



# Policy Brief

## CHALLENGES AND OPPORTUNITIES FOR THE FRESH FRUIT SUPPLY CHAIN IN DISTRICT CHITRAL

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### INTRODUCTION

Chitral's fresh fruit supply chain is constrained by multiple interrelated challenges that reduce its efficiency, profitability, and impact on local economic development. Despite having favorable agro-climatic conditions for fruit cultivation, the sector remains underdeveloped due to systemic inefficiencies, weak institutional coordination, and poor infrastructure, particularly in post-harvest handling and cold chain logistics. These issues lead to high post-harvest losses, limited market access, and low income for farmers. To address these issues, a systematic evaluation of the fresh fruit supply chain in Chitral is urgently needed. This includes identifying bottlenecks, assessing value addition opportunities, and recommending evidence-based interventions.

### PURPOSE AND SCOPE

- To assess the fruit cycle and post-harvest losses and examine existing handling, storage, and transportation practices among smallholder fruit producers.
- To identify and map the key structural, logistical, and market-related bottlenecks in the fresh fruit supply chain in Chitral.
- To explore the feasibility and potential impact of value addition (drying, packaging, branding) and cooperative models on market access and income generation.
- To evaluate the role of institutional support, financial services, and extension programs in enabling supply chain participation and upgrading.
- To analyze the influence of climate variability and gendered labor dynamics on supply chain resilience and productivity.

### PROPOSED SUPPLY CHAIN MODEL

*Table 1: The Implementation Plan of the Proposed Supply Chain Model*



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Time Horizon	Plans	Responsibilities	Expected Outcomes
Short Term (0–2 Years)	Establish Village Collection Centres (VCCs) Provide grading, weighing, storage, pre-cooling Train farmers on post-harvest practices Form farmer groups/cooperatives Improve local transport coordination	Government: Extension services, infrastructure NGOs: Training & capacity building Farmers: Adopt improved practices Microfinance: Working capital support	Reduced post-harvest losses Improved product quality Increased bargaining power Reduced reliance on intermediaries
Medium Term (3–5 Years)	Develop Mini Cold Hubs Introduce cold chain logistics Sorting, grading, packaging at hubs Strengthen urban market linkages Expand access to credit	Government: Roads, electricity, subsidies Private Sector: Storage & logistics investment Banks: Medium-term financing Farmer Groups: Collective marketing Transporters: Efficient logistics	Extended shelf life Reduced transport losses Better price realization Improved market integration
Long Term (5–10 Years)	Establish Central Processing Hub Develop value-added products Integrate into export markets Introduce digital systems Branding (“Chitral Fruits”)	Government: Policy & export facilitation Private Sector: Processing & branding Research Institutes: Innovation Exporters: Market expansion Insurance: Risk mitigation	Value addition Higher farmer income share Export growth Sustainable supply chain

*Source: Authors’ compilations.*

## POLICY RECOMMENDATIONS

The District Chitral possesses outstanding agro-climatic potential for producing premium temperate fruits such as apples, apricots and walnuts. However, unfortunately this potential remains largely unrealized due to a severely underperforming supply chain. The district faces an estimated loss of PKR 150–220 million annually from post-harvest., ranging from 38% for apples to a huge 54% for apricots. Unfortunately, the farmers attain only 15–32% of the final consumer price, while structural inefficiencies in infrastructure, market access, and institutional support perpetuate a cycle of low investment, poor quality, and rural economic stagnation.



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## **Key Constraints**

- **Infrastructure Deficit:** Road density (47.5 km/1,000 sq. km) is half the provincial average, with 85-88% of roads unpaved. The district has only 15 godowns with a total cold storage capacity of 13,250 tons, which is grossly inadequate for its production volume.
- **Inequitable Market Architecture:** 98% of fruit sales are controlled by informal intermediaries. Pre-harvest contracts lock 86% of farmers into fixed, below-market prices with unfairness mounting and reflecting in no renegotiation rights.
- **Production & Orchard Gaps:** 93% of orchards are small (<5 acres), 49% are over 15 years old, and 98% rely on traditional management, resulting in yields that are in actuality only 50-70% of the achievable potential.
- **Institutional Weaknesses:** In Chitral only 10-23% of the people have access to value addition training, formal credit (72% male vs. 28% female), and climate insurance remains severely limited. It is feared that in the future succession might be a problem as 58% of farmers are over 45 while only 8% are under 30.
- **Climate Vulnerability:** adversities include 62% of growers facing increasing pest outbreaks while 33% suffer flood damage. Above this the glacial-melt-dependent irrigation system (98% of supply) is highly sensitive to climate change, only increasing the climatic crisis affects

## **Strategic Opportunities & Proposed Model**

The proposed strategic supply chain transformation model shifts from a fragmented, intermediary-driven system to an integrated, farmer-empowering framework consisting of:

- **Village Collection Centers (VCCs):** For aggregation, basic grading, and pre-cooling at the community level.
- **Mini Cold Hubs:** Cluster-level facilities to extend shelf life and enable economies of scale in storage and transport
- **Central Processing Hub:** A main facility for modern grading, packaging, quality certification, and multi-channel market distribution (urban, export, direct-to-consumer).

## **Expected Outcomes**

Implementation of this model is projected to reduce post-harvest losses to 15-20%, while increasing farm-gate prices by 35-50%, and unlocking PKR 800 million to PKR 1.5 billion in additional annual farm income. Key recommendations include:

- **Human Capital:** Launch a Horticultural Youth Program and formalize knowledge transfer from experienced farmers.
- **Gender Inclusion:** Establish women centered processing units where they control all operations and target 40% cooperative/training seats for women.



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- **Orchard Rehabilitation:** Subsidize certified planting material and high-density systems; establish demonstration orchards.
- **Climate-Resilient Infrastructure:** Build solar-powered cold hubs, upgrade priority roads, and introduce area-based crop insurance.
- **Market Reform:** Create a Chitral Fruit Growers Cooperative Federation, deploy a mobile market information system, and mandate a fair contract farming framework.