

# FOOD FORTIFICATION:

Systems innovations to drive delivery  
and impact of fortified foods



**No conflicts to disclose**

# ONE OF THE MOST COST-EFFECTIVE INTERVENTIONS

## FORTIFICATION

*Wheat (iron & folic acid)  
and salt (iodine)*

**27:1 benefit-cost  
ratio<sup>a</sup>**

**\$<\$15 lifetime costs  
per person<sup>a</sup>**

*Lives saved, significantly improved quality of life,  
billions in economic returns*

## VACCINES

*All antigens*

**16:1 benefit-cost  
ratio<sup>b</sup>**

**\$45 per fully  
vaccinated child<sup>c</sup>**



*The comparison is illustrative, as the incremental vaccine costs and returns include the basic set of vaccines given to children, while the fortification figures only include the incremental cost of fortifying with iodine, iron, and folic acid. The economics of other micronutrients have not been studied as extensively but are also low cost.*

<sup>a</sup> Unpublished analysis by GAIN/BMGF. Data drawn from: 1) Horton, S., Alderman, H., Rivera, J., 2008. Copenhagen Consensus 2008; 2) Horton, S., Ross, J., 2003. The economics of iron deficiency; 3) Decline in the prevalence of neural tube defects following folic acid fortification and its cost-benefit in South Africa Sayed, A.R., Bourne, D., Pattinson, R., Nixon, J., Henderson, B., 2008; 4) Food Fortification in a Globalized World, Chpt 31, Table 31.1.

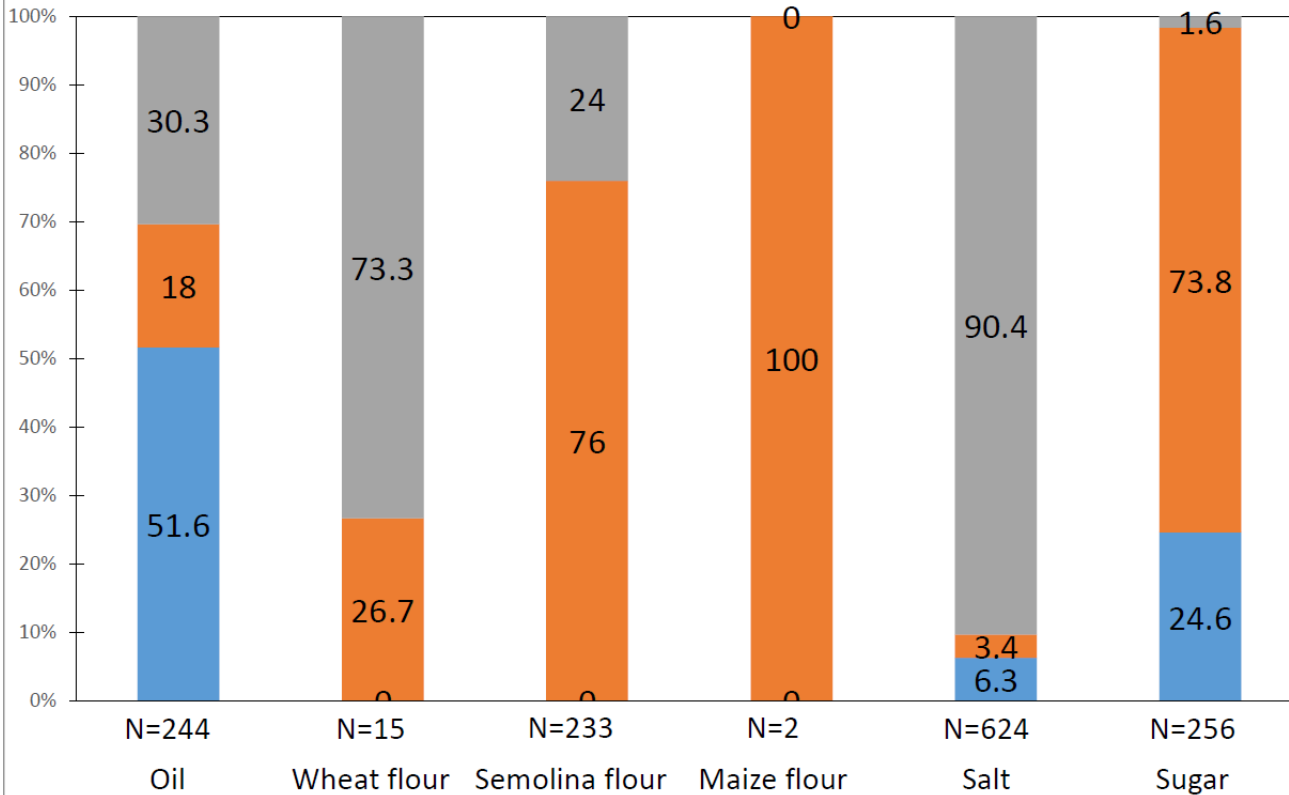
<sup>b</sup> Ozawa, et al. 2016. Return On Investment From Childhood Immunization In Low- And Middle-Income Countries, 2011–20. Uncertainty range 10-25.

<sup>c</sup> Immunization Delivery Costs in Low and Middle-Income Countries, April 2019. Fully-vaccinated child defined as those receiving DPT3. Median value of delivery \$24.86. Range: \$8.13 – \$96.16. Vaccine costs are approximately \$20 per fully immunized child (BCG, measles, pentavalent, pneumococcal conjugate, rotavirus, inactivated poliovirus), Gavi and UNICEF, 2019.

# YET COVERAGE RATES ARE NOT ON PAR

Lagos, Nigeria, 2015: Quantitative sample testing

Unfortified Inadequately Fortified Adequately Fortified



- Over-reliance on constrained governments to enforce programs.
- No incentive for food processing system to take on responsibility for health.
- Highly competitive markets, so tendency to reduce incremental cost.
- No culture of innovation in commodity businesses.
- No micronutrient elimination pathway around which to rally.

# PUBLIC HEALTH PROGRAM IMPLEMENTED BY BUSINESS

Government-issued fortification standards and enforcement

Micronutrient  
manufacturers

Premix  
blenders

Millers

Wholesaler  
buyers and  
distributors

Retailers  
(govt/private)

Consumers

*Systems innovations are needed to fundamentally alter  
incentives along the value chain*

# SYSTEMS INNOVATIONS THAT SHOW PROMISE



1.

## FULL SERVICE OFFERINGS

to millers to fill gaps

2.

## RETAILERS AS ALLIES

in enabling access to fortified foods

3.

## THIRD-PARTY WATCH-DOGS

to augment oversight

# 1. FULL SERVICE OFFERINGS TO MILLERS TO FILL GAPS



# MILLHOUSE



## FULL SERVICE MODEL BUILT AROUND PREMIX BUSINESS

*Why does it show promise?*

- Long term contract builds trust and steady demand.
- Bulk purchasing and local blending of micronutrients produces savings, which are passed onto millers and also support training.
- Leverages smart technology for quality monitoring.
- Working on both sides of the market: demand side community engagement reinforces supply-side work.
- Reframing from 'compliance' to 'ownership'.



## FULL SERVICE MODEL FOR RURAL MILLERS TO IMPROVE FORTIFICATION EQUITY

*Why does it show promise?*

- Creative business model for maize bag enables premix payment from millers.
- Remote monitoring of hundreds of mills makes fractured industry manageable.
- Network effect: Branded bag has catalyzed consumer demand and incentivized millers.
- Sustainability: Millers are issued a loan for dosifiers and pay outright for premix from maize bag savings.



# BIOANALYT

## HANDHELD DEVICE THAT ENABLES QUALITY CHECKS WITHOUT A LAB

### *Why does it show promise?*

- Enables millers to actively manage quality: feedback and adjustments.
- Cloud-connectivity plans will enable transparency and trust along the value chain, and incentivize quality.
- Empowered regulators can redefine relationship with industry.
- Reduces pressure & cost to accredit labs for micronutrient analysis.



## 2. RETAILERS AS ALLIES IN ENABLING ACCESS TO FORTIFIED FOODS



# ANNAPURNA BHANDAR PROGRAM IN RAJASTHAN, INDIA

## TURNING GOVERNMENT SHOPS INTO ASPIRATIONAL MARKETS

*Why does it show promise?*

- Urban retailers expand markets to rural areas.
- Rural retailers generate additional income and receive retail management training.
- Rural consumers have an aspirational experience (more stock, quality branded products, choice) without added cost. Fortified products fit this experience.
- Fortified oil from urban areas put pressure on producers in rural areas.
- Model leverages trust between retailer and consumer.

# RETAIL PROGRAM IN KYRGYZSTAN

## EMPOWERING RETAILERS TO TEST FOR IODINE IN SALT

### *Why did it work?*

- Leveraged consumer awareness of iodized salt.
- Involvement of most retailers posed a credible threat to millers.
- Low cost: Test kits for retailers, potassium iodate salt producers. Enables sustainability.
- Leveraged village health committees to underscore link to functional health; strengthened buy-in and sustained results.



# WFP RETAIL PROGRAM (IN DEVELOPMENT)

## EXPANDING CASH-BASED TRANSFER PROGRAM TO INFLUENCE NUTRITIOUS CHOICES

*Why does it show promise?*

- Target population: From 'beneficiary' to 'consumer' with nutritious offerings, choice, messaging.
- Spillover: enables retailers to market their more aspirational experience to non-voucher clients.
- Creates markets for suppliers of fortified products.
- Retail data enables faster understanding of consumption patterns and effectiveness of different approaches.



### 3. THIRD PARTY WATCH-DOGS TO AUGMENT OVERSIGHT

## **TRANSFORMING INDUSTRY BY SHEDDING LIGHT ON NON-COMPLYING FOOD MANUFACTURERS**

*Why does it show promise?*

- Consumer-facing food manufacturers have the most to lose.
- In highly competitive markets, simple raw material input changes by one large manufacturer can catalyze the industry.
- Model shifts miller response from 'compliance' to 'fulfilling demand' from food manufacturers.



# LEARNINGS

- Our efforts to advance the science & technology of fortification are at risk without a more robust and incentivized system of delivery.
- Systems innovations are powerful, underexploited levers to improve micronutrient health.
- New models often exploit within-industry partnerships and enlist larger industry as allies.
- Successful innovations tend to align supply and demand incentives using traditional business mechanisms.
- At their core, these innovations extend empowerment; business models and technologies support.



A woman with dark hair tied back, wearing a yellow patterned shirt, is focused on cooking in a large, dark metal pan. She is holding a long-handled metal spoon. The kitchen is rustic, with wooden walls and shelves. In the background, there are blue plastic water jugs, a purple plastic bag, and other kitchen items. The lighting is warm and natural.

**THANK YOU**

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