



January 2015

## UNICEF RUTF Supply Chain (B): Developing a Global Supply Network

### THE RUTF PRE-BID CONFERENCE

While preparing his slides for UNICEF's 2012 RUTF Pre-bid Conference two months ago, Jan Komrska had reflected on how much the supply chain for ready-to-use therapeutic food (RUTF) had changed in four years. The demand for RUTF, used in treating severe acute malnutrition (SAM) in young children, had grown dramatically from 2005-2008. When launching his first competitive bid in 2008, Jan faced several challenges: the variable lead time for delivery, the effects of uneven funding on the system, the lack of information flow within the supply chain, and the issues of relying so heavily on Nutriset as the dominant world supplier.<sup>1</sup> To overcome these challenges, UNICEF created a plan that would radically transform the global supply chain for RUTF. Some of those strategies included installing new buffer stock for the region<sup>2</sup>, developing better forecasting methods, local production, coordinating rapid flow of information and diversifying the supply base for RUTF<sup>3</sup>. Since 2008, production capacity for RUTF increased through the expansion of the Nutriset franchise, with newly established operations in several countries. At the same time, new companies with no prior experience in food production began manufacturing generic RUTF. As the Team Lead for the Nutrition Unit at UNICEF Supply Division, Jan needed to evaluate these new options in establishing contracts to meet the forecasted needs of 32,000 MT in 2013. The RUTF Pre-bid Conference was the first step in Jan's new challenge in allocating the UNICEF purchases across this expanded network of suppliers

### NUTRISET EXPANSION

Nutriset first produced a peanut-based RUTF named Plumpy'Nut® in 1996 and filed its first patent in France in 1997. By 2010, Nutriset and the Institut De Recherche Pour Le Developpement (IRD), a French public research institute, patented Plumpy'Nut® in over 30

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<sup>1</sup> Swaminathan J.M. et. al., 2009. The Nutrition Articulation Project: A supply chain analysis of Ready-to-Use Therapeutic Foods to the Horn of Africa, UNICEF Technical Report.

<sup>2</sup> Swaminathan, J.M., 2014. Case: UNICEF RUTF Supply Chain (A): Crisis in Horn of Africa, *University of North Carolina's Kenan-Flagler Business School*.

<sup>3</sup> Swaminathan, J.M., 2010. Case Study: Getting Food to Disaster Victims, *Financial Times*, October 13, 2010.

countries.<sup>4</sup> The patent in the United States, for example, specified a wide range of product formulations, including RUTF produced from various non-peanut sources, as well as the process of preparing the product and the method of using the product for re-nourishment.<sup>5</sup> The patent established Nutriset as the primary provider of RUTF for UNICEF.<sup>6</sup>

In 2005, a famine in Niger put an estimated 2.5 million lives at risk<sup>7</sup>. It was the first widespread demand for RUTF, and it pushed Nutriset to consider other options for production. Nutriset responded by forming a network of local producers.<sup>8</sup> Adeline Lescanne-Gautier, the general manager of Nutriset, explained that in 2005 the market in local countries was not large enough to justify establishing local factories, but at the same time shipping the packaged product from overseas was expensive.<sup>9</sup> Nutriset converged on a strategy Adeline called “close to a franchise.” They wanted to maintain the quality of their product while, as Nutriset sales manager Isabelle Sauget noted, fostering the establishment of sustainable production systems in developing countries in need.<sup>10</sup>

The franchise model was soon called the PlumpyField® network. Nutriset had very recently issued a press release that included this description of the approach:

Offering the company's patents as a tool to promote technology transfer of innovative technologies among private companies and NGOs in developing countries, Nutriset supplies members -- which operate as franchisees -- with production equipment and some raw materials (vitamins and minerals), develops quality control systems, conducts training programs for local managers and provides introductions to major global buyers. Nutriset also developed several funding mechanisms to help partners gain access to financing when needed and does not ask for any direct royalties except to be the exclusive supplier of minerals, vitamins and additives.<sup>11</sup>

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<sup>4</sup> Kraemer, T., 2010. Patenting Ready-to-use therapeutic food: the plumpy'nut controversy. Student Prize Papers. Paper 76. Available at: [http://digitalcommons.law.yale.edu/ylspps\\_papers/76/](http://digitalcommons.law.yale.edu/ylspps_papers/76/) [Accessed 20 February 2013].

<sup>5</sup> United States Patent: 6346284. 2013. Available at: <http://patft.uspto.gov/netacgi/nph-Parser?Sect1=PTO2&Sect2=HITOFF&p=1&u=%2Fnetacgi/html%2FPTO%2Fsearch-bool.html&r=2&f=G&l=50&co1=AND&d=PTXT&s1=nutriset&OS=nutriset&RS=nutriset>. [Accessed 20 February 2013].

<sup>6</sup> Komrska, J. 2012. Increasing access to ready-to-use therapeutic foods (RUTF). *Field Exchange*, [online] Available at: <http://fex.enonline.net/42/access> [Accessed 26 February 2013].

<sup>7</sup> Niger famine crisis 'at 11th hour' | World news | guardian.co.uk . 2013. Niger famine crisis 'at 11th hour' | World news | guardian.co.uk. Available at: <http://www.guardian.co.uk/society/2005/jul/20/internationalaidanddevelopment.famine>. [Accessed 21 February 2013].

<sup>8</sup> Nutriset. 2013. Nutriset. Available at: <http://www.nutriset.fr/fr/espacepresse/nutriset-reseau-plumpyfield/united-nations-standing-committee-on-nutrition-new-yorknutrition-and-business-how-to-engage.html>. [Accessed 20 February 2013].

<sup>9</sup> Should Fighting Hunger Be a Franchise Business? | Poverty on GOOD. 2013. Should Fighting Hunger Be a Franchise Business? | Poverty on GOOD. Available at: <http://www.good.is/posts/should-fighting-hunger-be-a-franchise-business/>. [Accessed 20 February 2013].

<sup>10</sup> A Pocket-Size Famine Fighter - Businessweek. 2013. A Pocket-Size Famine Fighter - Businessweek. Available at: <http://www.businessweek.com/stories/2005-09-13/a-pocket-size-famine-fighter>. [Accessed 20 February 2013].

<sup>11</sup> Nutriset. “Makers of Plumpy'nut(R) to Invest \$5.8 Million in African Companies to Fight Severe Acute Malnutrition Through Local Suppliers.” PR Newswire, 17 October 2012.

The establishment of the franchise network freed Nutriset of its former capacity constraints. In 2008, Nutriset had an annual RUTF capacity of 16,600 MT, compared to a total RUTF demand of 13,560 MT.<sup>12</sup> In 2012, as membership in the network rose, total production capacity estimates were 93,400 MT/ year.<sup>13</sup> This diversification of suppliers not only allowed for greater production capacity, but also supported a supply chain with more options to manage volatility in demand.<sup>14</sup> With greater production capacity and diversification of suppliers, Nutriset and members of PlumpyField were more capable of meeting demand and were better prepared for potential demand spikes in the future.

## LOCAL PRODUCTION

In addition to greater capacity with the same quality control, as described above, the franchise network enabled local production, which put supply in closer proximity to needs and cultivated the local economy.

Locally produced RUTF did not require shipment via long and complex supply chains. RUTF sachets produced in Malaunay, or another offshore location, must be shipped via a network of ports and transportation modes. Without interruptions, the usual sailing time from LeHavre, France, to Mombasa, Kenya, was 25 to 27 days.<sup>15</sup> But in reality, non-emergency orders sent by sea between 2005 and 2009 took an average of 34 days (with a range of 27 to 46 days). Delays in the transit had been traced to congestion and paperwork at the Mombasa port, violence in Kenya and port strikes in Le Havre. Air freight had occasionally been used to avoid such delays, but at much greater expense. In a 2008 comparison, the weighted average shipment cost for RUTF by sea was \$0.17 per kg, compared with \$2.40 per kg for air freight.<sup>16</sup> Thus, procurement from local producers were expected to reduce lead times and shipping costs. In addition, locally producing RUTF led to a lower transportation carbon footprint.

Local production also provided economic development opportunities. Peanut-based RUTF was fairly simple to manufacture, especially with effective technology transfer support, and could provide the basis for expanded local food processing capacity. Many of the key ingredients for RUTF – milk, sugar, vegetable oil, peanuts, the mineral and vitamin mix and a stabilizer<sup>17</sup> – had the potential to be acquired locally or regionally, which would bolster the quantity and quality of

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<sup>12</sup> Swaminathan, J.M., 2014. Case: UNICEF RUTF Supply Chain (A): Crisis in Horn of Africa, *University of North Carolina's Kenan-Flagler Business School*

<sup>13</sup> Komrska, J. 2012. Increasing access to ready-to-use therapeutic foods (RUTF). *Field Exchange*, [online] Available at: <<http://fex.ennonline.net/42/access>> [Accessed 26 February 2013].

<sup>14</sup> Komrska, J. 2012. Increasing access to ready-to-use therapeutic foods (RUTF). *Field Exchange*, [online] Available at: <<http://fex.ennonline.net/42/access>> [Accessed 26 February 2013].

<sup>15</sup> Swaminathan, J.M., 2014. Case: UNICEF RUTF Supply Chain (A): Crisis in Horn of Africa, *University of North Carolina's Kenan-Flagler Business School*

<sup>16</sup> Swaminathan J.M. et al. 2009. *Supplying ready-to-use therapeutic foods to the horn of Africa; the nutrition articulation project: a supply chain analysis*. [Powerpoint presentation].

<sup>17</sup> A stabilizer is an additive to food that helps to preserve its structure, such as preventing oil/water emulsions from separating in products. The stabilizer used in Plumpy'Nut® is proprietary and PlumpyField® members buy it, along with the mineral and vitamin mix, from Nutriset.

agricultural outputs.<sup>18</sup> In general, local production brought countries closer to nutritional autonomy.<sup>19</sup>

This was occurring in Haiti, through the work of Meds and Food for Kids (MFK), a PlumpyField® member. When Dr. Patricia Wolff founded MFK, it was her intention to contribute to development in the country in economic, social, health and agricultural sectors.<sup>20</sup> For this reason, MFK employed Haitians and worked directly with Haitian peanut farmers to encourage greater production. MFK also ran programs to educate farmers on aflatoxins that threatened peanut crop quality, which had been an obstacle for local sourcing of peanuts in the past.<sup>21</sup>

Local production also meant that the local community and government had a greater familiarity with the product. When local governments were readily exposed to RUTF, it fostered incorporation of these products into their national nutritional strategies.<sup>22</sup> The physical presence of local production granted greater attention to malnutrition within the country. Local language on product packaging also enhanced product recognition.<sup>23</sup>

## COST CHALLENGES

Hilina Enriched Foods PLC, located in Addis Ababa, Ethiopia, became a member of the PlumpyField® network in 2006. Eight years earlier, the company was founded with the mission to manufacture enriched food products to help fight against malnutrition and micronutrient deficiencies.<sup>24</sup> Initial products included Vitamin A enriched sugar and iodized salt. Hilina then became the first company to produce RUTF in Ethiopia. Amy Robinson, a US private donor and businesswoman, provided funds in order to begin production with proper equipment.<sup>25</sup> She had previously donated packages of RUTF to Ethiopia, but then decided that enabling local production – to avoid the high cost of importing the goods and expand global capacity – was the best way to contribute to the system.

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<sup>18</sup> Manary, M.J., 2005. Local production and provision of ready-to-use therapeutic food for the treatment of severe childhood malnutrition. In: Washington University School of Medicine, *Informal Consultation on community-based management of severe malnutrition*. Geneva: 21-23 November 2005. Geneva: World Health Organization.

<sup>19</sup> Troubé, C., 2012. Nutriset, a company at the heart of the nutritional revolution. *Field Actions Science Reports* [Online], Special Issue 5 | 2012, Online since 17 April 2012, Available at: <http://factsreports.revues.org/1408> [Accessed: 20 February 2013]

<sup>20</sup> Meds & Food For Kids :: The Solution. 2013. *Meds & Food For Kids :: The Solution*. [online] Available at: [http://mfkhaiti.org/index.php/the\\_solution1/](http://mfkhaiti.org/index.php/the_solution1/) [Accessed 01 March 2013]

<sup>21</sup> Harmon, D. T., 2011. *Call Between GiveWell and MANA* Interviewed by... Alexander Berger [online] 9 August 2011.

<sup>22</sup> PlumpyField, 2012. *PlumpyField's Mission and Vision*. [online] Available at: <http://www.plumpyfield.com/about/mission-vision> [Accessed 26 February 2013]

<sup>23</sup> Swaminathan J.M. et. al., 2009. The Nutrition Articulation Project: A supply chain analysis of Ready-to-Use Therapeutic Foods to the Horn of Africa, UNICEF Technical Report.

<sup>24</sup> PlumpyField, 2012. *HILINA Enriched Foods P.L.C.* [pdf] Available at: <http://plumpyfield.com/images/FichesPlumpyField/HilinaEngFinal.pdf> [Accessed 19 February 2013].

<sup>25</sup> UNICEF - Ethiopia - UNICEF Executive Director inaugurates Ethiopia's first Plumpy'nut factory. 2013. UNICEF - Ethiopia - UNICEF Executive Director inaugurates Ethiopia's first Plumpy'nut factory. Available at: [http://www.unicef.org/media/ethiopia\\_38423.html](http://www.unicef.org/media/ethiopia_38423.html). [Accessed 19 February 2013].

Hilina gradually scaled up production, but had trouble keeping costs competitive. In 2011, Hilina produced 12,000 MT<sup>26</sup> of RUTF and RUSF (ready to use supplemental food), a product used to treat moderate acute malnutrition (MAM).<sup>27</sup> Due to an adequate supply base in Ethiopia of peanuts, soya oil and cane sugar, the company only needed to purchase the powdered milk, mix of vitamins and minerals, and the stabilizer from Nutriset.<sup>28</sup>

However, imported milk powder was subject to import duties and added tax. In Ethiopia, import duties for member states of East African Community and Common Market for Eastern and Southern Africa (COMESA) ranged from 0-10%.<sup>29</sup> Trade outside of these organizations ranged from 0% (for Mauritius) to 60% (for Kenya). In addition to import duties, a 10-30% duty rate, 15% value added tax (VAT), 3% withholding tax and 10% surtax were also applied to imports of milk products from a countries within and outside of COMESA. These percentages varied depending on the country of origin and milk product. Combining local and imported material costs with production costs, Hilina's cost for RUTF was \$3.46/kg.<sup>30</sup> (see Exhibit 1)

Import duties were not the only challenge. Surprisingly, some local agricultural inputs could be more expensive than imports. In Haiti, for example, locally grown peanuts were more expensive than importing peanuts from the USA.<sup>31</sup> Farmers relying on manual labor – planting, weeding and harvesting – to produce the peanuts could not compete with industrial-sized farms overseas that use machinery on a large scale. Further, with low RUTF production volumes, companies lacked the economies of scale to overcome the fixed costs of establishing the plant and equipment. It was challenging for local producers to be competitive with larger producers, like Nutriset.

UNICEF had committed to buy locally, even if the local product costs were up to 20% higher than their foreign counterparts.<sup>32</sup> As a result, 23% of the RUTF purchased by UNICEF in 2010 came from local sources.<sup>33</sup>

## GENERIC RUTF

As Nutriset was building its franchise network, generic manufacturers emerged and challenged the patent. They argued that patents artificially limited production of a life-saving and very

<sup>26</sup> PlumpyField – HILINA – Ethiopia. 2013. *www.PlumpyField.com – HILINA – Ethiopia*. [Online] Available at: <<http://plumpyfield.com/members/hilina-ethiopia>> [Accessed 26 February 2013]

<sup>27</sup> Nutriset. 2013. *Nutriset*. [Online] Available at: <<http://www.nutriset.fr/en/product-range/produit-par-produit/plumpy-sup.html>> [Accessed 26 February 2013].

<sup>28</sup> UAM-Accenture Working papers, 2010. *Innovation to Fight Hunger: The Case of Plumpy'nut* [pdf] Available at: <[http://www.uam.es/docencia/degin/catedra/documentos/1\\_guimon\\_guimon.pdf](http://www.uam.es/docencia/degin/catedra/documentos/1_guimon_guimon.pdf)> [Accessed 19 February 2013].

<sup>29</sup> "Dairy Investment Opportunities in Ethiopia," SNV Netherlands Development Organisation Study, July 2008.

<sup>30</sup> Yuki Isogai, World Bank, Field Exchange Issue 40, February 2011

<sup>31</sup> National Public Radio, 2012. *The cost of saving lives with local peanuts in Haiti*, Food aid in Haiti. [podcast] 4 October 2012. Available at: <<http://www.npr.org/templates/transcript/transcript.php?storyId=161875989>> [Accessed 26 February 2013].

<sup>32</sup> National Public Radio, 2012. *The cost of saving lives with local peanuts in Haiti*, Food aid in Haiti. [podcast] 4 October 2012. Available at: <<http://www.npr.org/templates/transcript/transcript.php?storyId=161875989>> [Accessed 26 February 2013].

<sup>33</sup> Komrska, J. 2012. Increasing access to ready-to-use therapeutic foods (RUTF). *Field Exchange*, [online] Available at: <<http://fex.enonline.net/42/access>> [Accessed 26 February 2013].

simple product: fortified peanut butter. Nutriset countered by arguing that patents protected local manufacturers from high volumes of inexpensive imports and encouraged “nutritional autonomy” in countries with local production.<sup>34</sup> Nutriset’s intent on patent enforcement was not clear, having occasionally issued cease-and-desist letters and occasionally relaxed its patent restriction in an emergency. Buyers also seemed to also have a "release valve" in the Agreement on Trade-Related Aspects of Intellectual Property, which allowed governments to grant licenses or to import generics without the patent owner's consent in emergency situations.<sup>35</sup>

There was little guidance for buyers regarding the global patent situation, which made it complex to procure for programs in numerous countries. The only official document UNICEF received from Nutriset was a map that indicated where the patent was in force (see Exhibit 5). A blue dot marked the countries where generic RUTF could not be manufactured and used. Countries colored red and orange had very high burden of malnutrition and were high priority for UNICEF.

UNICEF concluded they would allow use of generic RUTF in countries where the patent was not in place (e.g. manufacturing generic RUTF in South Africa or India and importing it to Ethiopia, Eritrea, Nigeria, Liberia, Angola, Rwanda, Burundi, Yemen, Afghanistan, Pakistan, etc.). UNICEF also avoided taking part in any disputes among suppliers. The bid required suppliers to declare that their product, to the best of their knowledge, did not breach patent. Further, suppliers had to declare that they would reimburse the full amount of any product in UNICEF’s possession that was confiscated due to breaching of patent. In return, UNICEF agreed to avoid putting suppliers in unnecessary risk by importing their product to the countries with a blue dot.

## **UNICEF PROCUREMENT**

UNICEF is a custodian of the funds entrusted by various donors for projects linked to saving lives of children, such as those suffering from malnutrition. Therefore, clear Financial Rules and Regulations were drafted to guide procurement processes for the organization. Examples of the basic principles of the procurement followed by UNICEF included:

1. All purchases are carried out by means of competitive tenders.
2. The award of a contract shall be made, within the period specified for the validity of bids, to the bidder whose responsive bid has been determined to be the lowest evaluated bid. When the interest of UNICEF require, any or all bids may be rejected and the reasons for rejection shall be recorded.
3. All supply contracts of value above 100,000 USD, prior to communication with the suppliers, must be reviewed by the Contract Review Committee to determine the interests of UNICEF are protected and that purchases are carried out in conformity with

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<sup>34</sup> Hugh Schofield. “Going nuts: legal row erupts over French wonder-food used to nourish children.” Sunday Herald, Glasgow, Scotland, 11 April 2010.

<sup>35</sup> Ariel Zirulnick. “Somalia famine revives debate: is it acceptable to patent aid?” The Christian Science Monitor, 3 October 2011.

regulations, rules, instructions and directives and are in accordance with the best business practice.<sup>36</sup>

In anticipation of multiple offers to be received by the companies, Jan drafted a procurement strategy and presented it to the Contract Review Committee prior to the Pre-bid Conference. This strategy identified following objectives for the bidding exercise:

- A diverse supplier base with capacity to respond to demand, including emergency response;
- A competition on the market in order to obtain best value for money;
- Selection of products with characteristics that best match product specifications;
- Assurance of quality in line with set international standards;
- Supporting countries where local production is available in establishing contractual agreements for affordable products of assured quality that meet program needs.<sup>37</sup>

## CONTRACTING DECISIONS

Six weeks after the RUTF Pre-bid Conference, the tender closed and UNICEF had received bids from a number of companies. Manufacturers proposals outlined details such as their compliance with UNICEF requirements and terms, the price of their product, their offered production capacity and their experience in RUTF supply. UNICEF wanted to establish contract options for capacity in excess of the forecasted 2013 need of 32,000 MT to enable flexibility.<sup>38</sup> The supply target they set for this round of contracting was 40,000 MT.

Preliminary evaluation by the UNICEF procurement team based on several criteria had reduced the list of companies to nine (see Exhibit 4). Jan dedicated a full day at his office in Copenhagen to evaluate these nine options and make a recommendation to the team. He wanted to buy from a variety of sources, to continue diversification in the supply chain and to support countries where local production was available. But he also wanted competition within the market to offer UNICEF the best value for money while maintaining the RUTF quality.

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<sup>36</sup> UNICEF Financial Rules and Regulations, 24 June 2011. Available at: [http://www.unicef.org/about/execboard/files/2011-ABL8\\_Regulations\\_and\\_Rules-ODS-English.pdf](http://www.unicef.org/about/execboard/files/2011-ABL8_Regulations_and_Rules-ODS-English.pdf) [Accessed 28 March 2013]

<sup>37</sup> Blanco, F., 2012. RUTF Tender Overview. In: UNICEF, *Consultation with RUTF Suppliers*. Copenhagen, Denmark 15 August 2012.

<sup>38</sup> Blanco, F., 2012. RUTF Tender Overview. In: UNICEF, *Consultation with RUTF Suppliers*. Copenhagen, Denmark 15 August 2012.

## APPENDIX

### Exhibit 1 - Manufacturing costs for Hilina (2009)

| Ingredients   | Cost/ kg      | Material % | Overall %  |
|---|---------------|------------|------------|
| Milk powder (full fat)                                      | \$0.85        | 41%        | 25%        |
| Sugar   | \$0.28        | 13%        | 8%         |
| Vegetable oil   | \$0.38        | 18%        | 11%        |
| Peanut butter   | \$0.19        | 9%         | 5%         |
| Mineral & Vitamin mix                                       | \$0.38        | 18%        | 11%        |
| <b>Total materials cost:</b>                                | <b>\$2.08</b> |            | <b>60%</b> |
| Other (labor, quality control, packaging, energy, overhead) | \$1.38        |            | 40%        |
| <b>Total cost:</b>  | <b>\$3.46</b> |            |            |

### Exhibit 2 - Currency conversion history

| Year | ETB (Ethiopian Birr) per USD |
|------|------------------------------|
| 2012 | 17.788                       |
| 2011 | 16.936                       |
| 2010 | 14.381                       |
| 2009 | 10.810                       |
| 2008 | 9.021                        |
| 2007 | 8.897                        |
| 2006 | 8.634                        |
| 2005 | 8.693                        |
| 2004 | 8.605                        |



### Exhibit 3 - Historical and Forecasted RUTF demand

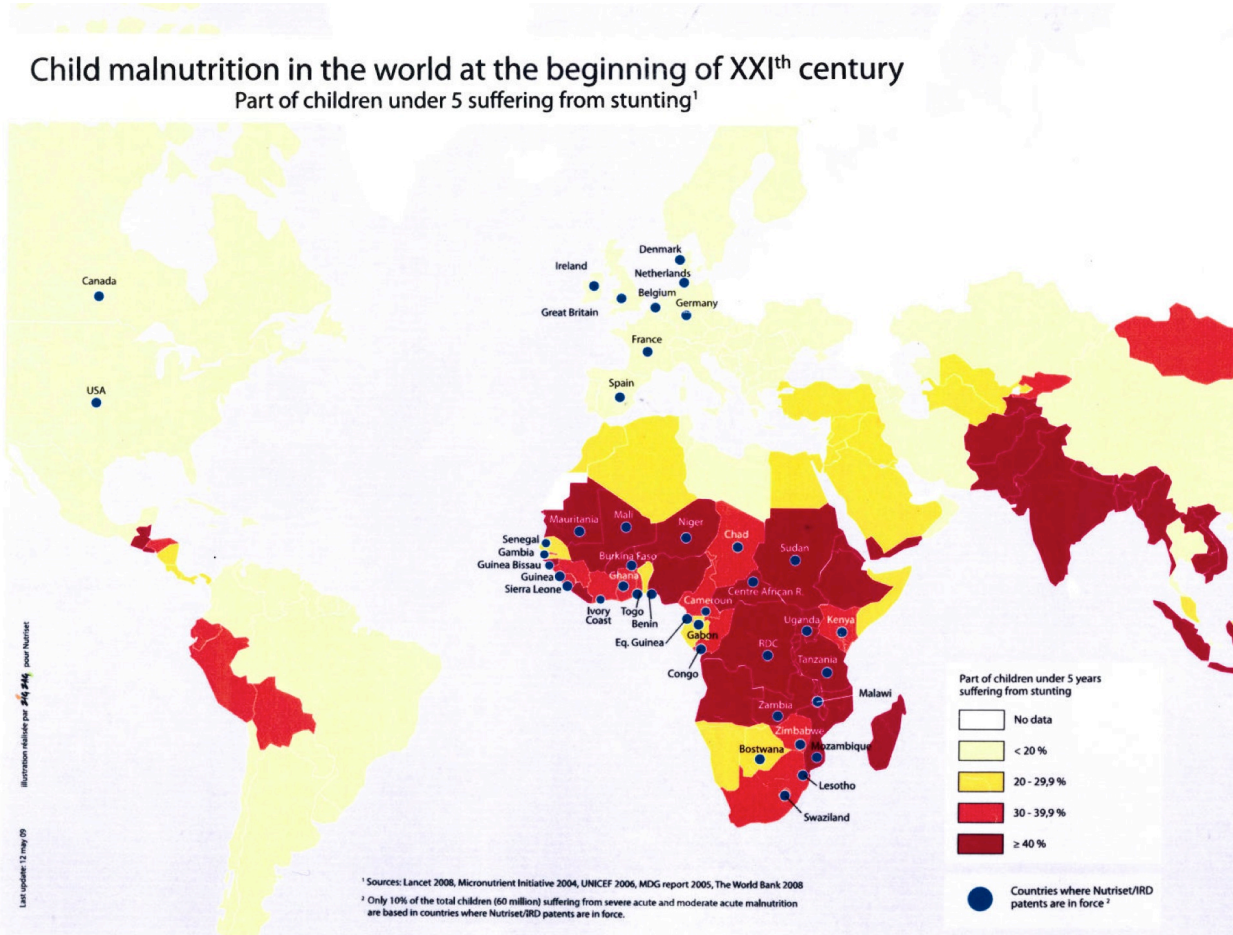
| Region        | 2009         |             | 2010          |             | 2011          |             | 2012          |             | 2013          |             |
|---------------|--------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|
|               | MT           | %           | MT            | %           | MT            | %           | MT            | %           | MT            | %           |
| East Africa   | 2,168        | 35%         | 7,188         | 35%         | 13,562        | 50%         | 9,900         | 33%         | 13,760        | 43%         |
| West Africa   | 2,806        | 45%         | 8,883         | 43%         | 8,507         | 31%         | 14,400        | 48%         | 12,160        | 38%         |
| Asia          | 541          | 9%          | 1,674         | 8%          | 2,442         | 9%          | 2,400         | 8%          | 2,560         | 8%          |
| Middle East   | 619          | 10%         | 2,946         | 14%         | 2,633         | 10%         | 3,000         | 10%         | 3,200         | 10%         |
| Latin America | 95           | 2%          | 136           | 1%          | 51            | 0.19%       | 300           | 1%          | 320           | 1%          |
| <b>TOTAL</b>  | <b>6,231</b> | <b>100%</b> | <b>20,828</b> | <b>100%</b> | <b>27,195</b> | <b>100%</b> | <b>30,000</b> | <b>100%</b> | <b>32,000</b> | <b>100%</b> |

### Exhibit 4 - Bids for 2013 supply

| Company and Shipping                                     | PlumpyField® member | Capacity (MT/year) | Price per carton |
|--|---------------------|--------------------|------------------|
| Nutriset, Le Havre Port, France                          | Yes                 | 56,000             | €35.82           |
| Hilina Enriched Foods PLC, Addis Ababa Factory, Ethiopia | Yes                 | 12,000             | \$55.20          |
| Edesia, New York Port, USA                               | Yes                 | 6,000              | \$49.82          |
| Compact India Private Ltd, Gurgaon Factory, India        | No                  | 5,000              | €36.63           |
| Tabatchnick Fine Foods Inc, New York Port, USA           | No                  | 4,000              | \$53.13          |
| Nutrivita Foods, Mumbai Port, India                      | Yes                 | 2,400              | \$46.92          |
| Vitaset, S.A., Santo Domingo Port, Dominican Republic    | No                  | 1,000              | \$47.61          |
| Meds and Food for Kids, Cap Haitien Factory, Haiti       | Yes                 | 800                | \$62.00          |
| Inno Faso, Ouagadougou Factory, Burkina Faso             | Yes                 | 600                | \$42.00          |

Data show prices for 1 carton of RUTF containing 150 sachets of 92g each. Incoterms are FCA at the named port/airport or Ex Works at the factory. \$=US dollars. The exchange rate during Fall 2012 ranged from €0.75-0.85 per US dollar.

Exhibit 5 - Nutriset patent coverage



## Exhibit 6 - PlumpyField profiles from 2012

**Meds and Food for Kids (MFK)** was established in 2003 in Cape Haitian, Haiti by Dr. Patricia Wolff.<sup>39</sup> After volunteering in Haiti for 15 years, Dr. Wolff was frustrated with the serious malnutrition crisis in Haiti and wanted to do something about it. She visited Dr. Mark Manary, the founder of RUTF production in Malawi, and brought his ideas back with her to Haiti. Through his influence Dr. Wolff directed the production of Medika Mamba (Creole for “peanut butter medicine”).<sup>40</sup> However, manufacturing good quality RUTF in Haiti remained a challenge and MFK has not succeeded to qualify their product with UNICEF. This led them to seek membership in the Plumpy’Field® network. Through this membership MFK hoped to gain access to Plumpy’Nut® recipe, increase their production capability, obtain UNICEF approval of the manufacturing facility, further drive economic development in Haiti and broaden their production beyond RUTF to supplementary products that prevent child malnutrition as well as treat it.<sup>41</sup> The goal of greater production capability has been realized through the construction of a new, more efficient factory, which was opened in November of 2012 and approved by UNICEF in December 2012.<sup>42</sup> With the new factory it was projected that production capacity would change from the current 80 MT/year to 800 MT/year.<sup>43</sup> Unfortunately, due to poor quality of local raw materials and high import duties, the price of locally manufactured Plumpy’Nut® remained very high.

**Nutrivita Foods** was founded in 2010 in Pune, India.<sup>44</sup> This location is about 160 km north of Mumbai, which is ideal for access to the Mumbai port for the export of products. Using this fact, Nutrivita was able to respond to the Famine Disaster in the Horn of Africa in 2010 with RUTF products.<sup>45</sup> With the modern machinery used at Nutrivita, they produce a variety of PlumpyField products, including Plumpy’Nut®, Plumpy’Sup® and Plumpy’Doz®. The majority of the raw products used for their production are sourced locally. The estimated production capacity for Nutrivita is 2,400 MT/year.<sup>46</sup> India has become well known for its rampant levels of malnutrition recently. UNICEF estimates that 1 in 3 of the world’s malnourished children live in India.<sup>47</sup> Thus, it is estimated that 60 million children are underweight in India.<sup>48</sup>

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<sup>39</sup> Meds & Food For Kids :: About MFK. 2013. Meds & Food For Kids :: About MFK. Available from: [http://mfkhaiti.org/index.php/about\\_mfk/](http://mfkhaiti.org/index.php/about_mfk/). [Accessed 19 February 2013].

<sup>40</sup> Meds & Food for Kids - St. Louis Business Journal. 2013. Meds & Food for Kids - St. Louis Business Journal. Available at: [http://www.bizjournals.com/stlouis/feature/Giving\\_Guide\\_2012/2012/11/meds-food-for-kids.html?page=all](http://www.bizjournals.com/stlouis/feature/Giving_Guide_2012/2012/11/meds-food-for-kids.html?page=all). [Accessed 19 February 2013].

<sup>41</sup> Meds & Food for Kids joins PlumpyField Network to expand production of life-saving food supplements in Haiti | Reuters . 2013. Meds & Food for Kids joins PlumpyField Network to expand production of life-saving food supplements in Haiti | Reuters . Available at: <http://www.reuters.com/article/2010/12/16/idUS197627+16-Dec-2010+BW20101216>. [Accessed 19 February 2013].

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<sup>48</sup> World Bank, 2013. *Undernourished Executive Summary* [pdf] Available at: [http://siteresources.worldbank.org/SOUTHASIAEXT/Resources/223546-1147272668285/undernourished\\_executive\\_summary.pdf](http://siteresources.worldbank.org/SOUTHASIAEXT/Resources/223546-1147272668285/undernourished_executive_summary.pdf) [Accessed 19 February 2013]

**Inno Faso** began in July of 2011, and joined the PlumpyField network in October of that year.<sup>49</sup> The company is based in Ouagadougou, the capital city of Burkina Faso. In 2012, the first year of operation, Inno Faso produced 600 MT of RUTF.<sup>50</sup> The RUTF produced is used to treat the estimated 330,000 children under the age of 5 years in Burkina Faso who suffer from acute malnutrition.<sup>51</sup> The company is part of the “2iE” technology park. This park is an international engineer training organization that provides courses in water and sanitation, environment, energy, electricity, management sciences, civil engineering and mining industry.<sup>52</sup> In this role, Inno Faso engages in the mission to promote young engineers and develop innovation in the South.

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## POTENTIAL QUESTIONS

1. Given the bids in Exhibit 4, how much should Jan recommend contracting from each supplier to exactly meet the 40,000 MT target? Provide a justification for each supplier and quantity you suggest, including those that you do not select for contracting.
2. Do you agree with a 40,000 MT target given a forecast of 32,000 MT in 2013? What target supply and other contingency plans would you establish in case of a spike in demand exceeding the 32,000 MT forecast?
3. What should Hilina do to improve their price? to increase their capacity? Which externalities (e.g. local regulations, commodity prices, geopolitical stability) pose the most risk for your plan?
4. Consider the three companies profiled in Exhibit 6. Rank where you project they will be *in three years* in the following areas: (a) overall capacity for meeting global needs, (b) risk in providing that capacity, (c) lowest ex works price (i.e., price at their factory)? Provide a brief justification for each ranking. How might uncertainty in externalities (e.g. local regulations, commodity prices, geopolitical stability) affect your decision?
5. How does Jan cultivate an effective supply base going forward?

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