

EVENT REPORT

STAKEHOLDER CONSULTATION
ON DOUBLE FORTIFIED SALT (DFS)

30 APRIL 2026



Background

The Food Safety and Standards Authority of India (FSSAI) - West Region and International Training Centre Food Safety & Applied Nutrition (ITCFSAN), in partnership with Global Health Strategies (GHS), convened a multi-stakeholder consultation on 30 April 2026, to explore the feasibility of integrating Double Fortified Salt (DFS) into Maharashtra's social safety net programmes (SSNPs). The consultation brought together senior experts, industry representatives, and private-sector players to examine operational, supply chain, and implementation considerations for introducing DFS through a phased, evidence-informed approach. The discussions focused on identifying practical pathways and generating actionable recommendations to support state government decision-making.

The consultation was organised in the context of the persistent burden of anaemia in Maharashtra, especially iron deficiency among women and children. According to NFHS-5 data, over 68.9% of children, more than 50% of women aged 15–49 years, and 54.8% of pregnant women in the state are affected by anaemia. Anaemia during preg-

nancy increases the risk of complications such as pre-term delivery and low birth weight babies. At the same time, in children, it can negatively affect cognitive development, academic performance, and active participation in school.

Addressing iron deficiency through food-based interventions, such as food fortification, is the most sustainable and cost-effective way to combat it and break the intergenerational cycle of malnutrition.¹ Salt is considered an effective vehicle for fortification because it is consumed universally across households, irrespective of socioeconomic status. India's long-standing Universal Salt Iodisation program has also created a strong foundation for integrating iron as an additional nutrient. Evidence from states such as Uttar Pradesh and Jharkhand indicates that regular DFS consumption can improve haemoglobin levels while maintaining iodine sufficiency, and has been associated with a reduced prevalence of anaemia and iron deficiency among schoolchildren.²



[1] WHO. Food fortification. Retrieved from https://www.who.int/health-topics/food-fortification/strengthening-national-food-control-systems#tab=tab_1

[2] Godbole U, Basantani M, Yadav S, Godbole N, Khandpur S, Godbole M, Raza S, Mbuya MNN, Neufeld LM. The Impact of Double-Fortified Salt Delivered Through the Public Distribution System on Iodine Status in Women of Reproductive Age in Rural India. *Curr Dev Nutr*. 2021 Mar 30;5(4):nzab028. doi: 10.1093/cdn/nzab028. PMID: 33948532; PMCID: PMC8075773.

Highlights of the Discussions

Opening and Context Setting Session

Ms Pritee Chaudhary (Regional Director, FSSAI - West Region) delivered a keynote address in which she described the consultation as an opportunity to identify practical, actionable steps for introducing DFS in Maharashtra. Referring to India's historical journey with salt, emphasising the Universal Salt Iodisation programme's success, she **positioned DFS as an important next step in addressing anaemia** and highlighted Maharashtra's strong social safety-net infrastructure as an enabling platform for its implementation. She noted that successful adoption in one state could help build momentum for a broader national DFS strategy.



Chairing the meeting, Ms Rita Teatia (Former Chairperson, FSSAI) reflected on India's food fortification journey and acknowledged the challenges of consumer acceptance, industry readiness, and budgetary constraints. Drawing from experiences in Gujarat and Madhya Pradesh, she identified the following five priority areas for Maharashtra's DFS programme: (i) production capacity, (ii) product quality and stability, (iii) cost implications for additional fortification, (iv) budgetary provision, and (v) sustained behaviour change communication (BCC). She emphasised the importance of collaboration between government, industry, and other stakeholders to support DFS integration in the state.

Scientific Evidence and Public Health Impact – presentations from experts

Experts from FSSAI, NIFTEM, ITC Foods, and Nutrition International (NI) presented scientific and industry evidence highlighting the potential of DFS as a scalable intervention to address iron-deficiency anaemia and iodine-deficiency disorders.

Dr Sirimavo Nair (Scientist and Chair of the Scientific Panel on Nutrition and Fortification, FSSAI) shared findings from studies among pregnant women and school children in Gujarat, which showed improvements in haemoglobin levels, cognitive outcomes, and strong community acceptance, while also noting that local salt producers could successfully transition to DFS manufacturing with technical support and quality assurance measures.

Dr Jeyan Arthur Moses, Assistant Professor at NIFTEM, emphasised that robust process technology, standardised quality control, and regulatory alignment have significantly improved the product and can help ensure the safety, stability, and effectiveness of DFS at scale.



From an industry perspective, **Dr Agatha Betsy** (Head of Nutrition Sciences at ITC Foods) discussed ITC Foods' experience in developing DFS products through encapsulation technology, noting that the technology has

helped improve the stability and quality of DFS by reducing interactions between iron and iodine, while also addressing concerns related to taste, colour, and shelf life. She also emphasised that consumer awareness, sensory acceptance, and sustained market demand remain critical for large-scale adoption. The presentations highlighted how advancements in DFS production technologies, particularly encapsulation and improved process controls, have contributed to enhanced product stability and sensory characteristics. These improvements were discussed as important factors in supporting greater consumer acceptance and facilitating large-scale adoption.

Mini Varghese from NI shared implementation learnings from programmes across Madhya Pradesh, Gujarat, and Himachal Pradesh, which currently reach 144 million beneficiaries across 100 districts. She underlined the importance of government ownership, inter-departmental coordination, strong monitoring systems, and sustained technical support for successful scale-up and long-term sustainability.

Breakout Sessions – Pathways for DFS Adoption in Maharashtra

1) Policy opportunities or entry points for DFS in social safety net programmes

Participants discussed potential programmatic entry points for integrating DFS. The ICDS scheme emerged as the most promising platform for DFS integration in Maharashtra, given its established supply chain systems and ability to reach young children early in life. The PDS was also identified as a potential delivery channel, although participants noted concerns around low household salt distribution volumes through the system. Participants recommended piloting DFS integration in high anaemia-burden districts and tribal-populated areas as priority geographies for implementation. Consumer awareness and acceptance were identified as critical to programme success. Participants highlighted the need for advocacy, community engagement, and BCC campaigns to accompany any pilot or scale-up efforts. Discussions also underscored the importance of strengthening delivery, storage, and quality assurance mechanisms, including standards and oversight for premix production and supply chains. On costing, participants emphasised the need for subsidised pricing models and agreed that distribution and communication costs should be treated as essential programme investments rather than additional expenditures. Participants also noted that DFS should be positioned not only within welfare schemes, but as part of broader efforts to improve dietary diversity and address micronutrient deficiencies more comprehensively.



2) Implementation and integration challenges and opportunities

Discussions in this breakout session focused on costs, system readiness, private sector engagement, and scaling opportunities for DFS in Maharashtra. Participants stressed the need to secure government funding and support, particularly to sustain the first five to ten years of scale-up. The PM-POSHAN scheme was identified as an immediate pathway for the government-led adoption of DFS. Key priorities highlighted: strengthening laboratory capacity, establishing a vendor pre-qualification system for premix and salt manufacturers, and establishing a robust enforcement mechanism to ensure quality assurance standards. Participants also noted the importance of training Food Safety Officers and introducing a real-time tracking system for DFS production, distribution, and compliance. Participants highlighted the role of the private sector, particularly leading food brands, in driving awareness and acceptance. Finally, the need to subsidise and scale encapsulation technology, and to align DFS pricing with iodised salt, was identified as an important step to encourage both private-sector investment and consumer uptake.



3) Positioning DFS as a viable, complementary solution to address micronutrient malnutrition

This session focused on technology transfer, programme integration, and demand generation as key enablers for scaling DFS in the state. On technology, participants identified wider access to encapsulation and related DFS production technologies as critical to expand production and supply, with government subsidies proposed to support this expansion. On programme integration, participants suggested that the ICDS scheme could procure DFS through PDS and distribute it through its existing network, with active coordination between the central and state governments.



Finally, on demand generation, participants stressed that increasing supply must be matched by strong consumer awareness efforts. Large-scale behaviour change and mass media campaigns—similar to those used to promote millet in India—were recommended to increase public familiarity and acceptance of DFS within and beyond SSNPs.



Expert Reflections on Breakout Outcomes

In this session, experts highlighted that while DFS is ready for scale-up and integration into social safety net schemes, the primary challenge lies in ensuring its large-scale distribution through appropriate government channels. They emphasised the need for a comprehensive project document — formally submitted to the state government — that outlines the benefits of DFS integration in SSNPs, investment requirements, and presents a policy rationale for adoption. Speakers also suggested the importance of collaboration between academic institutions and private manufacturers to build a strong case for government action.

The speakers emphasised that government leadership is a critical starting point for creating demand and enabling scale-up. Maharashtra was identified as having the potential to become the first state to integrate DFS across major welfare programmes — including PDS, ICDS, and PM POSHAN. A strong regulatory push, they noted, would create the foundational demand for DFS scale-up, while the government's procurement commitments and supportive policies would encourage private-sector participation and production scale-up. They also stressed the need for large-scale awareness efforts and incentive mechanisms, including technology-transfer support, to strengthen the DFS market ecosystem.



Recommendations

The following recommendations emerged from rich discussions during the breakout sessions and expert reflections, highlighting a consensus among stakeholders on key, evidence-based measures to integrate DFS into Maharashtra's SSNPs. Collectively, these recommendations highlight the importance of strategic programme design, private-sector engagement, and strengthened consumer trust - to ensure that the proposed DFS intervention supports long-term reductions in IDA across Maharashtra.

1) Programme Design

Speakers pointed to opportunities for strengthening programme design for DFS integration across SSNPs. Following areas emerged as key points of consideration for the state government:

- There is value in strengthening supply chain infrastructure through cost-effective systems for packaging, storage, and distribution of DFS through the PDS - ensuring product quality, preventing surpluses, and sustaining consistent, uninterrupted programme delivery.
- Standardisation of premixes at the point of procurement by DFS manufacturers could be supported through the development of Standard Operating Procedures (SOPs) and specifications for premix formulation.
- A vendor pre-qualification mechanism for premix suppliers and DFS manufacturers could be worth considering, as a means of ensuring that only quality-compliant suppliers are part of the supply chain.
- Integrating DFS into existing digital tracking systems like FoRTrace (Fortified Rice Traceability Application) could offer a practical pathway for enabling real-time visibility into DFS production, distribution, and compliance across the supply chain.
- Drawing on models from states such as Gujarat, Madhya Pradesh, and Himachal Pradesh, the Maharashtra state government could consider subsidy or partial subsidy approaches to DFS purchasing for consumers as a way of reducing costs and encouraging wider DFS uptake.
- The state government could look at providing procurement assurances for DFS under SSNPs, alongside financial incentives or subsidies to support manufacturers in procuring encapsulation technology and strengthening their manufacturing capacity. These would help incentivise private-sector participation and encourage the production and supply of adequate quantities of high-quality DFS.
 1. There may also be value in making specialised production technologies more accessible to manufacturers through the establishment of shared technology hubs where multiple private sector players, including MSMEs, can access common infrastructure such as premix preparation facilities,

encapsulation systems, and quality assurance and testing facilities — as a means of meaningfully strengthening producer capacity.

2) Integration of DFS into Existing SSNPs

Speakers highlighted the potential of existing SSNPs as ready vehicles for DFS integration, pointing to a number of avenues that the state government can consider.

- ICDS and PM POSHAN may serve as potential 'quick win' entry points given their reach among children at an early age, when product acceptance is higher, and dietary habits are still forming.
- The state government should consider leveraging the PDS as a large-scale delivery channel for DFS, given its wide reach scaling distribution in a phased manner - beginning with pilot programmes in priority districts with high anaemia prevalence and greater concentrations of vulnerable populations, including tribal communities.
- The state government should look at potential financing models for DFS integration into SSNPs to ensure programme sustainability and support a phased scale-up. Experts pointed that it should be underpinned by a comprehensive costing framework spanning production, storage, distribution, monitoring, and communication and behaviour change initiatives.

3) Consumer Trust and Demand Generation

Speakers underscored the need for behaviour change and media campaigns as useful levers for building consumer awareness around DFS - helping communicate its role in addressing IDA, counter misinformation, and promote its usage.

- The state government, with support from partner organisations, should look at implementing large-scale BCC campaigns to raise awareness around the benefits of DFS, address sensory concerns - particularly related to discolouration and encapsulated iron particles, dispel the prevailing myths around the increased use of common salt substitutes (such as pink salt, rock salt, etc.) and improve consumer acceptance.

- Engage and further incentivise large-scale and established industry partners to support consumer awareness through mass media campaigns and trusted consumer networks.
- Partner with influencers and celebrities to amplify messaging around anaemia reduction, promote the benefits of DFS consumption, and drive consumer awareness and trust.
- Using the findings from pilot programmes, generate evidence-based messaging and build confidence among policymakers, stakeholders and consumers before wider state-level rollout of DFS.



In Summary

The consultation served as an important step toward building consensus on integrating DFS into Maharashtra's SSNPs, bringing together critical stakeholders to examine the opportunities and operational realities of scaling DFS. Beyond generating a clear set of recommendations, the meeting helped align stakeholders around a shared understanding of the persistent burden of IDA and the need for practical, systems-driven nutrition interventions. Importantly, the consultation created momentum for future action by strengthening cross-sector collaboration, identifying potential technical and industry partners, and helping shape a roadmap for pilot implementation and phased scale-up in Maharashtra. In the foreseeable future, recommendations from this meeting could play a catalytic role in informing state-level policy initiatives, improving institutional coordination, and advancing more sustainable, large-scale approaches such as DFS to reducing iron deficiency anaemia among vulnerable populations across the state.

Annexures

Participant List

No.	Name	Designation	Organisation	Category
1.	Pritee Chaudhary IRS	Regional Director	FSSAI (West Region)	Government / Regulatory Body
2.	Vaidehi Kalzunkar	Deputy Director	FSSAI (West Region)	Government / Regulatory Body
3.	Muhammad Salman Chukkan	Technical Officer	FSSAI	Government / Regulatory Body
4.	Shashank Shekhar Pandey	Consultant, Social and Behavioral Change Division	FSSAI (West Region)	Government / Regulatory Body
5.	Isha Pawar	Section Officer	Dept. of Food, Civil Supplies and Consumer Protection	Government / Regulatory Body
6.	Rekha Aldar	Superintendent	Directorate of Primary Education	Government / Regulatory Body
7.	Mohan Arswad	Under Secretary	Dept. of School Education, Govt. of Maharashtra	Government / Regulatory Body
8.	Mansi Shekhar	Program Manager, Nutrition	Nutrition International	Partner Organisation
9.	Mini Varghese	Country Director	Nutrition International	Partner Organisation
10.	Ruchika Chugh Sachdeva	Nutrition Lead, India Country Office	Gates Foundation	Partner Organisation
11.	Parag Jalan	Chief Programmatic Officer	Fortify Health	Partner Organisation
12.	Shreeraj Manampadi	Senior Fortification Specialist	Millers for Nutrition	Partner Organisation
13.	Agnita Robert Narendra	Nutrition Specialist	KHPT	Partner Organisation
14.	Dr. Shivangi Choubey	State Consultant	KHPT	Partner Organisation
15.	Nandita Joshi	Senior Program Associate	World Food Programme	Partner Organisation
16.	Akshay Ravi	Director	Global Health Strategies	Partner Organisation
17.	Ubaid Shafi Bhat	Senior Manager	Global Health Strategies	Partner Organisation

Participant List

No.	Name	Designation	Organisation	Category
18.	Harshini Kumari Rathore	Manager	Global Health Strategies	Partner Organisation
19.	Dr. Prabodh Halde	Head, Global Regulatory, Public Policy and Advocacy	Marico Limited	Private Sector
20.	Kejal Joshi	Nutrition Manager	Marico Limited	Private Sector
21.	Kanika Banga	Lead – R&D Claims	Tata Consumer Products	Private Sector
22.	Agatha Betsy	Head, Nutritional Science	ITC Foods	Private Sector
23.	Nilesh Lele	President	CASMB	Private Sector
24.	Ashmi Mulay	Business Development Manager	Fermenta Biotech Limited	Private Sector
25.	Abhijeet Kumar	Founder	StepBeta OPC Pvt Ltd	Private Sector
26.	Umang Budhreja	CEO and MD	Umang Global Group Pvt Ltd	Private Sector
27.	Ritesh Mathur	President	AFSTI, Mumbai Chapter	Industry Assoc. / Trade Bodies
28.	Ojasvi Uppal	Senior Specialist – Regulatory & Advocacy	Food Industry Asia (FIA)	Industry Assoc. / Trade Bodies
29.	Parna Dasgupta	Country Head	Food Industry Asia (FIA)	Industry Assoc. / Trade Bodies
30.	Chinmayee Deulgaonkar	Managing Director	Control Union of India	Industry Assoc. / Trade Bodies
31.	Subhaprada Nishtala	Head of Academic Programs	ITCFSAN	Academia / Expert
32.	Dr. Jagmeet Madan	President	Indian Dietetic Association	Academia / Expert
33.	Dr. Sirimavo Nair	Scientist & Chair	Scientific Panel on Nutrition and Fortification, FSSAI	Academia / Expert
34.	Prof. Uday Annapure	Head, Food Eng. & Tech.	ICT	Academia / Expert
35.	Dr. Jeyan Arthur Moses	Assistant Professor	NIFTEM-T	Academia / Expert
36.	Rita Teotia IAS (Retd.)	Former Chairperson	FSSAI	Academia / Expert
37.	Dr. Rajan Sankar	Former Director, Nutrition	Tata Trusts	Academia / Expert

Agenda

Time	Session
11:00 – 11:05	Welcome Remarks & Context Setting <i>Ms Subhaprada Nishtala, Head of Academic Programs, International Training Centre for Food Safety and Applied Nutrition (ITCFSAN)</i>
11:05 – 11:10	Keynote Address <i>Ms. Pritee Chaudhary (IRS), Regional Director, FSSAI (West region)</i>
11:10 - 11:15	Special address by Chair <i>Ms Rita Teotia (IAS), Former Chairperson, FSSAI</i>
11:15 – 11:25	DFS: Scientific Evidence and Public Health Impact <i>Dr Sirimavo Nair, Scientist & Chair, Scientific Panel on Nutrition and Fortification, FSSAI, MoHFW</i>
11:25 – 11:30	DFS: Innovations in Product Development <i>Dr Jeyan Arthur Moses, Assistant Professor, NIFTEM</i>
11:30 – 11:35	DFS: Industry Perspective <i>Dr Agatha Betsy, Head - Nutrition Sciences, ITC</i>
11:35 – 11:40	DFS: Implementation experiences <i>Mini Verghese, Country Director – India, Nutrition International</i>
11:40 – 12:40	Breakout Session Pathways for DFS Adoption in Maharashtra Participants will engage in focused group discussions across three tracks, exploring policy entry points, implementation challenges, and the positioning of DFS as a complementary solution to address micronutrient malnutrition in Maharashtra. • Track 1: Policy considerations for DFS in social safety net programmes, led by Prabodh Halde, Head Global Regulatory, Public Policy and Advocacy, Marico Ltd. • Track 2: Implementation and integration challenges and opportunities, led by Ms Subhaprada Nishtala, Head of Academic Programs, ITCFSAN • Track 3: Positioning DFS as a viable, complementary solution to address micronutrient malnutrition, led by Vaidehi Kalzunkar, Deputy Director, FSSAI (West Region)/ITCFSAN Each track anchor will then summarise the key takeaways from their group for the wider audience.
12:40 – 13:10	Expert Reflections on Breakout Outcomes In this session, invited experts will share their reflections on the overall outcomes of the breakout session and offer their perspectives on opportunities and the way forward for DFS adoption in Maharashtra. • Prof. (Dr.) Jagmeet Madan, President, National Nutrition Science Professional Council, NCAHP, MoHFW, Govt. of India • Prof. U S Annapure, Head – Food Engineering & Technology, ICT • Dr. Rajan Sankar, Former Director – Nutrition, Tata Trusts • Ms. Pritee Chaudhary (IRS), Regional Director, FSSAI (West region) • Ms. Rita Teotia IAS, Former Chairperson, FSSAI
13:10 – 13:15	Closing: Key takeaways and way forward <i>Mr. Akshay Ravi, Director, Global Health Strategies (GHS)</i>
13:15 onwards	Lunch and networking