



## Strengthening fruit and vegetable supply-chain policies and programmes in India

India currently has one of the highest numbers of malnourished children in the world – 8% stunted, 43% underweight, and 20% overweight and obese. This distressing public health scenario is further exacerbated by a high prevalence of multiple micronutrient deficiencies among these children – such as iron deficiency anaemia and Vitamin A deficiency. Evidence shows linkages between early life malnourishment (either underweight or overweight-obesity) and predisposition to developing chronic diseases in adult life. Consuming 400g/day of fresh fruits and vegetables can help prevent micronutrient deficiencies while promoting overall growth and development. However, national averages indicate that children do not consume even 40% of the daily recommended amounts.

**P**ublic Health Foundation of India (PHFI) undertook a study titled ‘Leveraging fruit and vegetable supply policies to tackle the dual burden of malnutrition in India’ supported by the Leveraging Agriculture for Nutrition in South Asia (LANSA) consortium at the M S Swaminathan Research Foundation (MSSRF). The study aimed to analyse the policy environment related with fruit and vegetable (FV) supply in India to identify opportunities for policy to increase access to, and thus intakes of FV, especially among children.

### Methodology

A multi-pronged approach was carried out in two phases:

1. An evidence review on factors influencing fruit and vegetable consumption in low- and middle-income countries (61 studies: 11 intervention and 50 cross-sectional).



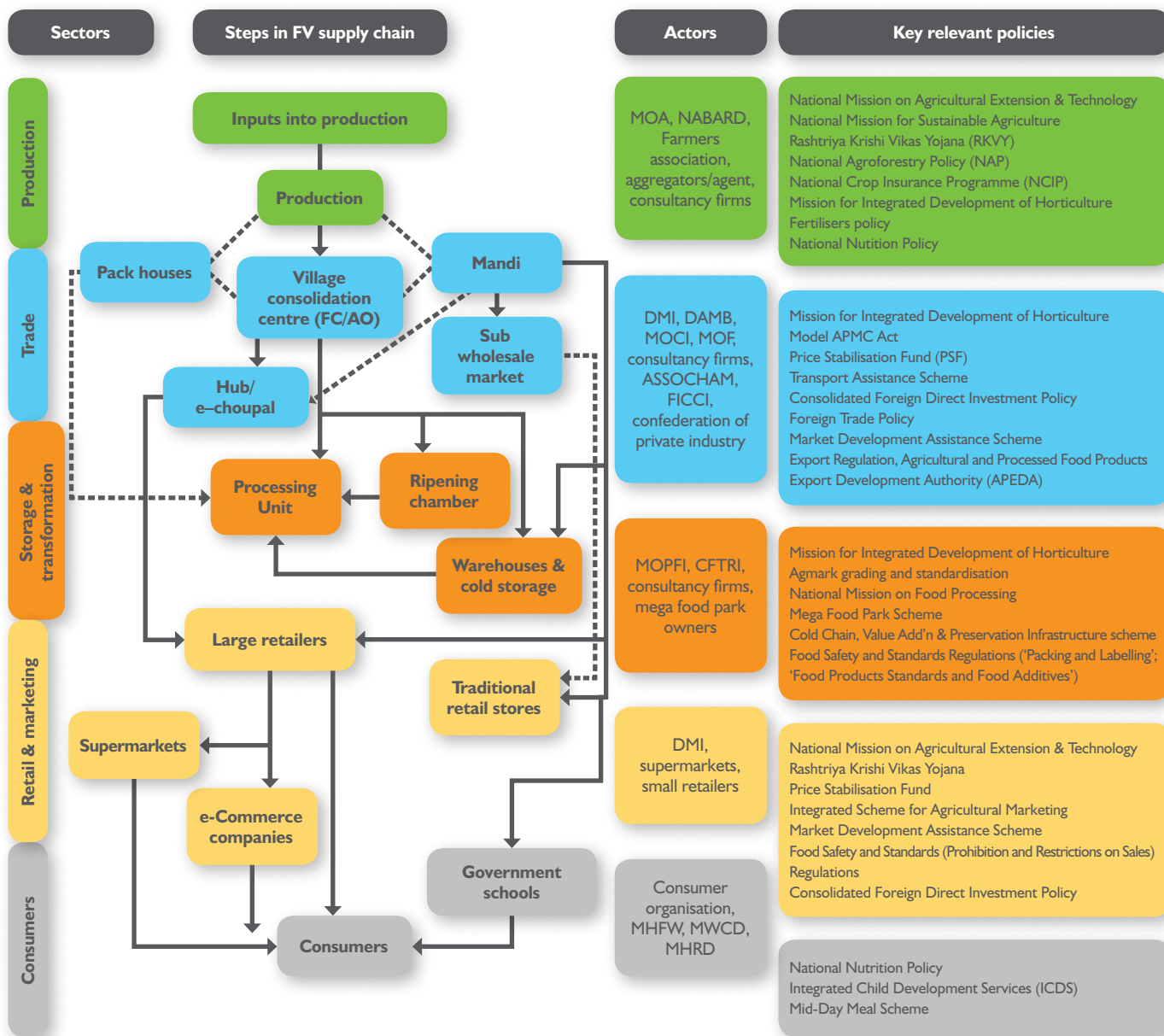
2. A policy analysis on FV supply in India, including a content analysis of 29 relevant policy documents and 55 interviews with stakeholders at the national and state level.

📍 Village market in  
Koraput, Odisha.

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**Figure 1**

**Summary of the fruit and vegetable (FV) supply chain in India, with key relevant actors and policies**



MOA – Ministry of Agriculture and Farmers Welfare; NABARD – National Bank for Agriculture and Rural Development; DMI – Directorate of Marketing and Inspection; DAMB – Delhi Agricultural Marketing Board; MOCI – Ministry of Commerce and Industries; MOF – Ministry of Finance; ASSOCHAM – The Associated Chambers of Commerce of India; FICCI – Federation of Indian Chambers of Commerce and Industry; MoFPI – Ministry of Food Processing and Industry; CFTRI – Central Food Technological Research Institute; MHFW – Ministry of Health and Family Welfare; MWCD – Ministry of Women and Child Development; MHRD – Ministry of Human Resource Development; FC/AO – Facility centre/Area outlet.

Note: One policy can appear in more than one sector depending upon the policy involvement in more than one area.

29 policies were identified in India which influence fruit and vegetable supply. The policy findings were mapped onto a stylised diagram of the fruit and vegetable supply chain to assist in identifying opportunities to strengthen policy support throughout the supply chain (Figure 1).

Policy provisions are outlined below that give incentives for supply, including the production, distribution,

processing, retailing, and demand for fruit and vegetables in India.

The majority of these government interventions are schemes, which are promulgated at the national level and implemented at the state level. One strength noted was the considerable state government discretion regarding the focus of the policies, which enables state governments to focus their policy implementation on relevant areas of supply and relevant commodities.

## Summary of key findings

### 1. From the evidence review

- Overall studies showed poor quality of evidence; only 15 of 61 studies assessed were of moderate–high quality using the GRADE assessment approach.
- Higher FV intake was associated with: female sex, younger age, living in an urban setting, parents with a higher socioeconomic status, attending a private school, and having parents with healthier diets.
- Effective interventions in schools combined nutrition/health education with some structural change in surroundings. A monthly food basket or cash transfer programme at the household level was also effective in increasing FV intake.

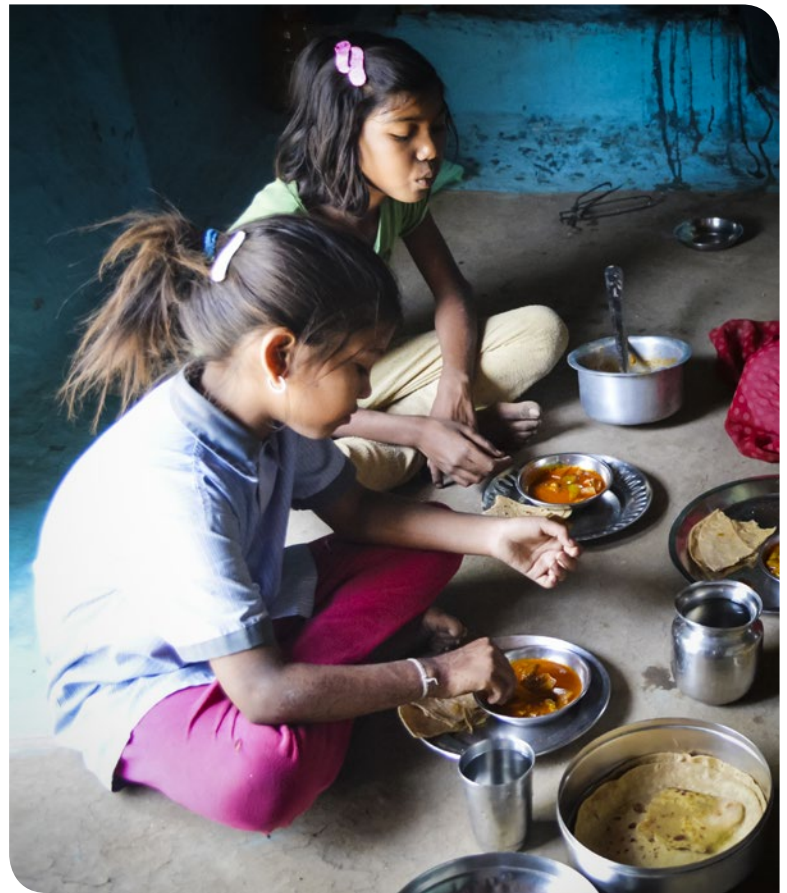
### Focus on South Asia (quality of evidence rank: low or very low)

- All 5 studies focused on school settings and personal factors influencing FV intake (not external factors, like supply).
- Higher FV intakes were associated with: daily breakfast consumption; higher monthly income and higher levels of maternal education; self-efficacy (but not self-control and expectations).
- Effective interventions included multi-component improvements to school-, classroom-, and family-environments: as a result, fewer children ate at the school canteen and more brought fruit in their lunch boxes.

### 2. From the policy research –

#### The policy landscape is characterised by:

- Growing government support for agriculture over the past decade, with a policy focus on employment, livelihoods and economic growth, but little integration of nutrition considerations in agricultural policy.
- Shared responsibility for agriculture-related policies between government sectors and across the Central Government and State levels; coordination remains a challenge.
- FV supply chains are diversifying, with traditional, commercial and modern approaches



co-existing. This requires innovation in production, transport and retail to meet changing markets.

↑ Children having food in Wardha, Maharashtra.  
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**In-depth interviews** with leading experts in the field of agriculture, public health and nutrition highlighted several ways to strengthen the supply and accessibility of fruit and vegetables:

- a) Engaging the health sector in supporting specific initiatives to bring together supply and demand for FV
- b) Identifying opportunities for strategic Public Private Partnerships to increase access to diverse expertise across the supply chain, in line with Sustainable Development Goal 17.
- c) Sharing and scaling up small-scale, local and state-level innovation in FV supply chains
- d) Improving integration and coherence in FV supply policies across sectors and national/state jurisdictions.
- e) Strengthening surveillance of policy impacts on consumer access to FV; for example, analysing the impact of subsidies and policies designed to improve availability of cold-chain infrastructure.

Children of Koraput Village, Odisha.  
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## Conclusion

Upon integration of all above pieces, there is clearly consensus and endorsement by diverse stakeholders from multiple sectors to try out the following in order to enhance FV supply chains:

1. Foster qualitative and quantitative research and innovation to improve efficiencies, reduce wastage, and improve healthy competition for FV as a high value crop both economically and nutritionally
2. Improving provision of infrastructure for storage and transport of perishable produce; including through drawing on indigenous techniques
3. Improving collaboration and coherence in policies across the supply chain, with a focus on improving outcomes for consumers in terms of access and quality
4. Strengthening policy implementation across sectors drawing on expertise from the Ministry of Food Processing and Industry, Department of Agriculture (National Horticulture Board), Department of Health, as well as from States and Industry
5. Strengthening demand for FV through targeted awareness activities and media-supported social advocacy, including through engaging with local supply, markets, and seasonality.



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