



## Introduction

Changing consumption preferences towards high value, nutrient and protein rich foods are signalling agricultural diversification in India. The country also stands among the largest producer of these commodities in the world. However, this record level of production has not translated into commensurate increased economic returns to the farmers due to underdeveloped and inefficient value chains.

In this background, a study on Financial Inclusion of Smallholder Farmers in High Value Agriculture was sanctioned to ICRIER, New Delhi and the work done under the study brought out as a book titled 'Agriculture Value Chains in India: Ensuring Competitiveness, Inclusiveness, Sustainability, Scalability and Improved Finance' published by Springer. The study analyses the performance of tomato, onion and potato (TOP), grapes, pomegranates, mango, banana, dairy, poultry and pulses value chains in terms of competitiveness, inclusiveness, sustainability and scalability and access to finance (CISS-F). The study also put forth important policy suggestions to make agricultural value chains more competitive, inclusive, sustainable, and scalable. These policy measures pertain to four pillars: agricultural finance, technology, markets and institutions. The current policy brief is based on two Chapters in the report, i.e., "Evaluating Agricultural Value Chains on CISS-F Framework" (Chapter 2) and "Strengthening Agri-Value Chains in India—Way Forward" (Chapter 9) of the book.

## II. Major Findings

1. Dairy products, particularly milk, demonstrate high farmer's share in consumer rupee at 75%, with co-operatives like Bihar's Sudha showing figures as high as 76%. Additionally, certain horticultural products such as pomegranates (45%) and grapes (43%) exhibit relatively higher farmer shares compared to staples like tomatoes (32.4%), onions (29.1%), and potatoes (26.6%), indicating varying degrees of market integration and value distribution across different agricultural sectors.
2. The analysis of Trade Adjusted Nominal Protection Coefficients (NPCs) suggests that tomato, onion, and potato are export competitive. India's position as the

8th largest global tomato exporter is overshadowed by its status as a net importer of processed tomatoes, with challenges such as high-input costs hindering competitiveness.

3. The scalability of agricultural value chains in India hinges on technological advancements and yield improvements rather than expanding cultivation areas. For instance, between 2010 and 2017, tomato production increased at a CAGR of 1.3% despite a decrease in cultivated area by 2.7%, owing to a CAGR in yield of 4.1%. Similarly, the introduction of tissue culture cultivars and adoption of micro-irrigation have led to substantial increases in banana production, which rose from 10.1 million tonnes in 1993-94 to 30.6 million tonnes in 2018-19. However, challenges such as inadequate infrastructure, market access issues, and price instability impede the scaling up of production.
4. The export competitiveness of dairy sector varies across states, co-operatives, and private sector players, with the private sector demonstrating higher competitiveness than cooperatives in Uttar Pradesh and Maharashtra. Co-operatives struggle due to highly volatile global prices of skimmed milk powder (SMP) and commitment to pay higher prices to farmers. Moreover, inability to adjust procurement according to market demand make the model uncompetitive.
5. Livestock, particularly buffaloes and indigenous cattle, contribute significantly to greenhouse gas emissions through enteric fermentation. The ration balancing programme under the National Dairy Plan has reduced methane emissions per kg of milk by 13.7% since 2012. Balanced rations have also decreased water footprint by 14%, with potential for further reduction through scientific feeding practices like Total Mixed Ration (TMR). Additionally, balanced rations have helped cut feeding costs by 16.3%.

## III. Policy Implications

1. **Institutional Credit through New Generation Channels:** With high proportion of individual farmers relying on exorbitantly high-interest informal credit (ranging from 36% to 120%) for investment and working capital needs, there is a critical need for policy intervention to address the



glaring financing gaps. To address these issues, creating pipelines for institutional credit through new-generation non-banking finance companies (NBFCs) and fintech sectors is crucial, alongside mitigating their risks through dedicated refinance facilities and first-loss default guarantees (say first 10–15% of default on their agriculture value chain portfolio). Encouraging equity capital investment in agriculture, possibly through a dedicated agriculture equity investment vehicle, and introducing collateral financing solutions and market instruments like hedging and futures contracts are imperative steps to foster sustainable growth in agricultural value chains.

**2. Coordinated Planning and Implementation Mechanism:**

Establishing a standing mechanism at the central level to discuss and adopt agricultural policies with clear goals is crucial. This mechanism should involve coordination between various ministries at central and state levels, similar to the GST Council, to ensure effective policy reform and incentivize private investment in agriculture value chains.

**3. Reform of Land Lease Markets:**

Addressing the fragmented land holdings through land lease market reforms is essential. This may involve incentivizing large land parcels through direct purchase or leasing models sanctioned by statute to facilitate the production of consistent quality agricultural produce and volumes.

**4. Promotion of Farm Level Aggregation:**

Encouraging the formation of producer collectives such as cooperatives, producer companies, and associations is vital. Positive incentives should be provided for individual producers to join these collectives, linking membership to benefits like cheaper credit, access to infrastructure, and joint marketing. While the announcement to promote additional FPOs is a good start, a comprehensive ecosystem of support is needed. This includes linking FPOs to equity and working capital, easing licensing and compliance, and creating back-end infrastructure for procurement and storage.

**5. Creation of a Multi-Agency Centre (MAC):**

Establishing a dedicated agency at the central level, with counterparts in each state, to coordinate actions

related to building value chains is crucial. The MAC should draw upon resources from various ministries, agencies, financial institutions, states, and the private sector to effectively coordinate efforts.

**6. Strategic Investment in Technology:**

Recognizing technology as a strategic investment for developing global agricultural value chains, abandoning ad hoc approaches is crucial. For this, increased investment in agricultural research to at least 1% of agriculture GDP from current 0.37% is needed to foster technological breakthroughs and innovation.

**7. Government Ownership of Vital Agricultural Technologies & Long-Term Investment Policy:**

It is important to establish mechanisms for the government to identify, acquire, and share vital agricultural technologies, including seeds, planting materials, agrochemicals, and farm machinery, to bridge existing technology gaps. Further, a long-term investment policy to promote home-grown agricultural technology, including incentives for private sector investment in agricultural research is needed.

**8. Strengthen Agricultural Extension Services and Empower Farmers:**

Strengthen agriculture extension services, particularly in high-value sub-sectors like horticulture and dairy, by leveraging digital technology and encouraging multiple players in the extension arena. At the same time farmers need to be empowered with choices and access to information and technology through direct income support options, allowing them to choose between various agricultural options based on market demands and quality norms.

**9. Development of Unified Market:**

There's a need for a central legislation akin to the GST to create a unified market for all agricultural produce within the country, promoting competitiveness and freedom for farmers to market their produce. Initiatives like e-NAM must be revitalised to promote portal-based trading and integrate supply chains. e-NAM linked to warehouse-based trading (including e-NWRS) and engagement of FPOs have the potential to transform agriculture marketing.