

LESSONS LEARNED FROM 10 YEARS OF EXPERIENCE IN AFRICA: SHARING EXPERIENCES IN FOOD FORTIFICATION

FOOD FORTIFICATION WORKSHOP, ADDIS ABABA, ETHIOPIA, 18 – 19 SEPTEMBER, 2012

In 2004, the Copenhagen Consensus – an expert Panel of eight economists including five Nobel Laureates – ranked fortification with micronutrients among the top three international development priorities. This was reaffirmed in 2008 and 2012.^{i,ii} While there are numerous approaches to controlling micronutrient deficiency in populations, food fortification – the addition of essential vitamins and minerals to staple foods and condiments – has emerged as one of the most feasible and sustainable. Food fortification costs only a few cents per person per year, and requires little or no change in behavior by the consumer.

Food fortification has been practiced in many industrialized countries since the 1920s and continues to be a fundamental part of food systems throughout the world. The World Bank has said that “probably no other technology available today offers as large an opportunity to improve lives and accelerate development at such low cost and in such a short time,” as fortification, along with other interventions to control micronutrient deficiencies.ⁱⁱⁱ



Over the past ten years, the GAIN Food Fortification Program has supported over 25 projects worldwide, with a number of them in Africa (Table 1). GAIN has learned that food fortification programs, although shown to be highly sustainable in industrialized countries, are complex undertakings in developing countries that require many actions on the part of both the public and private sectors in order to be effective and sustained.

Table 1: GAIN-supported large-scale food fortification projects in Africa

Country	Vehicle	Status of GAIN support*
Cote d'Ivoire	Wheat Flour, Vegetable Oil	Ended
Egypt	Wheat Flour, Vegetable oil	Current
Ethiopia	Not Applicable	Current
Ghana	Wheat Flour, Vegetable Oil	Ended
Kenya	Wheat Flour, Maize Meal, Vegetable Oil	Current
Mali	Vegetable Oil	Ended
Morocco	Wheat Flour, Vegetable Oil	Current
Mozambique	Wheat Flour, Vegetable Oil	Current
Nigeria	Wheat Flour, Maize Meal, Vegetable Oil, Sugar	Current
Senegal	Wheat Flour, Vegetable Oil	Current
Tanzania	Wheat Flour, Vegetable Oil	Current
Uganda	Wheat Flour, Vegetable Oil	Current
Zambia	Maize Meal	Ended

*As of November 2012, not including GAIN-UNICEF Universal Salt Iodization Partnership Project

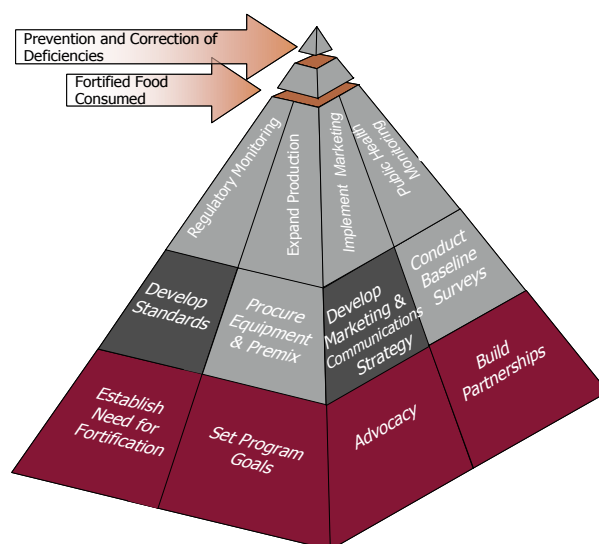
As part of GAIN's commitment to building on lessons learned to improve program delivery and effectiveness, GAIN invited key implementation partners across Africa to meet in Addis Ababa to discuss and learn from each other's experiences. Partners from 11 countries participated in the workshop. This brief summarizes the most important successes and lessons learned through food fortification programs in Africa over the course of a decade. Applying these will improve delivery, effectiveness, and impact of large-scale food fortification programs in developing countries to improve nutrition worldwide. Representing various areas of expertise, stages of program development, and operating environments, participants shared and discussed experiences related to important program aspects and next steps to reach full financial and institutional program sustainability.

GAIN'S LARGE-SCALE FOOD FORTIFICATION MODEL

GAIN's approach to large-scale food fortification programs in developing countries includes investing in partnerships and assessing market dynamic which enable long-term sustainability. The GAIN model provides grants and technical assistance to countries for food fortification ensuring this support complements existing investments made by governments and the private sector. Key elements to the GAIN model include:

- Policy and advocacy
- Production and distribution
- Quality control and quality assurance
- Marketing and communications
- Monitoring and evaluation
- Project management

Figure 1: Food Fortification Program Pyramid



The Food Fortification Program Pyramid (Figure 1) illustrates GAIN's model. The four primary building blocks are 1) establishment of the need for a fortification program in the population, 2) identification of program goals including appropriate nutrients, compounds, food vehicles and levels of fortification, 3) advocacy among policy-makers and other stakeholders, and 4) building public-private-civil society sector alliances and partnerships. Once this foundation is in place, more advanced fortification activities relate to the development of policies and regulatory standards, procurement of equipment and premix, quality control and assurance, marketing and communications, and baseline surveys against which progress may be measured. All of these

activities lead to increased availability and consumption of high-quality fortified foods progressing towards the public health goal of prevention of micronutrient deficiencies.

GAIN has been able to demonstrate scale and scalability of its food-fortification model through working with the public and private sectors to achieve systematic, national change. In this model, the government sets the policies, standards and regulations; the private sector (industry) produces fortified foods and makes them available and affordable to the consumer. Building public-private partnerships in countries that have limited infrastructure, especially for critical functions like government food quality control and enforcement of regulations, is a difficult task that GAIN is uniquely positioned to undertake.

PROGRAM SUCCESSES

- ✓ GAIN's investment in Africa in large-scale food fortification programs to date has provided access to fortified foods for over **270 million people**
- ✓ 70 percent of the population in the West African Economic and Monetary Union (UEMOA) region has access to fortified vegetable oil^{iv}
- ✓ Neural tube defects fell by 30.5 percent after folic acid was added to maize and wheat flour in South Africa^v
- ✓ Over 50 million people are consuming bread fortified with iron and folic acid in Egypt^{vi}

Applying this model has led to several important **achievements** to date in Africa. Demonstrating political commitment at the highest level, the Government of **Uganda** passed mandatory fortification legislation in 2011 and a tax waiver on premix importation in 2012, and mobilized resources through annual budget support to implement food fortification. The Government of **Egypt** demonstrated powerful commitment to fortification when the program continued through and after the revolution of 2011. Through strong industry leadership, the professional oil industry association AIFO-UEMOA passed a resolution for vitamin A fortification by all member countries in **West Africa** - before legislation was in place. Oil producers recognized that through fortification, they could add value to their product compared with non-fortified, imported oil, while contributing to resolve vitamin A deficiency. In **Nigeria**, GAIN provided technical assistance to review the national standards for wheat flour and maize flour to include folic acid and zinc, which has been approved and is awaiting gazetting.

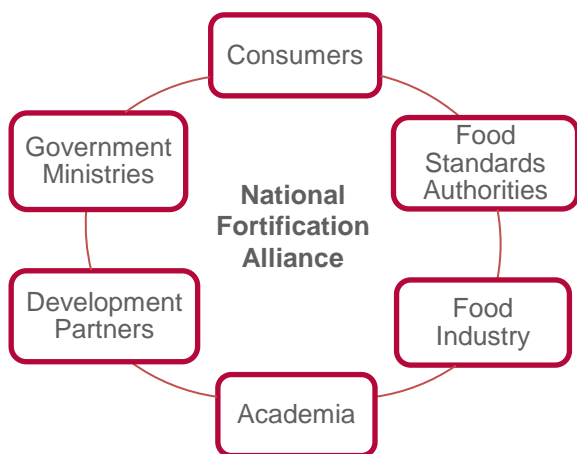
GAIN also helps countries implement innovative solutions to fill infrastructure gaps. **Ghana** experienced a significant improvement in the quality of fortified vegetable oil with the introduction of quality checks using a portable quantitative testing device at the port of entry. Between 2010 and 2011, the percentage of imported vegetable oil that contained appropriate levels of vitamin A increased from 61% to 95%.^{vii} GAIN invested in building capacity in **Egypt** through an automated management information system to help monitor its flour fortification program. The system records laboratory results and generates information for decision-makers to ensure compliance.

KEY LESSONS LEARNED

1) Build strong partnerships

- ✓ The National Fortification Alliance, an official platform for the public and private sector to discuss fortification, helps to break down barriers between industry and government and build necessary trust among partners
- ✓ Leadership matters: NFAs need a strong, relevant, charismatic chair to function effectively and create a sense of inclusiveness
- ✓ No one-size fits all applies to structure, however all NFAs should emphasize transitioning to self-sustainability

GAIN works through and with its partners to deliver programs. Large-scale food fortification is multi-sectorial by nature, with each sector providing critical contribution to the overall success of the program. Therefore partnerships are core to GAIN's fortification model - engaging the public and private sectors to work together to improve nutrition.



GAIN encourages national programs to form a National Fortification Alliance (NFA) in order to bring the different stakeholders together to reach the common goal of moving fortification forward. The experiences of Uganda, Nigeria, and Kenya reveal the following lessons learned for building effective multi-stakeholder partnerships for fortification:

In **Uganda**, the NFA was formed early on in the program and was led by the Ministry of Health. The NFA formed subcommittees based on GAIN's defined project components production and distribution, safety and quality, social marketing and communications. Sub-

committees created a sense of ownership and responsibility to deliver on project targets including reviewing all preparatory processes that led to conducting an industry assessment, drafting and pretesting manuals for quality assurance and control, and developing a communications strategy and campaign. Each deliverable was reviewed and approved by the NFA to ensure agreement. Under the leadership of the Uganda National Bureau of Standards (UNBS) and in consultation with multiple stakeholders, the first fortification standards were developed in 2003 and revised in 2006. Later in the project, leadership of the NFA approached the Ministry of Justice and Constitutional Affairs, through the Ministry of Health for legal endorsement which resulted in mandatory legislation being passed for food fortification in 2011, a huge milestone for the program.

In **Nigeria**, the initial Executing Agency for the project was the National Planning Commission. In the second phase, the National Agency for Food and Drug Administration and Control (NAFDAC), took over the management of the project and formed the NFA. All stakeholders unanimously agreed that private sector should serve as chair. A private sector-led NFA helped to strengthen the relationship between government and industry by allowing industry to have an equal voice in a supportive setting.



“It’s only when we work together as a team like this that we ensure our goals are achieved”

Fred Chiazor, Chairman of the Nigerian National Fortification Alliance, speaking at the Food Fortification Workshop in Addis Ababa, 18-19 September 2012

The **Kenya** National Food Fortification Alliance (KNFFA) operates as part of the National Interagency Coordinating Committee with the Ministry of Public Health and Sanitation, Division of Nutrition serving as Secretariat. Similar to Nigeria, there was unanimous support for the KNFFA being led by industry. The chair rotates between the three main fortifying industries (maize and wheat flour and oil). The KNFFA helps to build consensus between Government and private sector for fortification. Government has

demonstrated strong commitment by embedding fortification of staples in its Vision 2030 policy framework and by making it a central, leading platform for Kenya's Scaling Up Nutrition (SUN) initiative.

The cases of **Uganda** (government-led), **Nigeria** (private sector led), and **Kenya** (rotating industry leadership under a government umbrella) reveal there is no one-size-fits-all approach for structuring the NFA. This platform needs to be flexible, and is strongest when designed at the national level. GAIN has also learned that NFAs should develop plans outlining how they will continue to play a coordination role after project funding ends. The Uganda NFA operations were fully supported by GAIN during the project, whereas in Nigeria the NFA functions with only partial GAIN support. Kenya may provide a useful example for other countries to follow with industry serving as chair with a formal Government secretariat. NFAs should prioritize efforts to diversify their funding base or become institutionalized into the national system in order to pave the path towards sustainability.

2) Build Consumer Demand

- ✓ Government markets the cause through education; industry markets the product through advertising
- ✓ A regional logo can help to facilitate trade of fortified foods and incentivize large industry
- ✓ Communication campaigns emphasizing the benefits of fortification can help prevent misconceptions

Social marketing and communications is one of the key components in the GAIN food fortification model. Industry has a business incentive to respond to consumer demand for fortified products. A fortified logo helps to raise awareness about fortified foods and their benefit to consumer health.



Currently the Enrichi logo signifies that a food is fortified, however, harmonization of regional standards would allow the logo in the future to also indicate conformity with a specific standard. Countries should focus efforts on providing consistent messages to consumers about nutrition through multiple channels. A universally recognized logo is one tool that governments and industry can use that allows consumers to make more nutritious choices through easily identifying fortified products.

West Africa has been successful in developing a regional fortification logo, 'Enrichi,' around which national and social marketing strategies center. This concept materialized when **UEMOA** member countries agreed that a myriad of national logos may confuse consumers in the closely interconnected trade region. The concept also appealed to industry players to help facilitate intra-regional trade. The logo was developed in Cote d'Ivoire and has been adopted by all UEMOA member countries. The development process overcame several challenges including how to reach communities that speak different ethnic languages, appeal to different national contexts, and achieve national endorsement.

3) Ensure Quality of Fortified Foods

- ✓ Ensuring fortification levels are consistently adequate is a critical factor for achieving impact
- ✓ Success has been achieved where governments have invested in monitoring quality, however most countries have limited capacity and resources to do this

- ✓ GAIN is working with national and international partners to leverage innovations to close resource gaps for ensuring quality

Regulatory monitoring is a challenge for many food fortification programs in developing countries, particularly where responsibility for collecting samples from producers belongs at state or district levels. Low government capacity and resources to conduct robust inspection is frequently highlighted as a challenge in national fortification programs. Effective enforcement requires strengthening along the whole national surveillance system.

Today, the majority of wheat flour and maize meal in **South Africa** is fortified with iron, vitamin A, folic acid and other vitamins and minerals. This program has led to measurable impact: neural tube defects were reduced by 30.5 percent.^{viii} However, iron and vitamin A deficiencies were not reduced. A recent study on fortification levels in flour at retail level found that current levels of micronutrients added to maize meal and bread flour are unsatisfactory.^{ix} It is suspected that the dosing levels of vitamin and mineral premix by the millers were inconsistent with regulatory requirements. This experience reveals an important lesson for future fortification programs to prioritize building capacity for quality assurance.

Vegetable oil quality also has a significant impact on the amount of vitamin A that is retained. In a GAIN-supported study in **Egypt**, oil oxidation (indicated by peroxide levels and acid values), in addition to exposure to oxygen and light, was a key factor for the stability of vitamin A in fortified oil. This study found that peroxide levels should be minimized to less than 2 mEq/kg at production in order to optimize and sustain vitamin A levels in fortified oil.^x Fortification standards should take into account the potential effect of poor-quality vegetable oil on vitamin A stability.



In Egypt, GAIN is helping oil producers to integrate addition of essential vitamins into their normal production and quality control.

GAIN has learned that improving industry quality assurance and control (QA/QC) practices in addition to building external regulatory capacity is essential. Investment in quality, including improving miller dosing practices for better consistency, or lowering the allowable peroxide levels in fortified vegetable oil, may improve overall level of micronutrients delivered through fortified foods, and ultimately improve program impact.

LOOKING FORWARD

GAIN has learned that successful implementation of large-scale food fortification in **Africa** is achievable. In order for a fortification program to be sustainable the country must demonstrate political commitment, independent vitamin and mineral premix sourcing, on-going fortification with quality monitoring with acceptable results, and fortified products available to consumers at an affordable price. Sustainability is possible but needs emphasis and a plan. Ample time needs to be allowed for progress to become embedded in the national system. Technical assistance and support is sometimes necessary beyond a GAIN grant period to ensure that fortification continues.



National fortification programs are dynamic and must be continually reviewed to ensure relevance to the current environment. Across Africa, low-income consumers are moving to cities, cooking less in their homes using staples and changing their diets, which may have implications for nutrition programs. Science related to food fortification is also constantly evolving, improving the evidence base for fortification. GAIN is on a continuum of learning to improve fortification program delivery. In order to build on key lessons, the model must be flexible enough to adapt to local operating contexts.

Additional investments are necessary to build evidence surrounding areas that have been identified as critical to achieving success including better addressing delivery channels to low-income consumers, measuring the impact of social marketing, and leveraging new innovations that could enhance the scale and sustainability of programs. This evidence will not only accelerate the fortification learning curve but may be translated into improved policies and delivery models to accelerate progress towards the global goal of controlling and eliminating micronutrient malnutrition.

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