

The primary material of the study was secondary data including official statistics, reports, and earlier scientific research conducted in this field. Experts opinions and researchers observations and experiences regarding the subject matter were taken into consideration to identify problems in rice production and marketing, and to develop recommendations accordingly.

3. Research Findings

3.1. Rice production in the world

Rice is one of the essential foods for consumption in the Far East and South Asia. Rice consumption per capita is up to 200 kilograms, which is the most consumed product in the world after wheat [9].

Table 1. Global rice production. (Thousand metric tons)

Country	2015/16	2016/17	2017/ 18
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North America	6,289	7,292	5,847
Carabians	868	883	933
South America	15,783	16,978	16,441
European Union 28	2,050	2,068	2,090
The former Soviet Union	1,262	1,261	1,237
Middle East	2,392	2,455	2,475
North Africa	4,044	4,837	4,340
Sub Saharan Africa	15,701	16,397	16,025
East Asia	160,179	159,674	160,266
South Asia	152,263	157,145	153,825
South East Asia	111,317	116,515	119,591
TOTAL	472,963	486,783	484,331

Source: USDA February 2018 Office of Global Analysis

As shown in Table 1, rice production in the world has increased for the last years. In 2015, total rice production was approximately 472,996 thousand metric tons, and it reached up to 486,783 thousand metric tons in 2016. These figures show that rice production level increased by 13,820 thousand metric tons between two years. Asia is the world's largest rice producer continent. China ranks first in the world, while India, Indonesia, and Bangladesh are at the forefront countries in rice production. Approximately 68% of rice in the world is produced in Asia continent. Due to the favorable climate conditions, rice cultivation areas during 2016/2017 season increased by 2%. Meanwhile a 2% percent increase in the world population made a 5% contribution to global rice trade [10].

3.2. Overview of rice production, consumption, and trade in Afghanistan

Agriculture is a crucial sector for Afghanistan. About 70% of the population lives in rural areas and works on farms. Naturally, the Afghan economy is focused on the agricultural sector. But the agricultural infrastructure encountered significant damage during the 30-year war. Before the war in the 1970s, Afghanistan was an international supplier of agricultural products and 48% of the export revenue was obtained from these products. Furthermore, in the 1970s, Afghanistan was the world's largest producer of grapes, and it took a 20% share of the world's grape exports, and this share fell to 2.3% according to 2008-09 data. Also Afghanistan was self-sufficient for meat, milk, and cereals. Although the decline in agricultural production continues, the economy is still based mainly on the agricultural sector. In 2017, agriculture accounted for 66% of gross domestic product (GDP). In 2013-014, there were 1.4 million male workers under the age of 23 in the agricultural sector. It is estimated that this amount will increase to 1.9 million in 2018-019 and approximately 500

thousand young men and 160 thousand young women will participate [11].

Rice is the most essential primary food product after wheat in Afghanistan, and it has averaged about 8% of daily calorie intake (2,100 Kcal) and an average of 17 kg/year (2003/04-2013/14) per capita consumption. It is produced mainly in the northern and eastern (Kunduz, Baghlan, Takhar, Nangarhar, and Lagman) provinces of the country. In the 2011/12-2015/16 period, the shares of rice production in these provinces were 32%, 20%, 15%, 8%, and 7%, respectively. Rice was grown in approximately 6% of the total area under cereals and accounted for approximately 8% of the average total grain production in 2005/06-2014/15. On average, in the period 2001/02-2013/14, the country consumed about 493,303 tons of rice, of which 358,727 tons (73%) were produced domestically, and the remaining 134,394 tons (27%) were imported from Pakistan. Over the past two and a half years, the consumption, production, and imports of rice per capita in the country increased by 1.2%, 3.2%, and 5.2%, respectively.

Rice consumption is mainly dependent on rice imports to meet the growing demand of Afghanistan's growing population due to the small and semi-subsistence rice farming and low-quality of local rice varieties. On average, the country imported about 218 million tonnes of rice each year in the 2014/15-2016/17 period, accounting for about \$70 million (approximately 1.4% of the agricultural GDP). The majority of rice was imported from Pakistan. While some rice brands are imported under the name of other countries such as India, they are actually Indian rice varieties produced in Pakistan [12].

Table 2. Cereals productivity in Afghanistan (kg /ha):

Cereals	2014/15	2015/16	2016/17
Wheat	2,024	2,196	1,980
Rice	2,441	2,500	2,996
Barley	1,521	1,429	1,377
Maize	2,488	2,146	2,052

Source: Ministry of Agriculture, Afghanistan

Rice yield has an increasing trend as it reached 2996 kg per hectare in 2016/17 production period (Table, 2). Although rice consumption for food has a growing trend over the years, domestic production has a decreasing trend as it fell to 357 thousand tons in 2016/17 period (Table 3).

Table 3. Recent rice indicators of Afghanistan (thousand/tons)

Indicators	2013/14	2014/15	2015/16	2016/17
Total consumption	512	537	410	357
Use for food	467	478	486	496
Seeds	22	22	17	12
Waste	36	36	29	25

Import need	13	-1	122	176
Import	162	111	97	151
Deficit/Surplus	149	112	-25	-26

Source: Ministry of Agriculture, Afghanistan

As it is shown in Table 3, Afghanistan is mainly dependent on rice imports. Due to the lack of processing and packaging factories, domestic rice cannot compete with imported rice [13].

3.3. Socioeconomic structure of Takhar province

Takhar is one of the most prosperous and agricultural areas of Afghanistan, 400 km from the capital (Kabul). The province is surrounded by Badakhshan province in the east and southeast, Kunduz and Baghlan provinces in the west, Kapisa province in the south, and Tajikistan in the north. Takhar's surface area is approximately 124 thousand square kilometers. According to the Central Statistical Institute, the population of this province consists of 1,017,575 people and 121,276 families in 2017. An average of 6 people live per family, and the average population density per kilometer is 71.



Figure 1. Map of the research area

Source: https://en.wikipedia.org/wiki/Takhar_Province

Table 4: Composition of the population in Takhar (person)

Gender	Urban	Rural	Total
Male	68276	451744	520020
Female	68050	429505	497555
TOTAL	136326	881249	1017575

The highest portion of the working population in Takhar province is employed by the services sector (42.5%). The agricultural sector also plays an essential role in recruiting the labor force in the region after the service sector (35%). This was followed by the industrial sector (6.3%), and the construction sector (3.7%) [14].

3.4. Agriculture in Takhar

As Takhar is one of the agricultural provinces, its economy is mostly depended on agriculture, livestock, and horticulture. This province has 185,268 hectares of irrigated land, 288,549 hectares of rain-fed agricultural land, and 570 hectares of

unproductive land. The most produced agricultural commodities are rice, wheat, and barley. Wheat production amounted to 150,491 tons in the rainfed areas and 146,448 tons in irrigated lands. Besides, chickpeas, cotton, sesame, and beans are also cultivated in the province and make essential contributions to the economic situation of farmers.

The registered area of this province is 30087.40 hectares, while the enrolled agricultural lands are 29517.40 hectares. The remaining 570 hectares are registered as non-cultivated land. There are 494 greenhouses and 16 cold stores in the province, and it is foreseen that 300 greenhouses will be constructed in the future. There are 26 active channels for irrigation of agricultural lands, the construction of 22 additional irrigation canals in the province is foreseen. With the construction of these channels, irrigation problems of the farmers will be solved.

The major agricultural issues reported for Takhar province include water scarcity, insufficient infrastructure and lack of modern irrigation systems, natural disasters and the presence of animal diseases, the absence of farm equipment, lack of marketing storage possibilities, the high dependency of conventional agricultural methods [15].

Table 5: Agricultural production in Takhar province (tons)

Wheat	422,937	Pomegranate	1,520
Rice	149,110	Apple	2,296
Barley	3,103	Raisin	65,220
Maize	924	Peaches	1,791
Cotton	649	Safron	3,200 kg
Hububat	1,161	Melon/watermelon	162,211

Source: Agricultural province directorate of Takhar

3.5. Rice production in Takhar province

Takhar province is one of the areas with a pleasant climate and abundant agricultural land for rice cultivation. Therefore, in the province of Takhar, more rice is produced. However, the rice production, harvesting, packaging, marketing, production level, and rice cultivation level are not adequately controlled by the authorities.

In 2016/17, 144,519 tons of rice were obtained from 46,867 hectares of land. However, despite the decrease of 11367 hectares in agricultural land in 2017/18 period, rice production increases by 4591 tons. This increase can be attributed to farmers' adoption of the correct cultivation techniques, control of weeds, timely irrigation, use of fertilizers, and proper and careful work in the field. However, rice production and marketing face many problems which need to be solved in the long run.

Table 6. Rice cultivated areas and quantity produced, Area in hectares, production in tons.

2015/16		2016/17		2017/18	
Area	tons	Area	tons	Area	tons
36,030	154,409	46,867	144,519	35,500	149,110

Source: Ministry of Agriculture, Afghanistan

The most rice-producing district of Takhar is the district of Darqad. Unfortunately, in recent years the district faced severe terrorism and conflicts which caused a decline in cultivation areas. Therefore, the agricultural area in the district of Darqad has decreased from 14500 hectares to 8000 hectares [16].

3.6. Issues and solution recommendations for rice production and marketing

The main issues have been experienced by the rice sector in Takhar province, and their possible solution recommendations include the following.

Issue 1: The first issue to be solved for developing a sustainable rice sector in the province is low quality of production factors. Rice cultivation usually carried out by many small family farms. The insufficiency of the infrastructure limits the production and efficiency of the desired quality. The overwhelming majority of enterprises carry out their farming activities independently. There is no sufficient farm registration system to follow and control farming activities.

Solution 1: To solve this issue, the techniques of the fields and the conditions of farmers' health should be improved and effective control and monitoring should be provided. Studies should be conducted to provide training for employees following the technical and health regulations of small enterprises. It is also essential that the inventory belongs to the departments. In this context, the paddy production map of Afghanistan should be taken into consideration regarding expanding the cultivated areas, the environment and the appropriate species of the region.

Issue 2: Although there is a limited number of modern paddy processing plants which have significant production capacity and prepare products for the foreign market, they have problems in providing quality production factors required for a standard and sustainable production. High quality and continuous production factors directly affect processed paddy production.

Solution 2: The government should provide adequate paddy processing equipment to the factories who direct their processed product to international markets. Once these factories establish

good connections with foreign consumers, they will probably increase their sales and profit margins. Financial support must be provided to these companies for developing adequate infrastructure for research and development.

Issue 3: Takhar province could not develop its rice brand for domestic and international markets. Different rice products are sold in the name of Takhar Rice in various stores both in Turkey and abroad. Others can easily use the reputation of Takhar rice.

Solution 3: In order to solve this issue, both Takhar paddy producers and related local organizations must start and carry out brand works related to Takhar Rice. Along with the branding, the name Takhar Rice should be registered, and the outside producers and sellers can use the Takhar name. Otherwise, the name Takhar rice, which is used by everyone except Takhar, will lose its reputation in time with incorrect uses and poor quality rice.

Issue 4: The selling price of Takhar Rice is very low. The price in November 2018 is between \$0.6 and \$0.65 per Kg. If the producer sells it at these prices, he cannot make a profit or even get paid for his expenses.

Solution 4: The issue of low sales prices was the result of a small number of producers being dependent on a small number of traders. Traders always try to buy rice at predetermined low prices. Farmers who have no other alternative have to sell their products at this low prices. For this reason, producers must be organized through farmers cooperatives and unions. This will make it possible for them to act collectively in providing cheaper inputs, applying recent agricultural technology, and to have influence on selling prices.

Although the Takhar province has suitable climatic and soil condition for rice production and the agricultural environment hasn't contaminated with chemicals and pesticides, sustainable organic rice cultivation couldn't be developed. Since most of the developing countries have similar potential for cultivating organic crops [17], [18], and developing organic bazaars for local consumers [19], the Takhar province should be utilize this opportunity which will help to increase rice selling prices.

Conclusions and Recommendation

There is no production or cooperative organization involved in rice processing and marketing. However, producers believe that a rice marketing cooperative will be useful. The most significant expectation from such a cooperative is that marketing becomes an

alternative, payments are made on time, leading to branding and providing better price opportunities. In other words, it requires that the producers will have a permanent buyer and a better brand name in order to sell their products at a higher price. Producer organizations or marketing cooperatives to be established in the research field, will make significant contributions to the packaging, storage, and transportation of the products by the standards will help to reduce the cost of marketing services and provide regular products to the market.

Producers state that the number of processing facilities in the research area is very low. As farmers' capital is insufficient, they have to sell their products immediately after the harvest, sometimes at very low prices. Having processing facilities in the research area will allow the rice to be processed to higher value-added products by eliminating the necessity of selling at low prices. This will also contribute to standardized products and branding. It will also play an important role in the increase in producer revenues and the development of the regional economy.

The brand should be emphasized, entrepreneurs in the region should be made aware, encouraged and supported in the creation and management of a common trademark. In this way, creating a common brand will help to improve product quality and improve the performance of market services.

In the field of research, very few producers have graded the product they have harvested. This is the factors that negatively affect the standards, brand names, market demand and rice prices of the products. The producers should be informed about the importance of the classification of the rice crop.

No research institution in the region focuses only on rice production and marketing. There are few scientific studies on rice production techniques and the properties of Takhar province. In this context, research units to carry out research and development activities should be established, and coordination should be ensured.

Lack of information about the markets of the producers indicates that there are shortcomings regarding the market. Problems are gathered in the collection and dissemination of information on the supply and demand of the product in the market. An effective information and communication network should be established to collect and disseminate domestic and international information in the market and to disseminate it to all stakeholders in the sector.

The inadequacy of knowledge about production techniques leads to quantity and quality losses in the product obtained. Problems related to farming and

management procedures should be defined and solved within the framework of specific plans and programs taking into account the priorities.

Provincial and district agriculture directorates should pay more attention on Takhar rice and inform farmers about sales and marketing strategies. Efforts should be made to increase breeding activities in seeds, to reorganize seed prices and to facilitate and even subsidize the buyers. Relevant institutions should conduct research for Takhar rice and determine the most appropriate seeds, irrigation, fertilizer rate, and varieties as soon as possible. As a result, to achieve the old vitality of the Takhar rice and the economic value for the people of the region, it is necessary to encourage the production with various supports and thus to increase the production by strengthening the producers.

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