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A School Feeding Program in Nigeria: Tetra Pak's Business and Development Goal

Case A

CSM Deputy Director Dr. Aileen Ionescu-Somers prepared this case with Professor Ulrich Steger as a basis for class discussion rather than to illustrate either effective or ineffective handling of a business situation.

This case was commissioned by the World Bank Institute (WBI) with the support of the Global Alliance for Improved Nutrition (GAIN).

It was developed with input from the staffs of the Tetra Pak Food for Development Office, the Government of the State of Nasarawa in Nigeria, WBI, GAIN, Helen Keller International, the Solae Company and Good Hope International. The contribution of all parties is gratefully acknowledged.

15 DECEMBER 2005. It had been a grueling trip. Bjorn Wille, program director of Tetra Pak's African Food for Development Office and Mandla Mbau, Food for Development manager of Tetra Pak West Africa had started out early. At 6:45 they flew from Lagos to Abuja using a local airline. In Abuja, they hit the road and drove three hours to Lafia, the capital of Nasarawa, one of the 36 Nigerian states. They had planned a meeting in Lafia that afternoon with His Excellency Alhaji (Dr) Abdullahi Adamu, the Executive Governor of Nasarawa State, to discuss the status of the school feeding program in Nasarawa State, a state-supported initiative run in association with Tetra Pak. Having met with the program management team in Lafia, they learned that their journey was far from over. H.E. Governor Dr. Abdullahi Adamu, busy with many other issues, was held up at his home in Keffi. They decided to drive there, another ninety-minute journey. Half way, H.E. Governor Dr. Abdullahi Adamu's aide called to confirm the meeting but insisted that they should not travel unescorted – it was dangerous for two non-nationals to travel in rural Nigeria by themselves. They pursued their journey – it made eminently more sense to continue than to go back. They arrived at H.E. Governor Dr. Abdullahi Adamu's home at 20:00, exhausted and not having eaten all day.

But the meeting was crucial. On the way, they had discussed the program and its challenges.

The heavily fortified maize and soy-based beverage being distributed on the program – Nutri-Sip – was currently being imported from South Africa (with considerable logistical complications). Assuring local production was a huge political and economic challenge as it was indispensable to sustainability of the program. In spite of strong support from H.E. Governor Dr. Abdullahi Adamu, government bureaucracy had slowed cash flow to the program, thus jeopardizing its continuity. Capacity-building at the governmental and local NGO level was clearly needed. Communities were not all following project protocols. While there were long-term business gains for Tetra Pak should a national program based on a beverage distributed in Tetra Pak get off the ground, particularly on a national scale, the question of how far and how fast the company should or could go in Nigeria was very valid. The meeting would go on until 23:00...

Tetra Pak

In 2005 Tetra Pak was a multibillion-dollar global company that developed, manufactured and marketed systems for processing, packaging and distributing food. Part of the Tetra Laval group, it was the world leader for the supply of carton packaging for milk, soup, fruit juices and other liquids. The company was founded in 1951 in Lund, Sweden by Ruben

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European Foundation for
Management Development
Case Writing Award
2007

Rausing and Erik Wallenberg to focus on expansion into markets and technologies beyond fresh milk products. By September 1961, Rausing and Wallenberg had perfected their aseptic packaging concept, a technology that protected nutritional quality and allowed ambient storage of products requiring no preservatives. Aseptic processing involved very briefly heating products to extremely high temperatures (ultra-high temperature processing or UHT) in a closed system, and then rapidly force-cooling them to room temperature. In this way, products could remain fresh for months without refrigeration. It was a revolutionary concept. By 2005, Tetra Pak had sales of €8.1 billion¹ and more than 120 billion Tetra Pak packages were being distributed in over 165 markets, employing over 20,000 staff.

Nigeria, a wealthy pauper

Nigeria was the largest country on the African continent (refer to *Exhibit 1* for a map of Nigeria). Its population of over 130 million people included some 200 ethnic groups, 500 indigenous languages and two major religions (Muslim and Christian). Nigeria became oil rich when the “black gold” was discovered in the Niger Delta in 1958. By the mid-1970s, Nigeria had the 33rd highest per capita income in the world. But from 1975 to 1999 the country was plagued with a series of military regimes during which much oil revenue was squandered, mainly owing to poor financial management. Spates of massive governmental spending led to rapid rises in middle-class income accompanied by inevitable inflation. Because of corresponding increases in food prices, agricultural production shifted away from traditional export cash crops (peanuts, cotton, cocoa and oil palm products) to food crops. But with the main industrial investment focus on its

mineral wealth (by 2005, petroleum accounted for more than 80% of government revenues), industry associated with agriculture massively declined, leaving Nigeria with little to no capacity to convert agricultural raw material into value-added products. For example, despite potential to produce dairy products locally and a strong milk-drinking culture, Nigeria still imported powdered and tinned milk. Corruption and governmental inefficiency took their toll. By 2005, Nigeria figured in UN records amongst the world’s top twenty “most unlivable countries.” Per capita GNI was only at a level of \$400 despite the fact that oil-rich countries were benefiting from record escalating oil prices.

The President of the Federal Republic of Nigeria, His Excellency Chief Olusegun Obasanjo GCFR, was a former military ruler who, in 1979, became the first African leader to voluntarily hand over power to civilian rule. H.E. President Olusegun Obasanjo (GCFR) was persuaded by his supporters to run for election in 1999. He won overwhelmingly and his first steps were to lead a public anti-corruption campaign, implement economic reform, and push for privatization, tax reform and more transparency. However, under his leadership, ethnic and religious unrest also increased significantly. Violent clashes between the army or police and local populations became commonplace, resulting in multiple civilian deaths. Imposition of Islamic law in some states underlined divisions and caused migration of Christians. In 2003 H.E. President Olusegun Obasanjo (GCFR) was re-elected in a controversial election where international observers reported widespread ballot-rigging and intimidation of voters. He was accused of targeting his anti-corruption efforts against political opponents only. The Nigerian constitution stipulated that presidents should not run for more than two terms of office.

1. €1 = \$1.18, December 2005.

H.E. President Olusegun Obasanjo (GCFR) could therefore not present himself for the 2007 elections, that is, unless he and his party made a risky bid for constitutional change.

Malnutrition in Nigeria

According to UNICEF in 2005, malnutrition caused approximately 50% of child deaths worldwide, making the UN's Millennium Development Goal to eradicate extreme poverty and hunger by 2015 particularly ambitious. Unsurprisingly, with 66% of Nigerians living on less than \$1 per day, child malnutrition had long since raised its ugly head in the country. Nigeria was among the top twenty countries in which 40% of under-five children were chronically malnourished, the prevalence of stunting, underweight and wasting being 42%, 25% and 9%, respectively. This was mainly attributable to both poor dietary quality and parental ignorance of basic health and hygiene practices. This "hidden hunger," as it was termed, insidiously led to anemia, and vitamin A, iron and zinc deficiency disorders. Economic consequences were massive. Malnourished children were less likely to attend school, had diminished learning abilities and were more prone to infection, illness and premature death because of ordinary childhood diseases. Moreover, studies indicated that because of malnutrition, the average national IQ in Nigeria had been reduced by 10–15%.

Tetra Pak and School Feeding Programs

Wille, an American-educated Norwegian, had been a senior finance manager in his early career, first with ABB in Switzerland, subsequently moving to Singapore and then Indonesia. While in Indonesia, he started working with Tetra Pak as director of finance. In 1998 he became involved in the

implementation of a large school milk program in Indonesia. Wille explained this surprising combination of tasks:

Tetra Pak is Swedish and has a fairly informal family business culture and structure that encourages people to have more than one focus – while remaining accountable.

From 1996 to 1998, Tetra Pak had partnered with its largest Indonesian customer and a local NGO to set up a trial program in Indonesia involving some 10,000 children. The trial was a success and the program was expanded in 1999 based on a donation of 5,000 tons of non-fat dry powdered milk from the United States Department of Agriculture (USDA) to the Indonesian government. Before long, the Susu Sekolah program, as it was called, was delivering milk in 200ml Tetra Brik Aseptic packages to 500,000 Javan elementary school children three times a week. In October 2000 Tetra Pak partnered with Land O'Lakes Inc., a US dairy cooperative with NGO status, which had signed an agreement with the USDA to implement the Susu Sekolah program for a further two-year cycle and expand it beyond Indonesia. There could be no doubt about the business, economic and developmental benefits of the program. Wille commented:

We launched programs in Vietnam, Bangladesh, Philippines, Pakistan and Uzbekistan. We transferred know-how to local industry, combining philanthropy and business interests. It was a win-win; the partnership gave us new business opportunities.

The Tetra Pak Food for Development Office

In 2000 Tetra Pak's group management set up a Global School Feeding Board and a School Feeding

Knowledge Center. Wille and Ulla Holm, a Tetra Laval international director of financial services with experience of customer finance and dairy development, were active members of the Knowledge Center.

In March 2002 Holm and Wille developed a proposal with Kelly Boucher, School Feeding manager for Tetra Pak East Mediterranean, for building on the existing framework by establishing a Tetra Pak Food for Development Office (FfDO) to support both school feeding and agricultural and dairy development programs through public-private partnerships while facilitating the provision of Tetra Pak technology and market know-how to local industry. The managers presented their ideas to group management and were sufficiently convincing. The FfDO was set up in May 2002 with Christer Ronnegard as global director. Holm took over when Ronnegard retired in January 2004. As she put it:

Our school feeding and agricultural development programs go beyond ordinary business, without being charity. They represent a long-term development effort to improve the nutritional status of children while contributing to the development of the agricultural sector in developing countries, at the same time creating and developing new markets for Tetra Pak.

Wille was appointed full time to develop the FfDO for Africa at Tetra Pak South Africa. His first task was to develop a product for the commercial market that could be used in South African school-feeding programs. He worked with a South African company, International Nutrition & Sport (INS), to develop Nutri-Sip, a heavily fortified maize and soy-based drink. The drink was processed and packed by another South African company called Good Hope International (GHI) and delivered in aseptic

Tetra Pak packages to schools (refer to *Exhibit 2* for more details on this product).

In November 2003 Wille and Brian Hinchcliffe, the then managing director of Tetra Pak West Africa, were invited to make presentations to the Swedish Ambassador to Nigeria and a Swedish trade development delegation on the success of Nutri-Sip as a product and also on the question of dairy development in Nigeria. Convinced that school feeding could be the first component in an integrated chain to promote much-needed sustainable agricultural and industrial development in Nigeria while delivering business benefits to Tetra Pak long term, the ambassador asked Hinchcliffe to make similar presentations to H.E. President Olusegun Obasanjo (GCFR) in February 2004. With a farming background and agricultural development firmly on his agenda, H.E. President Olusegun Obasanjo (GCFR) also became convinced that a company such as Tetra Pak could help Nigeria to develop its dairy industry. At this very meeting, he created a National Dairy Development Committee (NDDC) and appointed his Excellency Alhaji (Dr) Abdullahi Adamu, the Executive Governor of Nasarawa State, as chairman. The NDDC was asked to prepare a report on the status of Nigerian milk production and its capacity to support a school milk program.

The results were sobering. In June 2004 the committee reported that the extremely fragmented local production could not cover school milk program requirements for even one state. It would clearly be a long time before Nigerian milk production could be “up to speed.” Wille described what ensued:

We agreed that a product like Nutri-Sip using local Nigerian raw materials such as sorghum and cassava could be developed and produced more rapidly for distribution in schools until such time that milk would be available to replace this alternative.

However, a product of similar quality to Nutri-Sip could not be produced locally in the short-term either. We agreed to jump-start a program based on imported South African Nutri-Sip with the idea that, as demand increased and the program grew, private sector investors could be attracted to fund production of a local brew.

H.E. President Olusegun Obasanjo (GCFR) requested H.E. Governor Dr. Abdullahi Adamu to initiate a pilot school feeding program to be entirely funded and administered by the State of Nasarawa together with the Federal Government with the objective of gradually making school feeding available within 10 years to 27 million schoolchildren across the country. H.E. Governor Dr. Abdullahi Adamu was enthusiastic; local production would generate demand for locally produced foodstuffs which would increase much-needed employment and income for local farmers, industry and distributors. The Nasarawa State Feeding Program Committee (NS-FPC) was established, with Dr. Daniel Iya, a highly qualified local doctor and university professor of surgery, as chairman. Tetra Pak West Africa and the FfDO were invited to act as technical advisors and to help state authorities set up an effective program infrastructure.

But spending precious foreign exchange, albeit temporarily, on an imported product with a development goal was controversial politically and economically. While from these points of view (given H.E. Governor Dr. Abdullahi Adamu's support), it was more feasible to introduce imported Nutri-Sip in Nasarawa than in other much more populous states, it was clear that there would have to be a move to local production by the end of 2005.

In May 2004 Mandla Mbau, a 35-year-old South African national with a Tetra Pak South Africa marketing management background, was engaged full

time as Food for Development manager based at Tetra Pak West Africa in Lagos. Mbau would be the conduit for lending Tetra Pak's expert knowledge to the program. Being African, Mbau was particularly excited about the potential of what Tetra Pak called the "agriculture to consumer" integrated model. Essentially, if the program were successful, it was an all-round win-win for all concerned; the citizens of Nasarawa State, the government, Nigeria as a whole, and Tetra Pak. School feeding would boost education in Nigeria. Enrollment would most likely go up, there would be reduced absenteeism and improved learning capacity since children would be more alert with improved cognitive skills. Farmers would be happy, because the school feeding would create demand for raw materials and stimulate supply chain development. Building processing facilities meant improving infrastructure which in turn would assure more food security, and improve livelihoods and employment prospects in communities. All in all, Wille and Mbau were convinced that the program could be a major contribution to building the Nigerian economy while reducing child malnutrition and poverty. (refer to *Exhibit 3* for the development and rollout strategy for the model.

Markus Huet, a FfDO consultant based in Malaysia with vast experience in the design of food programs in Asia, Africa and Eastern Europe was called upon. Huet traveled to Nigeria in November 2004, the first of some 12 visits up to the end of 2005, armed with a generic plan for school feeding programs that included an extended six-month pilot project, plans for donor interface, work on building community commitment, and creation of management structures and tools to manage data. Wille, Mbau and Huet elaborated a team structure (refer to *Exhibit 4* for the organigram and tasks to be covered) and processes for a full-blown school feeding program in Nasarawa State. There were a lot of steps to follow to ensure sustainability of the value chain to

produce liquid nutritional drinks in Nigeria (refer to *Exhibit 5* for a graphic representation of the necessary steps).

Wille's ambition was to replicate Tetra Pak's successful Asian model of joining forces with local and international NGOs and other partners. Berry Magarinos, Partnerships Manager with GAIN, the Global Alliance for Improved Nutrition (a Swiss Foundation established in 2003 and supported by the Bill and Melinda Gates Foundation² amongst other donor sources), had started a quest for suitable corporate partners to help achieve GAIN's objective, that of improving the nutritional status of people at risk of vitamin and mineral deficiencies worldwide by using fortified foods. In November 2004 Magarinos remarked:

Tetra Pak was seeking a partner to help them monitor the health impact of Nutri-Sip. They had commissioned an efficacy study in South Africa that was not empirically sound in that there was no control group. They lacked nutritional expertise and GAIN could help them. We were also intrigued with two aspects of the proposed program. Stimulating local production and local investments was an essential part of the sustainability of the model and as such was an innovative approach. Also, apart from the fact that Nutri-Sip as a school feeding solution provides vitamins and minerals in a way that traditional school feeding could not, the product cannot spoil easily, is hygienic and is a good solution for hard-to-reach rural areas.

A memorandum of understanding (MoU) was signed between Nasarawa State Government and Tetra Pak on 31 November 2004. But Africa was not

Asia. After one or two visits to Nigeria, Wille started to fathom the major challenges ahead:

I stayed at H.E. Governor Dr. Abdullahi Adamu's VIP guest house. It was 40° by day with high humidity, 30° by night. There was often no electricity – government power cuts were common. You'd wake up in the morning and there would be no water. Government officials had a very different mindset to those I was used to. This was another world.

The NSFPC nominated a full-time program manager as well as logistics, community development and financial managers supported by assistants. Spacious quarters in Lafia were given to this program management team, and the program acquired a fleet of five new distribution vehicles bearing the program logo. A distribution infrastructure and a monitoring system to prevent diversion of the fortified product were conceived. Warehouses and local storage rooms were identified and rehabilitated. But Huet noted:

The government's main interest was in exploring and expanding local production and in launching an accelerated plan to extend the program by 10,000 children per week. With no time to initiate the preparatory work, my plan went out the window. The pilot project was whittled down to a bare month. Instead of going through the requisite exercises with the community to actually demonstrate the commitment we expected, we settled for their verbal commitment.

Tetra Pak had agreed with the state government that the program would be launched on 17 January 2005. But Wille described the first problems encountered:

2. The Bill and Melinda Gates Foundation is dedicated to bringing innovations in health and learning to the global community (see <http://www.gatesfoundation.org> for more details).

To start rolling out the program, we also had to start production of Nutri-Sip in South Africa. It took four months to issue the first LoC (letter of credit) – literally ages in business terms. Containerizing the trucks and preparing them for distribution took six months. Nobody had envisaged such delays.

In June 2005 Wille found a nutritional design partner to develop a tailor-made product for Nigeria; the Solae Company, which in turn belonged to the DuPont Group (refer to Exhibit 6 for a graphic representation of the strategic partnership structure). Solae had been supplying a protein blend to GHI for the Nutri-Sip product. By September 2005, Kobus De Klerk, Africa area director for the Solae Company, had already elaborated a product that could be produced using Nigerian raw materials; cassava, sorghum, maize, vegetable oil and sugar. He commented:

The supply chain of raw materials is very informal in Nigeria. Essentially farm production gets sold into open trade and there are no formal distribution channels. Our value-added is our understanding of how to set up a distribution channel. A lot of product design is therefore spent relationship-building and working on supply chain management.

H.E. President Olusegun Obasanjo (GCFR) finally launched the School Feeding Program at Laminga Primary School on 27th September 2005. The atmosphere at the launch was buoyant and optimistic. Approximately 10,000 people attended and it was even broadcast live on national television. Holm commented:

In my view, the launch of the program was probably one of the best life experiences of most people that would be involved in its implementation. The Cluster Vice President of Tetra Pak for Sub-Saharan Africa informed me that it was undoubtedly

one of the best days he had ever had as a Tetra Pak employee.

Some months into implementation, the program continued to have major distribution problems. State bureaucracy weighed heavily; money was always an issue. Wille remarked:

The state had to sign off on all disbursements. LoCs remained problematic and the program team lacked cohesion and drive.

The bureaucracy did not stop there. At the best of times, imported products were a headache for companies in Nigeria. Containers with the Nutri-Sip product often got “stuck” in Lagos’s port. The government delayed in making funds available to pay clearing agents. Used to such delays, program staff tended to be relatively complacent; hence products could accumulate for weeks in the port without action, with the resulting storage charges, taxes and container rental costs pushing up the Nutri-Sip unit cost daily.

Brian McGuinness, MD of Tetra Pak West Africa since September 2004, supported the program fully – it was a great opportunity for both Nigeria and Tetra Pak, a potential “win-win” for all concerned – but he pointed out:

To sustain this model, we need to attract investment so as to involve local industry in the loop. We have to find the case for financial sustainability and return production to the local economy.

Although Mbau was frustrated about lack of progress in Nasarawa, he still felt that Tetra Pak had been making good headway under very difficult circumstances:

Tetra Pak works on targets and makes things happen. If you are lazy, you won’t get a lot done

in this country. There has to be personal sacrifice and involvement, commitment and unyielding resolve. But without H.E. Governor Dr. Abdullahi Adamu's support, the program is dead. He is a man of his word. He has followed through almost obsessively. He wants everything to happen quickly. He works with integrity and for this reason we can work with him. But will he be out of the government by 2007?

The program management team spent substantial amounts of time managing logistics related to product delivery. All were aware that more time was needed for focus on community education about health benefits of the supplement and even general hygiene. There was some initial reticence among certain families in the communities about allowing their children to take what was regarded as a “foreign” drink; locals that were suspicious about the benefits. The community manager initially spent most of her time dispelling such misgivings. Also, it was important that parents would see the drink as a supplement and not a meal replacement, a real risk given the level of poverty in these rural environments. Moreover, in order to properly benefit from the nutritious drink, every child had to be “de-wormed” before joining the program, since infection with ringworm (usually as a result of playing barefoot in stagnant water) was rampant. Therefore, raising parental awareness of precautions to take against reinfection (such as ensuring that their children wore sandals at all times) was also essential. The importance of raising awareness on such issues could not be underestimated.

The original plan was to increase the number of children on the program at a rate of 10,000 per week, to reach a distribution of 150,000 by end of 2005. The program management team had great difficulty keeping up with this pace given difficulties with cash flow and logistics, and the initial

target had to be revised downwards to an increase of 3,000 per week. A total of 75,000 children were on the program by the end of 2005, and it was still challenging to assure continuity (refer to Exhibit 7 for photos of Nutri-Sip distribution at a school). Iya commented:

We need to move away from fire fighting, when the availability of stock in warehouses is so low that it jeopardizes the program and managers have to spend days physically going to Lagos to negotiate release of the goods.

Wille spent one week per month at the project site in Nigeria, using work quarters within a government compound where often there was no access to facilities such as water or electricity. Tetra Pak executives undertook basic tasks such as stocking the generator, which was required because of government-authorized power cuts to economize on electricity in Lafia. Wille and Huet spent many hours teaching the management team how to implement the program and overseeing the writing of a Tetra Pak school feeding program manual, including a template of checklists on how to run such a program.

GAIN and Tetra Pak signed an MoU in October 2005 defining a broad area for collaboration including joint activities in Nigeria. GAIN was to sponsor a health impact study to start by March 2006. Before the program started, the schools were briefed on the need to keep data per student up to date for the duration of the feeding program. When the program got off the ground, 40 monitors were sent to schools to collect consumption data. Some were refused access to the students and data. Huet commented:

In December 2005 I made it clear to H.E. Governor Dr. Abdullahi Adamu that, if communities ignore program protocols, they should be removed

from the program. My experience is that this is the only way things can work with communities. But H.E. Governor Dr. Abdullahi Adamu was reticent about doing this for political reasons.

for Development work in Nigeria? If so, what steps needed to be taken?

In 2005, 60,000 units of de-worming agent were delivered to the program. By the end of the year, not all of the units could be accounted for by the program staff. Wille and Mbau were very keen to make sure that the program was watertight and totally accountable; they decided to raise this issue with H.E. Governor Dr. Abdullahi Adamu.

Mbau continued to push for localization of the product. He had little time to follow up on Huet's intense capacity-building visits. The original aim had been to start production of the first batch of "Nigerian Nutri-Sip" by June 2006. By the end of 2005, the move to localization was not progressing at the desired level.

Back in Keffi, the challenge

Wille and Mbau had another hour or so to wait before H.E. Governor Dr. Abdullahi Adamu would be free to talk. They decided to mainly focus on the potential waste of state money should the program not get more stable governmental support. They had worked on a game plan for 2006 that they felt would jump-start the program and put it on a more sustainable footing. In spite of potential long-term business advantages, had it been overly risky to embark on such a difficult challenge using a brand new business model in a country as complex as Nigeria and on such a sensitive issue as child nutrition? What solutions could they come up with in order to alleviate the current pressures on the program management team and put it on a more secure footing? Was there a need to fundamentally review the current structure of their Food

Exhibit 1. Maps of Nigeria and locations of Lagos, Abuja and Nasarawa State



Sources: <http://www.mbendi.co.za/cyngmps2.gif>, <http://worldcountries.info/Maps/Region/Africa-450-Nigeria.jpg>

Exhibit 2. Description of the Nutri-Sip product

For disaster relief and feeding programs, ready to consume, highly fortified food matrixes that contain the 6 (six) essential nutrients to sustain life in a moderate healthy condition should be administered. Nutri-Sip is a meal supplement that provides the targeted population with a well-balanced nutrient drink, containing Protein, Carbohydrates, Fats, Minerals, vitamins and Water (the six essential nutrients to sustain life) assisting in building up the immune system of the body, and providing the targeted population with essential micronutrients to meet the daily nutrient deficit intake, that assists in warding off opportunistic infection and diseases.

Unlike the provision of supply of staple foods to prevent starvation to selected targeted population groups, who will still be prone to infection of opportunistic diseases, primarily as a result of these foods that have to be reconstituted with water. Quality versus quantity has to be evaluated when addressing requirements of population groups in need of nutrient dense food matrixes.

Nutri-Sip is processed, utilizing state of the art, aseptic manufacturing lines at Ultra High Temperature (Tetrapak) to ensure a shelf life of 12 months without degradation of the nutrient content, at ambient temperatures worldwide.

In addition, a Bioflavonoid vitamin P with scientifically proven anti-viral, pathogen, bacteria, fungi and mould, totally organic and non toxic is included in the fortified formulation to assist the body in increasing the population of good intestinal flora, decreasing the risk of ditherer and proven to have a kill ratio of 99.999% against e-coli strains (including a host of other pathogens and bacteria) and assisting with the uptake percentage of the added nutrients, reducing the risk of diarrhea, respiratory infection etc

Minerals included in the formulation are Amino Acid Chelated Minerals scientifically proven peer reviewed, that have the highest bioavailability, well regulated and absorbed in tact by the body with no antagonism and mutual interference at receptor sites for minerals in the Jejunum (other Inorganic Minerals are absorbed in the Duodenum with antagonism and interference at receptor sites)

All vitamin's added in the formulation are water soluble and do not degrade over time as a result of contact with the Amino Acid Chelated Minerals, as would be the case with any inorganic mineral.

The targeted population for Nutri-Sip is the most vulnerable, toddlers, children, pregnant and lactating woman suffering from malnutrition, caused by a host of factors, namely; poverty, drought in rural areas, natural disasters, war conflict, displaced persons etc

The main advantage of the bio engineered formulation of Nutri-Sip is to reduce the risk of reconstituting solid foods that are semi cooked with contaminated water. Nutri-Sip is ready to drink, will prevent and correct nutrient imbalances and reduce the risk of contracting preventable and opportunistic diseases.

Logistics and storage is extremely cost effective when evaluating the cost dose response of a serving per person a day, in their health status. In the event of persons consuming more than 1 (one) serving per day, Nutri-Sip will not cause any harm, as the selected nutrients are well regulated and absorbed by the body, secreting any nutrient overages.

Source: Good Hope International, South Africa

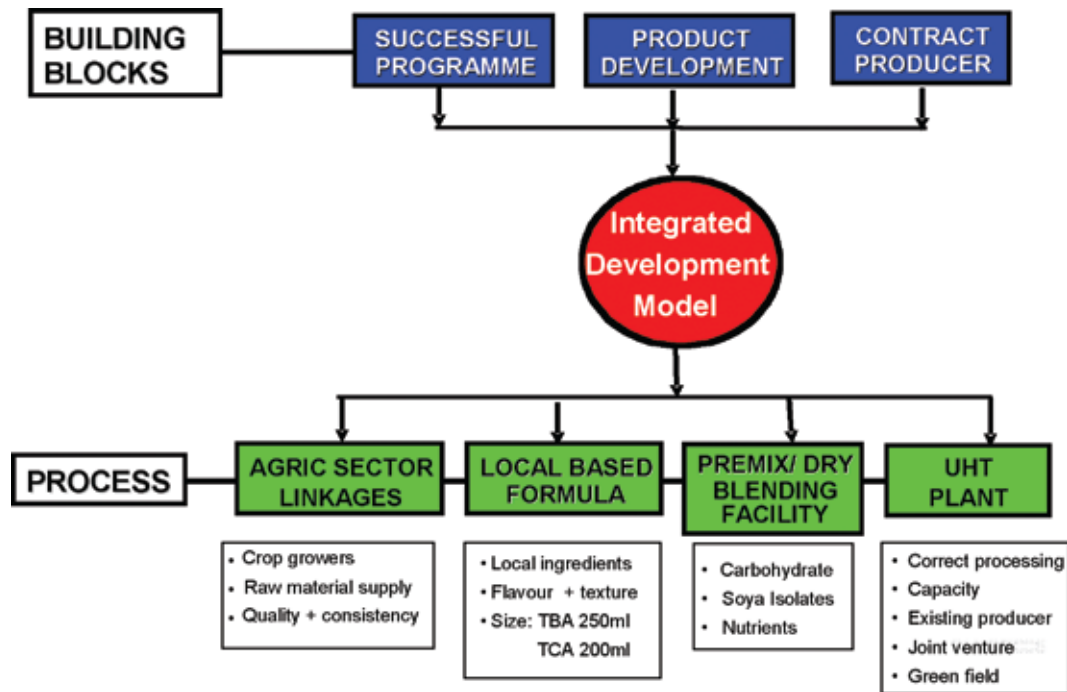
Exhibit 3. Integrated local product framework—from development to implementation

Development strategy

Major advantages of developing an integrated “from agriculture to consumer” model:

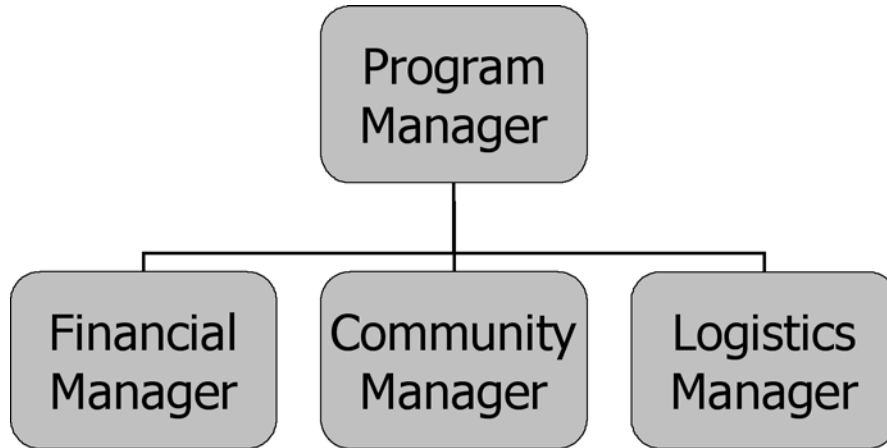
- School feeding is used as a catalyst for agriculture and economic development by creating demand and stimulating supply chain development
- Nutrition is used to improve health and education (increased cognitive development and enrollment, more education for girls, completed education cycles)
- Supply chain development leads to local infrastructure development
- Local food processing infrastructure enables food security, livelihood and employment
- The success of all of these factors allows for industry development which translates to economic empowerment overall
- The creation of a commercial market leads to growth and expansion

Implementation strategy



Source: Company information.

Exhibit 4. Program management structure: School Feeding Program Nigeria

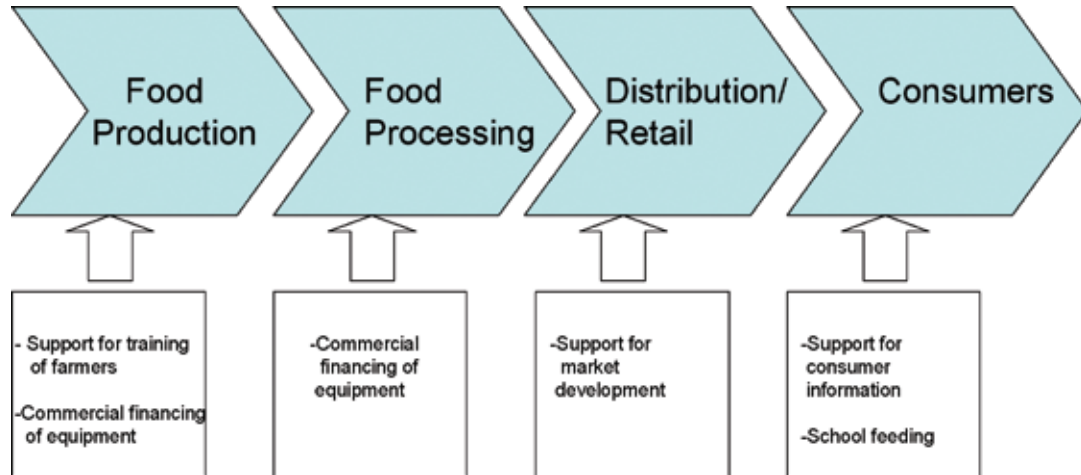


Key functions of the managers:

- Budgeting and financial monitoring
- Letter of credit follow-up
- Liaising with clearing agents, port authorities
- Stock management
- Organizing the de-worming program
- Program planning and implementation
- Field visits and training workshops
- Sensitizations of parents, teachers, local government authorities, traditional leaders, etc.
- Program monitoring (distribution and consumption tracking tools)
- Progress reporting/feedback to key stakeholders

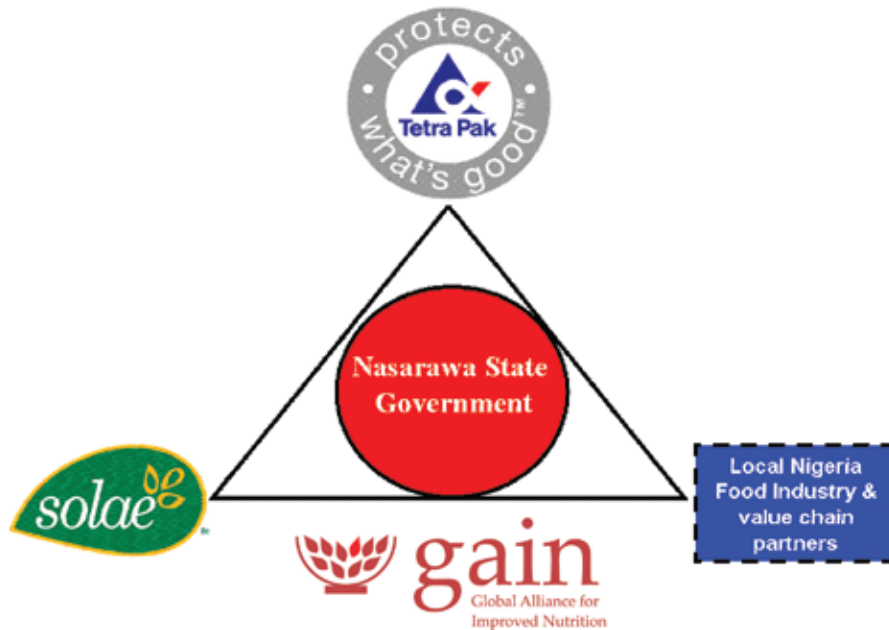
Source: Company information.

Exhibit 5. Steps required for the sustainability of the value chain producing liquid nutritional drinks in Nigeria



Source: Company information.

Exhibit 6. Strategic partnership structure



Source: Company information.

Exhibit 7. Children receiving Nutri-Sip in a school in Lafia, Nasarawa State, Nigeria



Source: Mandla Mbau, Tetra Pak.

