Role of Agriculture sector in Alleviation of Poverty in Pakistan

Ghulam Hussain[1], Farhad Manzoor[2], Shama Niamat[3], Naveed Anjum[4], Syed Yasin Shah[5], Dr. Muqeem ul Islam[6]

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Abstract:

Agriculture remains a cornerstone of Pakistan's economy, offering immense potential for poverty alleviation if managed effectively. This study explores the dynamic relationship between agricultural development and poverty reduction in Pakistan, highlighting how innovations in farming techniques, improved irrigation systems, and enhanced infrastructure can significantly boost rural productivity and income. Despite its agricultural base, Pakistan continues to struggle with widespread poverty due to structural challenges, poor policy execution, and underutilization of youth and women in the sector. The study analyzes the "vicious circle of poverty" and identifies agriculture as a key driver to break this cycle through employment generation, income redistribution, and food security. It emphasizes the importance of institutional reforms, investment in research and development, and targeted support mechanisms like microcredit and price policies. Empirical findings underscore that agricultural growth leads to measurable reductions in poverty, particularly when complemented by social inclusion and infrastructure development. The paper offers policy recommendations across short-, mid-, and long-term horizons for sustainable impact.

Key words:

Agriculture, Poverty Alleviation, Rural Development, Economic Growth, Pakistan

[1] *Foreign Service of Pakistan (FSP), Email: hussain_arain@yahoo.com*
[2] *Finance Division, Email: fmmabtd@gmail.com*
[3] *Government of Khyber Pakhtunkhwa (PMS), Email: sik_pms_officer@yahoo.com*
[4] *Ministry of Federal Education & Professional Training, Email: naveedanjum022@gmail.com*
[5] *Airport Security Force (ASF), Email: yasinshahasf@gmail.com*
[6] *Chief Instructor, National Institute of Management Peshawar, Email: muqeemci@nipapeshawar.gov.pk*

Introduction

Agriculture is one of the oldest traits of human civilization. Being an agrarian society, agriculture is the backbone of Pakistan's economy. Rapid urbanization and exponential population growth in recent years have resulted in a massive demand for agricultural products. The government is focusing on increasing rural growers' yields through infrastructural development, employing innovative techniques, modernizing the irrigation system, supplying certified seed varieties, and establishing modern supply chains, with the ultimate goal of alleviating poverty among the masses.
Advancement in the agriculture sector over time has increased output relatively; however, demand has risen exponentially.

Statement of the Problem

Agriculture in Pakistan, if properly managed, has the potential to significantly reduce poverty. Progress in the agriculture sector over time has contributed to poverty reduction, employment generation, and minimizing the inequality gap. Nonetheless, although Pakistan has made important strides in promoting agriculture and has achieved some success in reducing poverty, the challenges faced by this sector have become increasingly complex. The potential of agriculture to shape the future of poverty alleviation, as well as the challenges hindering this goal, needs to be critically examined.

Scope

This study has been conducted to examine and analyze the effect of the agriculture sector on poverty reduction. It will investigate the significance of agricultural growth in major and minor crops, livestock, and its contribution to poverty alleviation in Pakistan. It will further critically analyze agricultural policies and the role of institutions in combating poverty.

Poverty

Poverty is not simply the lack of money, but the inability to meet basic needs such as food, clothing, and shelter. The World Bank defines poverty as hunger and lack of shelter (www.gnb.ca/con). Traditionally, poverty refers to the lack of resources to provide life's necessities—food, clean water, shelter, and clothing. In today's world, it also includes access to healthcare, education, and even transportation (www.worldvision.ca).

In Pakistan, poverty is defined as "a state or condition in which a person or community lacks the financial resources and essentials to enjoy a minimum standard of life and well-being that is considered acceptable in society" (www.finance.gov.pk). The minimum wage in Pakistan is Rs. 25,000 per month (Pakistan Government, Finance Division, 2022).

"Poverty" in Pakistan

Pakistan's economy fluctuates daily, and the nation's progress remains slow. The causes of poverty in Pakistan are numerous, inhibiting economic growth and development, and trapping the poor in a vicious circle of poverty. The three major contributing factors to poverty in Pakistan are unchecked population growth, a large uneducated and poorly skilled population, and imbalanced taxation. Other factors include worsening law and order, social injustice, and ineffective government interventions.

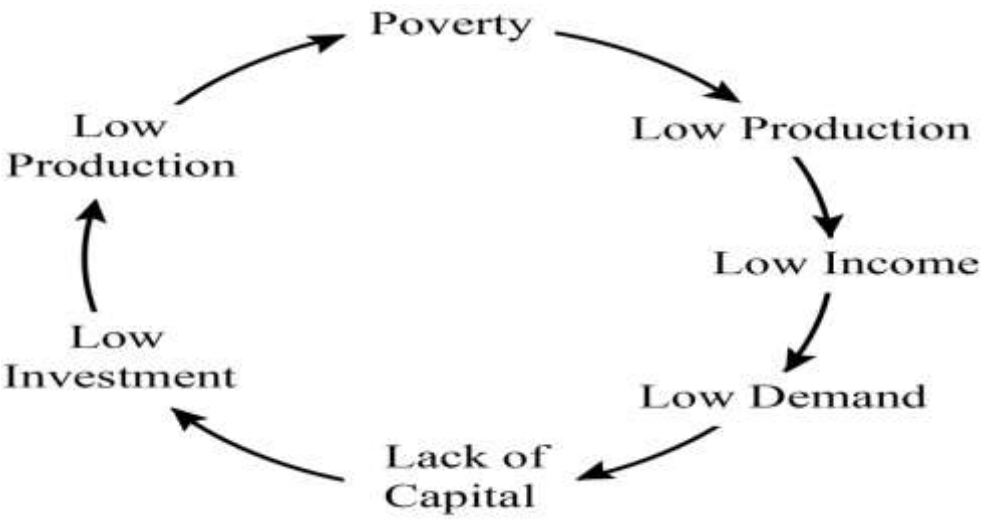
Vicious Circle of Poverty

Less developed countries suffer from poverty due to local issues and hurdles. These obstacles are interconnected in such a way that they form a strong vicious circle, resulting in a persistently low level of development.

A country remains poor because it lacks the capacity to save, which leads to low levels of investment and a deficiency of capital. Low productivity results in low income, reinforcing the cycle of poverty.

The vicious circle of poverty explains that an economy cannot escape poverty without the injection of external resources. These resources boost investment, increase income, and eventually reduce poverty.

Pakistan has taken on heavy borrowings but has failed to invest effectively in agriculture, manufacturing, and research and development. This failure has further entrenched the country in the vicious circle of poverty, and its economy continues to suffer (Byjus, 2022).



Role of Poverty Alleviation in Economic Development

According to Maslow's hierarchy of needs, poverty can be defined as the deprivation of the most basic needs: food, shelter, and clothing. The World Bank broadens the definition to include deprivation of healthcare, education, and employment, leading to an insecure future. Poverty is an undesirable state, and its reversal involves fulfilling basic needs, ensuring access to health and education, providing employment opportunities, and ensuring a secure and facilitated life.

Based on the lower-middle-income poverty rate, 39.2% of Pakistan's population lives below the poverty line. Research shows that four out of ten Pakistanis suffer from multidimensional poverty, with uneven distribution across the country's regions.

In Pakistan, poverty alleviation can spur economic development. This could lead to free education and healthcare, job creation, investment opportunities, entrepreneurial skill development, and the use of modern agricultural technologies such as solar tube wells, efficient irrigation techniques, hybrid and genetically modified seeds, climate-resilient varieties, and a shift from supply-driven to demand-driven marketing. These changes can broaden the agricultural base and reduce poverty.

Economic and social inequalities have a strong negative impact on economic growth, contributing to over 25% poverty. Eliminating these inequalities requires urgent corrective action to revive the economy and reduce poverty, which continues to plague Pakistan's development. Research has found that inflation, economic growth, investment, and trade openness are closely linked to poverty in Pakistan. Poverty alleviation could boost investments and foster economic development. Furthermore, research suggests that an increase of PKR 1,000 in per capita income can lift 1.6% of people out of poverty (Hayat U, 2019).

Agriculture

Role of Agriculture in the Development of Pakistan

Agriculture plays a vital role in uplifting Pakistan's economy and eradicating poverty. A significant portion of the labor force is engaged in the agriculture sector. It serves as the main source of food and supplies a substantial amount of raw materials to various industries. Agriculture also contributes heavily to the GDP. The percentage of cultivated land across provinces is: Punjab 77%, Khyber Pakhtunkhwa 14%, Sindh 5%, and Balochistan 4% (Finance, 2022). According to the Asian Development Bank's 2017 report, rising temperatures could reduce Pakistan's agricultural productivity by 7–10% by 2040. The following points highlight agriculture's role in economic development and poverty alleviation in Pakistan.

Irrigation as a Contributing Factor in the Agriculture Sector

Pakistan is blessed with abundant water resources. The Indus River and its tributaries irrigate 48 million acres through one of the world's largest contiguous irrigation systems—the Indus Basin Irrigation System—with an average annual water withdrawal of 101 MAF. Additionally, around 50 MAF of groundwater is extracted via 1.2 million tube wells. Water is essential to meet the food needs of Pakistan's growing population. However, rising population, reservoir sedimentation, reduced river flows, and climate change are placing immense stress on these water resources, gradually leading to water scarcity (Finance, 2022).

Major Source of Employment

The agriculture sector employs a large share of the country's labor force. It contributes approximately 45–48% to national employment. About 37.4% of the labor force is directly involved in agriculture, and over 65% of the rural population depends on it indirectly. Agriculture plays a significant role in reducing unemployment and alleviating poverty (Finance, 2022).

Contribution to GDP

Agriculture significantly contributes to Pakistan's GDP—currently at 22%. At the time of independence, it was the largest GDP contributor, although the service sector has since surpassed it. Today, agriculture remains the third-largest contributor. Livestock and fisheries are vital subsectors, offering employment and contributing substantially to exports. Livestock alone accounts for 61.89% of the agricultural sector and 14.04% of GDP. Pakistan ranks 5th among Muslim countries and 12th globally in farm output, and it is the world's 5th-largest milk producer, reinforcing the sector's foundational role in the national economy (Agriculture).

Foreign Exchange Earner

Agriculture is a major source of foreign exchange earnings. Key exports include cotton, rice, fruits, textiles, dairy products, and livestock. Collectively, the agriculture sector accounts for about 65% of the country's total export earnings.

Reduction in Poverty

Agriculture significantly contributes to rural development and poverty reduction. About 21% of Pakistan's population lives below the poverty line. The sector can reduce poverty while also stimulating non-farming employment and facilitating access to essential services such as sanitation, clean drinking water, electricity, healthcare, and education (Hayat U, 2019).

Food Security

With a population growth rate of 2%, Pakistan requires a robust agricultural sector to prevent food insecurity. Agriculture bears the responsibility of feeding the population, creating jobs, generating revenue, and alleviating poverty. Article 38 of the Constitution of Pakistan mandates the state to provide food to its citizens, which depends heavily on agricultural performance.

Increasing Tax Revenue

Higher tax revenue from agriculture, especially the non-farming subsector, enables greater public investment in development. Effective taxation within agriculture boosts GDP and facilitates job creation, further contributing to poverty alleviation and economic growth.

Major Crops

Key major crops include wheat, rice, cotton, sugarcane, and maize.

Associated Crops

Associated crops include fruits, vegetables, groundnut, rapeseed, sesame, safflower, sunflower, banana, soybean, millet, and gram.

Dairy and Livestock

The dairy and livestock sector contributes 49% of value addition within agriculture and 11.4% to Pakistan's GDP—surpassing the entire crop sector's contribution of 10.9% (Finance, 2022).

Fisheries and Poultry

Fisheries contribute 0.4% to the national GDP and form an important subsector within agriculture.

Global and Regional Rankings of Pakistan in Agriculture

Field	**World Ranking**
Seed Cotton (4,494,645 tons)	5
Rice (11,115,428 tons)	9
Onion (2,079,593 tons)	6
Mangoes, Teens, Guavas (2,270,229 tons)	5
Wheat (24,348,983 tons)	8
Dates (483,071 tons)	6
Sugarcane (66,888,011 tons)	5
Chickpea (446,584 tons)	5
Pulses (110,680 tons)	11
Okra (124,779 tons)	6
Goats (76,143,000 heads)	4
Buffaloes (40,002,000 heads)	2
Asses (5,417,000 heads)	3
Chicken (1,321,000 heads)	5
Camels (1,090,000 heads)	9
Meat (Buffalo – 1,085,000 tons)	2
Milk (Goat – 940,000 tons)	4
Meat (Goat – 491,000 tons)	3

Policies Governing Agriculture in Pakistan

Agriculture Transformation Plan (2020)

The Agriculture Transformation Plan (ATP) was developed after analyzing the value chains of 33 agricultural commodity clusters across the country. The main objective of the ATP is to transform agriculture from a supply-driven sector into a demand-oriented one that can compete both nationally and internationally. This is to be achieved through vertical integration rather than the horizontal expansion of value chain activities. The strategy aims to synergistically link different stakeholders along the value chains of these commodity clusters (Pakistan Government, Ministry of Planning, Development and Special Initiatives, 2022).

The ATP focuses on:

- Improving farm productivity
- Enhancing post-harvest management
- Strengthening value chain management
- Promoting the processing of agricultural commodities

National Food Security Policy (2018)

Article 38 of the Constitution of Pakistan mandates the State to provide basic necessities of life, including food, clothing, housing, education, and medical relief. The National Food Security (NFS) Policy aims to ensure a modern and efficient food production and distribution system that supports food security and nutrition through availability, access, utilization, and stability. It prioritizes poverty alleviation and the eradication of hunger and malnutrition.

Despite various initiatives, agricultural growth has not significantly benefitted Pakistan's rural poor. Previous policies focused primarily on major crops like wheat, rice, and sugarcane. Contributing factors to underperformance include:

- Slow technological innovation
- Inefficient and untimely input supply
- Inadequate extension services and technology transfer
- Limited infrastructure investment
- Market and trade restrictions
- Pest and livestock disease challenges
- Shortages of feed and fodder
- Lack of agricultural credit and tailored loan products

According to a report by Concern Worldwide and Welthungerhilfe, "As the year 2030 draws closer, achievement of the world's commitment to Zero Hunger is tragically distant." Furthermore, the Global Report on Food Crises (2021) predicts an increase in the severity and frequency of food crises. The World Food Programme reports that 41 million people are currently on the verge of famine.

Federal Price Support Policy

The price support policy aims to provide subsidies or regulate prices for agricultural commodities. It ensures that farmers receive fair compensation for their produce and are protected from market exploitation. The federal government enforces this policy through PASSCO and the Trading Corporation of Pakistan (TCP).

Pakistan Agricultural Storage and Services Corporation Limited (PASSCO)

Established in 1973 and operational since 1974, PASSCO is a public limited company with an authorized capital of Rs. 100 million and paid-up capital of Rs. 30 million. Of this, 75% was contributed by five nationalized commercial banks and ADBP (now ZTBL), while 25% was subscribed by the Federal Government. The Board of Directors, led by the Secretary of the Ministry of National Food Security & Research (Chairman), governs the corporation.

Major Functions:

- Maintain food security by conserving strategic food reserves
- Achieve self-sustainability through agro-business at national and international levels
- Ensure efficiency, accountability, and minimal loss or waste
- Implement support price mechanisms to stabilize markets and support farmers
- Meet targets set by the government's food policies
- Upgrade infrastructure and skills as needed
- Promote transparency, effective communication, and employee engagement

Trading Corporation of Pakistan (TCP)

Founded in July 1967 and registered under the Companies Act, TCP was Pakistan's first state trading initiative. It operates under the Ministry of Commerce and aims to:

- Achieve economies of scale via bulk transactions
- Prevent over/under-invoicing and safeguard foreign exchange
- Stabilize markets by counteracting speculative price hikes

- Ensure essential commodities are available to the public at affordable prices
- Provide fair prices to growers

Vision:
To serve the nation as a responsive, modern corporate entity attuned to national needs and global trade dynamics.

Mission:
To develop professional corporate structures, emphasize human resource development, adopt IT-based operations, ensure transparency, and maintain efficient resource usage.

Mandate:
Initially established to export agricultural goods and import essentials, TCP's revised roles (since 1995) include:

- Imports and exports
- Countertrade
- Procurement of lint cotton
- Inspection of brown rice exports to Europe
- Urea imports

Animal Quarantine Department (AQD)

AQD is an attached department of the Ministry of National Food Security and Research. It is responsible for quarantine, inspection, and certification of animals and animal products. AQD works with other agencies to protect livestock and wildlife from exotic diseases through regulation of imports, exports, and quarantine operations (Research, 2022).

Subsidiary and Supporting Institutions

Pakistan Agricultural Research Council (PARC)

PARC is the apex agricultural research body at the national level, functioning in partnership with the Ministry of National Food Security and Research. Its objective is to strengthen agricultural research systems at both federal and provincial levels (Pakistan Government, 2022).

Department of Plant Protection

Operating under the Plant Quarantine Act (1976), Agriculture Pesticide Rules (1967), and Agriculture Pesticide Ordinance (1971), the Department ensures plant protection and pesticide regulation across the country. Other supporting institutions working under or in collaboration with the Ministry of National Food Security & Research (MONFS&R) include:

- Fisheries Development Board
- Livestock Development Board
- Pakistan Oilseed Development Board

Analysis

Potential of the Agriculture Sector & Its Contribution to Poverty Alleviation

A 1% growth in the agriculture sector results in a 0.021% reduction in the poverty rate (Hayat U, 2019). Sustainable growth in agriculture is crucial for food security, rural development, and poverty alleviation. Furthermore, agriculture provides raw materials for industry, creating strong linkages with overall economic development. It contributes 22.7% to Pakistan's GDP and employs around 37.4% of the labor force (Economic Survey of Pakistan, 2022).

Improved agricultural production systems increase farm income, reduce consumer prices, enhance the diversity of food supplies, and generate exportable surpluses — all of which contribute to poverty reduction. In the post-COVID-19 era, the steep rise in commodity prices has underscored the sector's importance, particularly for countries that are net importers of food.

In 2021–22, the agriculture sector recorded a growth of 4.40%, surpassing the target of 3.5%. This growth was driven by high yields, attractive output prices, supportive government policies, and better availability of certified seeds, pesticides, and agricultural credit.

The crops sector outperformed expectations with a growth of 6.58% in 2021–22, compared to 5.96% the previous year. At the sub-sector level:

- Important crops grew by 7.24% (vs. 5.83% last year),
- Other crops by 5.44% (vs. 8.27%),
- Cotton ginning by 9.19% (vs. -13.08%).

Growth in the production of important crops was as follows:

- Cotton: +17.9%
- Rice: +10.7%
- Sugarcane: +9.4%
- Maize: +19.0%

Cotton production increased from 7.1 million bales to 8.3 million bales; rice from 8.4 to 9.3 million tonnes; sugarcane from 81.0 to 88.7 million tonnes; maize from 8.9 to 10.6 million tonnes. Wheat production, however, declined from 27.5 to 26.4 million tonnes.

Other crops, which account for 13.86% of agriculture value addition and 3.14% of GDP, grew by 5.44%, driven by increases in:

- Pulses: 29.82%
- Oilseeds: 24.75%
- Vegetables: 11.52%
- Fruits: 1.53%
- Fodders: 0.36%

Livestock, which accounts for 61.89% of agriculture and 14.04% of GDP, grew by 3.26% in 2021–22 (vs. 2.38% last year).

Fishing, with a 1.39% share in agricultural value and 0.32% of GDP, grew by 0.35% (vs. 0.73%).

Forestry, with a 2.14% share in agriculture and 0.49% of GDP, grew by 6.13% (vs. -0.45%).

Agricultural Growth (Base Year = 2015–16)

Sector	**2016–17**	**2017–18**	**2018–19**	**2019–20**	**2020–21**	**2021–22 (P)**
Agriculture	2.22%	3.88%	0.94%	3.91%	3.48%	4.40%
1. Crops (i+ii+iii)	1.37%	4.61%	-4.38%	6.32%	5.96%	6.58%
i) Important Crops	2.68%	4.27%	-8.59%	5.24%	5.83%	7.24%
ii) Other Crops	-1.24%	4.65%	3.62%	9.21%	8.27%	5.44%
iii) Cotton Ginning	5.24%	8.27%	-11.23%	-4.06%	-13.08%	9.19%
2. Livestock	2.89%	3.59%	3.65%	2.80%	2.38%	3.26%
3. Forestry	-2.92%	2.24%	7.22%	3.36%	-0.45%	6.13%
4. Fishing	1.22%	1.57%	0.78%	0.63%	0.73%	0.35%

Source: Pakistan Bureau of Statistics

Wheat

Wheat is Pakistan's staple crop and vital to national food security. It is cultivated on over 22 million acres and contributes 7.8% to agricultural value addition and 1.8% to GDP. Achieving self-sufficiency in wheat has consistently been a government priority.

Year	**Area (000 Hectares)**	**% Change**	**Production (000 Tonnes)**	**% Change**	**Yield (Kg/Hec.)**	**% Change**
2017–18	8,797	—	25,076	—	2,851	—
2018–19	8,678	-1.4%	24,349	-2.9%	2,806	-1.6%
2019–20	8,805	1.5%	25,248	3.7%	2,868	2.2%
2020–21	9,168	4.1%	27,464	8.8%	2,996	4.5%
2021–22 (P)	8,976	-2.1%	26,394	-3.9%	2,940	-1.9%

Cotton

Pakistan is the 5th largest cotton producer globally. Cotton and textile exports constitute around 60% of total exports. Cotton contributes 0.6% to GDP and 2.4% to agricultural value. However, over the past decade, cotton area has declined due to competition from other crops such as sugarcane and maize.

Year	**Area (000 Hectares)**	**% Change**	**Production (000 Bales)**	**% Change**	**Yield (Kg/Hec.)**	**% Change**
2017–18	2,700	—	11,946	—	753	—
2018–19	2,373	-12.1%	9,861	-17.5%	707	-6.1%
2019–20	2,517	6.1%	9,148	-7.2%	618	-12.6%
2020–21	2,079	-17.4%	7,064	-22.8%	578	-6.5%
2021–22 (P)	1,937	-6.8%	8,329	17.9%	731	26.5%

Sugarcane

Sugarcane holds great significance for sugar-related industries and is the second-largest agro-based industry after textiles. Its production contributes 3.7% to agricultural value addition and 0.8% to GDP. During 2021–22, sugarcane was cultivated on 1,260 thousand hectares, marking an 8.2% increase compared to the previous year's sown area of 1,165 thousand hectares. A bumper crop was recorded at 88.651 million tonnes, reflecting a 9.4% increase over the previous year's production of 81.009 million tonnes. This significant yield has contributed to employment generation and poverty reduction (Finance, 2022).

Table 2.5: Area, Production and Yield of Sugarcane

Year	Area		Production		Yield	
	(000 Hectare)	% Change	(000 Tonnes)	% Change	(Kgs/Hec.)	% Change
2017-18	1,342	-	83,333	-	62,096	-
2018-19	1,102	-17.9	67,174	-19.4	60,956	-1.8
2019-20	1,040	-5.6	66,380	-1.2	63,841	4.7
2020-21	1,165	12.0	81,009	22.0	69,534	8.9
2021-22(P)	1,260	8.2	88,651	9.4	70,341	1.2

P: Provisional
Source: Pakistan Bureau of Statistics

Rice

Rice is an important cash crop and, after wheat, the second major staple food item consumed in the country. It contributes 2.4% to value added in agriculture and 0.5% to GDP. During 2021–22, rice was cultivated on 3,537 thousand hectares, reflecting a 6.1% increase compared to 3,335 thousand hectares in the previous year. The record-high output stood at 9.323 million tonnes in 2021–22, which was 10.7% higher than the previous year's production of 8.420 million tonnes (Finance, 2022).

Year	Area (000 Hectares)	% Change	Production (000 Tonnes)	% Change	Yield (Kg/Hec.)	% Change
2017–18	2,901	—	7,450	—	2,568	—
2018–19	2,810	-3.1%	7,202	-3.3%	2,563	-0.2%
2019–20	3,034	8.0%	7,414	2.9%	2,444	-4.6%
2020–21	3,335	9.9%	8,420	13.6%	2,525	3.3%
2021–22 (P)	3,537	6.1%	9,323	10.7%	2,635	4.4%

Irrigation

During the monsoon season (July–September) 2021, rainfall was recorded at 125.0 mm, showing a decline of 11.3% compared to the normal average of 140.9 mm. In the post-monsoon season (October–December) 2021, rainfall stood at 23.5 mm against the normal average of 26.4 mm, reflecting a decrease of 11.2%. During the winter season (January–March) 2022, rainfall was 72.7 mm against the normal average of 74.3 mm, indicating a 2.2% decline (Finance, 2022). The rainfall recorded during the reference period is as follows:

Pakistan's Rainfall Recorded During 2021–22 (in Millimetres)

Season	**Normal****	**Actual**	**Shortage/Excess (mm)**	**% Shortage/Excess**
Monsoon (Jul–Sep) 2021	140.9	125.0	-15.9	-11.3%
Post-Monsoon (Oct–Dec) 2021	26.4	23.5	-2.9	-11.2%
Winter (Jan–Mar) 2022	74.3	72.7	-1.6	-2.2%

Source: Pakistan Meteorological Department
*: Area-weighted
**: Long period average (1961–2010)

Canal head withdrawals decreased by 0.05% during the Kharif season (April–September) 2021, reaching 65.08 MAF compared to 65.11 MAF in the same season of the previous year. During the Rabi season (October–March) 2021–22, withdrawals declined by 12% to 27.42 MAF from 31.21 MAF recorded the previous year (Finance, 2022). Province-wise details are as follows:

Canal Head Withdrawals (Below Rim Stations) (Million Acre Feet)

Province	**Kharif 2020**	**Kharif 2021**	**% Change (Kharif)**	**Rabi 2020–21**	**Rabi 2021–22**	**% Change (Rabi)**
Punjab	33.44	33.13	-1%	17.42	14.65	-16%
Sindh	28.80	28.96	1%	12.01	11.08	-8%
Balochistan	2.02	1.94	-4%	1.22	1.00	-18%
Khyber Pakhtunkhwa	0.85	1.05	23%	0.57	0.70	23%
Total	**65.11**	**65.08**	**-0.05%**	**31.21**	**27.42**	**-12%**

Source: Indus River System Authority

During FY2022, an amount of Rs. 90.312 billion (10% of the total PSDP) was allocated for 91 water sector development projects and studies, including:

- Mohmand Dam: Rs. 15 billion
- Diamer Basha Dam: Rs. 8 billion
- Diamer Basha Land Acquisition: Rs. 7 billion
- Kachhi Canal: Rs. 12 billion

Of the allocated amount, Rs. 57.544 billion was released by 31st March 2022, with actual utilization reported at Rs. 47.618 billion (Finance, 2022).

SWOT Analysis of the Agriculture Sector

Strengths	**Weaknesses**
- Availability of human resources	- Lack of a rural development strategy
- Increased crop productivity	- Unskilled labor
- Improved export capabilities	- Fragmented agricultural land
- Reduction of food gaps in some crops	- Migration of youth from rural areas
- Reformation of tenant–owner relationships	- Water resource issues due to mismanagement and poor storage infrastructure
- Abundant ground and freshwater resources	- High poverty and illiteracy
- Existence of legislation and regulations	- Lack of coordination among ARD stakeholders
- Participation of various entities in Agricultural Research & Development	
Opportunities	**Threats**
- Introduction of technology, including solarization	- Climate change leading to water scarcity
- Efficient water usage through drip irrigation (can save 50–60% water)	- Unsustainable extensive farming practices
- Improved rural facilities to retain youth	- Salinity and waterlogging
- Favorable terrain for oilseed cultivation	- Rapid urbanization
- Monsoon rains and four distinct seasons	- High global prices of hybrid seeds, fertilizers, and pesticides
- Fertile land	- Proliferation of unregulated residential colonies

EETH Analysis

Enhancement of Strengths	**Elimination of Weaknesses**	**Take Advantage of Opportunities**	**Hedges Against Threats**
- Impart skills to human resources - Promote PPPs for R&D - Modernize food processing - Implement land reforms - Improve access to high-yield varieties - Develop rural infrastructure - Enforce support price policy	- Remove hurdles in microcredit for farmers - Provide rural facilities - Establish agricultural colleges - Promote drip and drone irrigation - Expand microfinancing	- Solarize tube wells - Provide soft loans for drip irrigation - Utilize natural and human resources optimally	- Introduce climate-resilient crop varieties - Build large dams - Address salinity and waterlogging - Encourage vertical construction - Promote local R&D for agri-inputs

Non-Farming

Livestock and Poultry

Livestock

Livestock contributed approximately 61.9 percent to agriculture value added and 14.0 percent to the national GDP during 2021–22. Animal husbandry is the most significant economic activity for the rural population of Pakistan. More than 8 million rural families are engaged in livestock production, deriving around 35–40 percent of their income from this sector. The gross value addition of livestock increased from Rs. 5,269 billion in 2020–21 to Rs. 5,441 billion in 2021–22, showing an increase of 3.26 percent (base year 2015–16).

The government has renewed its focus on this sector for economic growth, food security, and poverty alleviation. The overall livestock development strategy aims to **foster** private sector-led development**, with the** public sector providing an enabling environment through policy interventions**.**

To address investment-related issues in the value-added livestock export sector, the government is considering developing this sector through the establishment of export meat processing zones, disease-free zones (for Foot and Mouth Disease [FMD], Peste des Petits Ruminants [PPR], and Highly Pathogenic Avian Influenza [HPAI]), facilitating the setup of modern slaughterhouses based on industry requirements, and offering various schemes through financial sector support.

The current government's focus includes breed improvement for enhanced productivity, establishment of nucleus herds, and identification of breeds that are well-adapted to various agro-ecological zones of Pakistan (Finance, 2022).

Estimated Livestock Population (Million Nos.)			
Species	**2019-20[1]**	**2020-21[1]**	**2021-22[1]**
Cattle	49.6	51.5	53.4
Buffalo	41.2	42.4	43.7
Sheep	31.2	31.6	31.9
Goat	78.2	80.3	82.5
Camels	1.1	1.1	1.1
Horses	0.4	0.4	0.4
Asses	5.5	5.6	5.7
Mules	0.2	0.2	0.2

Estimated figure based on inter census growth rate of Livestock ensus 1996 & 2006
Source: Ministry of National Food Security & Research

The position of milk and meat production for the last three years is:

Table 2.22: Estimated Milk and Meat Production			(000Tonnes)
Species	**2019-20[1]**	**2020-21[1]**	**2021-22[1]**
Milk (Gross Production)	**61,690**	**63,684**	**65,745**
Cow	22,508	23,357	24,238
Buffalo	37,256	38,363	39,503

Table 2.22: Estimated Milk and Meat Production			(000Tonnes)
Species	**2019-20[1]**	**2020-21[1]**	**2021-22[1]**
Sheep[2]	41	41	42
Goat	965	991	1,018
Camel[2]	920	932	944
Milk (Human Consumption)[3]	**49,737**	**51,340**	**52,996**
Cow	18,007	18,686	19,390
Buffalo	29,805	30,691	31,603
Sheep	41	41	42
Goat	965	991	1,018
Camel	920	932	944
Meat[4]	**4,708**	**4,955**	**5,219**
Beef	2,303	2,380	2,461
Mutton	748	765	782

Poultry meat	1,657	1,809	1,977

1: The figures for milk and meat production for the indicated years are calculated by applying milk production parameters to the projected population of respective years based on the inter census growth rate of Livestock Census 1996 & 2006.

2: The figures for the milk production for the indicated years are calculated after adding the production of milk from camel and sheep to the figures reported in the Livestock Census 2006.

3: Milk for human consumption is derived by subtracting 20 percent wastage (15 percent faulty transportation and lack of chilling facilities and 5 percent in suckling calf nourishment) of the gross milk production of cows and buffalo.

4: The figures for meat production are of red meat and do not include the edible offal's.

Source: Ministry of National Food Security & Research

The estimated production of other livestock products for the last three years is given below:

Table 2.23: Estimated Livestock Products Production:

Products	Units	2019-20[1]	2020-21[1]	2021-22[1]
Eggs	Million Nos.	20,133	21,285	22,512
Hides	**000 Nos.**	**18,139**	**18,751**	**19,384**
Cattle	000 Nos.	9,405	9,759	10,127
Buffalo	000 Nos.	8,622	8,878	9,142
Camels	000 Nos.	112	114	115
Skins	**000 Nos.**	**59,460**	**60,837**	**62,250**
Sheep Skin	000 Nos.	11,807	11,947	12,088
Goat Skin	000 Nos.	30,129	30,946	31,784
Fancy Skin	000 Nos.	17,524	17,945	18,377
Lamb Skin	000 Nos.	3,507	3,548	3,590
Kid Skin	000 Nos.	14,017	14,397	14,787
Wool	000 Tones	47.3	47.9	48.4
Hair	000 Tones	29.4	30.2	31.0
Edible Offal's	000 Tones	440	452	465
Blood	000 Tones	73.1	75.0	77.0
Casings	000 Nos.	60,069	61,461	62,888
Guts	000 Nos.	19,280	19,929	20,599
Horns & Hooves	000 Tones	64.3	66.2	68.2
Bones	000 Tones	961.0	990.3	1,020.7
Fats	000 Tones	304.5	313.6	322.9
Dung	000 Tones	1,362	1,405	1,448
Urine	000 Tones	413	425	437
Head & Trotters	000 Tones	274.6	282.4	290.4
Ducks, Drakes & Ducklings	Million Nos.	0.38	0.37	0.35

1. The figures for livestock product for the indicated years were calculated by applying production parameters to the projected population of respective years.

Source: Ministry of National Food Security &Research.

Poultry

The poultry sector is one of the most important segments of livestock, providing employment to more than 1.5 million people across the country. With an investment of over Rs. 750 billion, this industry has been growing at an impressive rate of approximately 7.5 percent per annum over the past decade. This growth has enabled Pakistan to rank 11th among the largest poultry producers in the world, with ample potential for further development.

Through farmer-friendly policies and interventions, the government has been encouraging both rural and commercial poultry production (Finance, 2022). The estimated production of commercial and rural poultry products for the last three years is given below:

Estimated Domestic /Rural & Commercial Poultry				
Type	**Units**	**2019-20[1]**	**2020-21[1]**	**2021-22[1]**
Domestic Poultry	**Million Nos.**	**89.84**	**91.22**	**92.62**
Cocks	Million Nos.	12.51	12.85	13.20
Hens	Million Nos.	43.93	44.72	45.52
Chicken	Million Nos.	33.40	33.65	33.90
Eggs[2]	Million Nos.	4,393	4,472	4,552
Meat	000 Tonnes	124.72	127.22	129.76
Duck, Drake & Duckling	**Million Nos.**	**0.38**	**0.37**	**0.35**
Eggs[2]	Million Nos.	17.18	16.47	15.78
Meat	000 Tonnes	0.52	0.50	0.48
Commercial Poultry	**Million Nos.**	**1,353.24**	**1,486.09**	**1,632.06**
Layers	Million Nos.	59.82	64.01	68.49
Broilers	Million Nos.	1,279.76	1,407.73	1,548.51
Breeding Stock	Million Nos.	13.66	14.34	15.06
Day Old Chicks	Million Nos.	1,336.71	1,470.38	1,617.41
Eggs[2]	Million Nos.	15,723	16,797	17,944
Meat	000 Tonnes	1,531.60	1,681.64	1,846.48
Total Poultry				
Day Old Chicks	Million Nos.	1,370	1,504	1,651
Poultry Birds	Million Nos.	1,443	1,578	1,725
Eggs	Million Nos.	20,133	21,285	22,512
Poultry Meat	000 Tonnes	1,657	1,809	1,977

1. The figures for the indicated years are statistically calculated using the base year 2005–06.
2. The figures for Eggs (Farming) and Eggs (Desi) are calculated using poultry parameters for egg production. Source: Ministry of National Food Security & Research

SWOT Analysis of the Livestock Sector

Strengths	**Weaknesses**	**Opportunities**	**Threats**
• Strong financial base • Demand-oriented sector • Sound public-private partnership • Supportive of local culture • Easy management	• Weak health support system • Adulteration issues • Lack of modern processing plants • Poor hygienic conditions in slaughterhouses • High costs of hatcheries and feed	• Rising demand in the domestic market • Growth in the halal food international market • Expansion of animal husbandry in international markets	• Disease outbreaks • International market competition • - Economic recession

EETH Analysis

Enhancement of Strengths	**Elimination of weaknesses**	**Take Advantage of Opportunities**	**Hedges against-Threats**
-Insurance policies for livestock -R & D in Public private Partnership -Credit for SME	- Standardized Health Support System through PPP -Monitoring Adulteration& Hygienic conditions through Authorities -Modernizing Processing plants	-Increase production to meet rising demand -Improve quality to capture halal food International Market	- Veterinary Centers for Diseases -Improve quality to compete in International Market

Legal & Institutional Analysis

Institutions Related to the Agriculture Sector

The following institutions have long governed the development, research, and regulation of the agriculture sector in Pakistan:

Pakistan Agricultural Storage and Services Corporation Limited (PASSCO)

Established in 1973 and commencing operations in May 1974, PASSCO was registered as a public limited company with an authorized capital of Rs. 100 million and a paid-up capital of Rs. 30 million. Seventy-five percent of the paid-up capital was contributed by five nationalized commercial banks and ADBP (now ZTBL), while the remaining 25% was subscribed by the Federal Government. (Pakistan Government, PASSCO, 2022)

Trading Corporation of Pakistan (TCP)

TCP intervenes in the market to prevent shortages of essential commodities and to ensure their availability to the public at affordable prices. Its price support initiatives are designed to ensure that growers receive fair compensation for their agricultural products.

Animal Quarantine Department (AQD)

An attached department of the Ministry of National Food Security and Research, AQD is responsible for animal quarantine, inspection, and certification services in Pakistan. It serves as the lead agency in collaborating with other institutions to protect wildlife and the livestock industry from the introduction and spread of exotic diseases by regulating the import, export, and quarantine of animals and animal products.

SWOT Analysis

Deptt	Strengths	Weaknesses	Opportunities	Threats
PASSCO	- Adequately funded -Technically sound HR -Reliability as public entity -Storage Infrastructure -Minimum support price	-Only one commodity -Poor distribution of "Bar Dana" -lack of coordination with provincial authorities -orthodox storage techniques and data collection/forecast	-Focus is being shifted to "demand driven" - Technical knowledge of International best practices for supply chain management	-Smuggling Climate change -Natural Disasters
TCP	-Legal Entity for price stability of essential commodities -Ingress in market	- Faulty data collection - Mismanagement/inefficiency in coordination and inspections	-Global price variation of Agri products -Consistency in Agriculture sector's growth	-Rival's productivity -Poor quality assurances by others countries
AQD	-legal entity -Inspection facilities for livestock and poultry - Infrastructure for diagnosis of diseases in animals	-lack of implementation of its policies -lack of best practices in meet processing	-Halal international food Market - Animal husbandry in international market	-Rival's productivity and quality - Animal diseases

Gap Analysis in Policies, Institutions, Management, and Agricultural Practices in the Agriculture Sector of Pakistan

According to the **Agriculture Transformation Plan 2020**, the agriculture sector is expected to transition from a **supply-driven** to a **demand-driven** model through value chains of agricultural commodity clusters distributed across the country. The plan encompasses clusters where these commodities are produced, marketed, processed, and traded.

Actual Scenario of the Agriculture Sector (kg/ha):

Province	P/yield of Wheat	P/ yield of Rice	P/yield of maize	A/yield of wheat	A/ yield of Rice	A/yield of Maize	Yield gap of wheat	Yield gap of rice	Yield gap of maize
Punjab	6825	9443	8245	2825	1967	6132	4000	7476	2113
Sindh	6851	11113	6865	3322	3574	973	3529	7539	5892
KP	6548	8512	7500	1814	2377	1863	4734	6135	5637
Baluchistan	6500	8000	6125	2276	3276	1069	4224	4724	5056
Pakistan	6681	9267	7184	2780	2483	4425	3901	6784	2759

(Source: Crop Yield Gap Analysis Pakistan, 2020. ZTBL)

The table clearly shows the actual performance of the agriculture sector against its total potential. It helps identify existing gaps and provides viable solutions to improve agricultural value and its role in poverty reduction. The following areas highlight how the targeted results can be achieved through the analysis of yield gaps and potential:

Improving Efficiency

The analysis of gaps and potential has been carried out in the following areas:

- **Farm productivity**: Enhance per-hectare yields by promoting group farming and clustering among small landholders.
- **Water management**: Improve water efficiency through modern technologies such as solar-powered tube wells and drip irrigation.
- **Post-harvest management**: Reduce losses through improved pesticide use and adoption of genetically modified seeds.
- **Climate compatibility**: Align harvesting practices with climate variations and local terrain conditions.
- **Microfinancing**: Provide financing through Microfinance Institutions (MFIs) with easy repayment terms.
- **Market mechanisms**: Protect farmers' earnings by establishing structured market systems and reducing reliance on intermediaries.

Expansion

- **Timely microfinancing**: Offer loans through MFIs under favorable conditions to encourage cultivation of new crops.
- **Demand-driven approach**: Base crop expansion on market demand and potential new markets.
- **Crop variety**: Promote the cultivation of crops like olives and pulses to reduce the burden on foreign exchange.
- **Tax incentives**: Provide tax exemptions and subsidies for introducing new crop varieties.
- **Infrastructure development**: Enhance storage facilities and market accessibility.

Diversification

- **Value addition**: Convert lower-value goods (e.g., wheat, barley, fruits) into higher-value products (e.g., bakery items, noodles, dry fruits) in line with international standards and market demand.
- **Support for processing units**: Offer subsidies for small-scale processing units and promote cottage industries in rural areas.
- **Value chain management**: Improve the quality of agricultural produce to meet both domestic and international market requirements.

Analysis of the Yield Gap per Hectare in Pakistan

In Pakistan, the agriculture sector suffers from underutilization of its resource potential, resulting in low per-hectare yields. Climate significantly affects agricultural outcomes, which in turn influence commodity prices, national output, economic growth, and poverty alleviation (Khan et al., 2020). The table below illustrates the provincial and national potential yields, actual yields, and yield gaps for major food crops.

Province	Potential Yield of Wheat	Potential Yield of Rice	Potential Yield of Maize	Actual Yield of Wheat	Actual Yield of Rice	Actual Yield of Maize	Yield Gap in Wheat	Yield Gap in Rice	Yield Gap in Maize
Punjab	6,825	9,443	8,245	2,825	1,967	6,132	4,000	7,476	2,113
Sindh	6,851	11,113	6,865	3,322	3,574	973	3,529	7,539	5,892
Khyber Pakhtunkhwa (KP)	6,548	8,512	7,500	1,814	2,377	1,863	4,734	6,135	5,637
Balochistan	6,500	8,000	6,125	2,276	3,276	1,069	4,224	4,724	5,056
Pakistan	6,681	9,267	7,184	2,780	2,483	4,425	3,901	6,784	2,759

(Source: Crop Yield Gap Analysis Pakistan, 2020. ZTBL)

Pakistan's food supply and prices remain highly dependent on good yields rather than any institutionalized process of technical change. As a result, the country is vulnerable to sharp recessions (Gizewski and Homer-Dixon, 1996).

There is considerable scope for another 'Green Revolution' across various crops. Although the low yields in Pakistan's crop sector compared to world averages raise concerns, they also indicate opportunities for improvement through addressing yield gaps. Bridging these gaps could generate employment and significantly contribute to poverty reduction.

Analysis of Food Security in Pakistan

Food insecurity is about more than just the physical scarcity of food in markets; it also reflects the inability to afford food, especially nutritious and wholesome options. In the 2021 Global Hunger Index (GHI), Pakistan ranked 92nd out of 116 countries, with a hunger level classified as "serious" and a score of 24.7. Regionally, Pakistan fared better than India (ranked 101) but lagged behind Bangladesh (76) and Sri Lanka (65) (Finance, 2022).

Pakistan's economic and financial policies have widened social and economic disparities, increasing the number of food-insecure people. Over the last three years, persistent double-digit food price inflation, coupled with declining incomes, has worsened food insecurity. The World Food Programme (WFP) estimates that approximately 43% of Pakistanis are food insecure, with 18% suffering from acute food insecurity.

According to the WFP, affordability is the greatest barrier to achieving a nutritious diet. The majority of Pakistanis cannot afford nutritionally adequate food. Therefore, merely increasing food availability is not enough. Ensuring access to healthy and safe meals is equally—if not more—important for achieving universal food security and addressing widespread stunting and wasting among children.

To prevent future food crises, the government must focus on:

- Improving the value chain of fruits and vegetables
- Enhancing storage capacity
- Promoting crop diversification
- Strengthening water management
- Adopting climate-smart agriculture

Additionally, prioritizing value addition in agriculture and maintaining subsidies on essential crops are crucial for food security.

SWOT Analysis of Food Security

Strengths	**Weaknesses**	**Opportunities**	**Threats**
- Legal framework (Article 38) - National-level direction and coordination - Synergies among provinces - Strong agricultural base	- Overlapping policies and efforts - Political differences between federal and provincial governments - Implementation gaps - Limited microcredit availability - Inadequate extension services and technology transfer - Trade and marketing restrictions - Unskilled labor	- Favorable seasons for diversification - Availability of genetically modified seeds - Rising international demand	- Climate change - Natural disasters - Water mismanagement - Lack of land reforms

EETH Analysis

Enhancement of Strengths	**Elimination of Weaknesses**	**Take Advantage of Opportunities**	**Hedges Against Threats**
- Synchronize policies among all stakeholders - Public-private partnerships (PPP) to enhance R&D - Modernize the agriculture base - Effectively implement support price policy	- Eliminate overlapping policies - Minimize political differences between federal and provincial governments - Bridge gaps through: • Large-scale microcredit schemes • Adequate extension services and tech transfer • Improved marketing and trade • Training institutions for skilled labor	- Solar-powered tube wells - Soft loans for drip irrigation - Optimal use of natural and human resources	- Introduce climate-resilient crop varieties - Strengthen coordination for freshwater management - Immediate land reforms with stakeholder consultation - Proactive disaster preparedness

Analysis of Food Prices in Pakistan Amid the Russia-Ukraine War

Pakistan imports a significant amount of wheat, pulses, and oilseeds from Russia and Ukraine. In the last financial year, these two countries accounted for:

- 77.3% of total wheat imports
- 19.3% of pulses imports
- 10.4% of oilseed imports

Although Pakistan is not heavily reliant on Russia or Ukraine for fertilizers and fossil fuels, the country is still affected by rising international prices for both.

Due to high fertilizer prices and drought in some regions, Pakistan missed its wheat production target of 28.9 million metric tons (MMT) in 2021–22. As a result, Pakistan will likely need to import around 3.0 MMT of wheat in the near future. Wheat prices were already at historically high levels, and the ongoing conflict has pushed them even higher. Domestic production costs have also surged due to increased fertilizer and energy prices, leading to further price hikes in the local market.

Cooking oil and ghee—staples in Pakistani households—have also been impacted. Pakistan's food import bill is approximately US$4 billion, of which US$2.7 billion (67%) is spent on edible oil. The country's annual edible oil requirement is around 4.1 MMT, but local production meets only 11% of this demand.

Since the start of the Russia-Ukraine conflict:

- Cooking oil prices in Pakistan have increased by 14.2%
- Vegetable ghee prices have risen by 15.8% in just six weeks

This trend is expected to continue due to a global supply shortage. Persistently rising prices will likely push more people below the poverty line. *Source: Food and Agriculture Organization of the United Nations, Pakistan*

Comparative Analysis of Agriculture Sector Performance: Institutions, Policies, Management, and Productivity

After a detailed analysis of federal and provincial agricultural policies, it has been observed that the Agriculture Transformation Policy 2020 has successfully addressed the core issues of Pakistan's agriculture sector and provided a comprehensive roadmap for reform.

The policy proposed transitioning the sector from a supply-driven to a demand-driven model. Given that agriculture is predominantly based in rural areas, its development is directly linked to poverty alleviation. In line with this policy, the provinces have replicated and adapted their strategies based on the framework of the Agriculture Transformation Plan 2020. As a result, the sector has shown significant improvement and has outperformed, surpassing the targets set since 2020 (Economic Survey of Pakistan, 2022).

However, the main objective of transforming agriculture from a supply-driven to a demand-driven system remains unfulfilled. This is primarily due to a lack of coordination among the federal and provincial governments, relevant institutions, and key market stakeholders.

Secondly, the technological interventions envisioned in the policy have not been implemented. Public-private partnerships in areas such as research and development, seed certification, infrastructure development, market access, and especially cluster/grouping-based agriculture have not materialized.

Thirdly, institutions have largely failed to eliminate bureaucratic red tape, nepotism, inefficiency, and the misutilization of resources—further hindering progress in the sector.

Comparative Analysis of Agriculture Sector *of Pakistan with India, Bangladesh, China, New Zealand, US, Australia, Ukraine*

(Yield Kg/hectare)

Crop	Pak	India	China	Bangla	New Zealand	US	Aus	Ukraine
Wheat	2,940	3,500	6,081	3,029	9,197	8,692	2,036	4,852
Rice	2,635	2,700	5,918	4,618	nil	7,616	10,000	3,171
Maize	6,436	6,105	7,065	7300	11689	11,000	7,000	7,000
Sugarcane	70,341	82,000	80,000	40360	nil	70,000	70,000	3,710

Economic survey of Pakistan 2021-22)

(India Annual yield Statist Research Department, FY 2021)
https://www.ceicdata.com › China ›. yield-per-hectare

Indicators	Pak	India	China	Bangla	New Zealand	US	AUS	Ukraine
Population	220 m	1.38 b	1.402b	165m	5.08m	340m	25.6 m	44m
GDP contr.	22.4%	19.9%	16.47%	11.63 %	5.65%	5%	3%	9.27%
Poverty rate*	35%	13.7%	1.70%	37.44 %	**0**	**1%**	**0**	**0.1%**
Labor eng. in Agri.%	37.4%	45.6%	24.73%	37.75 %	5.55%	10.3 %	2.5%	14.1%
Per capita Income	1,798 U$	1,947 U$	9,020U$	2,227 U$	48,802U $	62,20 0U$	57,30 0US	1800U$

(www.worldbank.org/en/home)
(www.worldpopulationreview.com)
*Income less than 3.02 U$ per day.

Conclusion

Pakistan is a populous country, and poverty continues to rise. The economy is heavily dependent on agriculture, which significantly contributes to the national GDP. Although Pakistan has an agricultural base and a large youth population—many of whom are directly or indirectly linked to the agriculture sector—young people appear reluctant to pursue careers in agriculture. To address this, the government launched the comprehensive Agriculture Transformation Plan 2020, aimed at realigning the direction of the sector. However, this plan has produced limited results in terms of youth and women engagement, though it has had some positive impact on poverty alleviation.

A 1% growth in the agriculture sector results in a 0.021% reduction in poverty levels, indicating that agricultural growth plays a crucial role in poverty reduction in Pakistan. Associated sectors such as cash crops, livestock, fisheries, and forestry also contribute to poverty alleviation by generating employment, increasing output, and narrowing the income inequality gap.

The impact of agricultural growth on poverty reduction depends on both its direct and indirect effects and its overall contribution to the economy. If properly managed, agriculture has the potential to significantly reduce poverty. Over time, advancements in the sector have helped alleviate poverty, generate employment, and reduce inequality. Empirical evidence suggests that improvements in agriculture have increased the income of marginalized communities, enabling farmers to lead more prosperous lives.

In developed countries, the input-output ratio in agriculture is significantly higher than in developing countries like Pakistan. A strong agricultural economy can foster social progress by enhancing productivity, employment, and income in rural areas. Modernized farming techniques and standardized food processing can meet the staple food demands of both developed and developing countries. Efficient market operations, backed by public support and customer-focused regulations, are essential. Developing a value chain mechanism is key to generating revenue and alleviating poverty.

Recommendations

Short-Term

- **Climate Adaptation**: Pakistan, being a semi-arid country, is vulnerable to climate change. The government should promote genetically modified seeds compatible with local climates via the Federal Seed Certification & Registration Department through public-private partnerships. Solarization, drip irrigation, and laser leveling should be financed by ZTBL and other microfinance institutions (MFIs). Provincial governments should invest in small rainwater reservoirs at the village level to store monsoon water for wheat cultivation.
- **Farmer Grouping**: Small landowners should be grouped to form larger farms where sowing, irrigation, and harvesting can be carried out simultaneously using mechanized techniques. This would facilitate investment and increase productivity.
- **Support Price Policy**: PASSCO should engage in public-private partnerships (PPP) and consider outsourcing its procurement and storage functions. It could focus on regulating and monitoring crop markets. Support prices should be cost- and market-oriented, and PASSCO's mandate should expand to include more major crops. TCP should be tasked with exploring global markets.
- **Protecting Agricultural Land**: Housing societies must not be allowed to expand onto agricultural land. Vertical construction should be encouraged. Relevant laws, including the Societies Act, must be strictly enforced.
- **Microcredit Access**: Government oversight is needed to ensure MFIs provide timely, collateral-free loans to small farmers. Further support should be extended to strengthen these institutions.

Mid-Term

- **Pest and Disease Resilience**: To ensure sustainable growth, pesticide standards must be enforced nationwide. The Department of Plant Protection should lead efforts to maintain uninterrupted pesticide supply in collaboration with private stakeholders, improving productivity and rural income.
- **Women Empowerment**: Women's role in agriculture should be prioritized. Currently underutilized, rural women can significantly contribute to economic and social development. Providing small loans and targeted programs can improve income, education, health, and mobility, driving societal change and reducing poverty.

Long-Term

- **Research and Development**: PARC, NARC, and universities should receive adequate funding through local and international sponsorship. Successful innovations should be patented in the sponsor's name to encourage research, establish strong farmer-industry links, and boost profitability.
- **Infrastructure Development**: The demand for high-value perishable products (e.g., fruits, vegetables, dairy, meat) is rising. To capitalize on this, major investments in stable electricity (e.g., solar energy), transport networks, and supply chains are required.
- **Urbanization Management**: To counter unplanned urban migration, rural areas should receive major policy reforms and investment. Enhanced healthcare, education, sanitation, and public service infrastructure would help retain the rural population and encourage agricultural development and poverty reduction.

Logical Framework Matrix for Poverty Alleviation Through – Institutions

INPUTS	OUTPUTS	OUTCOMES	IMPACT
Govt. Policies & Interventions	- Effective implementation of policies and interventions - Optimal utilization of fertile land -Better Water management -Fertilizers & Pesticides -Public Private Partnership	-Increased water availability - Wealth generation -Employment generation	- Food Security -Economic Boost - Increase Foreign Reserve -Poverty Alleviation -High Living Standard -Reduce Urbanization
Human Resource	-Increase knowledge base -Availability of Trained & Efficient HR	-Increase productivity -Meeting Standards	
Financial Resources	-Easy Access to Micro Finance	-Increased agriculture land & productivity -More choices for Farmer to opt	

Logical Framework Matrix for Poverty Alleviation Through Agriculture-Farming

Inputs	Activities	Outputs	Outcomes	Impact
-Fertile land **-Water resources** **-Seeds** **-Fertilizers & Pesticides**	-Laser levelling of land -Seed selection & sowing timings -Water management -Utilization of fertilizers & pesticides -Harvesting	YEILD	-Increased productivity -Wealth generation -Employment generation	-Food Security -Poverty Alleviation -High living Standard -Increase Foreign Reserve -Reduce Unplanned Urbanization -Economic Boost -Increase in Aggregate demand -Better Economic Outlook
Human Resource	-Provide services for production			
-Machinery & Equipment **-Tube well**	-Enhance the efficiency of production process -Technical interventions -R & D			
Govt. and Private institutions **-Producer** **-Market Stake holders**	-Decisive role starting from production till final disposal -Public Private Partnership -Seed Certification -Training			

Logical Framework Matrix for Poverty Alleviation Through Agriculture-Non-Farming

Inputs	Activities	Outputs	Outcomes	Impact
-Suitable land & environment **-Breeding** **-Feed** **-Vaccination**	-Efficient utilization of resources	Production	-Increased productivity -Wealth generation -Employment generation	- Food Security -Poverty Alleviation -High living Standard -Increase Foreign Reserve -Reduce Unplanned Urbanization -Economic Boost -Increase in Aggregate demand -Better Economic Outlook
Human Resource **-Skilled labors** **-Vets**	-Services in maintenance and production			
-Machinery & Equipment	-Feeding and water equipment -H-type multi-tier layer coop -Infrared bulbs and heaters -Gas brooder -Incubator -Milking machine -Calf puller -Calf feeding bottle			
Govt. and Private institutions **-Entrepreneur** **- Public Private Partnership** **-Market Stake holders**	-Decision Maker -Formulation and execution of plan -Training to labor -Arrangement and efficient utilization of resources -Use of marketing tools			

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