SAVING LIVES
CHANGING LIVES

How WFP supported the Government of Bangladesh to Introduce and Scale up Rice Fortification

A Case Study on Reducing Micronutrient Malnutrition

WFP
World Food Programme

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Contents

Introduction

In 2014, the WFP Policy, Programme, and Innovation Division initiated a project to support Regional Bureaux and Country Offices in knowledge sharing through the documentation of a series of technical case studies in nutrition programming. This effort was made in response to numerous requests from across the organization for examples of how WFP is implementing nutrition-specific and nutrition-sensitive programmes. These case studies focus on key success factors and lessons learned, as well as challenges and potential solutions, from experiences in each of these countries. The project also developed a template and guidance for writing technical case studies in order to facilitate further documentation in other contexts.

The first phase of the project highlighted flour fortification in Egypt, local production of specialized nutritious food in Pakistan, nutrition-sensitive interventions in Ecuador and the Dominican Republic, and scaling-up nutrition interventions in Niger and Malawi. In 2017, the Nutrition Division prioritized expanding the existing series of case studies to include examples from Bangladesh, Cameroon, El Salvador, Rwanda and the Kyrgyz Republic. The goal in sharing these case studies with internal and external stakeholders is to highlight important achievements of WFP Country Offices and leverage these experiences to support nutrition programming globally.

This initiative was made possible through the generous financial contributions of the Children's Investment Fund Foundation (CIFF) and Royal DSM.

WFP

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Overview

Since 2013, the Government of Bangladesh, WFP and other multisectoral stakeholders have worked in partnership to scale up the production of fortified rice, making it more widely accessible and available.

The Government of Bangladesh has taken keen interest and allocated funds to mainstream the distribution of fortified rice among ultra-poor households through its largest national safety net programmes.

Along with supporting the Government with the distribution of fortified rice, WFP has also collaborated with the private sector to ensure the availability of affordable and high-quality fortified rice in the commercial market for the wider population. At present, three local private companies in Bangladesh are producing fortified rice kernels for the Government's safety net programmes and for commercial markets, with more manufacturing companies interested in entering the fortified rice production business.

Plans are in place to scale up, with technical assistance from WFP, local facilities for the production of fortified kernels, blending units, and lab facilities to test the six micronutrients in fortified kernels. In addition, beneficiaries involved in awareness-raising initiatives that are receiving fortified rice through national safety net programmes are increasingly showing interest in purchasing fortified rice in commercial markets.

As a result of these joint efforts, since the start of the programme, the number of people in Bangladesh with access to fortified rice has grown from 30,000 in 2013 to more than 2 million in 2019.

Key Success Factors

- Strong government leadership and collaboration
- Robust evidence generation demonstrating the impact of rice fortification to support programme scale up
- Collaboration and synergies with local, national and international partners
- Private sector engagement and investment
- WFP's strong and diverse technical capacity

Quick Facts

- The Government of Bangladesh's National Strategy on Prevention and Control of Micronutrient Deficiencies 2015-2024 has adopted rice fortification as a method to reduce prevalence of malnutrition.
- Bangladesh loses over US $700 million in Gross Domestic Product (GDP) due to vitamin and mineral deficiencies.[1]
- Prevalence of zinc deficiency among non-pregnant and non-lactating (NPNL) women is 57.3 percent.[2]
- 14 percent of children in the country are acutely malnourished.[3]

Success Story

R.S Color Sorter & RS Foods, one of the pioneering rice millers to engage in the Scaling-up Rice Fortification in Bangladesh programme, is an enlisted supplier of fortified rice for the Government. In 2016, the company piloted the commercial sale of fortified rice in five kilogram bags in Sirajganj district. The prediction of Mr Ruhul Amin, the Managing Director, is that the consumption of fortified rice will expand in Bangladesh if it is actively promoted by the Government and WFP in the media.

"I have travelled around Bangladesh and observed the effects of nutrient deficiencies among the poor. When WFP approached my company regarding fortified rice, I saw it as an opportunity to use my business to help those who are less fortunate than me. The new business concept was challenging initially, and it was not clear if it would be a success or whether we would get a return on our investment. However, with the support of WFP and the Government, we have been successful in bringing fortified rice to the poor and vulnerable. There is a growing demand for fortified rice and I think further expansion in Bangladesh is very probable."

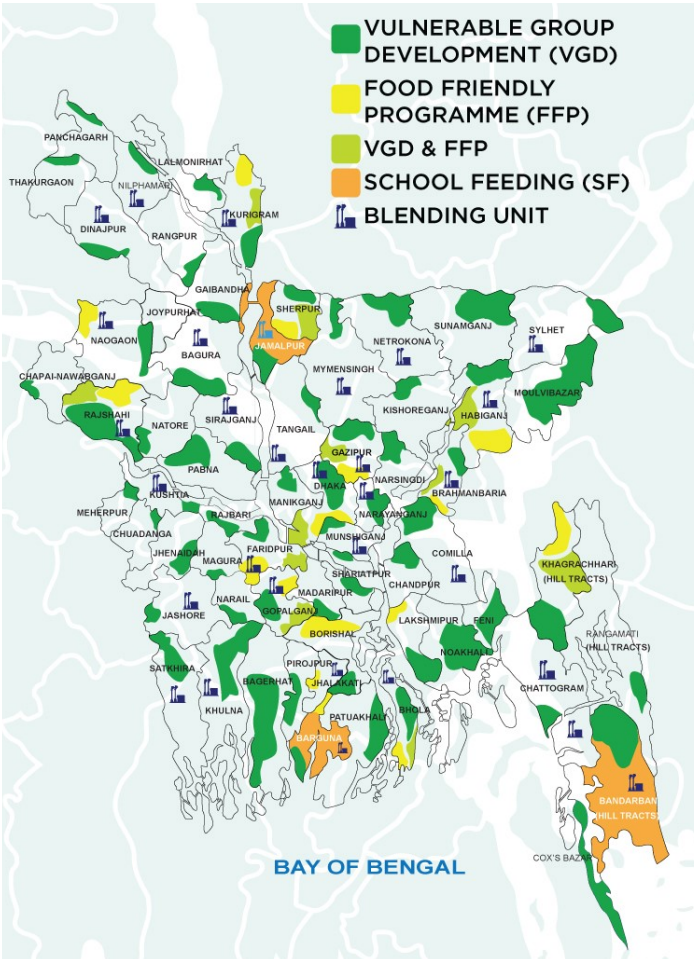
Md Ruhul Amin, Managing Director of R.S Color Sorter & RS Foods

Country Context

Bangladesh has made remarkable progress in reducing poverty which came down to 21.8 percent in 2018.[4] Despite this, child undernutrition rates continue to remain among the highest in the world. Stunting affects approximately 31 percent of children under 5 in Bangladesh, particularly in low-income households.[5] More than half of all adolescent girls and women of reproductive age consume diets deficient in micronutrients. The World Bank estimates that micronutrient deficiencies can cost countries up to five percent gross national product due to negative impact on productivity.

Milled rice, representing 77 percent of the average person's daily caloric intake in Bangladesh, is a poor source of micronutrients.[6] Although there are ongoing efforts to promote diversified diets, rice is likely to dominate the diet of the people of Bangladesh for the foreseeable future as it is both popular and affordable for most households. For these reasons, the Government of Bangladesh adopted rice fortification as one approach to reduce the prevalence of malnutrition in the 2015-2024 National Strategy on Prevention and Control of Micronutrient Deficiencies.

Figure 1: Overview of fortified rice distribution sites in Bangladesh



Programme Overview

The Scaling-up Rice Fortification in Bangladesh programme – supported by the Embassy of the Kingdom of the Netherlands and Koninklijke DSM N.V. (Royal DSM), a global science-based company working on health and nutrition – began in 2013. Its aim is to reduce micronutrient deficiencies in Bangladesh through rice fortification, especially among women, children and adolescents across rural and urban populations.

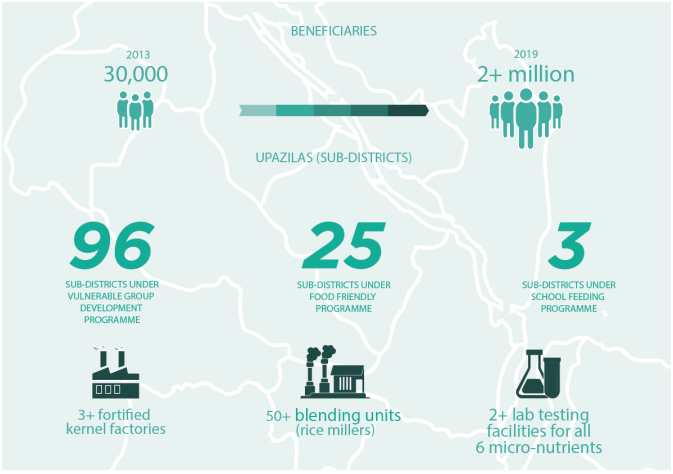
The programme built upon existing public and private partnerships, and earlier evidence-generation efforts. This included a rice landscape analysis conducted by the Global Alliance for Improved Nutrition (GAIN) and Royal DSM in 2011.[6] Since the inception of the programme, WFP has been working in partnership with Bangladesh's Ministry of Women and Children Affairs (MoWCA), Ministry of Food (MoFood) and Ministry of Disaster Management and Relief (MoDMR) to mainstream the distribution of fortified rice into large-scale social safety net programmes, such as the VGD programme (Box 1) and the FFP (Box 2). An acceptability trial[7] conducted by the Bangladesh Rural Advancement Committee (brac) and WFP in 2014 confirmed acceptability of fortified rice amongst social safety net programme participants. This provided robust evidence for the Government to expand the distribution of fortified rice to other social safety nets (Figure 2).

Box 1. The Vulnerable Group Development (VGD) programme

The VGD programme is one of Bangladesh's largest social safety net programmes. It targets socio-economically vulnerable rural households, particularly those depending on a woman's income. Currently, it reaches one million women and their households, combining training on income generating activities and life skills with a monthly transfer of 30 kilograms of rice. WFP supported the introduction of fortified rice in the VGD programme and is providing technical assistance to improve the beneficiary selection process, strengthen the quality of training, incorporate nutrition behaviour change communication, and establish a robust monitoring system.

The Government's commitment to integrate fortified rice into national social safety net programmes provided private sector manufacturing companies with a sustainable market for fortified rice kernels. WFP worked closely with Nutrition International (NI), Global Alliance For Improved Nutrition (GAIN), and other partners to strengthen Bangladesh's local capacity to produce fortified rice kernels and to blend these kernels with milled rice. Initially, fortified rice kernels were being imported at higher costs; however, with technical support from WFP, kernels are now also being produced locally by leading manufacturers, resulting in significant cost reduction. For instance, by 2019, three local privately-funded fortified rice kernel facilities, which reached an annual production capacity of more than 1,500 metric tonnes of

Figure 2: Key achievements of the Scaling-up Rice Fortification in Bangladesh programme (VGD, FFP, School Meals, RMG)



fortified rice kernels, and more than 50 blending units (rice mills) are operational in Bangladesh. As part of continuous collaboration with the Government, WFP is also providing technical assistance to the MoFood to establish a fortified rice kernel factory with a production capacity of 200 kg per hour, as well as a laboratory facility for kernel testing. In 2019, the aim is to inaugurate more kernel production facilities and establish operational blending units across 64 districts.

WFP is also investing in innovative approaches to raise awareness and increase demand for fortified rice among the wider population in rural and urban areas. For example, the national Rice Fortification Coordination Committee (RFCC) has approved and endorsed a television commercial on fortified rice, which was broadcasted across private and national channels. The commercial helps to raise awareness of fortified rice among the general population, thereby supporting the gradual process of commercialisation. Additionally, WFP partnered with Shornokishoree Network Foundation (SKNF) to raise awareness about health, nutrition and the benefits of fortified rice among adolescents through trainings and workshops in student clubs.

Box 2. The Food Friendly Programme for the Ultra-Poor (FFP)

In 2016, the Government of Bangladesh launched one of its largest social safety net schemes, the FFP for the ultra-poor, which provides 750,000 MT of rice per year to approximately five million poor families (25 million beneficiaries) across the country. The scheme aims to provide ultra-poor families (approximately 16 percent of the population) with the opportunity to buy up to 30 kilograms of rice per month during the lean seasons (March-April and September-November) at a price of BDT 10 per kilogram, which is one quarter of market price. The MoFood identified this programme as a strategic entry point to distribute fortified rice to some of the most malnourished households in the country. Therefore, with support from WFP, the MoFood started distributing fortified rice through the FFP in early 2018 in two sub-districts, and expanded to 25 by the end of 2019. The aim is to gradually distribute fortified rice to all beneficiaries enrolled in the programme.

SKNF engaged enthusiastic and proactive adolescent groups in schools in the sub-districts to educate them on social and health issues. In turn, these adolescents are responsible for disseminating knowledge and information among their peers and wider communities. Furthermore, to reach scale and ensure institutional integration of fortified rice in the Ready-made Garments (RMG) sector, WFP has partnered with Social Responsibility Asia (SR Asia), an international organisation promoting corporate social responsibility, sustainable development and best practices across countries in Asia. The aim is to sensitize key stakeholders including factory owners, buyers and association members such as Bangladesh Knitwear Manufacturers and Exporters Association (BKMEA) and Bangladesh Garment Manufacturers and Exporters Association (BGMEA) about the benefits of fortified rice, and explore opportunities to integrate fortified rice in lunch meals and shops within factories to help improve the nutrition and health of workers, the majority of whom are women.

By supporting distribution through national social safety nets and the RMG sector, and by increasing commercial demand for fortified rice, the programme aims to achieve economies of scale. From programme inception in 2013 to implementation in 2019, the number of people with access to fortified rice grew from 30,000 to more than 2 million (Figure 3).

Figure 3: Total beneficiaries reached under the Scaling-up Rice Fortification in Bangladesh programme (VGD, FFP, School Meals, RMG)

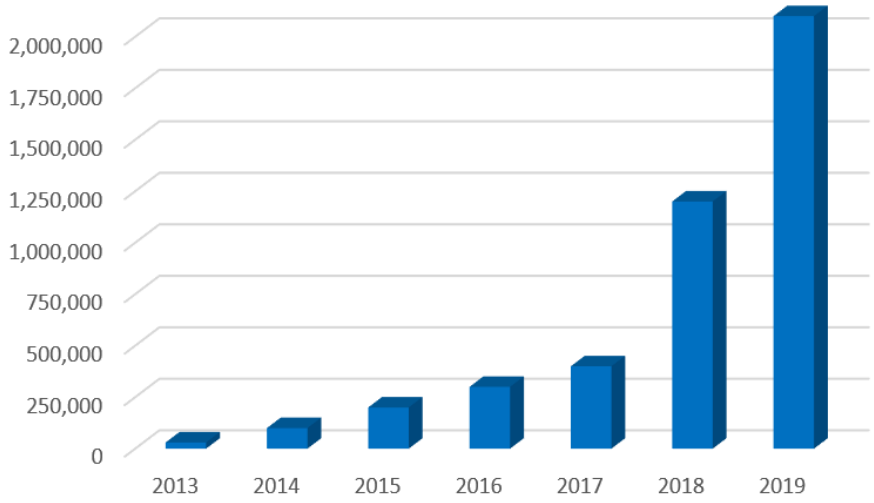
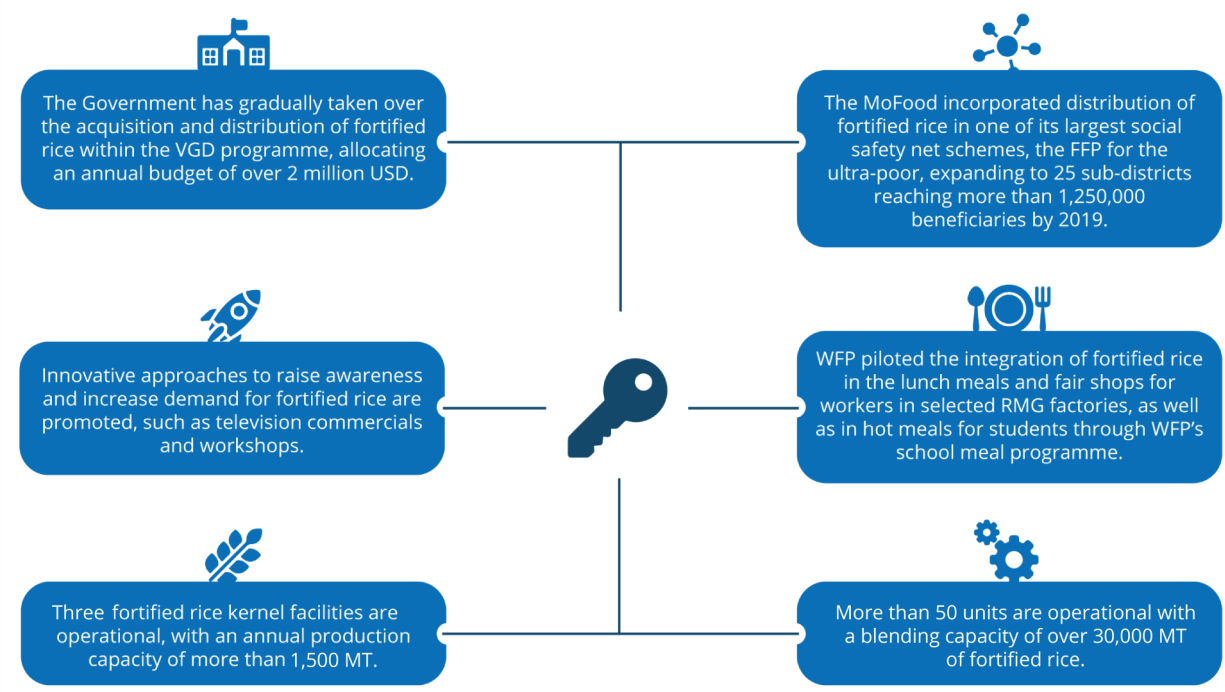


Figure 4: Key components of the Scaling-up Rice Fortification in Bangladesh programme



Getting to Success:

How WFP supported the Government of Bangladesh to introduce and scale up rice fortification

Strong government leadership and collaboration

Government ownership has been essential for the Scaling-up Rice Fortification in Bangladesh programme and has translated into increased financial support to achieve large-scale and sustainable domestic production and distribution of fortified rice to reach the most vulnerable. The Secretary of MoWCA played a key role, facilitating inter-ministerial dialogue and helping WFP to successfully navigate complex government structures, regulatory requirements, and social safety net systems. To further enhance government ownership, WFP facilitated the establishment of a Rice Fortification Coordination Committee in 2017, consisting of 13 ministries and ten organisations including NI and GAIN. The committee facilitates cooperation and coordination between government bodies, enhances evidence-based decision making, and was key to promoting the inclusion of fortified rice in the FFP (Box 2), alongside the VGD programme.

WFP also received approval from the Ministry of Social Welfare (MoSW) to introduce fortified rice in Sheikh Russell Children's Training and Rehabilitation Centres for Destitute Children and State Children's Homes across 13 districts.

Lessons learned from strong government leadership and collaboration

- Government ownership and financial commitment to continue programme expansion contributes to long-term sustainability.
- WFP's engagement with the government enabled national social safety net programmes to be used as an entry point for scaling up rice fortification to reach the ultra-poor.
- Establishing an inter-ministerial Rice Fortification Coordination Committee fostered improved cooperation among different government bodies and relevant stakeholders.

Robust evidence generation demonstrating the impact of rice fortification to support programme scale up

The design and implementation of the Scaling-up Rice Fortification in Bangladesh programme was supported by clear, robust evidence and regular assessments. This evidence was key to secure the Government's confidence in the nutritional impact of fortified rice consumption, as well as motivation among the private sector to invest in rice fortification.

A fortified rice acceptability study[8], conducted by brac and WFP in 2014, confirmed acceptability of fortified rice amongst social safety net programme participants, specifically those within the VGD and VGF programmes. An effectiveness study, conducted from 2014-2017 by the International Centre for Diarrhoeal Disease Research, Bangladesh (icddr,b) in partnership with WFP[9], demonstrated the impact of fortified rice on micronutrient deficiencies, and the advantages of distributing packaged fortified rice[10]. A formative evaluation[11] indicated that beneficiaries of the VGD programme were knowledgeable about the benefits of fortified rice, while WFP baseline and end-line surveys confirmed effective knowledge dissemination, and further verified that participants had received fortified rice as per expected quality and quantity.

A market assessment conducted by Quantum Consumer Solutions Limited in 2017 across diverse stakeholders revealed that, while there was positive interest in fortified rice, awareness among the wider population of the benefits of fortified rice consumption was limited. This finding highlighted the need for further investment in mass awareness and consumer sensitisation. However, the need to improve nutrition and diets at the national level is a growing incentive for the private sector to scale up investments for the production and commercial sale of fortified rice.

Assessments of quality assurance and control systems[12] have been carried out by WFP and GAIN to understand the current situation and identify entry points for further support[13]. WFP, along with its technical partners, is supporting the Government and the Bangladesh Food Safety Authority (BFSA) to develop quality control standards and tools to ensure food safety from production to distribution of fortified rice. A cost analysis of rice fortification conducted by a fortification expert from the Food Fortification Initiative identified areas across the supply chain to improve processes.

Lessons learned from robust evidence generation demonstrating the impact of rice fortification to support programme scale-up

- Acceptability and effectiveness studies helped increase the Government's confidence in fortified rice as a tool to combat micronutrient deficiencies, and motivated the private sector to invest in rice fortification.
- A market assessment demonstrated the viability of fortified rice in the commercial market, as well as the need for increased awareness raising and sensitization activities.
- Assessment of quality control measures strengthens the regulatory and policy framework for monitoring rice fortification to comply with food safety standards.

Collaboration and synergies with local, national and international partners

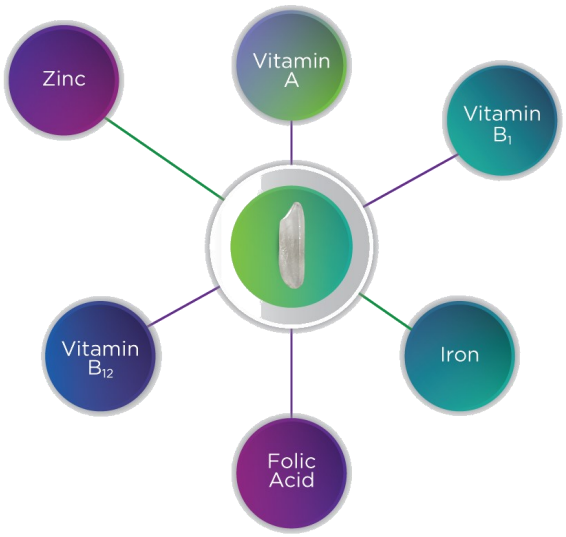
Working with local organizations to raise mass awareness

To raise awareness of the benefits of fortified rice consumption, WFP supports advocacy and sensitization workshops with key stakeholders in government agencies, agro-industry, the RMG sector, schools and rural communities. In addition, working with local creative agencies, WFP and the Government developed messages communicated through national and private media channels, including television. The market assessment conducted by Quantum Consumer Solutions Limited in 2017 demonstrated that awareness among the wider population about the benefits of fortified rice consumption remains limited, highlighting the need to scale up initiatives and investments in mass awareness and consumer sensitization. Consequently. WFP's partnership with SR Asia and SKNF has helped to leverage their strong business and community networks to reach key stakeholders in the RMG sector; proactive and energetic adolescents have also been engaged at the grassroots level through school clubs to improve awareness and increase demand.

Synergies with national technical institutions

In addition to strong government endorsement, enhancing the capacities and ownership of national technical institutions is key to ensuring effective quality control standards of fortified rice across Bangladesh. WFP provided support to national technical institutions to develop quality control standards during the production of fortified rice kernels, and to improve efficiency in the supply chain. For example, WFP collaborated with Bangladesh's National Food Safety Laboratory (NFSL), the Bangladesh Council of Scientific and Industrial Research (BCSIR), and the Bangladesh Standards and Testing Institute (BSTI) to establish a standard validation method to identify the micronutrients in the fortified rice kernels produced in Bangladesh. WFP, in collaboration with NFSL at the Institute of Public Health Nutrition (IPHN), hosted a training that was conducted by the Institute for Food Safety and Applied Nutrition (JIFSAN) of the University of Maryland for technicians of NFSL, BCSIR and BSTI along with technicians with similar expertise from Sri Lanka and Nepal. By 2019, NFSL and BSTI will be able to test all six micronutrients (Figure 5) for compliance with set BSTI standards in Bangladesh, leading to much lower lab testing costs and lag time for the local kernel producers. Currently, kernel producers send their products to foreign labs for analysis, which adds to the cost of production and delayed deliveries.

Figure 5: Six micronutrients contained in a fortified rice kernel



Collaboration with international partners

In addition to national partners, WFP worked closely with NI, GAIN, other international partners and private sector companies to strengthen Bangladesh's capacity for the production and blending of fortified rice kernels. The partnership with NI supported several aspects of the Scaling-up Rice Fortification in Bangladesh programme, including: providing technical assistance to enhance local production and distribution of fortified rice; promoting the development of standard operating procedures for blending and packing; supporting internal quality control for millers; developing tools for monitoring, supervision and enforcement of blending units; and developing training modules for rice millers and government officials on quality control and assurance. Additionally, NI supported WFP to engage in policy dialogue and public awareness raising by organizing RFCC meetings, district-level policy dialogue, and local awareness raising programmes. GAIN and WFP also conducted an assessment of the regulatory and policy framework for rice fortification and local production systems.

Lessons learned from collaboration and synergies with local, national and international partners

- Working in partnership with local and international organizations is essential to success, allowing for expertise and networks to be leveraged for awareness raising, capacity strengthening, and development of policy, regulatory and monitoring frameworks.

Private sector engagement and investment

Engagement and investment from the private sector are critical to provide national social safety net programmes with reliable supply sources of fortified rice, and to overcome some key challenges including high costs, risks, and a difficult business environment. Therefore, WFP and its technical partners provided support and technical assistance to various private sector actors, including: producers of micronutrients/premix, producers of fortified kernels, and millers who blend fortified kernels with milled rice (Box 3).

Lessons learned from private sector engagement and investment

- Different private sector partners are needed to produce fortified rice: premix suppliers, fortified rice kernel producers, and millers.
- Guaranteeing sustainable demand for fortified rice, through national safety nets and commercial markets, is essential to ensure private sector investments.
- Finding local solutions to developing necessary equipment improves cost-efficiency and sustainability.
- Understanding the regulatory environment, including taxation of premix mixtures, is a major concern for fortified rice kernel producers because it has a significant impact on the retail price of fortified rice.

Box 3. Working with the private sector to ensure sustainable domestic production

WFP engaged with the private sector to demonstrate the viability of producing fortified rice by generating robust evidence of acceptability and effectiveness, investing in consumer awareness raising, and providing direct technical support to private sector stakeholders.

WFP facilitated two South-South Cooperation study tours to China focused on rice fortification for the Government of Bangladesh, kernel producers, millers and garment manufacturers. These tours helped stimulate private sector investment in:

1. **Producing fortified kernels:** Currently in Bangladesh, three companies can produce fortified rice kernels, one of which is a supplier for WFP. More companies are showing interest in fortified rice kernel production.
2. **Blending fortified kernels and milled rice:** WFP worked with local engineering firms and millers to secure locally manufactured blending equipment, which was successfully developed and trialled in 2013. With support from WFP, NI and the MoFood, more than 50 blending units are operational across the country and able to distribute fortified rice to the VGD and FFP programmes. The aim is to have 64 blending units operational by 2019 in each of the 64 districts in Bangladesh.

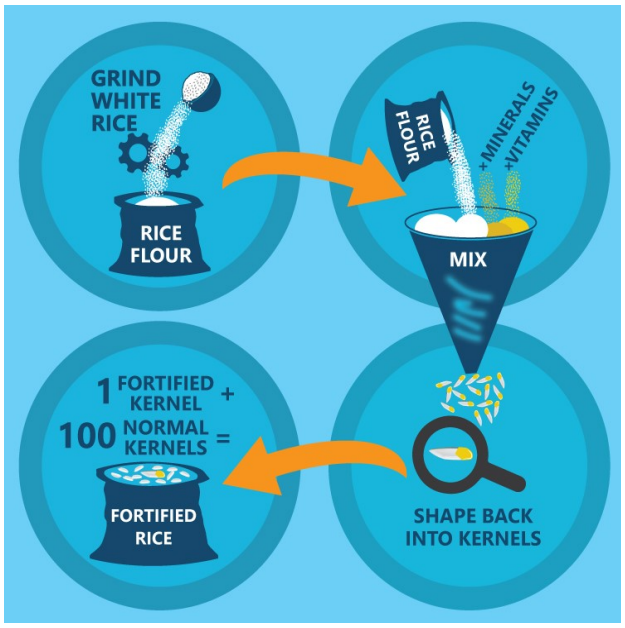
WFP's strong and diverse technical capacity

WFP played a catalytic role in the Scaling-up Rice Fortification in Bangladesh programme by bringing together local and international partners, and providing technical and strategic support across sectors. WFP worked with relevant ministries to streamline the supply chain for fortified rice and set national standards, laying the foundations for continued expansion and long-term sustainability. In addition, WFP supported manufacturers and blending units to explore marketing avenues to promote and distribute fortified rice. These actions required a broad, flexible skillset from a committed and innovative team. WFP Bangladesh invested in a five-member rice fortification team with technical experts in food handling, fortification, public health, nutrition, and public-private partnerships. Staff from outside the team supported other aspects, including programme coordination, government relations, supply chain, food technology, communications, procurement and finance. The initiative has been anchored by supportive WFP senior management committed to programme success. Additionally, technical experts from the WFP Regional Bureau in Bangkok have provided continued support to the programme.

Lessons learned from WFP's strong and diverse technical capacity

- A dedicated rice fortification team consisting of technical experts facilitates partnership with multi-sector local and international partners.
- Support and leadership from senior management is critical to programmatic success and sustainability.
- Strong technical experts at the regional level provide invaluable inputs to various programme

Figure 6: Process of rice fortification



Challenges

Reaching the poor

Reaching vulnerable people and groups who are not covered by VGD, FFP and WFP's school feeding programmes, but who are affected by micronutrient deficiencies, remains a challenge. Private sector marketing rarely targets the poor as consumers; awareness and affordability are also critical challenges in engaging the poor to purchase fortified rice. Thus, innovative marketing strategies and business incentives are needed to ensure that the most vulnerable groups in Bangladesh can access fortified rice.

Quality control and assurance

Although the Government of Bangladesh endorsed a standard for fortified rice kernel production, quality control is a challenge for WFP and other stakeholders. A lack of inspectors, measures to monitor and enforce compliance, and consequences for non-compliance leads to low confidence in rice labelled as 'fortified' as it might not meet established standards. A shortage of skilled technical officers and experts at production sites and at national level laboratories with the capacity to collect representative rice samples and analyse laboratory results through statistical models is also a crucial inhibitor to commercialisation.

Long-term commercial viability and sustainability

Awareness raising activities at present are targeted and at small scale. Therefore, there is still limited awareness among consumers in urban and rural markets about the benefits of consuming fortified rice. In addition, competitive participation of private companies in the mass market for production, marketing and distribution of fortified rice is low. In order to ensure a sustained commercial market, more emphasis and long-term engagement is required to raise awareness and improve knowledge on food and nutrition to ensure behavioural change. Exploring innovative avenues will provide opportunities to ensure adoption of fortified rice in daily consumption among the wider population, leading to commercial viability and sustainability.

Summary

The Scaling-up Rice Fortification in Bangladesh programme aims to reduce micronutrient deficiencies in vulnerable groups, particularly women and children, by promoting the consumption of rice fortified with essential vitamins and minerals. With support from Royal DSM and the Embassy of the Kingdom of the Netherlands, WFP worked with relevant ministries to streamline the distribution of fortified rice in its largest national safety net programmes, and to set national safety and quality standards, laying the foundations for continued expansion and long-term sustainability. In addition, WFP demonstrated the viability of producing fortified rice to the food industry by generating robust evidence of acceptability and effectiveness, investing in consumer awareness raising, and providing direct technical support to private sector stakeholders. WFP and its technical partners have helped raise mass awareness of fortified rice through sensitization of government officials, private sector and development partners, and target beneficiaries. Since the start of the programme, the number of people in Bangladesh who have access to fortified rice has grown from 30,000 in 2013 to more than 2 million in 2019. Continuing efforts to establish strong regulatory and policy frameworks will improve the enabling environment for the commercialization of fortified rice and competitive private sector investments.

Table 1: Key success factors for scaling up rice fortification in Bangladesh, and recommendations for applying them in other programmatic settings.		
ACTIVITIES ***Used by WFP to scale up rice fortification in Bangladesh***	**LESSONS LEARNED** ***From programme implementation***	**RECOMMENDATIONS** ***For applying success factors or lessons learned***
Strong government leadership and collaboration		
• WFP's pre-existing relationship with the Government led to the identification of VGD as an entry point for rice fortification. • The Secretary of the MoWCA facilitated inter-ministerial dialogue, and helped WFP navigate government structures, regulatory requirements and the national social safety net system. • WFP assisted in establishing an inter -ministerial RFCC, which was key to supporting the inclusion of fortified rice in FFP.	• Government ownership and financial commitment to continue programme expansion contributes to long-term sustainability. • WFP's engagement with the Government enabled national social safety net programmes to be used as an entry point for scaling up rice fortification to reach the ultra-poor. • Establishing an inter-ministerial Rice Fortification Coordination Committee improved cooperation among different government bodies and relevant stakeholders.	• Partner with government to identify entry points to distribute fortified rice within existing national social safety net systems. • Establish a committee in charge of rice fortification, including members from different government ministries to foster collaboration and coordination.
Robust evidence generation demonstrating the impact of rice fortification to support programme scale up		
• An acceptability study was conducted in the initial stages of the programme. • An effectiveness study demonstrated the impact of fortified rice on micronutrient deficiencies. • Quality control standards were assessed to identify regulatory and policy areas for improvement to support rice fortification and commercialisation.	• Acceptability and effectiveness studies helped increase the government's confidence in fortified rice as a tool to combat micronutrient deficiencies, and motivated the private sector to invest in rice fortification. • A market assessment demonstrated the viability of fortified rice in the commercial market, as well as the need for increased awareness raising and sensitization activities. • Assessment of quality control measures strengthens the regulatory and policy framework for monitoring rice fortification to comply with food safety standards.	• Invest in robust evidence generation to ensure strong government buy-in for introducing fortified rice within national social safety net systems. • Conduct market research to understand levels of demand and garner the interest and commitment of the private sector. • The formation of national quality control standards is an essential step to ensuring best practices, and to establish a commercial market for fortified rice.
Collaboration and synergies with local, national and international partners		
• WFP works with local organizations to generate mass awareness and disseminate knowledge about the benefits of consuming fortified rice across the country, through advocacy and sensitization workshops among key stakeholders. • WFP supports national technical institutions to develop quality control standards for the production of fortified rice.	• Working in partnership with local and international organizations is essential to success, allowing for expertise and networks to be leveraged for awareness raising, capacity strengthening, and development of policy, regulatory and monitoring frameworks.	• Invest in partnerships at the national and international level to leverage complementary strengths and technical competencies, and achieve scale.

Table 1 (CONTINUED): Key success factors for scaling up rice fortification in Bangladesh, and recommendations for applying them in other programmatic settings.		
ACTIVITIES	**LESSONS LEARNED**	**RECOMMENDATIONS**
Collaboration and synergies with local, national and international partners		
• NI supports WFP to engage in policy dialogue and public awareness through organizing Rice Fortification Coordination Committee meetings, district-level policy dialogue, and local-level awareness programmes. • WFP and GAIN have been developing sustainable solutions in assessing the regulatory and policy framework for rice fortification, local production systems and engaging private sector actors.		
Private sector engagement and investment		
• WFP is working with international partners and private sector manufacturing companies to strengthen Bangladesh's local capacity to produce fortified rice kernels. • WFP organized a tour in China for government representatives, kernel producers, blenders and garment manufacturers to facilitate peer learning on fortification. • WFP supported a local business to import extruder machinery from China, and connected them with DSM for technical oversight and training. • WFP worked with local engineers and millers to develop locally-manufactured blending equipment.	• Different private sector partners are needed to produce fortified rice: premix suppliers, fortified rice kernel producers, and millers. • Guaranteeing sustainable demand for fortified rice, through national safety nets and commercial markets, is essential to ensure private sector investments. • Finding local solutions to developing necessary equipment improves cost-efficiency and sustainability. • Understanding the regulatory environment, including taxation of premix mixtures, is a major concern for fortified rice kernel producers because it has a significant impact on the retail price of fortified rice.	• Build an evidence base including acceptability and effectiveness studies to engage the private sector in producing fortified rice as a viable business proposition. Offer technical support when needed. • Partner with local engineers and millers to build equipment instead of importing it, which improves cost-efficiency. • Connect interested private sector companies with specialists to facilitate production.
WFP's strong and diverse technical capacity		
• WFP Bangladesh invested in a specialized rice fortification team, comprising experts in food handling, fortification, public health, nutrition, and public-private partnerships. • Senior managers at the Country Office level were fully involved in decision-making. • The Bangkok Regional Bureau provided ongoing technical assistance.	• A dedicated rice fortification team consisting of technical experts facilitates partnership with multi-sector local and international partners. • Support and leadership from senior management is critical to programmatic success and sustainability. • Strong technical experts at the regional level provide invaluable inputs to various programme components.	• Invest in a dedicated team of experts the skills needed to support multi-sector partners. • Ensure that senior management in the Country Office is fully involved in the programme to give authority to programmatic and strategic decision-making. • Leverage regional-level expertise in rice fortification to strengthen programme scale-up.

Table 2: Challenges that surfaced while implementing the Scaling-up Rice Fortification in Bangladesh programme, and possible solutions for future programming	
Challenge(s)	***Possible Solution(s)***
Reaching the poor	
• VGD, FFP and WFP's school feeding programmes provided an entry point for the introduction of fortified rice. However, reaching vulnerable people and groups who are not covered by these programmes, but who are affected by micronutrient deficiencies, remains a challenge. • Commercial organizations rarely target the poor as consumers. • Engaging the poor and persuading them to purchase fortified rice takes time.	• Work with private sector producers to bridge the gap between the commercial market and the ultra-poor. This will help to ensure that when locally-produced fortified rice is available, vulnerable groups are able to purchase it. • Work with communications agencies to develop inclusive marketing strategies to engage the ultra-poor. • Mass awareness and targeted advocacy are required to sensitize the poor on the benefits of fortified rice for nutrition.
Quality control and quality assurance	
• Although the Government endorsed a standard for fortified rice production, quality control was a challenge for WFP and other stakeholders. A lack of inspectors, measures to enforce compliance, and consequences for non-compliance meant that rice labelled 'fortified' might not have met the Government's standard. • Ambiguity about interpretation of the current standards for rice fortification leads to misunderstandings about premix addition by producers. • There is a shortage of trained officers and technical experts who have the capacity to collect representative samples and analyze laboratory results through statistical models. • There is a shortage of skilled individuals for monitoring production processes (including steam management, water quality management, etc.) which could compromise the quality of the fortified rice.	• Establish an unambiguous standard for the nutrient content of fortified rice, which should only include the minimum levels to ensure better compliance with standards. • Establish record keeping protocols for fortified rice kernel producers so that they record every aspect of the production process, including the amount of premix purchased, production processes, steam management, etc. • Train government officials who assess production processes and collect rice samples so that they collect reliable and high-quality samples for laboratory testing. • Train laboratory personal to analyze the laboratory results using statistical tools. • Highly encourage fortified rice kernel and fortified rice producers to invest in equipment, such as fluorescent lights and precise weighing machines, so that they can effectively monitor the quality of their products during production processes. • A process for testing locally-produced kernels should be put in place for effective inspection. • Continue working with technical partners, such as GAIN, to develop the industry, laboratory and field-testing protocols and training modules to develop capacity of local organizations and government regulatory authorities • Monitor and enforce standards to ensure that nutritional outcomes are not compromised.
Long-term commercial viability and sustainability	
• There is a lack of awareness among consumers in the urban and rural market. • Competitive participation of private companies in the mass market for production, marketing and distribution of fortified rice is still low despite production for government safety nets.	• To ensure commercial viability and sustainability, demand and distribution of fortified rice needs to expand into the commercial market with more fortified rice suppliers competing to reach consumers in both urban and rural markets through strategic marketing and innovative distribution channels. • Exploring the possibility for inclusion into the feeding centres to orphans and vulnerable children run by the Ministry of Social Welfare or other avenues can ensure expansion of distribution of fortified rice among targeted vulnerable populations.

Notes

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