



Assessment of Potato and Mango Value Chains in Pakistan

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1 Executive Summary

Pakistan has a diversified economic base with the agriculture sector contributing 24% in GDP and 37.4% in employment¹. The predominance of agriculture in the economy indicates that agricultural growth is a critical driver of economic growth, employment, and poverty reduction, given its linkages with relevant sectors such as labour, transport, agro-processing, pesticides, fertilizers and irrigation systems. Punjab, the most populated province of Pakistan, provides the largest share in national agricultural production. Agriculture offers 19% of the GDP and gives employment to 48% of the province's population². It contributes to provision of raw materials for major industries. Census of agriculture shows that there are 5.2 million agriculture farms in Punjab, which are mostly smallholders. 42% of the farms are even less than one hectare. Farms ranging from one hectare to 10 hectares make up half of the total number of farms and they occupy 68.9 % of the total area. Farms consisting of 10 hectares and above are 22.2% of the total farm area². The agriculture sector in Punjab stands as a cornerstone of the region's economy, exerting a profound influence on various socio-economic facets. With its fertile lands and favourable agro-climatic conditions, Punjab boasts a robust agricultural landscape that plays a pivotal role in Pakistan's national economy and food security.

However, Micro, Small and Medium Enterprises (MSMEs), particularly in agriculture, remain highly vulnerable to climate change. Following the 2022 floods, a survey showed that 54% of Pakistani MSMEs laid off employees, 57% sought additional loans, and 25% suffered facility destruction. MSMEs lack adequate financial protection against climate-induced losses, limited by insufficient risk awareness, investment resources, and capacity to adopt risk-reducing adaptation measures.

In response, the project “Introduction of Climate Risk Financing Solutions for Agricultural Value Chains” aims to strengthen the climate resilience of MSMEs within the agricultural value chain in Pakistan, with a particular emphasis on women-led MSMEs or those where women hold key roles. To support these objectives, an in-depth desk study was conducted on five pre-selected value chains—potato, mango, date palms, tomato, and maize—to identify two for detailed analysis.

¹ <https://crs-agripunjab.punjab.gov.pk/>

² <https://www.agripunjab.gov.pk/>

The primary goal of this assessment is to evaluate the competitiveness of the potato and mango value chains, focusing on the following key areas:

1. Vulnerability of the value chain against climate risks
2. Degree of involvement of MSMEs in the value chain
3. Commodity/end products produced in the value chain
4. Women participation throughout the value chain
5. Economic potential of the value chain (e.g. value addition, export orientation)

Following this selection, comprehensive mapping of the selected value chains (mango and potato) was conducted. The study was further enriched through focus group discussions (FGDs) and key informant interviews (KIIs) in Okara and Multan, hub of potato and mango production respectively. It highlights the significant potential of these value chains to address climate and disaster risks, financial challenges faced by MSMEs, and the involvement of women. Tackling these issues presents an opportunity to unlock the full potential of the mango and potato sectors, fostering economic growth, food security, and rural development.

2 Potato and Mango Value Chain Mapping

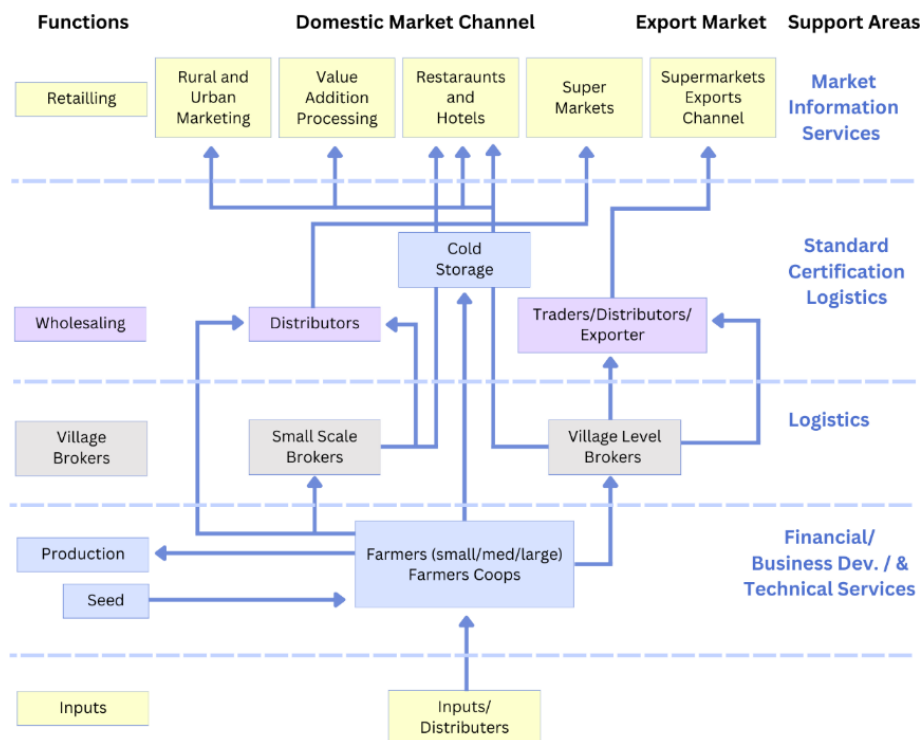


Figure 1: Potato value chain mapping

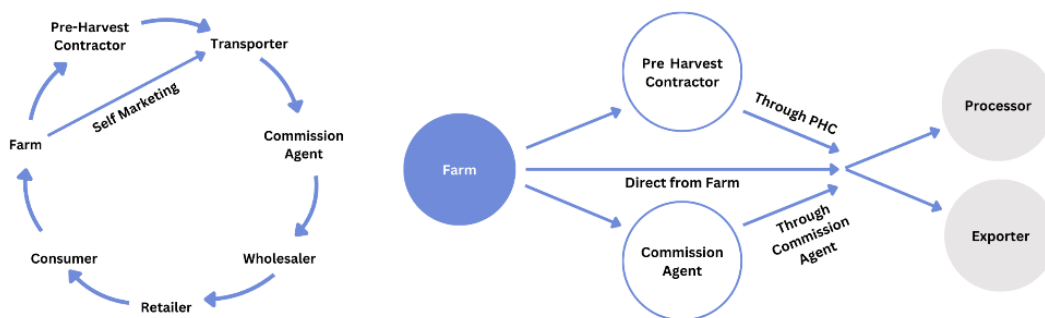


Figure 2: Mango value chain mapping for fresh mangoes and for processors and exporters

3 Pakistan’s Potato and Mango Value Chains Rationale

The following key areas were considered for the selection of the value chains:

3.1 Vulnerability Against Climate Risks

Climate change is increasingly evident through rising temperatures, altered rainfall patterns, and more frequent and intense extreme weather events. These shifts have intensified production risks in agriculture, a sector already vulnerable due to its dependence on favourable weather and fluctuating crop prices.

In Punjab, erratic temperature changes have significantly impacted potato and mango crop productivity in recent years. Extreme heatwaves, seasonal shifts, and frost events have taken a substantial toll on these crops.

Climate extremes are expected to become more intense and frequent with each additional tenth of a degree in global warming³. Figure 3 and Figure 4 illustrate climate projections for Punjab province, showing average mean surface air temperature based on a multi-model ensemble for two emission scenarios i-e SSP2-4.5 (middle of the road scenario) and SSP5-8.5 (fossil fueled Development), along with the projected increase in the number of days with a heat index exceeding 41 degrees, respectively.

³ <https://dialogue.earth/en/climate/usd-9-billion-pledge-a-start-but-pakistans-flood-recovery-needs-more-than-promises/>

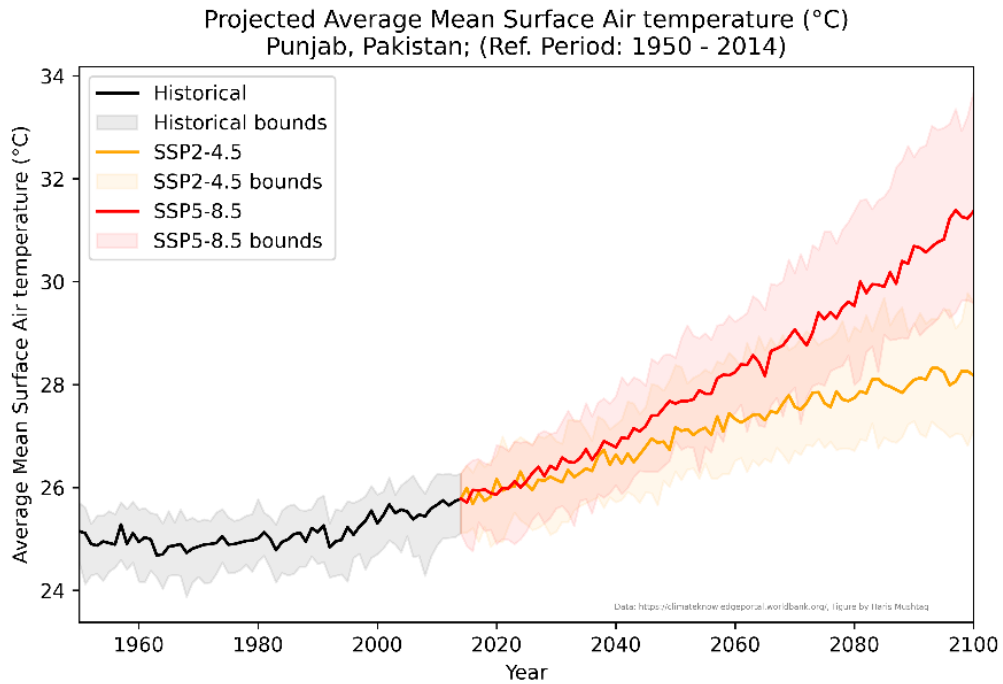


Figure 3: Projected average mean surface air temperature trends for Punjab, Pakistan⁴

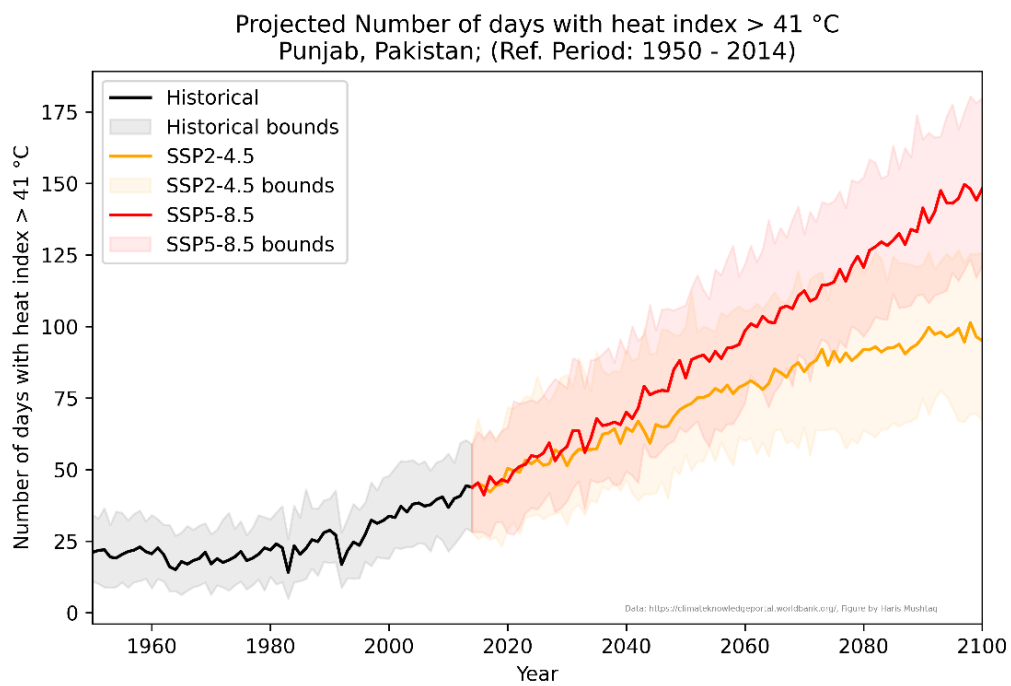


Figure 4: Projected number of days with heat index > 41°C for Punjab, Pakistan⁴

⁴ <https://climateknowledgeportal.worldbank.org/> (Figure by Haris Mushtaq)

3.2 Economic Potential

Both selected value chains offer immense economic potential if value-added products are effectively developed and integrated:

Potato: Pakistan's potato exports reached \$264 million in 2022, with key buyers including Sri Lanka, UAE, and Afghanistan. There is strong potential to expand into processed products such as fries and crisps.

Mango: Pakistan ranks sixth in global mango production but exports only 6-7% of its output. Increasing value addition—through products like juices, jams, and dried mango—presents a significant opportunity for growth, enhancing both export volumes and profitability.

3.3 Involvement of MSME's

Despite growth in agriculture, particularly mango cultivation, smallholder farmers and SMEs struggle with limited market opportunities due to capacity and resource constraints, resulting in high transaction costs and inefficient market systems. Key actors in the mango value chain include nursery developers, growers, transporters, wholesalers, retailers, exporters, and processors. However, only a small portion of mangoes is processed into value-added products like pulp and juices, revealing untapped potential for MSMEs. In the potato value chain, MSMEs play a crucial role by supplying quality inputs, connecting farmers to markets, and helping meet international standards, particularly in the frozen fries sector, fostering competition with larger players.

3.4 Participation of Women

In mango farming, farm ownership and management are predominantly held by men, while women are mostly hired for maintenance and post-harvest tasks like sorting and packing, earning daily wages during harvest. In case of the potato value chain, men mostly handle land preparation and transport, while women manage planting, weeding, and post-harvest activities, including processing into value-added products. Women's contributions in both sectors, particularly in post-harvest roles, are essential to productivity, showcasing their valuable skills in seed preparation, grading, and sorting within these agricultural value chains. It also highlights the vast potential for training women in value addition in the post-harvest process with a view to income generation and economic development.

3.5 Value Addition

Value addition is one of the lagging sectors in the domestic and the export markets of Pakistan. In Pakistan, close to 1% of the total production go into the value-added products, which is

significantly lower than the 30% benchmark seen in more developed agricultural markets⁵. This provides room for substantial improvement as increasing value addition could enhance export competitiveness and better utilize the country's potato surplus. Opportunities exist in expanding the production of processed products such as frozen fries and dehydrated potatoes, which align with global consumption trends.

Similarly, nearly 90% of mangoes in Pakistan are consumed raw, presenting a significant opportunity for value-added products such as jams, juices, nectars, squashes, milkshakes, jellies, dried fruit slices, frozen pulp, and flavourings for baked goods and ice cream.

4 Conclusion

Our study highlights the value addition prospects along with significant economic, social, and environmental importance of the mango and potato value chains. Both sectors are vital for rural employment, women's empowerment, and sustainable income and livelihoods. However, both value chains are under considerable pressure from climate change and environmental degradation, with MSMEs facing substantial barriers to realizing their potential. By strengthening resilience for MSMEs through enhanced access to financial protection instruments, there is a promising opportunity to unlock the full potential of the mango and potato sectors, fostering economic growth, food security, and rural development.

5 Recommendations

Addressing Climate Risks

- Introduce programs like climate-smart business schools which will build resilience of MSMEs through climate risk management and business management trainings
- Collaborate with financial institutions for the development of climate risk financing instruments like crop and weather induced insurance, climate-resilient loans for MSMEs.
- Promote modern value addition techniques (e.g., frozen fries, dried mangoes).
- Identify and prioritize key hazards to sustainable mango and potato value chains (e.g. yield losses due to diseases, lack of water, excessive water, etc.) also taking into consideration climate change
- Analyse systemic risks to the value chains: how are developments in other agricultural value chains or sectors influencing sustainability of the potato and mango value chain?

⁵ <https://agribusiness.org.pk/>

Empowering MSMEs & Women

- Encourage registration and provide resources to formalize operations.
- Offer training in quality control, packaging, and exports.
- Improve women's access to modern technologies and market opportunities.

Strengthening Market Linkages

- Financial literacy campaign to enhance MSME credit access and management.
- Foster partnerships between MSMEs, agribusinesses, and exporters to ensure compliance with domestic and international standards

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