



Food Fortification Initiative

Enhancing Grains for Healthier Lives

Funding Opportunities

INDIA: Reach 400 million people with fortified wheat flour and/or rice

US\$ 12,000,000

5 years

With a high prevalence of anemia and preventable birth defects as well as high consumption of both wheat flour and rice, the potential health impact of fortifying cereal grains in India is immense.

Twenty-four Indian states report [anemia prevalence](#) of 26 to 65% among married women; the average is 50%. The World Health Organization considers anemia prevalence over 40% a severe public health concern as it causes debilitating fatigue, lowers productivity, limits cognitive development in children, and contributes to maternal deaths.

Anemia can be caused by many things, including deficiencies of iron and vitamins B9 and B12. The typical vegetarian diet in India provides very little iron and vitamin B12, which are most commonly found in animal-based food sources.

In India, [45 of every 10,000 births](#) (live births and stillbirths) have a birth defect of the brain or spine. With [25.6 million](#) annual births, this equates to 115,390 birth defects of the brain or spine every year. Adequate intake of vitamin B9 (folic acid) could lower the prevalence to [6 per 10,000](#) live births.

Spina bifida is an example of these birth defects. It has varying degrees of severity and can cause lifelong disability. Another example is anencephaly, which is always fatal. Of infants born with a birth defect of the brain or spine, [75% die](#) before their fifth birthday.

Many vegetables include vitamin B9, but is very difficult to reach the recommended daily intake of this essential vitamin from unfortified food alone.

At 190 grams per person per day, rice is the most widely available cereal grain in India, according to the Food and Agriculture Organization of the United Nations (FAO). Wheat flour availability is 166 grams per person per day.

The Food Fortification Initiative (FFI) has identified 18 states in India with potential for fortified rice or wheat flour in various market channels. Wheat flour fortification in the government's Public Distribution System (PDS) has successfully moved forward in the state of Haryana. FFI has provided technical support in Haryana by conducting a wheat supply chain analysis, calculating the costs for the government to supply fortified wheat flour in the PDS system, and ensuring consumer acceptance of the fortified product.

For the remaining 17 states, FFI proposes examining the current political environment to determine which states have leadership willing to support grain fortification with at

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least iron, vitamin B12, and folic acid. For the identified states, FFI would conduct an assessment to include:

- Industry capacity to fortify flour and / or rice using published reports and personal interviews
- Current wheat flour and rice consumption patterns based on existing survey data
- Potential distribution channels such as the Public Distribution System and open market
- Other possible nutrition partners

Next FFI would present results of this assessment to state leaders and, building on the successful Haryana state model, collaboratively develop practical, operational plans to fortify grains in each state. Activities will include:

- Promote mandatory fortification so that costs and health benefits are shared equally
- Create awareness about nutritional deficiencies, their consequences, and benefits of fortification
- Generate commitment among influential multi-sector leaders to support fortification
- Train millers to fortify their wheat flour and rice according to national standards
- Develop sustainable procedures for internal and external monitoring to ensure compliance with India's fortification standards
- Share the strategy with other nutrition groups in India to avoid duplication of efforts

FFI's vision is for mandatory, sustainable grain fortification to be implemented and monitored in each of the 18 states identified in its 2012 assessment.

WEST AFRICA RICE FORTIFICATION: *Reach 146 million people in 12 countries with fortified rice.*

US\$ 3,054,000

Three years

The highest per capita consumption of rice outside of Asia is in West Africa. In 12 West African countries, the fortification of imported rice, in addition to the limited volume of domestically and industrially milled rice, has the potential to reach 146 million people. Several countries in West Africa already fortify wheat flour, salt, and cooking oil. They have some awareness and policy understanding of why fortification is important and why mandatory fortification is necessary. Fortifying rice would fill a nutrition gap not being addressed by existing programs. However, several countries would need to collectively mandate rice fortification to make it economically feasible.

FFI's proposed activities and milestones would occur in three phases over three years:

Baseline, months 1 – 6

- Activities

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- Develop advocacy and knowledge toolkits for partners and policy makers
- Assess export supply chains in key rice origin countries (India, Thailand, Viet Nam, Pakistan)
- Develop and promote minimum nutrient standards
- Develop linkages with regional and national bodies
- Engage partners on strategies to add rice fortification into policies and legislation
- Milestones
 - Export supply chain analyses completed in four rice origin countries
 - Advocacy and knowledge toolkit developed and finalized

Engagement, months 7 - 18

- Activities
 - Plan, coordinate and hold meetings for policy makers, map legislative process
 - Raise awareness with public/private/civic sector partners and provide technical assistance as necessary
 - Assess national import control systems
 - Develop and activate communications strategy
 - Add rice fortification to regional and national nutrition agendas by increasing awareness at targeted nutrition-related events
- Milestone
 - Secured commitment from country governments for national and regional legislative action plans for mandatory and social safety net fortification

Strategy implementation, months 19-36

- Activities
 - Support local partners and policy makers to introduce mandatory fortification
 - Conduct training as needed to support a robust regulatory monitoring system
 - Provide technical assistance as necessary to rice importers
 - Provide technical assistance as necessary to national rice millers developing industrial capacity
 - Identify gaps and opportunities for improved import control
- Milestones
 - Mandatory legislation
 - Effective national/regional standards
 - Regulatory monitoring systems
 - Implementation of fortified rice

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ASIA-PACIFIC

Papua New Guinea: *Improve rice fortification program and add wheat flour fortification to improve nutrition for 8 million people*

US\$ 500,000

Three years

Key improvements to Papua New Guinea's national mandate for rice fortification would increase the program's nutritional benefits for consumers. The National Department of Health, UNICEF, and University of Papua New Guinea are engaged partners, but they lack technical expertise to improve the existing fortification program. FFI would work with the National Department of Health to make the following changes:

- Specify the use of rinse-resistant kernels so that the nutrients are not removed when rice is washed before cooking
- Include additional essential nutrients, such as folic acid, in fortified rice
- Fortify wheat flour as well as rice
- Support the legislative process to pass the proposed Food Act update and corresponding updates to Food Sanitation Regulations
- Work closely with border and import food control agencies to improve efficiency and quality of the regulatory monitoring system, including integration of routine monitoring for fortified foods

Bangladesh: *Lead national leaders to mandate, implement, and sustain wheat flour fortification*

US\$ 300,000

Two years

Although Bangladesh reports a high consumption of rice, it appears that rice millers there are not industrialized enough to fortify on a mandatory basis. Bangladesh's consumption of foods made with wheat flour, however, continues to increase across its population. FFI estimates that approximately 300 wheat flour mills in Bangladesh may be capable of fortifying, though more work is needed to understand the flour industry's capacity to fortify. FFI would:

- Map the rice and wheat flour supply chain to inform feasibility and reach of mandatory fortification
- Collaborate with national leaders to secure buy-in for a comprehensive national grain fortification program
- Support drafting of national standards that would identify the type and level of nutrients to be added to the wheat flour and/or rice based on current consumption patterns and nutritional needs
- Support millers and government inspectors in the scale-up for fortification

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Mongolia: *Ensure that wheat flour fortification is well implemented and monitored*

US\$ 150,000

One year

FFI support to partners in Mongolia in 2017 and 2018 resulted in the country passing a law on fortified foods in May 2018. The law requires that specified foods must be mandatorily fortified with vitamins and minerals, however the law did not identify the nutrients. FFI is eager to continue to provide support to Mongolia as it introduces supporting regulations and standards to implement its mandatory fortification program. FFI would:

- Support the development of national standards for wheat flour that are appropriate for the country's consumption levels
- Train mill staff to set up equipment, implement, and monitor fortification
- Guide regulatory authorities to practice a sustainable monitoring program

LATIN AMERICA

Advocacy for improved grain fortification standards throughout Latin America

US\$ 230,000

Two years

Since 2009, the World Health Organization has published recommendations for the types of iron and the concentration levels of nutrients for wheat and maize flour fortification. Similar information for rice is now available from research led by the World Food Programme.

Nearly every country in Latin America was fortifying grains before these recommendations were available, however. Consequently, the fortification standards of many countries in this region are not using globally recognized effective forms of iron or amounts of other nutrients. Further funding would allow FFI to:

- Lead two workshops (one in Spanish in South America and another in English in the Caribbean) to guide county leaders to harmonize their existing grain fortification standards with global recommendations. FFI has had such workshops in Asia, Africa, and the Middle East.
- Review quality control measures currently used in flour production facilities and current food safety practices of government inspectors to ensure capabilities exist for monitoring the type and amount of nutrients added to flour

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LATIN AMERICA

Assess potential for rice fortification

US\$ 120,000

One year

In Latin America, wheat flour and maize flour fortification is common in industrial mills, but rice fortification is not regularly practiced. In 13 Latin America countries, more than 75 grams of rice per person per day is available for consumption, making it a food worth considering for fortification. In eight countries (Costa Rica, Cuba, Dominican Republic, Ecuador, Guyana, Haiti, Panama, and Suriname), more rice than maize or wheat products is available, according to FAO. Costa Rica and Panama already have legislation to fortify rice. To assess other opportunities for rice fortification in this region, FFI would:

- Analyze the supply chain of wheat flour, maize flour, and rice
- Determine the feasibility of fortifying rice based on industry capacity
- Recommend whether fortified rice would add value to the country's existing fortification program

EASTERN EUROPE: *Advocate for four countries to successfully fortify wheat flour*

US\$ 560,000

Four years

Bread and pasta are commonly consumed across Eastern Europe and Central Asia, but very little wheat flour is fortified there. Several countries have worked toward wheat flour fortification in the past but have not finished the work. Advocacy is needed to complete the projects. In Ukraine, Georgia, Kazakhstan, and Tajikistan, FFI would:

- Identify roadblocks to past wheat flour fortification efforts by interviewing key influential individuals
- Develop a communications strategy to minimize the perceived barriers and maximize fortification's benefits
- Train national advocates to generate demand for fortified flour

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CHINA: *Gain political support for sustained wheat flour and rice fortification to reach 1.4 billion people*

US\$ 9,139,988

Five years

Some provinces in China have some of the highest observed rates of birth defects of the brain and spine in the world. Though several studies have demonstrated that fortified wheat flour improved nutrient status in Chinese communities, the government has yet to make wheat flour fortification part of its national nutrition program. Some businesses in China have voluntarily fortified products, but this has not led to a widespread health impact.

In China, 212 grams of rice are available for human consumption per person per day, followed closely by wheat flour at 173 grams per person per day, according to FAO. Fortified rice, to FFI's knowledge, has not yet been discussed in China.

FFI's five-year action plan is in three stages:

Engagement – years one and two

- Activities
 - Seek endorsement by the National Health Family Planning Commission to support achieving mandatory wheat flour and rice fortification in China
 - Organize high-level advocacy meetings to engage with policymakers at regional and national level
 - Review legal regulatory framework in China for introducing and enforcing mandatory fortification
 - Secure political commitment to introduce fortification legislation and supporting standards
 - Collaborate with the National Health Family Planning Commission to develop multi-year workplans with planned transition to government counterparts
- Milestones
 - Political commitment to introduce mandatory fortification of wheat flour and rice
 - Implementation work plans endorsed by National Health Family Planning Commission

Strategy Implementation – years three and four

- Activities
 - Engage with private sector to create awareness of value of fortification and train for internal monitoring
 - Address potential concerns over sensory changes

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- Milestones
 - Private sector successfully integrates fortification quality control and quality assurance steps into milling practice
 - Public sector successfully integrates fortification regulatory practices into food control system

Transition – year five

- Activities
 - Transition oversight of the program to the government
 - Provide focused support as needed for sustainability
- Milestone
 - Government demonstrates commitment of resources to continue program implementation

About FFI

The Food Fortification Initiative (FFI) helps countries promote, plan, implement, and monitor sustainable grain fortification programs. FFI is a public-private-civic partnership with a Global Secretariat at Emory University in Atlanta, Georgia, USA.