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# THE PROOF IS IN THE PILOT: 9 INSIGHTS FROM INDIA'S RICE FORTIFICATION PILOT- TO-SCALE APPROACH

A case study

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Including fortified rice in social assistance programmes represents an enormous opportunity to improve nutrition in India, where micronutrient deficiencies are widespread and programmes reach millions of people. But the unique country context, large population, decentralized governance, fragmented rice industry and concerned activist community pose significant challenges for smooth scale-up.

Against this backdrop, WFP supported national and state governments of India in a unique 'pilot-to-scale' approach, carrying out four sequential large-scale pilots to test and demonstrate the feasibility and effectiveness of including fortified rice in different social assistance programmes. At the same time, working across the value chain, WFP supported standard setting; local production of fortified rice; integration into government distribution systems; and information, education and communication in different contexts, gradually building the momentum for integration of fortified rice into social assistance programmes country wide.

After nearly a decade of pilots, engagement and advocacy, in 2021 the national government committed to mainstreaming fortified rice into all three of its food-based social assistance programmes. Fortified rice is now gradually being introduced into programmes, so far reaching over 400 million people, and the country has become self-sufficient in fortified kernel production. This brief shares nine insights from this global success

story of scaling up food fortification as a strategy to reduce micronutrient deficiencies.

## 1. When diets are poor, fortification can play an important role

Despite India's progress in economic and sustainable development, millions of people are still not consuming nutritionally adequate diets. The 2019-2021 National Family Health Survey<sup>1</sup> revealed that only 11 percent of children aged 6-23 months were fed a minimum acceptable diet with adequate food group diversity and meal frequency.

Adult diets are also poor: Half (49%) of women consume fruit only occasionally, and very few eat chicken, meat, fish or eggs daily, with nearly one-third (30%) of women vegetarian and abstaining from these nutritious animal-source foods altogether. Diets that do not include animal source foods must be very diverse in order to meet all nutrient needs, especially for the most nutritionally vulnerable groups who have higher needs for essential (micro)nutrients per amount of energy. Inadequate intake of nutritious foods can manifest in micronutrient deficiencies, compromising health, child growth and adult productivity. Anaemia, which can result from dietary iron deficiency, was found in two thirds (67%) of Indian children aged 6-59 months and more than half (57%) of women of reproductive age.

An estimate of the overall prevalence of micronutrient deficiencies in India <sup>2</sup>		
Vitamin D deficiency	61%	(95% CI 0.07, 0.26)
Iron deficiency	54%	(95% CI 0.49, 0.59)
Vitamin B <sub>12</sub> deficiency	53%	(95% CI 0.41, 0.64)
Folic acid deficiency	37%	(95% CI 0.27, 0.46)
Vitamin A deficiency	19%	(95% CI 0.09, 0.29)
Iodine deficiency	17%	(95% CI 0.07, 0.26)

Pooled prevalence from children (0-5 years), adolescents (<18 years), adults (>18 years) and pregnant women.

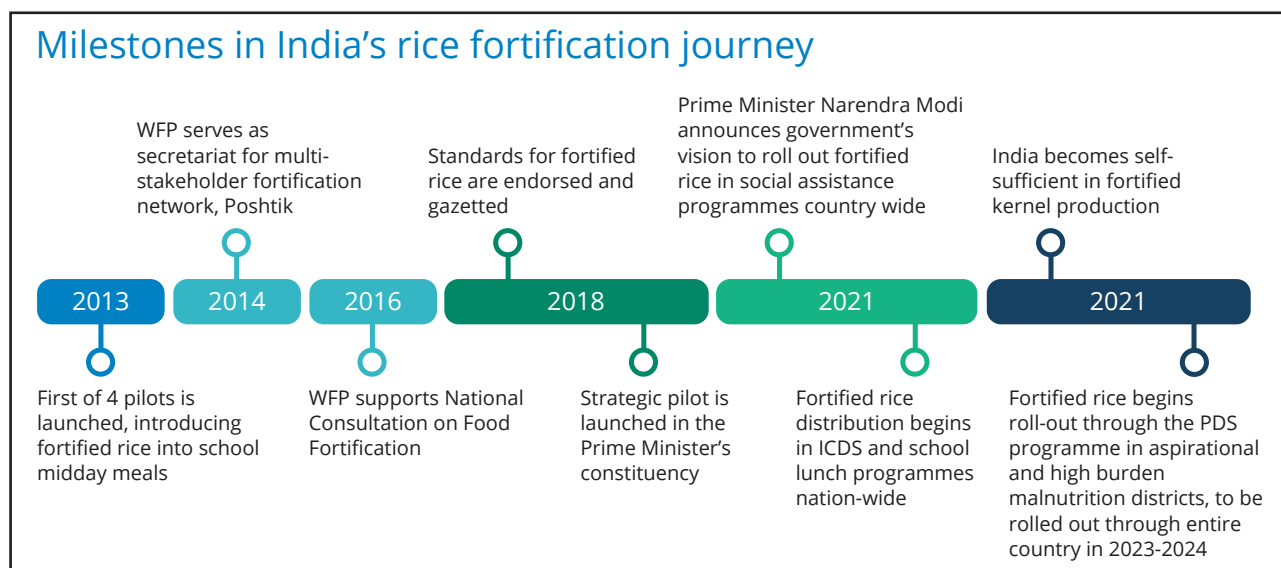
## 2. Introducing fortified rice into social assistance programmes harnesses existing systems that serve the nutritionally vulnerable

India's social assistance programmes reach some of the poorest and most nutritionally vulnerable in society. Three programmes that were already distributing rice offered the opportunity to improve the nutrition of participants by replacing

the unfortified rice normally distributed in the programmes with rice fortified with iron, zinc, folic acid, vitamin A, thiamine, riboflavin, niacin, vitamin B<sub>6</sub> and vitamin B<sub>12</sub>.

Utilising existing programmes, including their targeting and distribution systems, meant that there were no programme establishment costs and that fortified rice could easily be introduced with a small increase in the programme cost.

Social assistance programme	Target group	Rice distribution mechanism
Public distribution system (PDS)	Poor and vulnerable households. 800 million people.	Households receive ration cards to redeem for rice at fair-price shops.
PM Poshan school lunch programme (previously Midday Meal programme)	Schoolchildren 6-14 years (grades 1 to 8). 118 million school children.	Children are served rice in hot midday meals.
Integrated Child Development Services (ICDS)	Pregnant and lactating women, children 6-36 months, children 3-6 years. 110 million people.	Women and young children receive take-home rations including rice. Older children are provided with hot cooked meals at mother child health and nutrition centres.



### 3. Pilots generated the proof needed to go big

India's fragmented rice industry and the large scale of social assistance programmes (the PDS alone serves 800 million people) meant there was concern that efforts to roll out rice fortification could not achieve the required scale and quality. Some stakeholders felt that even though rice fortification efforts had been successful in other countries, these experiences would be difficult to replicate in the Indian context.

To address these concerns, WFP supported national and state governments with a unique pilot-to-scale approach, implementing four large-scale pilots in different parts of the country – three in the school lunch and one in the ICDS programme – in order to test implementation, demonstrate effectiveness and continuously improve programmes.

These pilots were effective in demonstrating that rice fortification could be rolled out through existing social assistance distribution systems and

supply chains, that costs could be brought down through economies of scale, and that nutritional anaemia could be reduced, with evaluation showing a significant drop in the prevalence of anaemia amongst school children. Evidence generated from operational research during the pilots was used to improve programmes, and issues experienced in the first pilot were corrected in the second.

After witnessing the success and feasibility of the pilots, in 2021 the national government committed to scaling up, announcing that all rice distributed through the three food-based social assistance programmes would be fortified by 2024, with the potential reach of more than a billion people.

It was important in the Indian context that pilots were considered large enough to generate substantial evidence - pilots included up to 1 million children - to demonstrate effectiveness at scale. Another success factor was WFP's strategic choice to implement a pilot in the Prime Minister's constituency, which brought attention to the benefits of fortified rice among the highest levels of government.



The Indian pilot-to-scale approach may be useful in countries where governments are not yet fully convinced about fortification. In cases where there is already government buy-in, advocacy and sharing the experiences of other countries may be sufficient and would likely achieve scale faster. Another approach would be for countries to undertake a pilot to test feasibility and acceptability and omit evaluating the impact on anaemia, which may take a couple of years.

#### 4. Assured demand was the selling point for private sector investment

Assuring the private sector that there would be predictable demand and a substantial market for fortified rice was essential for stimulating investment. The inclusion of fortified rice into the social assistance programmes provided a guaranteed market, and this confidence was boosted with the national government's public commitments to use fortified rice in these programmes.

The predictable demand saw the private sector respond: By early 2022 the number of fortified kernel suppliers had increased from 18 to 154 nation-wide within the space of a year. Setting standards for fortified rice also proved to accelerate progress, ensuring a clear legal framework and expectations.

#### 5. Working across the value chain was key to successful scale up

WFP quickly understood the necessity to work across the value chain from production through distribution systems to consumption, and provided the government with end-to-end solutions on all aspects of the rice fortification value chain.

To increase production, the WFP country office helped build private sector capacity to produce fortified rice, both by training and sensitizing local millers to produce fortified kernels and supporting other millers to blend the fortified kernels with unfortified rice. Concurrently WFP supported the development of supply chain and distribution systems, costing and monitoring systems, food safety and quality, national standard setting, and education and communication with communities to promote fortified rice.

#### 6. Directly involving communities garnered support for fortified rice

While WFP supported the government to develop communication materials at the national level, effective social and behaviour change strategies also took place at the community level. School cooks in particular were targeted through SBCC campaigns, encouraging them to use water-tight cooking methods that retain more nutrients than boiling and straining.





Another effective strategy was holding cooking and tasting demonstrations, where WFP partnered with local organizations to visit communities and cook a local dish using fortified rice, demonstrating that fortified rice has the same taste and aroma as unfortified rice.

## 7. Joining forces with other organizations strengthened the case for fortification

Participation and serving as the secretariat for 'Poshtik', a multi-agency fortification advisory network, was strategic for WFP to amplify its advocacy for fortification. This platform enabled WFP to join forces with other development organizations working on fortification in India, including GAIN, Nutrition International, the Bill & Melinda Gates Foundation, Tata Trust and PATH, and advocate with a unified voice. Continuous and united promotion gradually saw fortification increase in importance as a national government strategy to improve nutrition.

Poshtik was also a valuable platform for responding to organizations and activists concerned about fortification, presenting as a unified coalition of respected organizations communicating the evidence-based benefits, science and safety of fortification. The scientific robustness of evidence that backed responses proved to be a critical factor in addressing concerns, and could be

further developed by WFP and other organizations publishing operational research results and evaluations in peer-reviewed scientific literature. Learning from the Indian experience, it is advised that country offices undertake a stakeholder analysis in the project planning phase to better understand the prevalent views on fortification and be able to respond timeously and appropriately.

## 8. South-south triangular cooperation also benefits the 'teacher'

Study visits and exchanges with other countries engaged in rice fortification helped India accelerate progress. WFP arranged for an Indian delegation to visit Costa Rica, a country known for its success with fortified rice, and brought several delegations from South Asia (Sri Lanka, Bhutan, Bangladesh) to learn from India's experience.

India's openness to sharing lessons learned and solutions on topics such as multisectoral commissions, costing analyses, standard setting, blending solutions and bottlenecks benefited other countries and avoided reinventing the wheel. But while the benefits to the 'learner' in a south-south triangular exchange are clear, an additional outcome of these exchanges was the confidence and pride that they gave the Indian government in its own fortification programme, serving to reinforce its commitment to rice fortification.



## 9. Playing the long game paid off

The success of rice fortification in India was partly due to long-term engagement of WFP, partners and national and state governments through consecutive pilots and gradual scale up. While the first pilot was launched in 2013, evidence on the impact on anaemia was only available 5 years later in 2019. Continued funding for staff, advocacy efforts, research, study tours and pilots was also essential.

The stability of WFP country office staff across the process was also a key success factor, with

the same dedicated and knowledgeable key staff supporting India on rice fortification for nearly a decade, giving confidence and consistency to government counterparts and maintaining institutional memory.

While fortification is an effective and proven strategy to reduce micronutrient deficiencies, it does not happen nor produce results overnight. As WFP continues to support countries in food fortification programmes, persistent engagement over the long term is emerging as a key success factor in creating successful and sustainable actions to fight persistent micronutrient deficiencies.



## References

1. International Institute for Population Sciences (IIPS) and ICF. 2021. National Family Health Survey (NFHS-5), 2019-21: India. Mumbai: IIPS.
2. Venkatesh, U., et al. (2021). "Micronutrient's deficiency in India: a systematic review and meta-analysis." Journal of Nutritional Science 10: e110.

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WFP promotes and enables the scale up of staple food fortification as one strategy to improve diets. We source and provide fortified foods for our programmes and food distributions, advocate for fortification in policy, and play a facilitating role in countries, connecting key actors. In 2021 WFP committed to increasing the proportion of fortified staples out of fortifiable staples (wheat flour maize flour and rice) from 60% to 80% by 2025, together with fortified vegetable oil and salt, as part of the global Nutrition for Growth commitments. WFP supports food fortification as one strategy to improve nutrition, complementing dietary diversification, micronutrient supplementation, public health measures and nutrition and health education.





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