

Agriculture decline in Pakistan and how to counter it.

1- Introduction

Agriculture sector of Pakistan is crippled by several challenges. The force of agriculture in contributing to development of the country has been paralysed. Certain policies and reforms are mandatory to reinvigorate its potential.

2- An overview of situation of agriculture in Pakistan

~~2.1) Scarcity of water~~

- i- Agriculture employs 31.4% of national labour force.
- ii- 70% exports of country dependent on agriculture.

~~2.2) Lack of innovation and~~

3- Causes of agricultural decline in Pakistan

3.1) Scarcity of water

- i- Pakistan's per capita water availability has dipped below 1000 cubic meter per year.

3.2) Lack of innovation and technology

- i- Farmers still using decade old methods
- ii- No use of robots, drones, sensors.

3.3) Inadequacy of infrastructure and market access.

- i- Perilous situation of roads and transport
- ii- Unavailability of storage infrastructure.

3.4) High prices of agricultural inputs

i- Prices of agricultural inputs has raised upto 200-250% in last five years.

3.5) Climate related disasters.

i- Floods of 2022 inundated 4.9 million hectares of cropland in Sindh province.

4- Effects of agricultural decline in Pakistan

4.1) Decreased economic growth

i- Agriculture; 2nd contributor in economy.

ii Agriculture's contribution decreased by 2.85%

4.2) Prevalence of food insecurity and hunger

i- Pakistan ranked 99 out of 121 in

Global Hunger Index.

4.3) Import of food commodities

i- Food imports go up by 15 in first half of FY22-23.

4.4) Rise in poverty

i- Poverty has reached more than 40%.

4.5) Slowdown in industrial sector.

i- Reduced supply of raw materials

ii- Disruption in supply chain.

5- Measures to counter agricultural decline in Pakistan

5.1) Provision of subsidies on agri products.

i- Withdrawal of duty on imported seeds.

ii- Eliminating excessive tax on fertilizers

5.2) Easy availability of agri loans

i- Loans for tractors and solar power tubewell.

5.3) Reduce energy consumption in agriculture.

- i- Eliminating fossil fuel footprints from the agriculture and replacing them with clean energy.

5.4) Discourage flood system of irrigation.

- i- Using drip and sprinkling system for orchards
- ii- Zero tillage technique for traditional crops.

5.5) Using modern technology in agriculture.

- i- To allow business to be more efficient, safer and profitable.

5.6) Education and training of farmers

- i- Knowledge about sensors, automation, digitalization
- ii- Arranging workshops, demonstration plot, farmer groups.

5.7) Enhancing storage facilities

- i- Storing at desired temperature, pressure, humidity.
- ii- Prevents 30-40% post harvest losses.

5.8) Public Private partnership to sustain agricultural progress.

- i- It can help in investment in infrastructure.
- ii- Promote linkage between market and private buyers.

6- Conclusion

"If agriculture goes wrong, nothing else will have a chance to go right", says famous Indian agricultural scientist M. S. Swaminathan. This is best applied to the situation of Pakistan. Pakistan is entangled in many issues, mainly economic. This is due to agricultural decline in Pakistan. Pakistan is an agrarian economy, and future of its population is heavily dependent on agriculture. But agriculture sector of Pakistan is incapacitated by various complications. Causes of this agricultural dilemma are ubiquitous, such as water scarcity and climate challenges which results in disasters like floods and droughts. Also, the infrastructure is not satisfactory. Pakistan lags behind in respect of innovation and technology in agriculture. Rising costs of agricultural inputs have blocked the way of its progress. This decline is manifested in the form of reduced economic growth and food insecurity. Inflation has reached its zenith, due to surge in food prices. Industrial growth is slow and poverty and social inequality are omnipresent in the country. Certain, agriculture

centered measures and policies are essential to revitalise its potential.

These includes, provision of subsidies on agri products and agri loans.

A mechanism must be provided with to replace flood system of irrigation with sprinkling. Education and training of formers is essential to cautiously use nutrient fertilizers and quality seeds.

Also, to reduce energy consumption and adopting environment friendly methods.

Public-private partnership can be a key facto to help sustain agriculture.

Agriculture is the second highest sector contributing to country's economy with share of 22.9 per cent. ~~Followed~~

It employs about 37.4 per cent of the national labour force. About

70 per cent of Pakistan's exports are directly or indirectly dependent upon agriculture. Pakistan is one

of the few countries that are blessed with plenty of

arable land. Pakistan's arable land is about 24.1 million hectares. It

covers about 47 per cent of national land, and is more than global

average of 38 per cent. Pakistan generate a significant revenue from the export of its staple and

and cash agricultural crops. According to Department of Agriculture, Pakistan produced in 2021, "67.1 million tons of sugarcane (5th largest global producer); 25 million tons of wheat (7th largest producer); 10.8 million tons of rice (10th largest producer)." Hence, Pakistan has great agricultural potential.

Despite being an agrarian economy, so much resources and a major portion of workforce in agriculture, Pakistan is dwindling in this sector. All these expedients are fruitless unless they ~~cannot~~ are not able to fulfil the needs of the country. Decline of agriculture in Pakistan is because of various factors.

The main factor is scarcity of water. The per capita availability is below the international threshold.

Although, about 95 per cent of water is used for agricultural production in Pakistan, some regions faces severe scarcity of water.

This is due to geographical barriers, unequal distribution and population growth. The dependence of the country on a dwindling resource makes agriculture particularly vulnerable to water scarcity.

Glaciers in the northern mountain ranges are melting due to climate changes. These glaciers are vital source of water in rivers. Groundwater resources are also being depleted rapidly. This is pushing Pakistan to extreme scarcity of water. According to figures provided by Water Management Department, "Pakistan's per capita water availability has dipped below 1000 cubic meter per year. This is stark decline from around 3950 cubic meters in 1965." So, the water shortage for agriculture is continuously on the rise. Moreover, lack of innovation and technology is another factor contributing to decline of agriculture. Many farmers in Pakistan are still using the decades old methods of agriculture, which have passed down through generation. They resulted in lower efficiency, higher costs and vulnerability to climate events. Farm machinery penetration is low compared to developed nations. This limits land preparation, sowing, harvesting and processing leading to slower turnaround times and increased wastage. Modern and advanced agricultural countries are using certain technical gadgets including

drones, sensors, robots and digital agriculture techniques. Their agriculture sector is at cusp of revolution. Their operations now work far differently than, they were year ago. They have changed in accordance with changing circumstances, which Pakistan has not. Pakistan has dragged its feet when it comes to embracing new technologies in agriculture. Hence, the reluctancy in adopting technology in agriculture is a drawback to it.

Not just technology, Pakistan also lacks a sustainable infrastructure to satisfy economic woes. This really affects the market access of farmers. Agricultural farms and villages are often located far away from cities and markets. The situation of roads and transport is perilous. Small farmers are not able to reach big markets and get the fair deals. These shortcomings create a multitude of challenges for farmers, impacting everything from production cost to income generation. A lack of proper storage infrastructure, including cold storage leads to significant spoilage

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of perishable goods like fruits and vegetables. Farmers then have to rely on middleman or broker for instant deals. They offers pretty low prices than market's actual rates. Therefore, the insufficient development of infrastructure and limited market access are major bottlenecks hindering the growth of Pakistan's agriculture sector.

Likewise, high prices of agricultural inputs are also the factor contributing to agricultural decline. Agricultural inputs such as diesel, electricity, seed, Fertilizers and pesticides are lifeline for agricultural growth.

In the last four to five years, the prices of these inputs have gone up by 200 to 250 percent. The Agri Forum Pakistan (AFP) has claimed that

"due to increase in prices of agricultural inputs, production of different crops, fruits and vegetables have declined by 45 to 65 percent".

The farmers were unable to cultivate all their farmlands. A major portion of land, hence remained non cultivated. The farmers find themselves incapable to properly

prepare the land for any crop due to high input prices and water shortage, while they also cannot buy expensive quality seeds and fertilizers. So, increase in prices of agricultural commodities causes significant decline in production.

Also, climate change badly affects the agricultural sector in Pakistan. Pakistan is among top few countries that faced severe natural climate disasters in last 3 to 4 years.

Increasing temperatures, erratic rainfall patterns, and more frequent extreme weather events like droughts and floods pose significant risks to agricultural production. The devastating floods of 2022 in Pakistan significantly impacted the country's agricultural sector.

The largely affected were areas of Sindh and Balochistan province.

According to Pakistan Agricultural Research Center, "the floods inundated 4.9 million hectares of cropland in Sindh province". Along with croplands, floods also destroyed infrastructure such as irrigation canals, bridges and storage facilities, hindering transportation of agricultural products. And not just the floods, droughts

are also fatal for agriculture. Certain desert areas, especially of Thal in Punjab and Thar in Sindh are dependent upon rainwater. So, the climate related disaster also contribute to agricultural decline.

Agricultural decline for a country like Pakistan with agrarian economy is deadly. It has ~~the~~ negative consequences, which affects the social and economic life of the country. The major effect the agricultural decline causes in Pakistan is, it reduced economic growth of the country. Agriculture contributes second highest share in country's economy after service sector. A decline in agriculture is directly decline in the economic growth of the country. It is evident from the floods of 2022, when a major portion of agricultural lands was destroyed. The country's economic growth does not reach the expected growth level. According to the economic survey of Pakistan, "the agricultural sector only achieved growth of 1.55% in FY22-23 compared to 4.40% growth recorded in FY21-22". The damage in the

agriculture sector had a spill-over effect on the industry and other allied service sector. Thus, the economic growth in the country ~~could~~ cannot be sustained with decline in agriculture.

Not just economic growth lessen, decline in agriculture in Pakistan also results in food insecurity. Decline in agricultural production means insufficient availability of food for people. Pakistan in the recent few months has faced severe food shortage. According to the 2022 Global Hunger Index, "Pakistan ranks 99 out of 121 countries." A significant portion of population is grappling with food insecurity. World Citizen Report narrates that, "in 2022, around 69-71 million people faced food shortage in Pakistan". Every item of food is directly or indirectly obtained from agriculture. Wheat, rice, sugarcane and corn are main crops used in or as food items. Decline in their production will dwarf the country's food availability. Undernourishment is all-pervasive in Pakistan, which demonstrates that food insecurity has reached

alarming level. Hence agricultural decline triggers food insecurity. Food shortage compels the government to import edible commodities. In the recent few months, Pakistan's imports of food items have significantly increased. Being an agricultural country, importing food items is dilemma for Pakistan. Although, the main crops of Pakistan are wheat, rice and sugarcane, yet wheat and sugar was imported in FY 22-23. Pakistan Bureau of Statistics states that, "food imports of Pakistan go up by 15 per cent in first three months of FY-22-23". Although, Pakistan was already importing edibles like cooking oil, vegetables, Tea, coffee, etc. But surge in wheat import was unusual and strange equally. "Wheat imports in July-September shot up by 31 percent and cost \$407 million. Last year, \$99 million in wheat was imported in the same period". So, the imports of food items has increased as result of agricultural decline.

Agricultural decline, also resulted in increasing poverty and social inequality. The setback to agriculture whether caused by floods,

lack of technology, and scarcity of water, it has affected the poor farmers of the country. And it has not equally affected the people. Those with contribution in service and other sectors can sustain, but farmers are vulnerable to its consequences. Poverty has reached alarming level in Pakistan.

"It is estimated that 40 percent Pakistanis live in poverty and 24 percent below poverty line". Those facing the extreme poverty, have survival as their primary goal in life. Poverty is increasing every coming year in Pakistan.

According to World Bank, "poverty has risen by 5 percent to 39.4 percent in FY22-23 with 12.5 million more people pushed into poverty as compared to previous year". Hence, the poverty has increased as result of agricultural decline.

Moreover, agricultural decline cause slowdown in industrial sector.

Agriculture and industrial sector has inter-dependance. Decline in agriculture can disrupt industrial function in many ways; industry requires raw materials, which mainly comes from agricultural

products. Food, textile, biofuels and many other industries are dependent upon agriculture. Also, agriculture is the main source of revenue for major portion of population. Disruption in agriculture can affect their consumption capacity. This can lead to decrease in demand for industrial goods and services, further impacting industrial production. It can also disrupt supply chains across various industries. In Pakistan, slowdown has been witnessed in previous few months ~~was~~ is result of decline in agriculture. Thus, the agriculture and industrial sector are inter-connected.

Despite the fact that challenges to agriculture are stern and ubiquitous, certain measure can help revitalise its potential. The agricultural has been paralysed in Pakistan, pertaining to numerous factors, but it has ability to revive. Precise policies and plans can be effective to revolutionise agriculture in Pakistan, which are discussed in following paragraphs.

Agricultural decline can be countered by providing subsidies on agri products. The agri products including

seeds, fertilizers, pesticides, etc. are agricultural inputs. The prices of these products have surged, compared to the agricultural revenue. This price hike has made it difficult for poor farmers to grow cultivate their crops with full potentiality. Definite efforts are required by government to address their woes.

The subsidies like withdrawal of duty on imported seeds and pesticides are essential. Easy and cheap availability of fertilizers like urea and nitrogen must be ensured. Along with that special subsidies are required for low growth and most affected areas. Such kind of measure has been taken by Punjab Agricultural Department, which has "announced a subsidy program for farmers in 13 districts to acquire laser land levellers. The government will provide 250000 against each laser land purchased by the farmers." This initiative will enhance agricultural practices in the region. So, the subsidies are vital to counter agricultural decline.

Not just subsidies, government should also make sure easy availability of agricultural loans. Farmers need heavy amount of loan to

buy tractors or install solar tube wells. Such They are not able to generate such huge amount at once. They should be provided with loan on easy terms and conditions. Empowering and investing in Zarai Taraqati Bank Limited is mandatory for provision of easily and timely loans to farmers. Loan schemes should solely be focus on empowering farmers to help sustain agricultural growth. Loan quota of farmers must be increased. The government had increased loan amount for farmers in FY22-23 "from 1.8 trillion to 2.2 trillion, the allocation of 50000 tube wells to solar power". Hence, the loan amounts will support farmers for agricultural growth. Moreover, Energy consumption in agricultural field benefits farmer as well as environment. By reducing fossil fuel footprints in the country, and replacing them with clean energy alternatives, agricultural production can be make sustainable on the basis of self sufficient energy. The extraction of groundwater in Pakistan heavily relies on fossil fuels or electricity, produced by fossil fuels. Hence this extraction is done by non-renewable sources of energy, which lead

to high levels of carbon emissions. Four major crops responsible for this are wheat, rice, sugarcane and cotton. "The energy required for the irrigation of four major crops is 103 PJ (Petajoule), which is equivalent to 2.5 million ^{metric} tons of oil. It generates footprint of 11 billion kilograms." It not only deteriorate climate, but also increases the cost of production. Hence, for efficient agriculture, energy consumption must be reduced.

Not just energy consumption, water should also be conserved. Agriculture is one of the most water-intensive sectors globally, and especially in Pakistan. The unsustainable use of water for farming has led to dwindling water tables and water scarcity. The traditional system of flooding must be discouraged to conserve water. It resulted in loss of heavy amount of water in transpiration. Drip and sprinkling system must be ensured for vegetables and orchards to conserve excessive water. For traditional crops, 'zero tillage' technique should be put forward. Zero tillage is a method that refrains from traditional ploughing and tilling the soil before sowing crops. It involves directly drilling seeds into untilled, moist soil.

The benefits of this technique are manifold, with one of the most significant being water conservation. Thus, water conservation is essential for agricultural growth in the future.

Also, agricultural decline can also be countered by using modern technology in agriculture. Modern technology guarantees improved agricultural productivity. The importance of using modern technology has been previously highlighted by stakeholders. Former Prime Minister Imran Khan said that, "introduction of modern technology and provision of all possible facilities for the farming community are among top priorities of the government". Modern technology in agriculture is necessary to compete with world standards. Pakistan is now lagging behind its regional peers in terms of agricultural production. According to Ayub Agriculture Research Institute (AARI), "China is getting 39 maunds of wheat per acre, which is the highest average production in the world, while Pakistan's average per acre yield is 26 maunds". Pakistan has good arable lands but farmers lack the resources needed to switch to modern technology. The advanced devices allow agriculture to be more efficient, profitable and safer. So, Pakistan dearly needs modern technology to confront agricultural decline.

Modern technology and techniques can only be used by educating and training farmers. Pakistani farmers lack the basic knowledge. Majority of them are so illiterate to read method or prescription on the label of pesticide bottle. They are not familiar with advanced methods and techniques used in agriculture. They used decades old practices, which they acquire from their elders. They must be given knowledge about using sensors, data analysis, and automation to optimize water use, fertilizer application and pest control. They should also have the exposure to go beyond traditional crops and explore high value options like fruits, vegetables and cash crops. This can be done by providing farmers with direct access to experts, workshops, demonstration plot, online platforms and farmer groups. Therefore, enhancing knowledge and exposure of farmers is necessary to counter agricultural decline.

Also, storage facilities must be enhanced for conservation of crop for long time. Some fruits and vegetables cannot sustain the environmental severity for long time, and began to rot. Since agricultural farms are situated far away from markets, and roads and transportation

does not allow its timely transfer. It give rise to the necessity of cold storage facilities. Cold storage facilities conserve the fruits for long time in desired temprature. It prevents the waste of food and vegetables. According to reports, "Pakistan experiences significant post-harvest losses, estimated at around 30-40 percent for fruits and vegetables". The cold storage ensures less produce goes to waste, leading to increased food availability. and In this way, cold storages prevent the losses in agriculture.

Lastly, the public private partnership must be ensured to confront the agricultural decline. Neither public, nor the people alone can sustain agriculture. It needs mutual and dedicated approach from both sectors. Government can provide subsidies and policies, but a lot of reforms are needed on public. The cooperation from both sides can address the decline in production and competitiveness. Public private partnership can help investment in infrastructure. Public funds can be leveraged to attract private investment in irrigation systems, cold storage facilities, rural roads, and logistics networks. The partnerships can

also promote market linkages between farmers and private buyers, leading to fairer prices and better market access to capital for small holder farmers. Hence, the uplift of agricultural sector is possible only by contribution from both public and private sectors.

In a nutshell, one may say that, being an agricultural country, Pakistan has vast resources. But its agricultural force has been paralysed by numerous challenges. Its per capita availability has dipped to an alarming level. Farmers are still using decades old methods. Technology and digitalisation is hard to find in the country. Roads and transport have perilous situation to ensure market access of farmers. Prices of fertilizers, pesticides and other agricultural inputs have dwarf the power of farmers to cultivate. Climate has wrecked the agricultural sector, especially in the floods of 2022. Agricultural decline is visible from the economic decline in recent months. When economic growth does not reach the expected level. Pakistani population is also facing shortage of food, which is now being imported. Decline in agriculture has ~~hardly~~ fully hit the poor farmers,

causing surge in poverty and social inequality. It has also crippled the progress of industrial sector. Certain measures are necessary to counter this agricultural decline. The main policies are provision of subsidies and loans to farmers. Also, replacing energy consumption sources with clean energy can increase production and decrease the expenditure. Drip and sprinkling techniques must be used for orchards, and zero tillage technique for traditional crops. Farmers must be trained by arranging workshops and demonstration plots. Contribution of both public and private sector is essential to address agricultural challenges. Pakistan should focus on agricultural growth. Developed nations always prioritise their agriculture. Former President of United States, Thomas Jefferson said, "agriculture is our wisest pursuit, because it will in the end contribute most to real wealth, good morals and happiness".

