

Faire Tache d’Huile: Cooking Oil Fortification in West Africa

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“Whose responsibility is fortification? It doesn’t have a natural home in the public sector. At the public level, fortification is a multiple orphan: though indirectly relevant to the work of multiple agencies, it has no explicit parent. While everyone has a role to play, it’s no one’s central interest. It’s no one’s day job. But given the stakes, it must be everyone’s central interest. It must be everyone’s day job.”

—Shawn Baker, Vice President and Africa Regional Director, Helen Keller International

In May 2007, Helen Keller International (HKI) announced a new \$2.7 million multi-partner public-private initiative to produce vitamin A-fortified cooking oil (oil) in eight countries in West Africa. These eight countries—Benin, Burkina Faso, Côte d’Ivoire, Guinea-Bissau, Mali, Niger, Senegal, and Togo—comprised the West African Monetary Union (known as UEMOA from its French initials; see Exhibit 1). The program was dubbed “Faire Tache d’Huile,” literally similar to a “snow ball effect” in French, used figuratively to express the scope and outcomes of this multi-country, multi-partnership approach to vitamin A fortification of cooking oil in the West Africa Region. The successful implementation of this cooking oil initiative catalyzed a similar regional initiative on micronutrient fortification of cereal flour, with the two regional initiatives declared at the Clinton Global Initiative as “Fortify West Africa.” This case

describes the Faire Tache d’Huile initiative with a particular focus on the coordination issues involved and the conditions under which such a public-private partnership is likely to succeed (in this case addressing a pressing public health challenge).

In developing economies, rapid and thorough food fortification for public health worked best as a multi-sectoral effort that included governments, industries, researchers, non-governmental organizations (NGOs), and other social actors. What made Faire Tache d’Huile nearly unique among such initiatives was that it operated not only at the level of individual UEMOA member states, but at the regional level as well. This made coordination essential to any and all progress. HKI had helped bring together the key private, public, and not-for-profit stakeholders with the goal of achieving mandatory vitamin A fortification of industrially-produced cooking oil throughout UEMOA. Funding for the initiative was led by the United States Agency for International Development (USAID), which contributed \$1.3 million. Other financial partners included the Michael & Susan Dell Foundation (contributing \$750,000), the Government of Taiwan (China) (\$300,000), the Global Alliance for Improved Nutrition (GAIN, \$200,000), and the Micronutrient Initiative (MI, \$173,775). These were investments that augmented prior country level funding

by MI and GAIN, supporting food fortification in Côte d'Ivoire and Mali.

By early 2009, three countries in West Africa were fortifying vegetable oil—Burkina Faso, Côte d'Ivoire, and Mali, with Benin and Senegal expected to do so within the year. Within this initial group, common language and geographic proximity had made it easier than expected to spread practice from one country to another. However, the collaboration that was emerging at the regional level concealed many challenges that had to be overcome in each individual country, where industry dynamics and institutional contexts differed. Clear understanding of the challenges in individual countries could help stakeholders wishing to implement food fortification in other parts of Africa and beyond.

Vitamin A Deficiency in West Africa¹

Vitamin A deficiency (VAD) was the leading cause of preventable blindness and visual impairment in children. VAD also significantly increased the risk of severe illness, and even death, from such common childhood ailments as diarrheal disease and measles. VAD increased one's susceptibility to diseases such as malaria as well. For pregnant women in high-risk areas, VAD occurred especially during the last trimester when demand from both the unborn child and the mother was highest, and typically first manifested itself during this period as night blindness. The impact of VAD on mother-to-child HIV transmission awaited further investigation. Adequate vitamin A in high-risk areas could significantly reduce mortality. Conversely, its absence caused a needlessly high risk of disease and death.

VAD was a public health problem in more than half of all nations, hitting hardest young children and pregnant women in low-income countries, especially in Africa and Southeast Asia (see Exhibit 2 for data on the prevalence and impact of VAD in West Africa and Exhibit 3 for estimates of economic losses in Africa from all vitamin and mineral deficiencies). Worldwide, an estimated 250 million preschool children were vitamin A deficient, and it was likely that in VAD areas a substantial proportion of pregnant women were vitamin A deficient. An estimated 250,000 to 500,000 vitamin A deficient children became blind every year, half of them dying within 12 months of losing their sight. Research indicated that even children with mild VAD and no clinical symptoms had 25% to 30% higher death rates than those without VAD. VAD compromised the immune systems of approximately 40% of the developing world's children under the age of five and led to the deaths of as many as one million young children each year. Hundreds of millions more were at increased risk of disease and early death.

To successfully combat VAD, short-term interventions and proper infant feeding had to be backed up by long-term sustainable solutions. For deficient children, the periodic supply of high-dose vitamin A in swift, simple, low-cost, high-benefit interventions had produced remarkable results, reducing mortality by 23% overall in high VAD populations and by up to 50% for acute measles sufferers.

The arsenal of nutritional well-being weapons included a combination of breastfeeding and vitamin A supplementation for the youngest victims, coupled with enduring solutions such as promotion of vitamin A-rich diets and food fortification. Since breast milk was a natural source of vitamin A, promoting breast-

1. For more details, please refer to our sources, www.who.int/nutrition/topics/vad/en/index.html, accessed February 7, 2009; WHO country data: www.who.int/vmnis/vitamina/data/en/index.html, accessed March 3, 2009; and, African prevalence of VAD: www.who.int/nutrition/publications/micronutrients/vitamin_a_deficiency/WHO_NUT_95.3/en/index.html, accessed March 3, 2009.

feeding was the best way to protect babies from VAD. However, because breastfeeding was time-limited and the effect of vitamin A supplementation capsules lasted only 4–6 months, these were but initial steps toward better overall nutrition, not long-term solutions.

In 1998, the World Health Organization (WHO) and its partners—the Canadian International Development Agency (CIDA), MI, UNICEF, HKI and USAID—launched the Global Alliance for Vitamin A (GAVA). In addition, WHO, UNICEF, and others subsequently provided support to countries in delivering vitamin A supplements with the goal of eliminating VAD by 2010. Linked to sick-child visits and national poliomyelitis (polio) immunization days, these supplements averted an estimated 1.25 million deaths in 40 countries since 1998.

An important part of an integrated package of essential services that promoted child health and stopped preventable deaths, high-dose vitamin A supplements were also among the most cost-effective ways

to improve child survival. One high-dose vitamin A capsule every six months could help protect a child from the death and disease associated with VAD. These capsules cost approximately two U.S. cents each and could often be delivered through existing child health programs. However, doing so in West Africa was challenged by the gaps in local healthcare delivery systems; food fortification was seen as a more direct way to help populations at risk.

Vitamin A Fortification

Fortification of oil products with vitamin A initially occurred in Europe in the early 20th century after rates of VAD there rose as consumers switched from dairy-based butter to new, oil-based margarines. Several years of fortification virtually eliminated VAD from Europe. Further, in 1944, for example, margarine fortification with vitamin A reduced VAD in Newfoundland, Canada, from 48% to 2% of the population in four years.²

Table A. Selected vitamin A fortification standards for margarines and oils

<i>Country</i>	<i>Parts per million (mg per kg)</i>
Belgium	6.75–8.1
Brazil	4.5–15.0
Canada	9.9
Chile	9.0
Denmark	7.56
Indonesia	7.5–9.0
Malaysia	7.5–9.0
Peru	9.0
Sweden	9.0
United States	9.9
United Kingdom	7.2–9.9
Food aid standards	10.0–15.0

Source: Commonwealth Regional Health Community for East, Central, and Southern Africa, reprinted in *The Micronutrient Initiative, “Sugar and Oil Fortification with Vitamin A,”* brochure, n.d.

2. Commonwealth Regional Health Community for East, Central, and Southern Africa, reprinted in *The Micronutrient Initiative, “Sugar and Oil Fortification with Vitamin A,”* brochure, n.d.

While vitamin A supplements could immediately protect children from VAD for six months, the experience of Europe and Canada suggested that programs of vitamin A fortification could eliminate the problem entirely. Table A shows some of the vitamin A fortification standards in place in countries around the world. Because the production process and losses from heat and light could reduce the initial amount of vitamin A in fortified foods by up to 20%, producers typically added somewhat more fortificant to compensate. The three primary manufacturers of vitamin A fortificant included German chemical giant BASF, Swiss-based DSM Nutritional Products, and New York's Fortitech.

In addition to the cost of fortificant, MI research summarized the cost of oil fortification as follows. Tanks and dosing pumps to combine the vitamin A premix with refined oil cost between \$20,000 to over \$200,000 to procure and install. Chemicals and equipment for quality control and quantitative testing could require initial investment between \$30,000 to over \$80,000 depending on the testing protocols to be used.³ However, every \$1 invested in vitamin A fortification returned \$7 in wages and decreased disability, according to HKI estimates.

Players

Helen Keller International

HKI was an international NGO, headquartered in New York, that fought blindness and malnutrition in over 21 countries, primarily by providing expertise, training, and technical assistance to establish nutrition and eye health programs in partnership with host countries.⁴ The role of vitamin A fortifica-

tion in preventing blindness was a natural connection to HKI's mission of eye health, since VAD was the leading cause of preventable blindness in children. To accomplish its cooking oil fortification goals, HKI partnered with industry, government, and donors, fostering communication between stakeholders, brokering relationships, and creating information flow. "HKI's value added is in knowing the actors," explained Shawn Baker, HKI Vice President and Regional Director for Africa. "We play the roles of both broker and catalyst. We are not a watchdog."

This was hard to do, Baker added: "People talk about partnership but don't realize what it actually takes to make it happen. It takes commitment, time, and relationships. Donors don't understand why we need our number of staff, why we need meetings, and why we need time. Look at our cost structure: we are more expensive than an NGO that is hiring frontline health workers, but we need the time to develop relationships and we need the people to put in the time. We are also dealing with a higher level of relationship than frontline health and service delivery groups do."

The Micronutrient Initiative

Since 1998, MI had supported semiannual preventative vitamin A supplementation along with CIDA, HKI, UNICEF, USAID, WHO, and many other organizations in close collaboration with national governments. By 2004, almost 60% global coverage had been achieved. MI and partners in GAVA continued working for higher coverage with the aim that every child under 5 at risk of VAD could receive a high-dose vitamin A supplement every 6

3. Micronutrient Initiative, "Fortifying Africa's Future," (Johannesburg, South Africa: Micronutrient Initiative, 2006), table 4, page 11.

4. See www.hki.org, accessed May 4, 2009.

months. In 2006 alone, MI programs arranged the supply of sufficient vitamin A to meet the needs of 347 million children in over 70 countries.

In addition to supplementation, MI explored possibilities to reduce VAD through foods that were naturally rich in nutrients, such as red palm oil and orange-fleshed sweet potatoes. MI also supported the fortification of food staples, such as flour, oil, and sugar, with vitamin A and other essential vitamins and minerals. To this end, MI developed and maintained the FortAf (Fortify Africa) website and email newsletter as an information resource and portal focused on African fortification and food processing industries. MI was also a key partner in Faire Tache d'Huile.

UEMOA

UEMOA was an economic and monetary union of West Africa formally created in January 1994, based on the pre-existing West Africa Monetary Union Bank of the CFA franc zone,¹ with eight members in 2008, a currency guaranteed at fixed parity to the Euro (CFA 656 = €1), and zone-wide fiscal and monetary rules, including a common external tariff and free trade among its members. Patterned after the European Union, the UEMOA Commission (UC) was located in Ouagadougou, Burkina Faso, and financed by a share of a one percent levy on all UEMOA imports.⁵

According to Adelaide Belemsigri, who headed NORMCERQ, the UEMOA department in charge of all regional standards, product quality, and norms: "UEMOA's emphasis is on economic and monetary issues. Social issues [such as fortification]

are a small section. Nutrition and malnutrition are a social issue for the UEMOA Commission. There is a quality program in place to set regional standards, but the objective is to develop a common industrial policy for the region. In all areas, however, UEMOA is responsible for harmonizing national regulations. One objective of regional harmonization is to break technical and nontariff barriers to trade. With harmonization, we create the political willingness among member states to get involved. Without harmonization of standards, there will be no result. There is an additional principle: the UEMOA Commission should not duplicate what individual member countries can do themselves, but instead look for where it can add value."

Mawuli Sablah, HKI Regional Coordinator for Faire Tache d'Huile, worked closely with the UC. He elaborated, "The UEMOA Commission provides legal backing, legislation, logos, tax exemptions on intraregional trade, direct investment on public health grounds, and standards, particularly surrounding customs and trade. HKI and UEMOA have an MOU [memorandum of understanding] on mandatory fortification of specific multiple food products, currently focused on cooking oil and wheat flour. The issue is how to accelerate results. Challenges in meeting responsibilities remain."

To set regional standards, the UEMOA secretariat coordinated among member states. If half of the member states agreed, UEMOA then launched a formal process for setting up a new standard. To this end, the UC ran 17 technical committees and coordinated with member state national committees and their national standards organizations. "Countries can pass their own directives," Belemsigri noted. "They can go ahead and do it themselves. But

5. For more details please see <http://knowledge.uneca.org/Members/Summermkhululi/observatory-on-regional-integration/regional-economic-commissions-in-africa/uemoa-waemu-westa-african-economic-and-monetary-union/uemoa-waemu-west-african-monetary-union>, accessed April 20, 2009.

when a UEMOA directive is passed, country directives need to fit its terms. If not, member states must adapt their rules to UEMOA's directive." As of early 2009, UEMOA had approved nine standards for oil fortification covering such variables as microbiological content, chemical content, and the level of vitamin A. The standards would not go into force, however, unless approved by member state ministers. Said Belemsigri, "The ministers have to pass the legal application of these guidelines. Technical documents are ready for use, but we need political recognition to make it official." UEMOA's Statutory Council, a group of member state officials, met semi-annually to review such applications.

Once approved, member states had three months in which to voluntarily adopt the standards. However, because vitamin A fortification of cooking oil was deemed a public health issue, UC oil fortification standards would be imposed on a mandatory basis, with judicial recourse in the event of non-implementation. According to Belemsigri, the internal legal issues delaying the imposition of mandatory oil fortification would be resolved in 2009, and mandatory fortification would be approved or endorsed in 2010.

West African Health Organization

Functional since 2000, the West African Health Organization (WAHO) served the public health needs of the 15 member states of ECOWAS, the Economic Community of West African States, which included UEMOA member states as well as Cape Verde, Gambia, Ghana, Guinea, Liberia, Nigeria, and Sierra Leone. In 2002, WAHO officially became the UEMOA regional health agency as well. Through its annual assembly, WAHO worked closely with member Ministries of Health (MOHs), particularly those in UEMOA countries, to help influence national

health standards among ECOWAS countries, and viewed vitamin fortification as a tangible means to this end. In 2005, WAHO advanced salt, flour, and oil fortification, in 2006 passing a resolution for member MOHs to facilitate mandatory fortification. This resolution was re-affirmed in the 2008 General Assembly of Health Ministers meeting of the 15 ECOWAS countries.

AIFO-UEMOA: The Cooking Oil Industry Association

AIFO-UEMOA (AIFO) was a professional association of cooking oil producers and refiners located in UEMOA countries, initially established in 2000 with 14 member companies primarily in response to the economic challenges created by UEMOA's decision to adopt WTO import duties. The opportunity this created for cooking oil imports was dramatic: UEMOA import duties fell from 45% on processed oil and 20% on unrefined oil to 20% on refined oil, 10% on semi-refined oil, and 10% on unrefined oil. A November 1999 meeting of UEMOA oil producers led to AIFO's formal creation the following July. "We went to the UEMOA Commission to do a big study of our problems," said AIFO founding member, former president, and current vice president, Angora Tano. "Also, we went to all the member states to explain the problem and solicit for help to preserve the oil industry. We were not successful with the governments [of the member states], so we went to UEMOA because decisions adopted by the UEMOA Commission can require the member states to change their laws in conformity."

The issue was not simply increased competition from cheaper oil imports. There was also in some instances rampant smuggling, and AIFO sought greater customs surveillance of UEMOA ports and border crossings to at least ensure that import duties,

whatever the rate, were being collected. Moreover, UEMOA imposed upon consumers a value added tax on oil of 18–20% that AIFO wanted reduced.

As a collectivity, AIFO had more clout with national customs authorities, for example, than did its individual members. Noted Sablah, “Senegal’s main oil producer, Suneor, has much more trouble lobbying successfully in Senegal than if AIFO does so as a group. There is unity among the producers in order to advocate for one’s own interests in one’s own state.” Yet large members often had significant influence in their home countries, and this benefited AIFO as well by creating focal points around which the expectations and objectives of AIFO and other players coalesced.⁶

Another motivation for AIFO’s creation was to improve operational efficiencies and secure a stable base of raw material supply. Cotton, peanuts, and palm were the three primary sources of oils in West Africa. Improving public health was not part of AIFO’s agenda until several years after its founding.

Government Ministries and Agencies

While the MOH was the government agency whose mission most closely matched the objectives of food fortification, in practice the participation, assent, and coordination of multiple other ministries and agencies were required to prepare for, regulate, and oversee the implementation of food fortification at the country level. Ministries of commerce or trade oversaw import duties, customs regulation and enforcement, and regulated wholesale and retail distribution. Ministries of industry regulated the production and refining of cooking oil, which was

the locus of the actual fortification process. National laboratories and national standards organizations certified technical aspects of fortification, and university laboratories hosted additional testing. MOHs typically sought overall responsibility for food fortification efforts but lacked the political influence over policy formulation maintained by their Commerce and Industry counterparts. Moreover, MOHs rarely had staff expertise to take decisions about either oil production or legislation and regulation.

Individual Cooking Oil Producers

AIFO reported that its 14 members—the largest producers in the UEMOA zone—directly employed some 20,000 people and held CFA 500 billion in capital. There were two main scenarios that governed how industry players might get involved with fortification efforts, Baker said: “The government is doing its job or producers pressure government to do it. Companies can go forward without government, but as long as no legal framework stating that fortification is good, companies open themselves to risk. Food legislation that allows fortification is not the same as legislation that makes it mandatory. Here producers want a mandatory statement, but they are willing to do voluntary fortification. There’s a liability issue and there’s a fear that rivals could slam fortified products with accusations of poisoning.”

Getting Started

Initial Studies

The elements that eventually comprised *Faire Tache d’Huile* emerged as early as 2000. MI in

6. On focal points as the implicit locus of decision making and negotiations, see Thomas Schelling, *The Strategy of Conflict* (Cambridge: Harvard University Press, 1960).

2000 and 2001 funded population studies to help identify potential food vehicles for micronutrient fortification. This involved mapping nutrient deficiencies and food consumption patterns to identify commonly consumed, inexpensive, and centrally produced food vehicles that could be easily fortified. Cooking oil proved desirable due to its low cost, daily use in West African cuisine, and low cooking temperatures (relative to Asia, where repeated stir frying at high heat could break down the fortificant). MI in partnership with HKI also commissioned consultants to undertake industry assessments to determine which food industries were capable of doing the fortification work. Preparatory work was intense, and was not funded by GAIN grants but was required from GAIN applicants. Questions that needed to be answered in the preparation phase included: Was food fortification justifiable? Were local industries sophisticated enough to incorporate fortification technology into their production processes?

Government policy dictated whether and how food could be fortified and certified, so any fortification initiative required thorough knowledge of the legal framework for fortification policy. In some countries legal permission was required to add fortificants to food products, for example. With this in mind, planners needed to consider whether an appropriate legal framework was in place for fortification to proceed, and if not whether the appropriate infrastructure could be developed easily.

Producers Coalesce

Separately, cooking oil manufacturers and refiners in 2000 founded AIFO, an industrial association whose members shared (1) an anxiety over their individual exposure to cheap cooking oil imports from Brazil and Southeast Asia created by UEMOA's

decision to adopt the lower, WTO tariff rates; (2) the belief that joint action to lobby governments would be more effective than their individual efforts; and (3) the desire—at least among the stronger producers of the region—to capitalize on the possibilities of intraregional trade created by UEMOA's customs and monetary union. Recalled Tano, “Our productivity was already low because factor costs—energy, logistics, and internal taxes—were high. Some taxes in Senegal were as much as 60%. So we opposed the idea of reducing import duties.”

To make its case, AIFO proposed that UC staff attend workshops and seminars on tax policy and economics. Tano recalled that AIFO's advocacy was rewarded: “UEMOA took our advice and got involved, and we developed a good relationship with UEMOA. In the process, our organization became well known and involved in policy formulation. No UEMOA decision could be taken without our knowledge. Getting involved also increased UEMOA's visibility vis-à-vis member states.” AIFO did not dictate policy, however. Tano fretted that AIFO long wanted to reduce UEMOA's value added tax on oil products, but had no success until 2008, when rising food costs became a cost of living issue. “Now we are in the process of reducing VAT to 5%,” he said.

A continent away, GAIN was launched in 2002 at a United Nations Special Session on Children, with the goal of fighting malnutrition through public-private partnerships in affected countries. In October 2002, HKI, MI, UNICEF, and WAHO—four NGOs that had already collaborated at country level for several years in preparation for regional food fortification—organized the first public-private sector dialogue on food fortification in West Africa in Accra, Ghana to increase awareness of the advantages of food fortification in combating micronutrient deficiencies. A follow up dialogue for countries not

attending the Accra meeting was held in conjunction with the ECOWAS Nutrition Forum in 2003.

Separately, HKI's Baker helped catalyze industry interest in oil fortification by asking to present to AIFO on the subject once he learned of the group's existence in the course of his work on oil fortification in Mali. At AIFO's general assembly of 2004, Baker gave a presentation on oil fortification to a receptive audience. The oil industry saw not only the public health benefits of fortification, but also thought that fortification could successfully differentiate their products from the cheap (and unfortified) oil imports. AIFO moved at the meeting to adopt a resolution supporting the fortification of all oil produced in UEMOA countries. According to the minutes, AIFO "recommended that the [AIFO] executive office undertake the necessary steps with policy makers, being the UEMOA Commission and the Governments of our countries to have vitamin A fortification of oil adopted as standard practice within UEMOA and to undertake communication campaigns targeted at the population to promote consumption of vitamin A-fortified oils exclusively." Individual AIFO members supported regional norms as a means of promoting their products and expand intraregional trade. As Tano recalled, "I was the managing director at Cosmivoire, and at the time we saw fortification purely as a marketing opportunity, as a way to promote the brand."

In 2007, the second public-private dialogue in Bamako, Mali, saw the creation of a regional alliance for food fortification that for the first time included financial partners, a welcome development, noted Baker: "Donors tended to be strongly risk averse and want clear validation of a program's potential direct impact before they commit funds." The UC expert technical committee on standards approved and adopted standards for fortifying cooking oil in

November 2007 as well as a regional logo for branding fortified foods.

Meshing the Parts

Interests

The main challenge was designing a partnership that satisfied the interests of all the various parties. "These alliances are fraught with tension," noted one observer. Sablah explained: "There are public interests in strengthening public health and industry, creating jobs. Private interests are corporate social responsibility and adding value to their product in distinction to foreign imports of unfortified oil. Fortification strengthens the producer alliance, it strengthens UEMOA. The oil industry has a strong regional association. You have to fortify." This followed the model used for flour fortification being expanded to ECOWAS. To effect change, a stakeholder explained, "we need strong advocates at the regional level. We link the cost of VAD and malnutrition to investment needs. We are also trying to remove import taxes on pharmaceuticals. Vitamin deficiencies are no longer just a public health but now an economic issue as well. The Copenhagen Consensus made it one of the top issues." However, advocacy was more complex in a context of high governmental turnover—when officials changed, the process repeated.

It was important to consider that all players could also be highly complementary. WAHO's Ismael Thiam explained: "The partnership is based on comparative advantages. HKI have experts on the ground, they also have expertise in VAD. WAHO tries to catalyze subregional activities. Ministers are informed. Our political mandate gives us an opportunity to ask for information from Ministries of Health. We have to show the private sector what

role they can play and that fortification is an opportunity to add value to their products and expand markets.”

Particular challenges emerged when all partners agreed on the benefits of fortification, but were competitors, as was the case for Unilever and Cosmivoire (more below). Originally Cosmivoire had wanted to fortify sugar, not palm oil, because it was part of a group with a monopoly on sugar production in Côte d’Ivoire. Unilever was not involved in sugar production there.

At the public sector level, HKI need to get authorities involved and think about tradeoffs. For example, the public sector lost money on making fortificant tax exempt. HKI and its experts worked to convince government to get involved and accept that losing some tax revenue is worth the gains made by fortification. Many issues such as legislation, competition, taxes, and tariffs were addressed by different departments whose staff and leaders needed to be enrolled and subsequently informed. “We need a common view,” a stakeholder explained, “which will lead to a common understanding of the problem if we are to make progress.”

Another potential lever was consumer associations. “We used to bring consumers associations to come in order to have them sensitize consumers about the existence and value of food fortification,” Thiam noted, “so that they will look for and register the meaning of the logo. Consumers associations met in the Bamako meeting of 2007. But consumer associations didn’t do enough. At the country level, they don’t know what role to play. We are even involving the press.”

National Fortification Alliances: ANF

National fortification alliances (ANFs, from the French acronym) brought together representatives from public and private parties needed to participate in fortification to supervise and promote ongoing cross-sectoral dialog on fortification. Only actors participating in an ANF received support for fortification from GAIN. Each country set up its ANF differently, often by presidential or ministerial decree, or as an NGO. As such, the ANF was usually a multi-stakeholder private-public sector legal entity. However, one observer asserted that “The ANF is the result of good intentions that pave the way to hell. While an ANF gives the private sector an opportunity to pressure the government for legislation, for standards, the forums tend to discuss issues ad nauseum without taking decisions.” Although cross sectoral discussion could be done without the ANF as an intermediary, the ANF facilitated introductions and relationship building before actors interacted directly. Conflicts were never far away. Oil producers could see the budget figures for fortification projects and therefore knew what to bid to win deals.

Launching Fortification: The Experience of Selected Countries

With an estimated average of 31% of its 235 million people living in towns of over 10,000 inhabitants, West Africa was more urbanized than eastern and southern Africa.⁷ In 2005, West Africa produced 1.2 million tons of palm oil. Average consumption was

7. “Africapolis: Urbanization Trends in West Africa 1950-2020,” Agence Française de Développement, 2008, www.afd.fr/jahia/Jahia/Africapolis, accessed July 2009.

1.7 million tons, with average per capita consumption of 6.3 kilograms per year.⁸ This compared to collective 33 million tons produced by Indonesia, Malaysia, and Thailand in 2006.⁹ “At one point in time Asia could not compete with West Africa,” Tano pointed out. “Now, in one week Asia out-produces West Africa.”

See Exhibit 4 for an overview of the state of implementation in francophone West Africa and Exhibit 5 for the state of oil fortification in West Africa outside UEMOA. Baker felt that Senegal should be the farthest along with fortification. “The industry is ready to produce,” he explained, “but the bureaucracy is glacial.” Thiam agreed: “Advocacy of fortification is facing a big bureaucracy in Senegal. So far, the bureaucracy is winning.” On March 5, 2009, however, Senegal’s president signed a decree for mandatory fortification such as existed in Côte d’Ivoire and Mali. According to MI’s Banda Ndiaye, “In Senegal, we hope fortification will start within three months. We also want to evaluate imports. We want to do a baseline survey too, to assess existing vitamin A and iron coverage, and we await funding for lab analysis.”

Examination of the fortification process in Mali and Burkina Faso follows a deep dive into the process and outcome in Côte d’Ivoire, one of the most advanced countries in terms of oil fortification, beginning on page 14 below.

Telling the Story

Regardless of location, consumer adoption was key to the effort bearing fruit. It helped that additional

cost of fortification passed on to the consumer was not high, about 5 CFA cents, or 1 U.S. cent, per liter. Nevertheless, communications were key. The communications component ranged a gamut of formats from formal advocacy, to elevator talks, to a concerted media campaign, in West Africa on radio and television in that order, as low literacy levels precluded the effectiveness of print media in the areas and populace most affected by VAD.

According to David N’Dri, HKI Adbidjan, there were three major strategies: advocacy, social marketing, and communication/mobilization. Social marketing was marketing the cause, not selling a product. “We are selling a cause,” he explained. “We use traditional marketing strategies such as TV, radio, and commercials, as well as mixed marketing tools and community participation and mobilization to raise the awareness on the benefits of fortified foods.” Selling a case required advocacy at many levels, N’Dri explained. “At the institutional level it takes time for ministries to come to agreement and execute on their areas of responsibility. Typically, the MOH took the lead in approaching the others and urged them to get involved. Coordination also required discussions in the UEMOA Ministerial Council with heads of state as a Ministry of Health agenda item. It involved the development of training workshops for regional directors of health and regional district directors, and finally an effort to reach social opinion leaders.

A common logo for the fortified product was in the works. A West African logo would help consumer awareness about fortified foods and their benefit to the health of children and mothers. The target group would be the population at

8. Micronutrient Initiative, “Fortifying Africa’s Future,” (Johannesburg, South Africa: Micronutrient Initiative, 2006), p. 26.

9. United States Department of Agriculture, Foreign Agricultural Report, “Indonesia: Palm Oil Production Prospects Continue to Grow,” Commodity Intelligence Report, December 31, 2007, www.pecad.fas.usda.gov/highlights/2007/12/Indonesia_palmoil/, accessed May 11, 2009.

large and specifically those in the rural areas and at greatest disadvantage. At the time of the case, the Côte d'Ivoire logo (see Exhibit 6) was adopted with some modifications for application on a regional basis. However, a number of obstacles made its immediate use problematic. These obstacles were in the process of resolution in order to make the logo available for branding fortified foods by the industry.

National governments tended to promote logos their industries use, Baker explained, but it became clear at the regional level that myriad logos might be counterproductive. Branding was important and should be considered at a pan-national level, he said. The topic was discussed at a conference in Dakar in February 2009 that brought together the UC and WAHO plus technical representatives from UEMOA member countries. "The UEMOA wanted a standard logo to be applied to any fortified product, regardless of industry or place of manufacture," Baker explained. The conference was discussing what standard to agree to. In addition to adopting a regional logo to allow consumers to easily identify fortified food products, it was proposed that UEMOA create an additional mark indicating conformity with food fortification standards. Industry players were also interested in the use of the broader regional logo, Baker believed.

Ongoing Challenges

Regional versus National Fortification Efforts

Among the most vexing challenges HKI faced was the complex question of whether and to what extent to forge national effort into a regional level initiative, and conversely how to use a regional initiative to accelerate national efforts. Helpfully, HKI viewed regional and national efforts as mostly syn-

ergistic rather than conflicting. One advantage of regional effort was the ability to set out a regional standard for practice, legislation, and certification. Another was the ability to work directly from the start with regional institutions and a region-wide industry association to accelerate fortification within individual countries and the region. A third was the impact of harmonized standards. The challenge was in managing a large number of actors all moving at a different pace. The advantage of national level effort was its easier focus and the ability to bypass the idling that regional cooperation typically entailed when some members were less prepared or capable than others.

Patrice Bosso in HKI's Abidjan office elaborated: "The community based process is very slow. Oil fortification started in 2007 and is to be completed by 2010. However, it took one year to develop the regulatory framework. Member countries have the ability to go faster, but once adopted at the regional level, it becomes compulsory for each member country to adopt. The dilemma is whether to wait on adoption regionally or move early at the national level."

Broadening HKI's regional efforts to the 15 ECOWAS states would follow, Baker added: "Working with the UEMOA Commission as a first step in the regional effort is ideal for moving the fortification agenda more easily to the broader ECOWAS level." This was because a memorandum of understanding existing between the UEMOA and ECOWAS Commissions stipulated that ECOWAS would adopt standards established by UEMOA. However, this meant harmonizing UEMOA standards with existing national standards in Anglophone countries, such as Nigeria and Ghana, ultimately facilitating intra-regional trade, with likely adverse consequences for the smaller national level players.

Cross-Border Trade and Harmonization

The next big challenge for further efforts across the region but also the broader continent was border control. “There are 100 land border crossings in West Africa,” Baker explained, “versus a strategic number of ports. This is the advantage of a regional approach: you don’t have to police the land borders with anything like the same level of scrutiny as otherwise.” Common external tariffs could for example limit smuggling and impose more standards. The borders, however, remained porous and enforcing such standards tenuous. “The big issue is import control of competing fortified products,” Baker explained. “When I first arrived five years ago, village markets in Senegal mostly carried Senegal-produced oils and palm oil producers were more local. Today we see products from other countries.”

Furthermore, for uniformity it was recommended that all countries use the same units of measurement in their fortification standards, preferably mg/kg, since vitamin A premix was measured in those units. As part of the harmonization, it was also important that the fortified products be labeled with the same units—either mg, IU, or RE (retinol equivalents)—to indicate the levels of added nutrient included. This would make comparison of nutrient levels in products from the different countries easier. Even as a result of the harmonization, in setting standards for vitamin A, the other sources of vitamin A in the diet of particular country had to be taken into consideration.

Making Things Easier

A CREDIT LINE

Some observers believed that proponents of food fortification should assume some of the risks that

food producers bore in developing countries and help provide credit lines. Development banks, for example, could be contacted for discussion on the establishment of a fund to support lines of credit for the cereal flour milling and vegetable oil industries and other private sector players. Banks could enter a partnership with GAIN or HKI to establish such a funding mechanism for the private sector’s fortification effort. The major concern of the private sector was carrying an inventory of micronutrients that tied up cash flow at a time when working capital was particularly tight.

GLOBAL PREMIX PROCUREMENT FACILITY

Micronutrient fortificant (premix) was the largest recurrent input cost for large-scale mass food fortification programs. Procuring this premix was not without complications: access to suppliers; inflated prices; access to upfront capital for large purchases; lack of quality assurance and monitoring of delivered products; and, often, the lack of funds.

Some observers suggested that GAIN had a strong comparative advantage in designing, managing and operating a Global Premix Procurement Facility. The food fortification efforts that GAIN supported were already establishing large new markets for the premix industry and would continue to do so with the addition of a new Infant and Young Child Nutrition Program and the GAIN–UNICEF Universal Salt Iodization Partnership Project that supported the creation of a revolving credit facility to local millers and vegetable oil refineries to access fortificant. The cost of micronutrients premix corresponded to US\$1.00 to US\$5.00 per ton of fortified food and generally represented between 0.5% and 2% of the cost of the final product. However, for companies fortifying large amounts of food, premix cost could hamper cash flow.

Developing such a facility would require identifying milling and refinery production capacity and market size; analyzing the cost of purchasing food fortificant relative to each producer's productive capacity; assessing the capacity of GAIN suppliers to meet the demand for fortificants in each targeted country; and reviewing distribution channels and the capacity to receive fortificants on a regular basis to meet production levels.

A Country Case Study: Côte d'Ivoire

Côte d'Ivoire, with about 19 million people sharing 322,462 km², bordered Liberia and Guinea to the west, Mali and Burkina Faso to the north, Ghana to the east, and the Gulf of Guinea and the Atlantic Ocean to the south. The economy relied heavily on agriculture, with smallholder cash crop production being dominant. Côte d'Ivoire was prescient in pushing for food fortification. Salt iodization had begun in 1985, for example, and a 1998 presidential decree mandated that oil be fortified. The Ivorian standard for oil fortification is 25-30 international units (IU) per gram, which provided 30% of recommended daily allowance of vitamin A.

The Players

Unilever began voluntary fortification of oil in 2001, well before other AIFO producers. However, both Unilever and Cosmivoire (Côte d'Ivoire's two leading oil producers) participated in the 2004 AIFO general assembly where Baker presented. The meeting changed their view: fortification was no longer seen as a pure business situation. Even so, despite the enthusiasm at the AIFO level, Tano remembered that he and his colleagues at Cosmivoire did not see fortification as a public health benefit. Rather, they viewed fortification as a marketing tool

for their brand: "The fortification idea came from HKI. We at Cosmivoire saw it as a marketing opportunity. At first it was a question of marketing, a way to promote the brand. But it has been a process of development. The common market was not yet implemented and [producing oil fortified with] vitamin A cost slightly more. At the time we gave it two years, one year to convince, one year to implement." The goal was to be able to provide 80% of the population with access to fortified oil by 2008.

Public Participation: Setting and Running the ANF (Association Nationale de Fortification)

Patrice Bosso, HKI Abidjan, elaborated: "Cosmivoire had a marketing concept: cholesterol free cooking oil. No social dimension existed in their thinking, it was just a marketing strategy. And there was no public participation." The idea of public-private collaboration in the region was raised by WAHO and HKI at Accra's 2002 first public-private sector regional dialogue on food fortification. There was also an opportunity: in 2003 the Ivorian MOH tendered bids to raise funds for fortification of oil and flour at the national level. HKI supported the proposal and approached GAIN in 2005 for its support. As a result, Côte d'Ivoire received money for the food fortification in what was called the PIPAF project.

Public actors also converged in the creation of the Ivorian ANF in 2003 as part of GAIN's first round of fortification funding to developing countries. It was important to note that GAIN did not suggest nor mandate that ANF be set up. "They gave us conditions for GAIN funds to be released for management by the ANF," ANF Secretary General Pierre Gagne said. "GAIN told us how the funds were to be managed: for funds to be released, the country needed to create a forum of government, industry,

civil society, and development partners (WHO, UNICEF, World Food Program). The forum should elect a general assembly and establish a structure to conduct operations. We decided on a structure. The government expressed willingness to reduce tax on fortificant. We elected the MOH to head the ANF, unanimously. All the members were busy in their own businesses but we needed structure in charge of matters on a daily basis.” The ANF decided that HKI should be implementing the project under the supervision of GAIN. In the process, GAIN picked HKI to manage the money so that HKI wore a double hat in Côte d’Ivoire, as implementing agency and manager of GAIN funds. Bosso, from HKI Abidjan, actually saw three roles for HKI in Côte d’Ivoire: legal framework, capacity building, and coordination of action.

Headed by a political appointee from the MOH, few believed the ANF had reached its full potential. However, it was very hard for anyone to withdraw from the group, as doing so created the impression that the withdrawing party has no concern for public health. “We get in touch with each ANF member to make sure they respect their commitments. Also studies and experience is shared,” HKI’s David N’Dri explained, “and so are studies from different countries. We’ve supported alliance members to attend conferences on fortification. The major idea was to maintain alliances. Also, it’s a way to show that all players will gain something. To do the organizing, we started advocacy to get in touch with the various organizations relevant to the alliance. We also convinced the public authorities to issue a decree to establish the ANF.” This required one on one meetings to convince all partners to join the alliance; HKI created these opportunities. “The more they meet, the more the alliance is alive. HKI capitalizes.” HKI also helped identify international events and get members interested in taking part and focused members

on capitalizing the achievements to date. “When we created the fortification logo we made sure the alliance would take ownership and take it to others. Alliance members presented the logo at a UEMOA meeting, for example.” Finally HKI helped make members responsible for action.

According to ANF Secretary Pierre Gagne, Côte d’Ivoire’s ANF general assembly met every six months to discuss the status of fortification implementation. In some instances, extraordinary meetings might be called as had been the case to consider, design and approve the “caravan,” a truck that traveled throughout Côte d’Ivoire presenting information on food fortification to out of the way inhabitants.

The general assembly usually considered two items, namely the daily operations of the ANF and HKI’s implementation status, and was the body that made major decisions. If a newcomer wanted to join the ANF general assembly, the assembly decided based on the recommendation of the Scientific and Technical Committee. In terms of reporting, Gagne and the Minister of Health signed general assembly minutes for submission to GAIN and approval of HKI reports. GAIN usually did not ask for the report but worked via HKI to make their audit or gather information. “GAIN is supposed to report to ANF on meeting with the implementing agency,” Gagne pointed out, “but they never have. HKI will tell us that GAIN is here in Côte d’Ivoire. We won’t otherwise know.”

The ANF permanent secretariat had a structure with technical and scientific committees, among others, which brainstormed issues once a month. HKI funded them per the agreement. “If we wait for government to fund it would never happen,” Gagne explained. “On paper we have 12 people but only 4 actually exist. We have no fuel. Government lacks the means to equip the secretariat. Government has

passed laws but is losing money (in taxes) because of it. It was not easy.”

Institutional Framework: The Ground Rules

A second element of fortification in Côte d’Ivoire was to build the capacity of control institutions: labs, offices of the directorate of quality promotion and standardization, and the various ministries. The Ministry of Commerce had to control illegal oil, fight fraud, enforce compliance with fortification rules, and monitor the market for food safety issues. The Ministry of Commerce and the Ministry of Industry were two distinct institutions in Côte d’Ivoire. The Ministry of Industry monitored factories. At the time, explained HKI Abidjan’s Bosso, “there was no legislation regulating factory quality, but under the fortification system, firms had to agree to accept Ministry of Industry checkers. Minimum consensus was reached on the level of fortification although the industry’s wish was to do production and raw material checks only. The Ministry of Industry wanted to check everything in every plant, but industry refused because it was already producing at ISO 2000 and Côte d’Ivoire fortification standards.” New entrants had to be at that standard too before they could start fortification. “This is an example of consensus: loss and gain to both sides. Industry agreed to MOI inspections every three months but now they are every two months. MoI samples the premixed fortificant and the final product. Industry conceded to MOI inspections. MOI agreed to the process. We have not seen any implementation problems.”

Finally, the Ministry of Economy and Finance had to be involved to manage some grant money and the tax exemption process. Getting all these pieces together Bosso said, was “the hardest part. GAIN’s position was that there would be no more funding

without a legal framework. It took one year.” In the end four ministries—of Health, Industry, Commerce, and Economy and Finance for the prime minister—signed an agreement into force. The next stage was to have a presidential order issued, followed by new legal frameworks, for salt iodization, for example. The Ministry of Economy and Finance signed the decision for tax exemption of inputs used for fortifying. The Customs director also signed and enforced the implementation orders barring imports of unfortified oil and flour.

Other agencies were involved too: the National Public Health Laboratory sampled in the field to verify compliance with parameters and the MOI Office of Promotion of Quality and Standardization performed inspections. “Each one comes and expresses their work conditions and concerns about operations,” Gagne noted. “All are under the ANF permanent secretariat and forward the results to HKI as implementor. HKI is in charge of executing on those concerns. HKI gets funded for this.”

Outcome

The project started in 2005, though with an existing 55% coverage rate for Ivoirians, thanks to Unilever’s preexisting oil fortification. At the time the country’s civil unrest was ebbing, but the country remained effectively split in two between north and south. Despite years of upheaval, four different ministers signed the document decreeing mandatory oil fortification.

Production data from 2007 indicated that Unilever had capacity to produce 100,000 metric tons of palm oil, and Cosmivoire could produce 80,000 tons of palm oil. United Oil Company (UOC) was set up in 2006 and began fortification in 2007, with a theoretical capacity of 40,000 tons. Trituraf, a

small producer of cottonseed oil, closed due to lack of raw material in the face of prices for cottonseed that were exceeded by the cost of production inputs. Trituraf was attempting to reopen in early 2009.

One third of Côte d'Ivoire production was exported. Cosmivoire exported to Benin and Togo, Unilever exported to Mali, Burkina Faso, and Niger. Major agribusiness player Olam was a shareholder of Cosmivoire, and bought unrefined oil for local processing. From early 2007 unrefined oil prices rose 40%, increased finished prices in 2008.

To educate Ivoirians about the benefits of food fortification, the caravan had put on shows throughout Côte d'Ivoire to reach audiences as diverse as army leaders and local chiefs, among others. Reaching the most remote areas was essential according to N'Dri, because "not easily reached people are the most important to reach. Such an effort involved a team: HKI, a communications agency, the national nutritional program, and the ANF office." The outreach also involved public puppet shows, public criers, or "griots," as well as short speeches from prefects, the ANF, nutrition program staff, artists, and humorists. These GAIN-funded efforts were to be completed by August 2009.

In terms of process, some saw tensions. "The private sector was unhappy with the ANF because it took a long time to arrive at decisions," explained a researcher familiar with the situation. "There was too much discussion. Non-primary role people intervened in areas they didn't know anything about. For example the person in charge of communications prepared a promotion campaign for fortified oil, but the Ministry of Health intervened about fashioning the message. They'd get bad advice, have to report back to the group; it took up time and accomplished nothing." More generally this researcher believed that ANFs might be a roadblock as much as a

catalyst. With too many people involved, conflicts of interest abounded: industry saw the budget for the project and hence knew what to bid; or there was poor clarity around ANF's role, as oversight or implementer.

Country Vignettes: Mali and Burkina Faso

Mali

CONTEXT

The seventh largest country in Africa and among the poorest in the world, Mali was a landlocked nation, bordered by Algeria on the north, Niger on the east, Burkina Faso and the Côte d'Ivoire on the south, Guinea on the south-west, and Senegal and Mauritania on the west. Its size was just over 1,240,000 km² with an estimated population of almost 12 million people. Mali's borders on the north reached deep into the middle of the Sahara Desert, while the country's southern region, where the majority of inhabitants lived, featured the Niger and Senegal rivers. Agriculture and fishing were key economic and social pillars, although the country also had gold, uranium, and salt resources.

PROCESS

A key challenge in Mali was getting the consumer organizations onboard. The power of consumer organizations varied across countries but in Mali they were strong and tended to be hostile to imported products and highly protective of the consumers. The goal here was to head off the misperception that fortified products were somehow suspect and should be avoided. Beyond that the power of a consumer organization could be harnessed to serve

as strong advocates for the cause of fortification and more generally to promote a particular product among consumers. On the positive side, the fact that HUICOMA; the largest oil producer in the country produced cooking oil in Mali and fortified it with the blessing of the government meant that the issue was not entirely novel. In addition, since the oil was locally produced, Mali's anti-import sentiment could not be channeled against this cause.

OUTCOME

Overall the edible oil industry had seen major ups and downs in part because of massive price fluctuations in the movement in other commodities. For example, Mali's major oil producer, a parastatal in the process of being privatized, came under pressure when a crash in cotton prices led to a drop in production, reduced the supply of raw materials and raised demand for imports of palm- and peanut-based cooking oil. The demise of the state monopoly also meant that output was now divided among several producers. In early 2009 Unilever in Côte d'Ivoire was exporting oil to Mali. There had also been institutional tensions. Observers reported that the head of the oil company was original skeptical about the effort, and the fact that the effort was driven by the Ministry of Health, a relatively low priority ministry, did not help drive policy.

According to AIFO president Bintou Diallo, Mali had been a major cottonseed producer, with capacity three times that of neighboring Burkina Faso. However, due to cheap Asian palm oil imports and the unavailability of domestic cottonseed, Mali in 2008 did not produce even 10,000 tons. "They are flooded with Asian oil. They moved to sunflower oil, brought in peanut oil, but it was hard to produce up to capacity for several years in a row. We didn't expect this situation. Fortified oil was first launched

in the region in Mali. HUICOMA was the country's biggest industry, but it is now barely functioning."

Burkina Faso

CONTEXT

Like Mali, Burkina Faso was landlocked, surrounded by Mali to the north, Niger to the east, Benin to the south east, Togo and Ghana to the south, and Côte d'Ivoire to the south west. Its 13 million people lived in 274,000 km². Burkina Faso was the leading cotton producer in Africa. World Bank subsidies and recommendations had encouraged Burkina Faso's focus on the crop at the expense of peanut oil production. (Palm plantations for palm oil were sited only along coastal Africa.) Domestically produced oil met only about 40% of Burkina Faso's demand, reflecting a sharp decline in cottonseed availability. Access to cottonseed depended on the local cottonseed associations. There were 250,000 tons of cotton seed available for the year, of which 80,000 tons were reserved for SN-Citec (Citec), the country's major oil producer, and 85,000 tons for smaller, less efficient firms. Much of the country's cotton was exported for clothing.

Established in 1941, Citec in 1995 had invested CFA 12 billion in new U.S. production technology to increase capacity and modernize. The process was unusually efficient, permitting Citec to generate 95% of the power that it consumed for production from otherwise unused cottonseed husks, and to produce protein-rich pelletized animal feed with husks and cake created as a byproduct of the oil production process. Citec was the first plant in West Africa to install the process. At the time of the case Citec processed about 120,000 tons of cotton seed per year, yielding 20,000 tons of oil. While this made Citec Burkina Faso's leading oil producer, it

was still small by regional standards, where plants yielded 40,000-45,000 tons of oil per year. Burkina's production of all fats (butter and oil) was 70,000-75,000 tons per year, of which vegetable oil comprised 40,000-45,000 tons. Number two company Josira produced some 7,000 tons of oil annually. Small scale artisanal producers contributed limited quantities as well. The remaining oil on the market in Burkina Faso was palm oil imported from Côte d'Ivoire and Malaysia.

PROCESS

Baker and other observers believed that having the MOI leading fortification in Burkina Faso instead of the MOH was more effective because food fortification was primarily an industrial issue at the implementation level. The results improved public health, but the measures needed to get the program going were closer to industry's needs and related to their challenges in the market and in regulatory issues. In Burkina Faso the MOH had been a somewhat more difficult bureaucracy, Baker explained, very interested in getting funding for projects but unwilling to commit the necessary resources to put them into action. In addition, Burkina's ANF was considered less effective than others in the region.

OUTCOME

Citec began selling fortified oil in May 2008. In early 2009, 100% of Citec's oil was fortified with vitamin A. The cost of fortification at Citec was as yet unclear, because HKI had been financing Citec's fortificant purchases indirectly, and Citec would only begin taking full responsibility for its fortificant purchases in November 2009. The company added 60 IU of vitamin A per gram of cooking oil, and labeled its oil as such. Total cost of fortification to the

consumer was CFA 5 cents, or one US cent per liter of oil, an amount that observers and participants in the process expected consumers could easily bear. About 70%-80% of the market would have access to fortified oil by 2010. While Citec president Bintou Diallo noted that social marketing by the MOH in the media had been effective in boosting consumer awareness, "since fortification has become mandatory, it is irrelevant in the end anyway."

Unfortunately, in February 2009, Diallo had the sad task of announcing layoffs and planned to shutter Citec for four months of 2009, far longer than the typical annual one-week shutdown for cleaning and maintenance. Citec expected only 100,000 tons of raw material in 2009. Citec hoped to secure another 20,000 tons through a different association of Burkina cotton producers. Failing to produce to capacity could cost Citec as much as CFA 300 million (€150,000) in lost discounts on raw materials. Citec's operations manager explained, "Cottonseed needs to have a 21% oil content. If suppliers offer us cottonseed with 20% less than that, we pay them less for it. There are moisture parameters too, and additional discounts for substandard cottonseed. Fiber content must be 11% and there are acidity requirements as well. All of these factors affect what we will pay for cottonseed. However, now that the quantity of cottonseed in the market is limited, Citec can no longer force discounts on suppliers for lower quality cotton because we are lucky just to buy what we can. Regardless of cottonseed quality, however, our refined oil must meet fixed standards." Insufficient cottonseed supply meant that Citec would face substantial oil imports in the Burkina marketplace. Though Diallo was quick to protest the share of the West African market captured by imports from Brazil and Southeast Asia, Citec's inability to meet demand offered no other choice.

Exhibit 1. UEMOA—West African Economic and Monetary Union



Exhibit 2. Estimated VAD incidence and child deaths, Sub-Saharan Africa, 2004

<i>Country</i>	<i>Sub-clinical VAD in children under 6 years of age (in %)</i>	<i>Annual number of child deaths from VAD</i>
Angola	55	34,000
Benin	70	9,000
Botswana	30	500
Burkina Faso	46	20,000
Burundi	44	8,500
Cameroon	36	10,500
Central African Republic	68	5,000
Chad	45	12,500
Congo	32	1,500
Congo Democratic Republic	58	96,000
Eritrea	30	1,750
Ethiopia	30	51,000
Gabon	41	450
Gambia	64	1,000
Ghana	60	12,000
Guinea	40	8,000
Guinea-Bissau	31	1,750
Kenya	70	23,500
Lesotho	54	1,100
Liberia	38	5,000
Madagascar	42	13,000
Malawi	59	17,500
Mali	47	24,000
Mauritania	17	1,500
Mozambique	26	14,000
Namibia	59	500
Niger	41	26,000
Nigeria	25	82,000
Rwanda	39	9,500
Senegal	61	9,500
Sierra Leone	47	13,250
South Africa	33	6,000
Swaziland	38	600
Tanzania	37	—
Togo	35	3,250
Uganda	66	29,000
Zambia	66	19,000
Zimbabwe	28	4,900
Total		

Source: The Micronutrient Initiative, "Vitamin and Mineral Deficiency: National Damage Assessment and Protection Audits, 2004," (LOCATION: Micronutrient Initiative and UNICEF, 2004), p, 2,

Exhibit 3. Estimated annual economic losses due to VAD and other vitamin and mineral deficiencies (percent of GDP)

<i>Country</i>	<i>Percent of GDP loss</i>	<i>US\$ estimate in \$000s (2004)</i>
South Africa	0.4	851.1
Nigeria	0.7	504.7
Kenya	0.8	124.8
Botswana	0.6	51.9
Mozambique	1.2	66.5
Zambia	1.3	70.1
Malawi	1.4	25.3
Guinea-Bissau	1.5	4.2

Source: Micronutrient Initiative, "Fortifying Africa's Future," (Johannesburg, South Africa: Miconutrient Initiative, 2006), p. 3.

Exhibit 4. State of implementation in francophone West Africa

<i>Action</i>	<i>Benin</i>	<i>Burkina Faso</i>	<i>Côte d'Ivoire</i>	<i>Guinea-Bissau</i>	<i>Mali</i>	<i>Niger</i>	<i>Senegal</i>	<i>Togo</i>
Nutrition policy on food fortification	◆	◆	◆	◆	◆	◆	◆	◆
Nutrition status assessment		◆	◆		◆	◆	◆	
Food vehicle identified	◆	◆	◆		◆	◆	◆	◆
National alliance established		◆	◆		◆	◆	◆	
Identification of site within industries	◆	◆	◆		◆	◆	◆	◆
Identification of equipment needs	◆	◆	◆		◆	◆	◆	◆
Establish standards	◆	◆	◆		◆	◆	◆	◆
Launch fortified foods		◆	◆		◆			
Logo for branding fortified foods		◆	◆					
Social marketing/logo for branding			◆		◆			
Monitoring and evaluation								
Impact evaluation								

Exhibit 5. State of oil fortification in West Africa non-UEMOA

Action	Ghana	Guinea	Nigeria	Gambia	Liberia	Sierra Leone	Cape Verde
Nutrition policy on food fortification	◆		◆				◆
Nutrition status assessment	◆		◆				◆
Food vehicle identified	◆		◆				
National alliance established	◆		◆				
Identification of site within industries	◆		◆				
Identification of equipment needs	◆		◆				
Establish standards	◆		◆				
Launch fortified foods	◆		◆				
Logo for branding fortified foods	◆		◆				
Social marketing/logo for branding	◆		◆				

Note: No large-scale cooking oil manufacturing existed in Guinea. Normally, refined cooking oil was imported and repackaged for domestic sale there.

Exhibit 6. Côte d'Ivoire's oil fortification social marketing and logo



Exhibit 6, continued.

