Multiple Micronutrient Powder Supply & Market Outlook

UNICEF Supply Division

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This note provides new information on multiple micronutrient powder (MNP) supply availability, 2014 tender results and product offtake through 1H 2016.

Summary

- MNP is an innovative product designed to improve the quality of young children’s diet. It is used for the home fortification of local complementary foods introduced after six months of age.
- MNP procurement through UNICEF in 2015 doubled compared to 2014, increasing from 11.5 million units to reach 24.2 million. UNICEF anticipates MNP demand to increase further to reach 27 million units in 2016, due to the consolidation of current programmes, as well as the scale up in countries with increasing support from donors and investments from governments in nutrition programmes. To date (September 2016) fifty countries report implementing MNP home fortification programmes.¹
- Despite the significant increase in demand, challenges with forecasting the specific timing of programme scale-up and new country introductions are constraining global MNP supply availability. MNP products are made-to-order (not to stock, due to a short shelf life of 24 months) and typically have an estimated 8-12 weeks lead-time for production, depending upon order-size.
- Since 2013, UNICEF approved one supplier’s product with an extended shelf life of 36 months. UNICEF pre-positions this manufacturer’s product for use in emergencies.
- UNICEF issued a tender end-1Q 2014 and evaluated products from 20 potential suppliers. The evaluation concluded with the issuance of three long-term arrangements (LTAs) for a two-year period (July 2014-July 2016) and the identification of additional new suppliers with the potential to meet UNICEF’s technical requirements for product and manufacturing site compliance. Two of these potential new suppliers subsequently met UNICEF technical requirements during 3Q 2014 and were awarded LTAs.
- During 2016, UNICEF extended the current LTA durations for the five-awarded suppliers by an additional year through to July 2017. UNICEF anticipates issuing a new MNP tender during the 1H 2017.

1. Background

Millions of children suffer from undernutrition, which jeopardizes their health, growth, development, and survival. An estimated 165 million children are stunted, while 190 million and 293 million suffer from Vitamin A deficiency and anaemia respectively. MNPs are an innovative product designed specifically to address anaemia by improving the nutrient density of a young child’s diet. MNPs have proven to be both efficient and effective, and studies have found that on average MNPs reduce anaemia in infants and young children from 6 to 23 months of age by 26% and iron deficiency by 52%.² MNPs also have limited programmatic challenges as programmes can easily integrate MNPs into existing local food practices.

2. MNP Product and Quality

The World Health Organization (WHO) recommends the use of MNPs containing iron, vitamin A, and zinc to reduce anaemia and improve iron status among infants and young children aged 6-23 months and children aged 2-12 years.² However, as other vitamins and minerals are often absent or lacking in foods typically consumed by young children, UNICEF promotes the use of a 15-component MNP. UNICEF procures MNP in sachets packed in a 30-unit box/pouch (Table 1).

Table 1 MNP Sachet Procured Through UNICEF

<table>
<thead>
<tr>
<th>Presentation</th>
<th>Composition of 1 sachet¹</th>
<th>Use Frequency</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 box or pouch = 30 x 1 gram sachets</td>
<td>15 vitamins and minerals (including iron, zinc and vitamin A)</td>
<td>1 sachet a day</td>
<td>Available with standard and customized layout</td>
</tr>
<tr>
<td>1 box = 30 x 1 gram sachets</td>
<td>5 vitamins and minerals (iron, zinc, vitamin A and C, and folic acid)</td>
<td>1 sachet a day</td>
<td>Only available as customized layout</td>
</tr>
</tbody>
</table>

Source: UNICEF Supply Division.

UNICEF and the World Food Programme (WFP) are procuring increased quantities of MNP as part of programmes that support child nutrition. In collaboration with WFP, UNICEF is working to harmonize and improve the quality testing methods and adherence to parameters in the specifications.

However, there is no official monograph for MNP. Monographs are official published standards that set the quality standards for active ingredients and product formulations. Manufacturers, regulatory authorities, as well as any agencies or organizations checking the quality of a product or its active ingredient reference monographs, and use them as an integral part of product authorization and release. UNICEF and the US Pharmacopeial Convention (USP) are collaborating to develop a monograph for MNP, which will set an international reference standard for the identity, strength, quality, and purity of MNP. In absence of a monograph for MNP, UNICEF MNP product specifications refer to the US Pharmacopeia for dietary supplements and the monograph for oil and water soluble vitamins with minerals tablets and Codex Alimentarius standards for the product base / excipients.

3. Demand and Forecast

MNP demand through UNICEF increased from approximately 900,000 units in 2007 to reach 11.5 million units (347 million sachets) in 2014 (Figure 1). Procurement volumes tend to experience year-to-year fluctuations as some key country programmes order MNP every second year. However, 2015 demand doubled compared to previous years to reach 24.2 million units. The consolidation of current programmes and the scale up from product introduction in new countries due to the support from donors and the investments from governments account for the increase. UNICEF anticipates demand to increase further in 2016 to reach 27 million units (810 million sachets) given indications from country demand forecasts.

Country demand forecasts are subject to inaccuracy and uncertainty particularly on the timing of scale-up and product introduction. These forecast limitations can lead to MNP supply constraints, as most

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manufacturers make MNPs to order. In 2013, UNICEF and partners established the Nutrition Dashboard (NutriDash) to help address these challenges. NutriDash is a web-based database used to collect and strengthen nutrition programme information. The dashboard information is used to support programme management, advocacy, and mobilize resources, as well as to improve country demand forecasting. It assists countries to project supply requirements and ensure timely delivery.

**Figure 1** UNICEF MNP Procurement and Forecast, 2007-2016

![Graph showing UNICEF MNP Procurement and Forecast, 2007-2016](source: UNICEF Supply Division)

**Figure 2** UNICEF MNP Deliveries by Region 2007-2015

![Graph showing UNICEF MNP Deliveries by Region, 2007-2015](source: UNICEF Supply Division)
MNP demand through UNICEF has steadily increased. Deliveries tripled from 2013 to 2015, from 7.8 million units to reach 24.6 million units to meet increasing demand. Since 2007, UNICEF has procured MNP on behalf of 79 countries, of which the majority are from Asia, CEE/CIS, and Latin America and the Caribbean (LAC), (Figure 3). However, demand in sub-Saharan Africa has also been increasing significantly since 2013.

Regional workshops on Home Fortification of Complementary Foods (HFCF) organised since 2009 by UNICEF in collaboration with partners, including the US Centers for Disease Control and Prevention (CDC), the Micronutrient Initiative (MI), the United Nations High Commissioner for Refugees (UNHCR), and WFP have supported regional and country awareness and product introduction. The World Bank (WB) is also supporting projects that have large food fortification components in DR Congo, Malawi, Mozambique, Pakistan, and Senegal. UNICEF provides details regarding drivers of demand and changes that have influenced procurement volumes over the past few years across each region (Table 2).

Table 2 Drivers of MNP Procurement through UNICEF by Region

<table>
<thead>
<tr>
<th>Region</th>
<th>Considerations</th>
</tr>
</thead>
</table>
| South, East Asia and the Pacific | • Asian countries have procured MNP since 2007 and have some of the most developed micronutrient home fortification programmes.  
• Afghanistan, Bangladesh, Myanmar, and Pakistan have the largest programmes. UNICEF anticipates their demand to increase as these programmes expand their coverage.  
• The emergency in Nepal recently increased demand. |
| Latin America and the Caribbean | • Latin American countries generally started procuring MNP in 2008. They have also developed programmes addressing micronutrient deficiency.  
• Historically Ecuador, Guatemala, and Haiti had the highest demand in the region. However, since 2013, Peru has embarked on a nation-wide programme to address childhood anaemia, ordering millions of packs of MNPs each year. In 2015, MNP procurement for Peru alone through UNICEF accounted for 35% of total volume UNICEF anticipates the demand to continue as Peru rolls out its MNP programmes to more country regions.  
• Other Latin American countries are also piloting MNP use. UNICEF expects them to develop national home fortification programmes, and generate new MNP procurement requests. |
| Sub-Saharan Africa            | • African countries started to procure MNP in 2011 and are in the process of initiating home fortification programmes and MNP introduction. Rwanda implements one of the largest MNP programmes in sub-Saharan Africa reaching approximately 300,000 children.  
• UNICEF expects the countries in the region will continue to introduce and scale up MNP in the near-to-mid-term following HFCF workshops held in 2011 and 2012.  
• The WB funds the procurement of MNPs for DR Congo, Mozambique, Malawi, and Senegal. |
| Middle East and North Africa  | • Demand from Middle Eastern countries began in 2012 and has been relatively modest, with the exception of Yemen. As children in the region suffer more from micronutrient deficiencies than acute malnutrition, UNICEF expects demand to increase in the near-to-mid-term.  
• UNICEF’s response to the emergencies in Iraq, Syria, and Yemen has also contributed to increased demand.  
• UNICEF and partners conducted a HFCF workshop for the region in 2013. |
| CEE and CIS                   | • UNICEF and partners conducted a HFCF workshop for the region in 2013, jointly with the Middle East and North Africa.  
• To date, the bulk of procurement has been for Kyrgyzstan and Tajikistan. |

Source: UNICEF Supply Division.
During 2013, UNICEF delivered 7.7 million units (232 million sachets). Spikes in demand resulted from emergency response programmes to the crisis in Syria and the floods in Philippines. UNICEF prioritized the delivery of orders for emergencies, which necessitated rescheduling some routine deliveries to other countries.

In 2014, twelve countries placed first-time orders for MNPs through UNICEF (Benin, Burkina Faso, Comoros, Dominican Republic, Iraq, Mozambique, Sao Tome and Principe, Senegal, Solomon Islands, Turkey, Vanuatu, and Zimbabwe) illustrating the scale up in new product introductions. The WB is supporting Mozambique with a multi-year project that involves the substantial supply of MNP targeting three provinces. Mozambique received the first deliveries in 2015, with additional deliveries anticipated in 2016. The WB also supported MNP pilot procurement in DR Congo and Senegal in 2013 and 2014 respectively. Deliveries to Pakistan started in early 2016 and Malawi anticipates deliveries to start later this year.

By 2Q of 2016, nine additional countries initiated the procurement of MNP for the first time (Cabo Verde, Ghana, Guinea, Kiribati, Jordan, Macedonia, Mauritania, Papua New Guinea, and Samoa). Peru is currently the country with the biggest MNP orders through UNICEF, totalling 8.5 million units in 2015 and 11 million units to date (July 2016). Nepal, Yemen, and Syria are receiving MNPs as part of emergency response programmes. Other countries receiving substantial quantities over the last year are Myanmar, Nigeria, and DPR Korea.

4. Middle-Income Countries

Figure 3 UNICEF Low- and Middle-Income Country MNP Procurement 2007-2015

From 2007 to 2016 (July), 45 % of total MNP procurement through UNICEF has been for 35 middle-income countries (MICs) (Figure 3). Market share of MNP procurement through UNICEF by MICs has been growing and accounted for 65 % and 80 % during 2015 and 2016 (through July) respectively. This is important since MICs tend to self-finance a larger proportion of the supply commodity needs than LICs.

Source. UNICEF Supply Division.

For example, Peru, which accounts for 60 % of total 2015-2016 MIC MNP procurement to date (19.5 million units), fully self-fines their MNP procurement through UNICEF. As more countries transition from LIC to MIC status, and more new countries start integrating MNP into their programmes, UNICEF anticipates more MNP supplies to be channelled to MICs.

5. Supply

UNICEF issued a tender in March 2014 to source MNP suppliers to cover anticipated demand for the July 2014-July 2016 supply period. UNICEF evaluated potential products from 20 suppliers and concluded the tender in 2Q 2014 issuing LTAs with three manufacturers. UNICEF subsequently issued an additional two LTAs to two manufacturers that met UNICEF technical requirements following the provision of additional data (Table 3). UNICEF extended current LTA durations by an additional year for five currently awarded suppliers, through to July 2017 and anticipates issuing a new tender in 1H 2017. UNICEF anticipates manufacturer supply capacity to increase as more suppliers complete the
stability data for the products they offer, and pass Good Manufacturing Practice (GMP) inspection, in preparation for a new tender UNICEF anticipates issuing during the 1H 2017.

Table 3 Current UNICEF MNP Supply Arrangements

<table>
<thead>
<tr>
<th>Supplier</th>
<th>Type of supply</th>
<th>Duration years</th>
<th>Start</th>
<th>End</th>
</tr>
</thead>
<tbody>
<tr>
<td>DSM Europe (Switzerland)</td>
<td>Global</td>
<td>2+1</td>
<td>21-July-14</td>
<td>20-July-17</td>
</tr>
<tr>
<td>DSM (Malaysia) / formerly Fortitech</td>
<td>Global</td>
<td>2+1</td>
<td>21-July-14</td>
<td>20-July-17</td>
</tr>
<tr>
<td>Renata (Bangladesh)</td>
<td>Global</td>
<td>2+1</td>
<td>21-July-14</td>
<td>20-July-17</td>
</tr>
<tr>
<td>Piramal (India)</td>
<td>Global</td>
<td>1.8+1</td>
<td>21-Sept-14</td>
<td>20-July-17</td>
</tr>
<tr>
<td>DSM (South Africa)</td>
<td>Global</td>
<td>1.7+1</td>
<td>09-Oct-14</td>
<td>20-July-17</td>
</tr>
</tbody>
</table>

Source: UNICEF Supply Division.

Previously, UNICEF had largely relied on two manufacturers, Piramal Enterprises (India) and DSM (Switzerland), to meet countries’ needs. These two suppliers accounted for 60% and 40% of UNICEF’s internationally procured MNP since 2010 respectively. In 2013, another manufacturer, Fortitech (Malaysia, now part of DSM), was qualified. To respond to increased demand, existing LTA holders have been expanding capacity, mainly by adding new filling and packing lines.

While aggregate capacity to meet demand was sufficient through the scale-up in 2011 and 2012, a large part of the capacity was lost in 2013 due to production and packaging quality problems identified with the facility of the largest supplier. This had a significant impact on global availability, and consequently, a negative impact on programmes. During 1Q and 2Q 2013, reports of damaged product in nine countries were received. The total quantity affected was 3.5 million units (100 million sachets). The investigation that followed identified a reduced stability of the product due to poor sealing of the sachet and a change in the formulation. As a result, the product changed colour when exposed to high temperature and humidity conditions experienced during transport and storage.4

While no risk to the consumer was identified as a result of product deterioration, the product was not suitable for use. Corrections to the formula and the manufacturing processes were made during 3Q 2013 and were validated, with production starting again in November 2013. By mid-2014, the supplier had successfully recalled and replaced the affected product.

6. Pricing

Figure 4 UNICEF MNP Unit Pack US$ Delivered at Place Price at UNICEF Copenhagen Warehouse

Despite substantially increased volumes, the standard MNP pack price for a carton of 30 x 1 gram sachets has remained stable. This in part may relate to the limited competition in the market. As UNICEF’s LTA unit price in Euro has not changed, the fluctuations and notable decrease in 2014-15 delivery price to UNICEF’s Copenhagen warehouse is attributed to exchange rate fluctuations between the US$ and the Euro (Figure 4).

Source: UNICEF Supply Division.

4 All manufacturers define MNP storage conditions as “below 25°C”. However, stability data indicates products can tolerate exposure to higher temperatures (<40°C), but not for the full shelf life of the product.
UNICEF FCA prices for standard and customized sachets are shown below (Figure 5 and Figure 6).

Figure 5 UNICEF MNP Standard Sachets Unit Pack FCA US$ Price

Figure 6 UNICEF MNP Customized Sachets Unit Pack FCA US$ Price

Source: UNICEF Supply Division.

7. Steps Forward

- UNICEF will continue to issue a yearly MNP forecast, and will continue to strengthen forecast accuracy as a result of NutriDash and other related efforts. UNICEF anticipates further improvements in forecast accuracy based on country feedback and collaboration, following repetitive forecasting exercises, as well as the encouragement of all procuring countries to participate.
- UNICEF will continue to work with potential suppliers to assist their technical and manufacturing site approval, in order to expand the supplier base.
- In collaboration with WFP, UNICEF will harmonize and improve the testing methods and adherence to parameters in the specifications.
- The US Pharmacopeia agreed to work with UNICEF to develop a monograph for MNP 15 component. This will provide internationally recognized standard specifications and better guidance to regulatory authorities in receiving countries for sampling and testing.
- UNICEF anticipates issuing a new tender during 1H 2017 to secure MNP supply for 2017 onwards.

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