

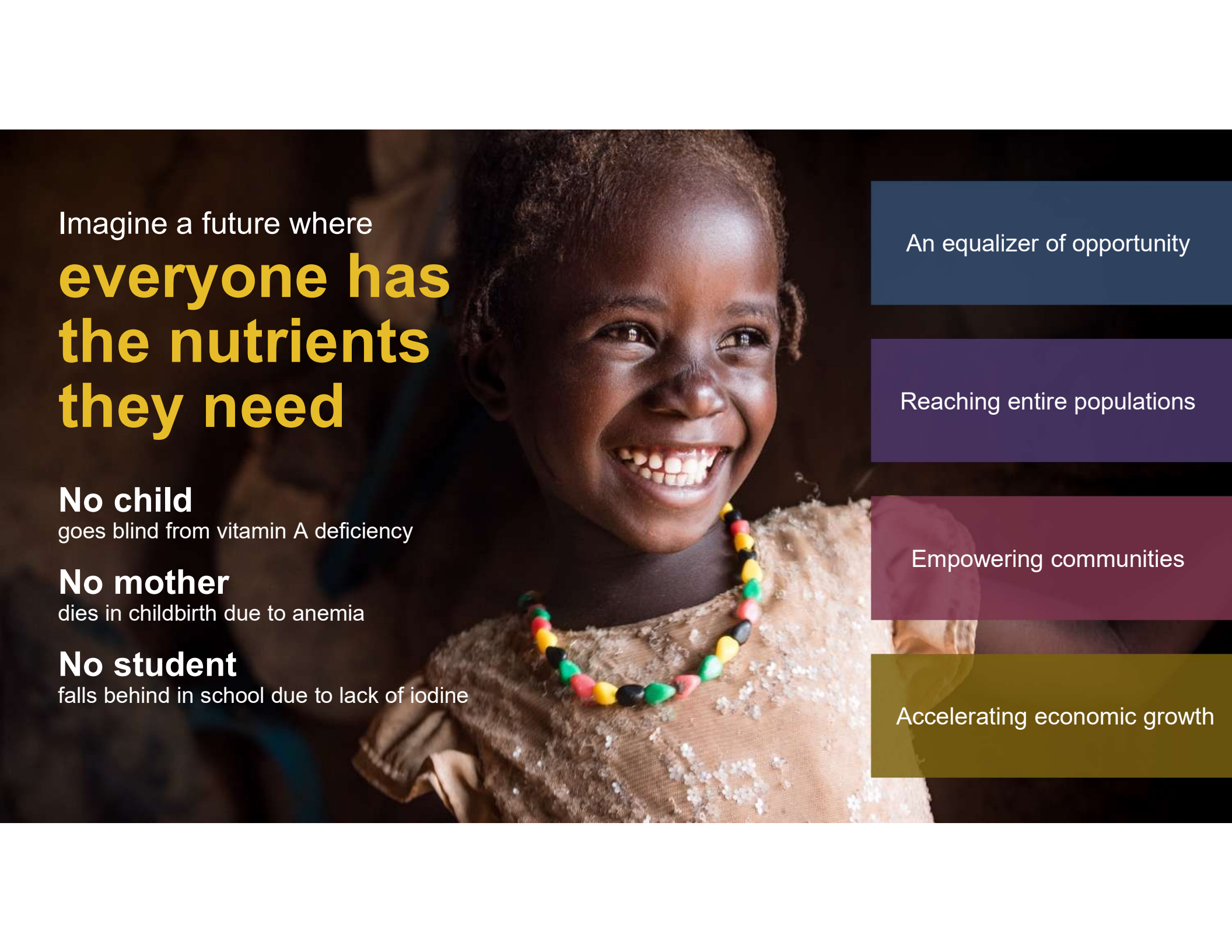


Nutrition Delivered at Scale

INVESTING IN FOOD FORTIFICATION

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TYRES



Imagine a future where
**everyone has
the nutrients
they need**

No child

goes blind from vitamin A deficiency

No mother

dies in childbirth due to anemia

No student

falls behind in school due to lack of iodine

An equalizer of opportunity

Reaching entire populations

Empowering communities

Accelerating economic growth

Vitamins and minerals are the foundation of human potential

We all depend on the same core set of micronutrients to achieve healthy growth and brain development

Yet healthy diets remain out of reach for billions of people worldwide—leading to a lack of essential nutrients or 'micronutrient deficiencies'



Right now, our global food system is failing us

2 in 3 women

of reproductive age suffer from
micronutrient deficiencies

70% of people

in low-income
countries cannot afford to
eat a healthy diet

Over half of preschoolers

are deficient in at
least 1 of 3
micronutrients

45% of all child mortality

is caused by undernutrition
(including vitamin A
and zinc deficiencies)

260,000 global birth defects

every year are due
to maternal
folate deficiency

Up to 5% of global GDP

is lost due to preventable deaths
and loss of productivity of people with
micronutrient deficiencies

20,000

deaths of children every year

The cost of doing nothing is staggering



Example: Indonesia's health and economic costs for just three micronutrient deficiencies (iron, folate and zinc)

But we have tools to solve the problem



A tiny amount of folate early in pregnancy

radically reduces the risk of stillbirths and neural tube defects like spina bifida



Ensuring there's enough iron

in commonly consumed foods would change the lives of 2 billion people, reducing disease and preventable death



Zinc in food

helps fight off infectious diseases and will lower levels of stunting found in children under five



Large-scale food fortification reduces micronutrient deficiencies, reaching families affordably through existing food channels

Large-scale food fortification

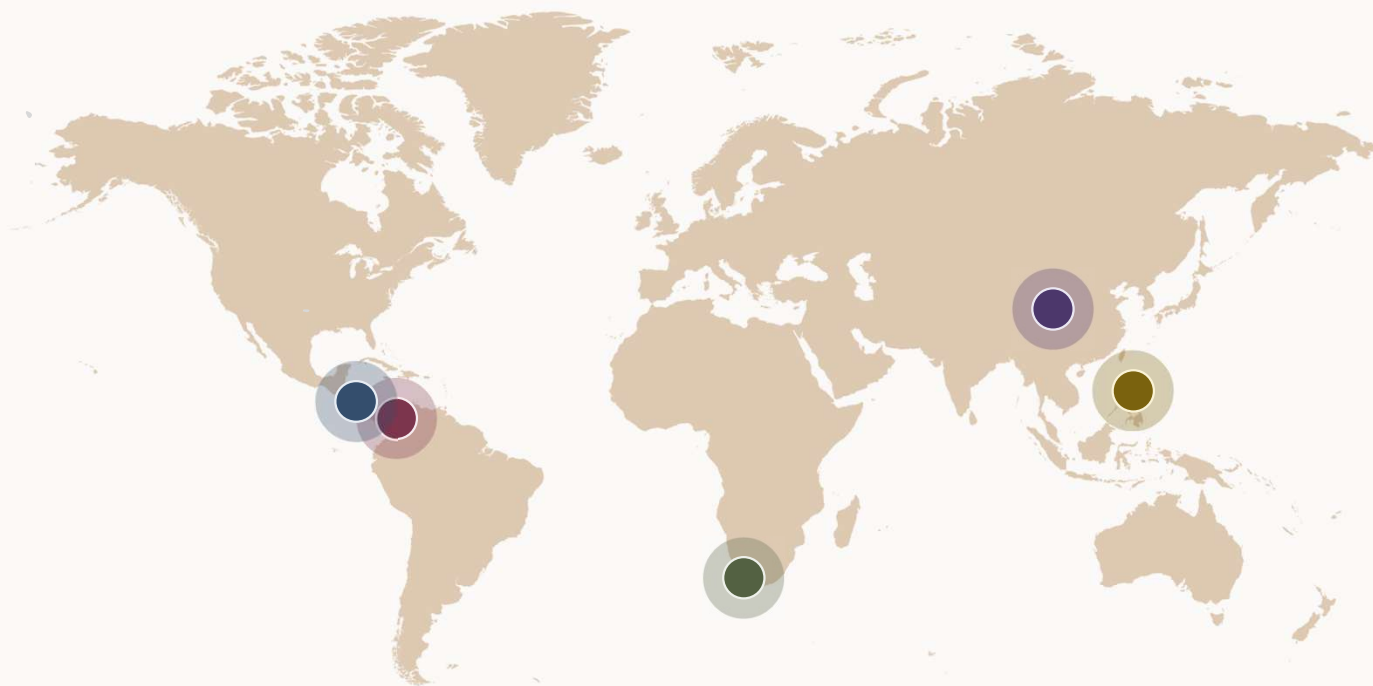
is a process where food producers add essential vitamins and minerals, often missing from people's diets, to staple foods such as salt, rice, flour, and oils, reaching large numbers of people cost-effectively through existing diets

Fortification offers a low-cost, high-impact opportunity for investment

Sustainably transforming everyday foods into powerful public health tools



Billions have already been reached



Enriching widely eaten foods with nutrients can be a public health **game changer**

Guatemala

started their journey fortifying sugar with vitamin A in the 1970s, and deficiency rates in school children fell from 22% to 5% in just the first year

China

Within a decade of introducing an iodized salt strategy, 95% of the population was reached, with best practices in using population surveillance data to keep policies up-to-date

Costa Rica

reduced anemia in children from over 19% to just 4% through iron fortified wheat, milk and maize flour

Philippines

has created 181,000 MT supply of fortified rice – more than enough to serve their school feeding and social safety net programs

South Africa

achieved a 30.5% reduction in neural tube defects following folic acid fortification

Food fortification unlocks progress in food system transformation

Every country's plan for improving nutrition has components that work together.



1 Use food fortification to reach millions of people through existing diets and food channels

2 Address specific vulnerable populations with supplementation, improve infant and young child feeding, and enable access to cleaner water and sanitation

3 Improve diets through education, behavior change and access to higher nutrient foods

Food fortification is a uniquely sustainable part of the solution—**delivered through the existing private sector without changing eating habits**

Improving basic foods that every family eats

by fortifying staple foods that reach broad populations



Indian Fortified Rice

After 8 months of fortified rice, math scoring improved by over 80% and language test scores rose by 237% for Gujarat school children

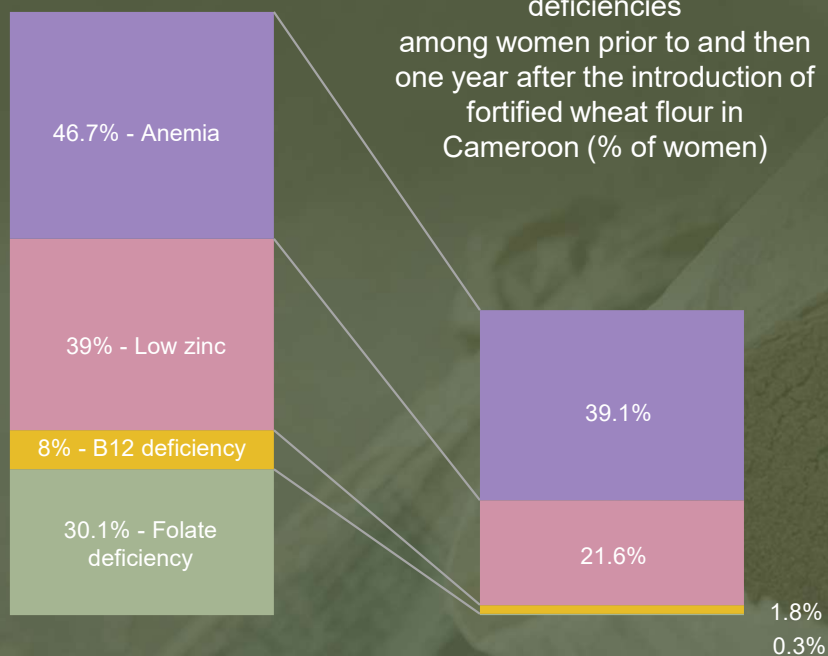


Kenyan Fortified Wheat Flour

In just four years, the portion of fortified flour in Kenyan markets rose from 18% to 84%

We know food fortification works fast

Prevalence of micronutrient deficiencies among women prior to and then one year after the introduction of fortified wheat flour in Cameroon (% of women)



Micronutrient deficiencies among women in Cameroon plummeted when fortification of wheat flour was implemented

In just one year...

Folate deficiency among women, which is detrimental to healthy babies, dropped from 30% of the total population to less than half a percent

For just pennies per person

The long-term operational costs of food fortification per-person, per-year are small

Cost per person per year to supply fortified food in Nigeria:

Vegetable oil	\$0.05
Sugar	\$0.07
Wheat flour	\$0.18
Rice	\$1.34

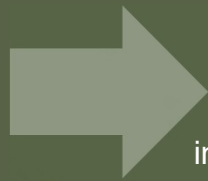




Food fortification is a highly cost-effective solution

Example: Indonesia's health and economic costs for current micronutrient deficiencies in iron, folate and zinc

Over ten years, an investment of
\$181 million
in fortifying flour at Indonesia's mills



will return about
\$3 billion
in prevented losses and increased national economic activity

Over the three micronutrients, the cost-benefit ratio for Indonesia is close to

1:15

A group of five young children, likely in Tanzania, are smiling and looking towards the camera. They are wearing school uniforms. The background is a blurred natural setting.

School feeding programs offer immense opportunity

School meals are already inexpensive

and using fortified food adds only pennies

US\$35.23

Per child per year to
feed Tanzanian
school meals

**US 15
cents**

Additional cost per
child per year to use
fortified food

Why isn't every country joining in?



Many countries have legislation

Over 140 countries have fortification regulations covering widely consumed staple foods. But surveys suggest that food reaching families still doesn't always contain the mandated nutrients.

Impact depends on the private sector

Food fortification depends on companies investing to change how they operate, while other public health interventions (like vaccines) are delivered through public channels. Companies need clear regulatory frameworks, an even playing field, and the right enabling environment.

Regulatory capacity is limited

In resource-constrained environments, building capacity to regulate companies and getting the enabling environment right often requires external investment. But once it's up and running, sustained costs to the government are low.

Companies trade off non-compliance penalties with costs of fortifying

What are the common issues for companies?

1

Monitoring and enforcement

Under-resourced food safety regulatory authorities can't fully implement inspection, testing, and enforcement – non-compliance has fewer consequences

2

Not a level playing field

If one company starts to fortify (passing on costs to customers), and others don't, customers will choose less expensive products and the first-mover might have significant losses in market share

3

Costs to fortify

But if companies don't pass on the costs to consumers, their often narrow margins can be eroded even by the seemingly small increase in costs

4

Premix availability and quality

Beyond cost concerns, imported premix is not always easy to access, especially for medium and smaller mills. Quality of premix also remains a big challenge, driving lower levels of nutrients in fortified food

5

Consumer awareness

Companies consistently cite the need to inform their customers when a new 'fortified' label is introduced, to avoid circulating misinformation

Six key areas of opportunity to catalyze change in the system

Investment roadmap



Example of a catalytic investment

AI Reading of Iron Spot Tests

Hornbill Ag

Upload Test Image



SD2505.jpg X Remove

USE CAMERA

Mill Code (Optional)

Sample Code (Optional)

Enter mill code

Enter sample code

Fortificant Used

Flour Used

NaFeEDTA

Wheat Flour (Atta)

Analyze Iron Spot

Hornbill Ag

Hornbill Ag developed IronLens, a computer-vision tool that digitizes the iron spot test via a smartphone, using AI to instantly analyze samples and report iron levels.

Speed

results delivered ~100 X faster than lab tests

Cost saving

~99% cheaper to administer than lab tests

Accuracy

strong correlation with lab-based standards

Agile

Compatible with any smart phone

Environmentally friendly

Create at least 20X less energy, hazardous waste, CO2 emissions than lab tests.

Impact

Government:

Stronger monitoring in low-resource settings; easier enforcement of fortification standards

Industry:

Lower operational costs compared to using lab testing, faster compliance checks and fewer recalls. Small mills can participate in fortification programs

Consumer:

Safer fortified foods, with reduced risks of overdose or ineffective fortification

Example of a catalytic investment

Game changing device to reduce inspection costs and enhance compliance

BioAnalyt



Rapid testing

BioAnalyt develops and provides portable, rapid test kits like the iCheck devices, which enables on-the-spot micronutrient testing at the production line

Speed

results delivered in
5–60 minutes

Scalability

devices are portable, no
set-up calibration

Cost saving

10% of lab testing

Accuracy

strong correlation with
lab-based standards

Impact

Government:

Stronger monitoring in low-resource settings; easier enforcement of fortification standards

Industry:

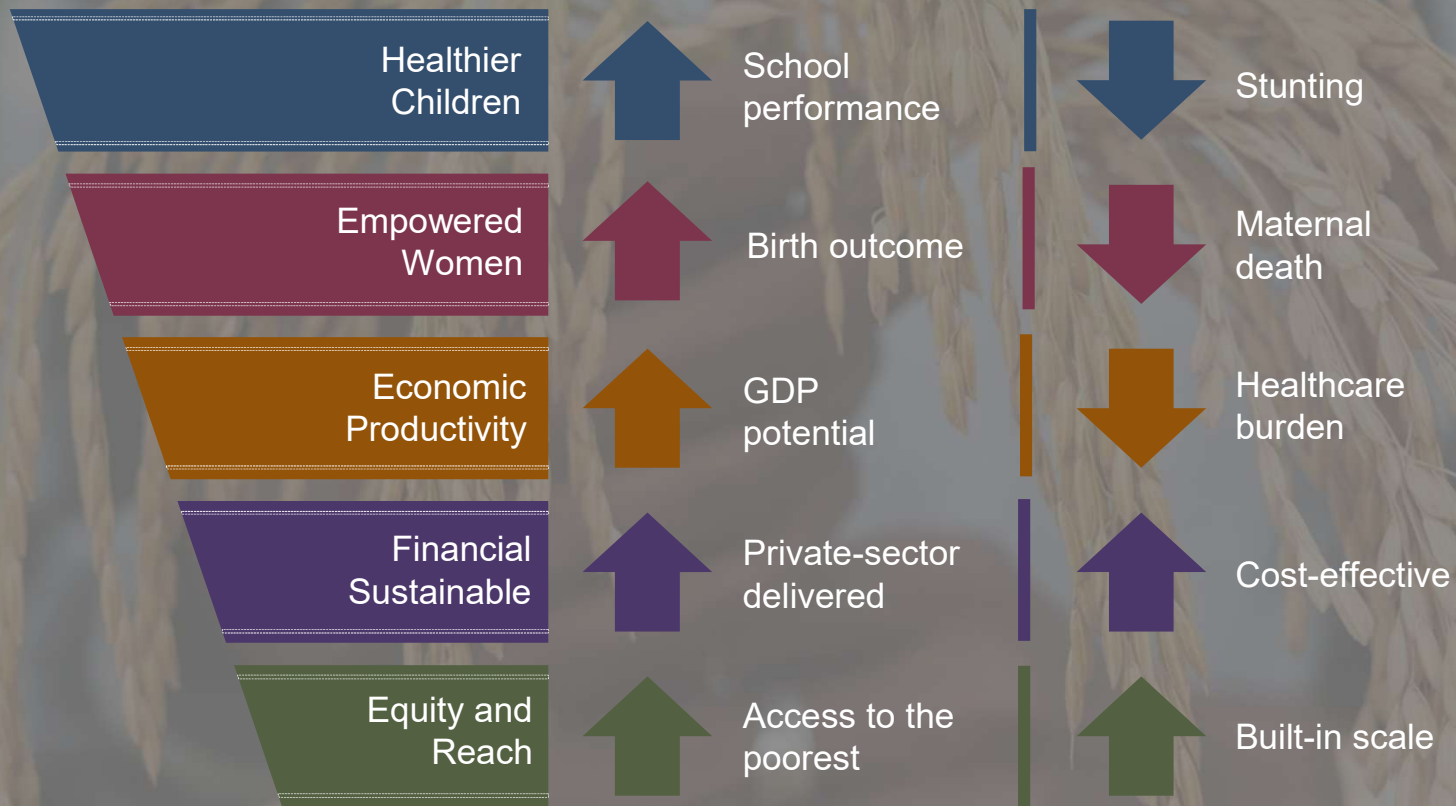
Lower costs compared to labs, faster compliance checks, fewer recalls. Small producers can participate in fortification programs

Consumer:

Safer fortified foods, with reduced risks of overdose or ineffective fortification

Your return on investment

Your investment in food fortification has clear benefits



Food fortification is a key driver in the fight against malnutrition—cost-effectively and sustainably delivering nutrients through everyday foods