

Learning and best practices

SCALING UP OF WHEAT FLOUR FORTIFICATION IN PUBLIC DISTRIBUTION SYSTEM OF HIMACHAL PRADESH



ACKNOWLEDGMENT

The institutionalization of the wheat flour fortification would not have been possible without the leadership and continued support of the Department of Food and Civil Supplies and Consumer Affairs, Government of Himachal Pradesh. The Department's stewardship in integrating food fortification within public food distribution and consumer protection systems, has been instrumental in advancing program sustainability and scale.

We acknowledge the Department's commitment to coordination, operational oversight, and facilitation of state-level implementation, which has strengthened compliance, enhanced system ownership, and ensured alignment with National nutrition priorities.

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LIST OF ABBREVIATIONS

AAJ	Antyodaya Anna Yojana	LFSS	Ladakh Food Security Scheme
AMB	Anaemia Mukh Bharat	MDM	Mid-Day Meal (Scheme)
BCC	Behaviour Change Communication	M&E	Monitoring and Evaluation
CFTRI	Central Food Technological Research Institute	NFHS	National Family Health Survey
CoA	Certificate of Analysis	NFSA	National Food Security Act
FPS	Fair Price Shop	NPHH	Non-Priority Household
FSC	Food Supply Centre	PDS	Public Distribution System
FSSAI	Food Safety and Standards Authority of India	PHH	Priority Household
GAIN	Global Alliance for Improved Nutrition	QA/QC	Quality Assurance / Quality Control
HDPE	High-Density Polyethylene	SOP	Standard Operating Procedure
ICDS	Integrated Child Development Services	UT	Union Territory
IEC	Information, Education and Communication	WFF	Wheat Flour Fortification
KHPT	Karnataka Health Promotion Trust		

KEY MESSAGES

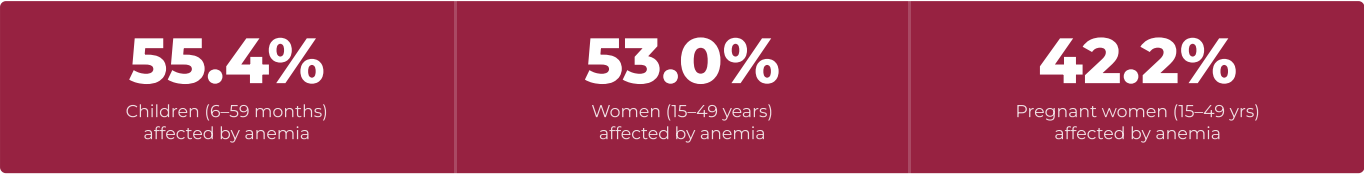
- Himachal Pradesh became the **first state in India** to implement 100% wheat flour fortification through the PDS, launching the initiative in January 2020.
- The programme addresses a critical public health challenge: NFHS-4 (2015-16) recorded anaemia prevalence of 53.7% among children (6–59 months) and 53.4% among all women (15–49 years), rising to 55.4% and 53.0% respectively in NFHS-5 (2019-21).
- Leveraging wheat flour as a widely consumed staple through the PDS provides a cost-effective, sustainable platform for delivering iron, folic acid, and vitamin B12 to vulnerable households at scale.
- The initiative has achieved **statewide coverage across all 12 districts**, ensuring all PDS wheat flour distributed in Himachal Pradesh is fortified to FSSAI standards.
- More than **70 lakh beneficiaries** across ~19.6 lakh ration card households are reached through the programme, demonstrating its extensive population-level impact.
- A network of **91 empanelled flour mills** produces over 3.22 lakh metric tonnes of fortified wheat flour annually, supporting uninterrupted PDS supply.
- Strong leadership from the Department of Food, Civil Supplies and Consumer Affairs (FCS&CA), Government of Himachal Pradesh, has been central to the programme's success.
- Continuous capacity building, miller engagement, and quality assurance measures have strengthened compliance, with multiple rounds of testing confirming adherence to FSSAI standards.
- Himachal Pradesh's experience shows large-scale food fortification can be institutionalised within government systems — a replicable model for improving nutrition security across India.
- Sustained investment in quality assurance, monitoring, community awareness, and convergence with health and nutrition programmes can further enhance impact on anaemia reduction.

BACKGROUND AND CONTEXT

MALNUTRITION AND ANEMIA IN HIMACHAL PRADESH

Himachal Pradesh (HP) faces a significant anemia burden, particularly among women and children.

The National Family Health Survey 4 & 5 (NFHS 4 & 5) data revealed the scale of the challenge across key population groups:



Source: National Family Health Survey (NFHS-5)

These figures underscore the need for sustained, population-wide micronutrient interventions. While the state has strong health and nutrition systems, diet quality remains a persistent challenge — especially among economically vulnerable households dependent on the Public Distribution System (PDS).

WHY IS WHEAT FLOUR FORTIFICATION NEEDED?

Wheat is a staple food across Himachal Pradesh, and Public Distribution System (PDS) wheat flour is consumed daily by most low-income households. The latest household consumption expenditure data (2022-23) indicates that household consumption of wheat/atta is higher than rice in both rural and urban areas in Himachal Pradesh.

Fortifying wheat flour with **iron, folic acid, and vitamin B12** is one of the most cost-effective ways to address micronutrient deficiencies and reduce anemia at scale. As HP distributes wheat entirely in flour form in PDS, it represents a low-disruption, high-coverage intervention embedded within an existing delivery system.

Every \$1 invested in anaemia reduction can yield a return of approximately \$12 to \$19.

Estimated yearly costs of Iron Deficiency Anaemia in 6–59-month-old children amount to 8.3 million DALYs and production losses of \$24,001 million USD — equal to 1.3% of GDP.¹ At just 8–10 paise per kg (~\$0.001), wheat flour fortification is among the most cost-effective strategies available.

1. [Social Costs of Iron Deficiency Anemia in 6–59-Month-Old Children in India - PMC](#)



Empowering Communities: Wheat flour fortification provides direct, cost-effective nutrition to families across Himachal Pradesh.

POLICY CONTEXT

The Wheat Flour Fortification (WFF) program operates within India's broader food and nutrition policy landscape.

Together, these instruments create a strong enabling environment for coordinated and regulated implementation at scale.

NATIONAL FOOD SECURITY ACT (NFSA), 2013

Mandates subsidised food distribution through the PDS, providing the statutory foundation for large-scale linked interventions.

FSSAI STANDARDS (2018)

Sets national fortification standards for wheat flour including dosing norms and labelling requirements — the regulatory baseline for all WFF activity.

ANEMIA MUKT BHARAT ABHIYAAN

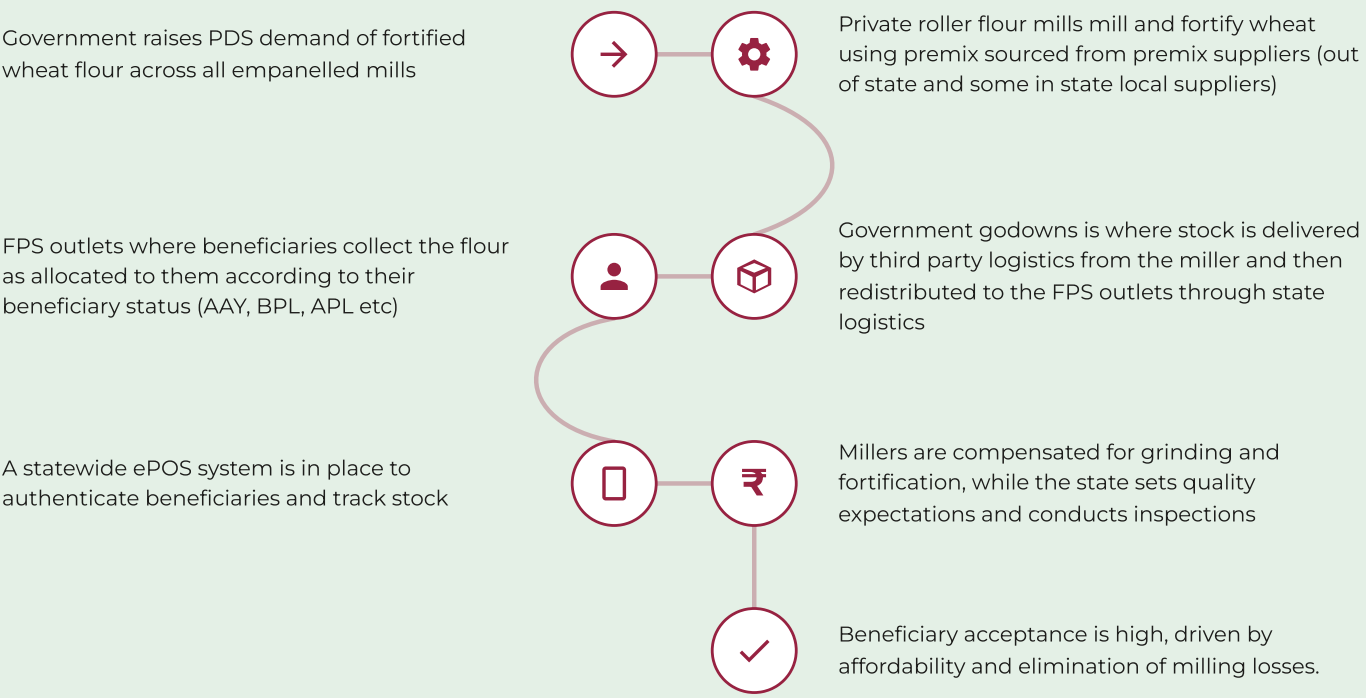
Outlines staple food fortification as a broader national strategy for anemia reduction, creating cross-departmental alignment.

2017 ADVISORIES

Mandated inclusion of fortified wheat flour in PDS, Integrated Child Development Services (ICDS), and Mid-Day Meal (MDM) programmes.

OVERVIEW OF THE PDS WHEAT FLOUR SYSTEM IN HIMACHAL PRADESH

The PDS in HP delivers subsidised fortified wheat flour to Above Poverty Line (APL), Below Poverty Line (BPL), and Antyodaya Anna Yojana (AAY) households through Fair Price Shops (FPS). The system relies on the following:

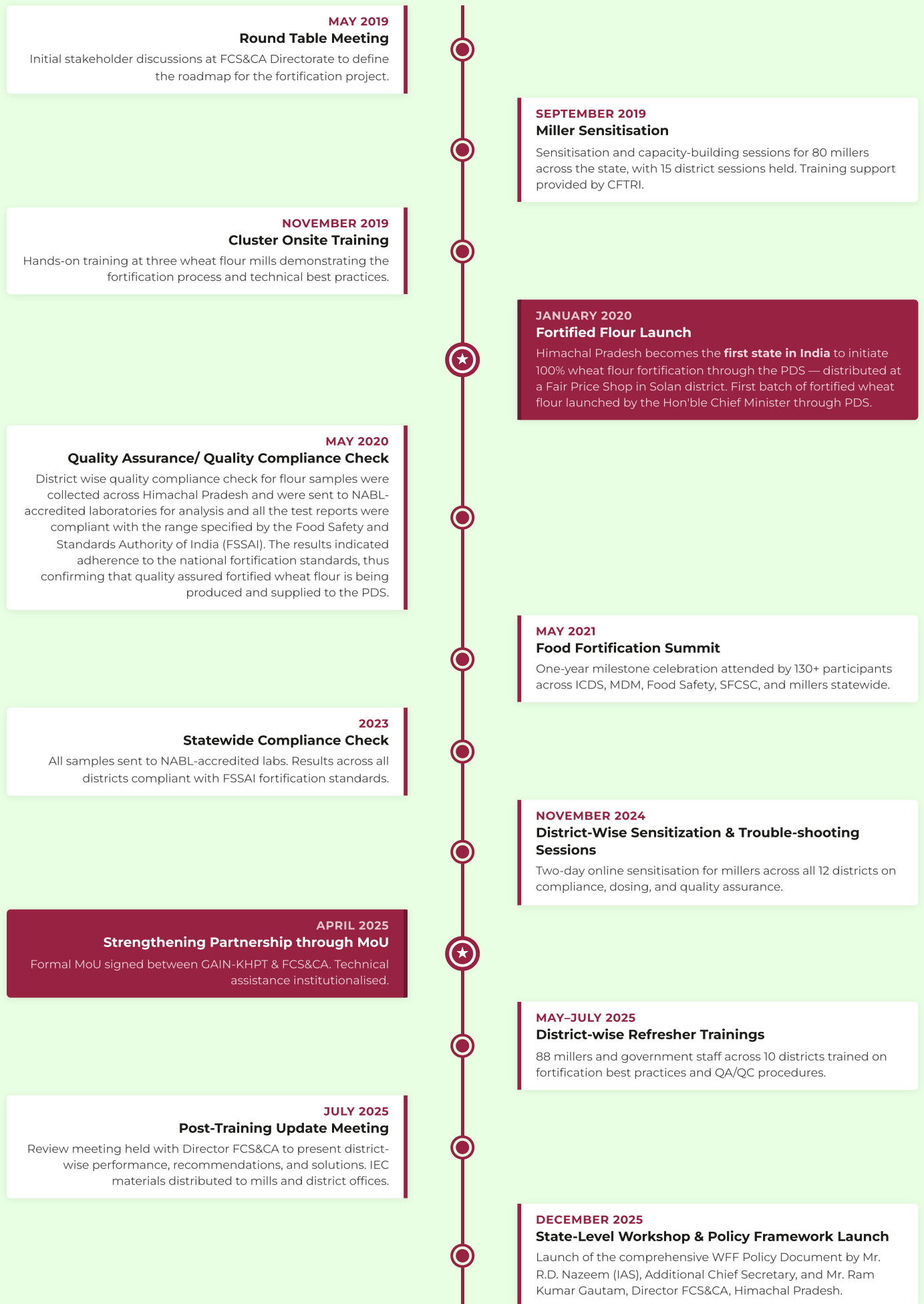


Packaged fortified atta ready for Public Distribution System dispatch in Himachal Pradesh.



TIMELINE JOURNEY OF WHEAT FLOUR FORTIFICATION IN HIMACHAL PRADESH

From an initial roundtable in 2019 to a landmark policy workshop in 2025 — six years of coordinated action.



PROGRAMME AT A GLANCE

Since its launch in January 2020, HP's WFF programme has achieved full statewide scale. The extensive activities in collaboration with FSC&CA have resulted in building capacity of millers and has benefited ration card holders of the HP as presented below:

91

Empanelled flour mills producing fortified wheat flour for the PDS*

Over 70 Lakh

Beneficiaries reached across 19.6 lakh ration card households**

3,22,204 MT

Of fortified flour produced annually*

100%

Of PDS wheat flour fortified across all 12 districts

70%

Of millers now sourcing premix from local suppliers — a growing in-state industry

*Annual production data shared by FCS&CA department HP | **Transparency Portal, ePDS Himachal Pradesh | Data as of February, 2026



ENABLERS OF SUCCESSFUL WFF IN HIMACHAL PRADESH

Himachal Pradesh's successful implementation has been driven by a combination of factors that position the state as a model for advancing fortified wheat flour as a public health intervention.

01 STRONG POLITICAL WILL & ADMINISTRATIVE LEADERSHIP

The state demonstrated early leadership by mandating fortification for all PDS wheat flour and forming a dedicated state task force. Public endorsement from district officials to the Chief Minister set the tone for rapid, statewide adoption.

02 HIGH CONSUMER ACCEPTANCE & TRUST

Texture and taste changes are minimal and acceptable. Beneficiaries save significantly by not having to separately mill grain. Community trust in FPS owners and local leaders reinforces confidence in the fortified product.

03 OPERATIONAL STABILITY & EFFICIENT SUPPLY CHAIN

The mill-to-godown-to-FPS-to-beneficiary chain functions smoothly. The ePOS system strengthens transparency and reduces diversion risk. Most mills were already equipped with feeder infrastructure, enabling a seamless transition.

04 STRONG MILLERS' ENGAGEMENT & LOCAL INDUSTRY DEVELOPMENT

Early engagement of the Roller Flour Mills Association enabled smooth programme design. Local premix production now serves ~70% of millers. Predictable PDS demand enhances revenue stability for mill operators.

05 MULTI-STAKEHOLDER PARTNERSHIPS

FCS&CA provided strategic leadership through a dedicated task force. Technical partners contributed evidence-informed design, SOPs, and capacity building. FPS owners and local officials reinforced last-mile community trust.

ROLE OF DEVELOPMENT SECTOR PARTNERS

The Global Alliance for Improved Nutrition (**GAIN**) and **KHPT** provided technical assistance for implementation, capacity building, and quality-control systems, supporting the Department's efforts to institutionalise and sustain the programme. Technical manuals, local-language posters, hands-on training, QA/QC protocols, and periodic compliance reviews were provided — translating policy intent into operational reality.

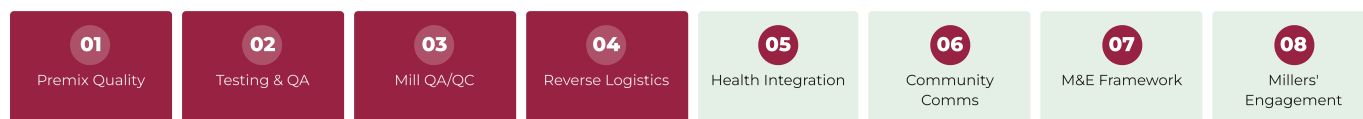


MoU signing between Department of Food Civil Supplies, Gov of Himachal Pradesh, GAIN & KHPT

FRAMING THE WAY FORWARD: RECOMMENDATIONS FOR IMPACT

Himachal Pradesh has made significant progress in operationalising WFF through the PDS, achieving full coverage and a stable supply chain.

The following recommendations aim to support Himachal Pradesh in evolving from a supply-driven fortification programme to a high-impact public health intervention — setting a replicable benchmark for other states.



01 STRENGTHEN PREMIX QUALITY REGULATION & PROCUREMENT ECOSYSTEM

Premix quality directly determines the consistency of micronutrient delivery in fortified wheat flour.

Variability in premix quality and pricing can lead to uneven micronutrient content across mills. State-level empanelment, mandatory Certificates of Analysis, and pooled procurement can improve both compliance and cost efficiency.

1

Create state-level empanelled vendor list with quality criteria and FSSAI validation

2

Develop a premix QA protocol covering storage, sampling, and traceability

3

Mandate batch-wise Certificate of Analysis (CoA) from premix supplier; upload to digital portal

4

Explore state-level pooled procurement to reduce cost variability across mills

02 STRENGTHEN TESTING AND QUALITY ASSURANCE SYSTEMS

Regular testing and surveillance ensure fortified wheat flour meets prescribed standards beyond production points.

Mandatory quarterly testing and random market surveillance strengthen FSSAI compliance and reduce the risk of sub-standard products reaching beneficiaries.

1

Sustained training and capacity building of labs with state-of-the-art methodologies

2

Quarterly quantitative testing of both premix and final product at NABL-accredited labs

3

Random market surveillance across PDS channels to verify compliance at distribution points

03 ADVISORY FOR MILL-LEVEL QUALITY ASSURANCE AND QUALITY CONTROL

Mill-level processes are critical for maintaining accurate micronutrient dosing across all production batches.

Standardised SOPs for calibration and record-keeping ensure uniform dosing accuracy, while batch retention samples allow rapid resolution of quality gaps.

1

Mandate SOP for calibration, maintenance, and documentation at each mill

2

Require batch retention samples for 3–6 months

3

Conduct annual mill audits focused on Quality Assurance/Quality Control compliance

4

Provide annual technical refresher training for mill operators and QA staff

04 ESTABLISH REVERSE LOGISTICS AND COMPLAINT MANAGEMENT SYSTEMS

Without structured reverse logistics, quality issues can disrupt distribution without a clear resolution pathway.

Defined return and replacement SOPs supported by ePOS-based reverse entries allow quality issues to be resolved without interrupting supply chain continuity.

1

Develop return and replacement SOP linking FPS → Govt. godown → mill

2

Integrate reverse stock entries into the ePOS system for full traceability

3

Implement batch traceability with digital logging at each supply chain node

01

Premix Quality

02

Testing & QA

03

Mill QA/QC

04

Reverse Logistics

05

Health Integration

06

Community
Comms

07

M&E Framework

08

Millers'
Engagement

05 INTEGRATE WFF WITH HEALTH AND NUTRITION PROGRAMMES

Fortification delivers public health impact only when aligned with broader nutrition and anaemia-reduction efforts.

Formal convergence with ICDS, Health, Education, and Anemia Mukht Bharat enables joint planning, while frontline platforms reinforce correct consumption practices.

1

Form multi-departmental working group (Food, Health, WCD, Education)

2

Leverage ICDS, ASHA, and MCH platforms to promote fortified wheat consumption

3

Pilot targeted allocation for high-risk groups — pregnant women & adolescent girls

4

Align WFF messaging with Anemia Mukht Bharat for a unified public health narrative

06 STRENGTHEN COMMUNITY-LEVEL COMMUNICATION INITIATIVES

A focused BCC approach shifts WFF from passive receipt to informed utilisation at the household level.

Leveraging FPS, Anganwadi Centres, and PHCs addresses misconceptions, promotes correct usage, and builds sustained demand among women, caregivers, and families.

1

Train FPS dealers, Anganwadi Workers, and PHC staff on WFF benefits and messaging

2

Leverage Anganwadi sessions, PHC visits, and FPS interactions for community engagement

3

Design visual low-literacy materials for FPS and community-level dissemination

4

Use radio, short videos, and WhatsApp groups to amplify sustained messaging

07 DEVELOP A ROBUST MONITORING AND EVALUATION (M&E) FRAMEWORK

A strong M&E framework is essential to assess whether fortified wheat flour is reaching and being consumed by the target population.

Integrating ePOS and supply chain data with health outcome indicators can identify consumption gaps and measure programme effectiveness.

1

Build integrated framework covering inputs, process, outputs, and outcomes

2

Deploy mobile-based digital checklists for inspectors across all districts

3

Conduct biannual haemoglobin testing among key demographic groups statewide

4

Analyse ePOS and supply-chain data to monitor consumption gaps and reach

08 STRENGTHEN MILLERS' ENGAGEMENT AND NON-FINANCIAL INCENTIVES

Millers are central to operational continuity, yet policy or cost-related challenges can slow compliance and implementation.

Structured dialogue platforms enable rapid problem resolution and smoother policy transitions, while responsive non-financial incentives can motivate millers and strengthen multi-stakeholder engagement for smoother implementation.

1

Reassess fortification incentives to reflect rising premix costs

2

Institutionalize quarterly dialogues between millers and the Department of Food and Civil Supplies and Consumer Affairs

CONCLUSION

Himachal Pradesh has achieved full coverage and strong acceptance of fortified wheat flour through the Public Distribution System, demonstrating the value of coordinated action across government, industry, technical institutions, and development partners.

The Department of Food, Civil Supplies and Consumer Affairs has provided critical leadership in programme planning, procurement, distribution, and oversight, while participating millers have enabled the consistent production and supply of fortified wheat flour. Development partners — GAIN and KHPT — provided technical assistance, capacity building, training, and implementation support, and Fair Price Shops and local administration supported last-mile distribution and beneficiary engagement.

Building on this foundation, sustained collaboration among these stakeholders will be essential to strengthen laboratory capacity, establish a robust procurement and quality-assurance ecosystem, integrate wheat flour fortification with health and nutrition programmes, and invest in behaviour change communication. These actions can help transform fortified wheat flour from a supply-driven intervention into a high-impact public-health strategy that contributes to measurable reductions in anaemia.

Himachal Pradesh is well positioned to emerge as a national leader in staple food fortification, setting a benchmark for government-led, quality-assured, community-informed, and health-focused implementation.



Healthier Diets. For all.



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