Fighting Hunger Worldwide

Fill the Nutrient Gap Madagascar

Summary Report

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Summary Report

Fill the Nutrient Gap (FNG) is a situation analysis and decision-making tool developed by World Food Programme (WFP) with inputs from University of California, Davis; International Food Policy Research Institute (IFPRI); Epicentre; United Nations Children's Fund (UNICEF); Harvard University; and Mahidol University.

It identifies context-specific strategies for improving nutritional intake of vulnerable populations, especially during the first 1,000 days. FNG uses secondary data review and linear programming analysis to understand a country or region's nutrition situation, compare the potential impact of interventions, and identify programme and policy entry points to ensure consumption of an adequately nutritious diet.

In December 2015 the Madagascar Country Office of WFP presented the FNG framework and methodology to government partners including the National Nutrition Office (ONN) and the National Statistics Institute (INSTAT), and to UNICEF[1] (Fig.1). Secondary data was compiled and preliminary affordability analysis was undertaken using Cost of the Diet (CotD) software and primary data collected by WFP and INSTAT. Based on the initial findings, specific scenarios were proposed for modelling. Full results were shared and recommendations for the national nutrition policy that is being prepared were formulated in stakeholder meetings in October 2016 (Fig.2).

FNG Madagascar Team	WFP	Madagascar Country Office , HQ Nutrition, RB Johannesburg
	National Government	National Nutrition Office, National Statistics Institute
	UN Agencies	UNICEF, WHO, FAO, UNFPA
	Other Partners	PSI, World Bank< Institut Pasteur, GRET

Figure 1. Stakeholders involved in the FNG process

1) Define Focus

The target groups for analysis were identified in collaboration with stakeholders. They were based on consideration of current malnutrition characteristics across Madagascar.

CHILDREN UNDER 5:

⇒ Stunting affects 47 percent with high levels in urban and rural areas. There has been little reduction in the past twenty years (Fig. 3).

⇒ Wasting is at 8 percent, considered very high.

⇒ Anaemia is at 50 percent, considered severe (Fig. 5).

ADOLESCENT GIRLS (10-19 YEARS):

⇒ Among adolescents aged 15–19, 37 percent are pregnant or have a baby; this is higher in the 4 southern regions at 51 percent.

PREGNANT AND LACTATING WOMEN (PLW):

⇒ Underweight is at 24 percent, considered severe (Fig. 4).

⇒ Anaemia is at 35 percent, considered moderate, among Women of Reproductive Age (WRA; 15–49 years) (Fig. 5).

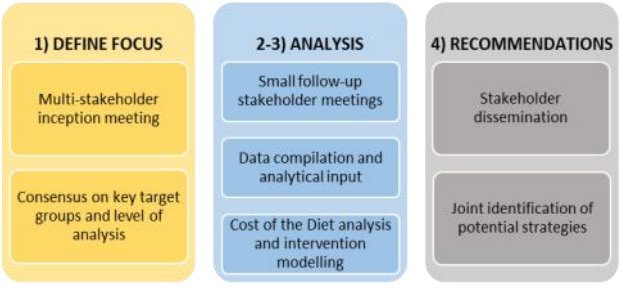

Figure 2. The FNG process

Fill the Nutrient Gap Key Steps

1) Define Focus: Identify target groups and geographical and/or seasonal elements from stakeholder consultation and national nutrition data.

2) Policy Analysis: Determine if there is an enabling environment for access to, and availability of, nutritious foods, and identify relevant entry points and platforms for increased availability and access to nutrients.

3) Analysis of Nutrient Availability and Access: Analyse factors such as local preferences and practices, and estimate nutrient gaps for key target groups and context-appropriate interventions to fill nutrient gaps.

4) Recommendations for Interventions: Identify roles for different sectors and stakeholders, and public platforms for policy and programmes.

1. Please see full report for a complete list of stakeholders from various sectors.

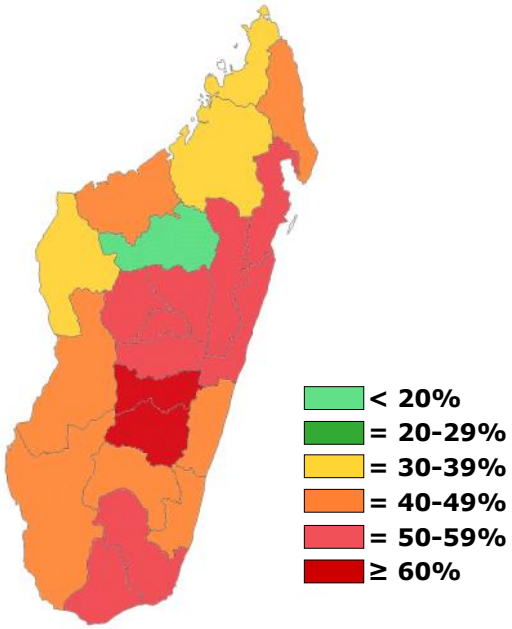

Figure 3: Stunting in children under 5 by region[2] (Source: DHS 2008)

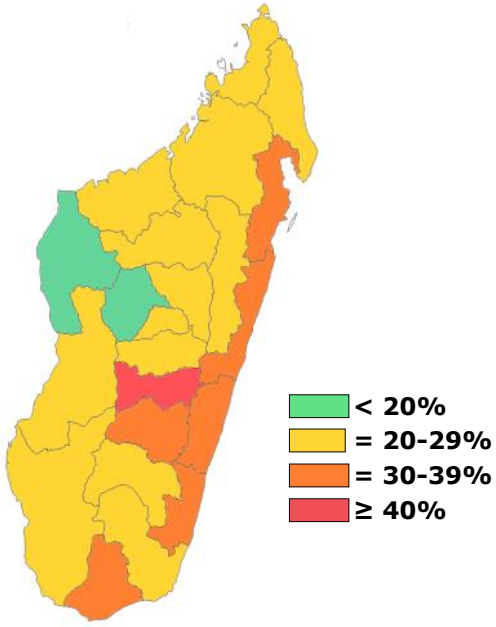

Figure 4: Underweight in WRA by region (Source: DHS 2008)

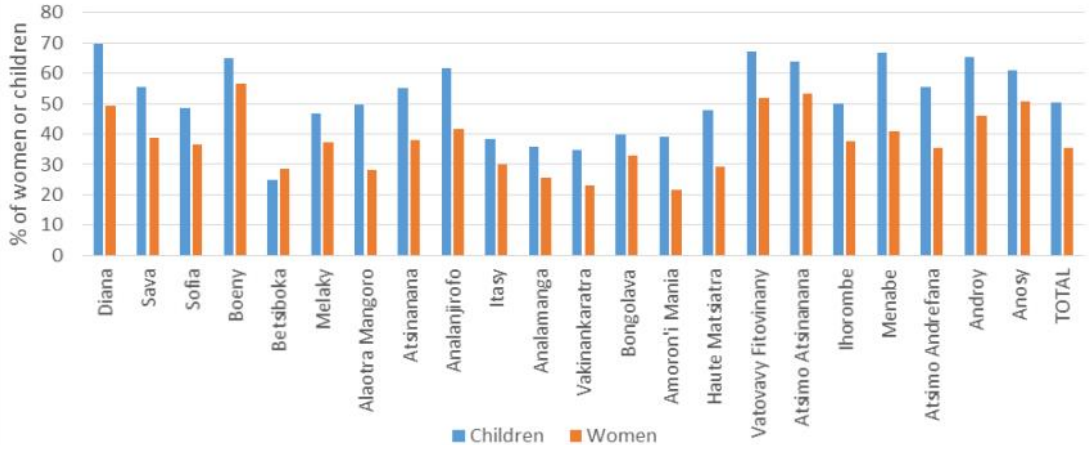

Figure 5: Anaemia in children under 5 and WRA by region (Source: DHS 2008)

2) Policy Analysis

An enabling policy environment provides entry points for nutrition interventions and promotes eventual implementation. In Madagascar the existing policies and programmes by entry point are:

NATIONAL POLICY AND LEGAL FRAMEWORK:

- The National Nutrition Policy (2005–2015) and the National Plan of Action for Nutrition (2005-2011 & 2012-2015) are under revision.
- Previous plans were based on international evidence (Lancet series, 2008) but did not prioritise context-specific needs.
- A National Decree to regulate the marketing of breastmilk substitutes was approved and adopted in 2011.
- The National Nutrition Council falls under the Office of the Prime Minister and oversees the National Nutrition Office (ONN) which is represented nationwide by Regional Nutrition Offices.
- Madagascar joined the Scaling Up Nutrition Movement (SUN) in 2012.
- The only mandatory fortification is for salt iodisation but compliance is variable.
- Madagascar scores low on the Global Food Security Index with insufficient regulation and monitoring of food quality and safety.

FORTIFIED COMPLEMENTARY FOODS AND SPECIALIZED NUTRITIOUS FOODS (SNF):

- Several public-private partnerships produce SNF for women and young children in select areas, aiming to scale up in the future:
  - Koba Aina FBF (GRET/Nutri'Zaza partnership);
  - Kalina Zaza and Kalina Reny Lipid-based Nutrient Supplements (LNS) (World Bank/ Programme National de la Nutrition Communautaire (PNNC) partnership); and
  - Zazatomady Micronutrient Powders (MNP) (ONN/Ministry of Health/ Population Services International [PSI] partnership).

SCHOOL MEALS:

- The Ministry of Education's Home-Grown School Feeding Programme, which has WFP support, reaches 300,000 children.
- MNPs are delivered through school feeding.

2. The WHO classifies stunting prevalence of ≥40% as very high. We have further disaggregated to illustrate the severity of the problem in Madagascar.

3) Analysis of Nutrient Availability and Access

A wide range of nutritious foods are available in Madagascar and production is diverse, but seasonality impacts the quantities produced. This results in seasonal food insecurity, exacerbated by climatic shocks, particularly in the south.

Economic and physical access are major constraints to a diet that meets nutrient needs: 92 percent of the population live on less than USD 2 per day and poor infrastructure reduces market access.

AVAILABILITY:

- Rice is the main staple.
- Agricultural production is mostly small scale and for subsistence only.
- Storage of crops for lean season is uncommon.
- Production is hampered by the use of inefficient or inadequate farming and post-harvest practices, and limited access to inputs, credit, technical services, markets, and market information.

ACCESS:

- Southern Madagascar particularly suffers from seasonal food insecurity, with up to 68 percent of households affected.
- Food insecurity was exacerbated in 2015-16 by El Niño.
- High levels of poverty combined with high food prices and inflation make nutritious diets inaccessible for many.
- Poor infrastructure limits market access, with some communities a 2 hour walk from the closest market; roads are sparse and often impassable, particularly during the rainy season.

NUTRIENT INTAKE:

- Almost all children are breastfed but early initiation after delivery is practiced by only two thirds of mothers.
- A minimum acceptable diet is met by only 2.7 percent of children aged 6–23 months, primarily reflecting that minimum meal frequency is met by only 3.9 percent (Fig.6) (Demographic and Health Surveys [DHS] 2008[3]).

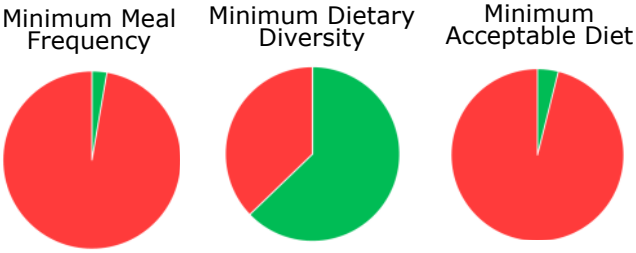

Figure 6. The percentage of children receiving a Minimum Acceptable diet in Madagascar (DHS, 2008)

- An analysis of determinants of stunting carried out by SUN found inadequate dietary intake and prenatal factors (low quantity and quality of food during pregnancy, low use of iron supplements, a large proportion of adolescent pregnancies) to be determinants of stunting.
- Currently vitamin A and iron supplementation coverage is limited (Table 1), but the government is exploring possibilities for expansion.

Supplementation	Children 6-59 months	PLW
Vitamin A	42.7%	
Iron		1-60 days: 42.4% >90 days: 7.1%

Table 1. Current Vitamin A and iron supplementation (DHS, 2008)

LOCAL PREFERENCES AND PRACTICES:

- Culture and local beliefs play a significant role in infant feeding practices and the perception of malnutrition.
- Grandmothers and traditional birth attendants are highly influential.
- Negative perceptions of colostrum and exclusive breastfeeding are common.
- Stunting is not well recognized as a form of malnutrition.
- Pregnant women often limit dietary intake in an attempt to limit the size of the baby at birth.

3. In the 2008 DHS, Minimum Dietary Diversity uses 3 food groups as the cut-off. In the 2012 ENSOMD, only 30.9% of children met Minimum Dietary Diversity as 4 food groups were used as the cut-off.

Modelling Dietary Improvement

Affordability modelling and intervention recommendations were informed by the secondary data on availability and access, actual nutrient intake, and influencing cultural factors. Results from linear programming analysis were used to examine whether optimised diets with locally available foods could meet nutrient needs for target groups.

A CotD market survey was conducted by WFP Madagascar, ONN and INSTAT in August 2015 in 14 livelihood zones; ten rural and 4 urban. Household composition for the livelihood zones and expenditure data were provided by INSTAT.

The CotD software calculates the lowest cost locally available diet that meets nutrient needs when adjusted to incorporate local staple food. This is known as the Staple Adjusted Nutritious Diet (SNUT).

For most livelihood zones the staple was rice; in the south (zone 10), staples were maize and cassava. It was possible to meet nutrient requirements using SNUT in all regions; however, in 7 of the regions, at least 84 percent of households could not afford it.

Limiting nutrients (difficult to meet for at least some household members using available foods) were calcium and iron, and zinc for children 6–23 months in most rural areas. Pantothenic Acid was a limiting nutrient for lactating women in most zones.

Eight types of potential interventions to improve affordability were modelled based on the secondary data analysis, current or planned national interventions, and stakeholder suggestions:

Interventions Modelled

- Multi-micronutrient tablets (MMT) (vouchers)
- Iron and folic acid supplements (in-kind)
- Specialized nutritious foods (SNF) (vouchers)
- Fortified staple foods (market)
- Orange-flesh sweet potato (in-kind)
- Locally available nutritious foods (vouchers)
- Home gardening with natural nutritious foods
- Cash transfers

Separate modelling was conducted for rural and urban zones in each region. The modelling examines cost to the household of meeting the nutrient needs of its members when they receive specific nutritious foods or income support for free. Here, it is assumed that the cost of specific food items and/or cash, and their provision, comes from the public sector. The modelling assesses what difference specific options could make in terms of accessing a nutritious diet, focusing on the household's needs and means.

The most effective interventions for each target group were:

- Children 6–23 months: of the 6 SNF modelled, three reduced the cost of the diet by around 69 percent: a voucher for a daily portion of Koba Aina (fortified blended food), Plumpy'Doz (medium quantity LNS) or Kalina (small quantity LNS) (Fig. 7).
- Adolescent girls: they were part of modelled households in rural but not urban areas based on average household demographic data. Their nutrient needs were the most expensive in all households because of their increased requirements for growth. The most effective intervention was daily provision of Multiple Micronutrient Tablets (MMT) which reduced the cost of SNUT by 8 percent (Fig. 8).
- PLW: the most effective intervention was a voucher for a daily portion of SuperCereal (SC) & fortified oil, which reduced the cost of SNUT by 43 percent in rural and urban zones. Kalina was also highly effective (Fig. 9).

These interventions were combined to form packages, as shown on page 8. The modelled diets are theoretical and would need to be accompanied by complementary behaviour change interventions. Costs have been modelled from a household perspective. A next step would be to estimate programming costs from the non-market based options.

4) Recommendations

Recommendations were formulated during stakeholder discussions and informed by the secondary data analysis and CotD modelling. They include programme and policy measures to address access, availability and demand for nutrients and nutritious foods.

Recommendations

- Develop targeted strategies to improve the nutrient intake of adolescent girls through schools and community platforms.
- Collaborate with the private sector on potential for staple food fortification.

The recommended actions have the potential to increase consumption of nutrient-dense foods, especially by vulnerable target groups. Recommended interventions are presented on pages 9-10.

Cost of the Diet Modelling

Average cost of the diet for target groups in rural and urban zones of Madagascar with different interventions (Figure 7: child 6–23 months; Figure 8: adolescent girls in rural zones only; Figure 9: PLW).

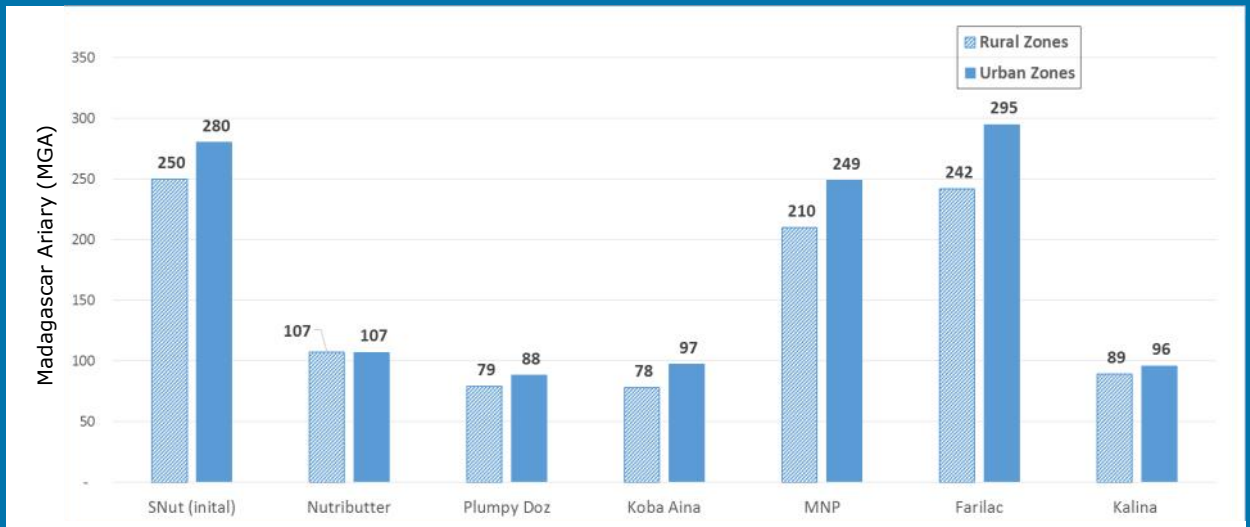

Figure 7: The daily cost of the SNUT diet for 6-23 month-old children with modelled interventions (1 portion per day of foods mentioned provided for free) in rural and urban zones of Madagascar

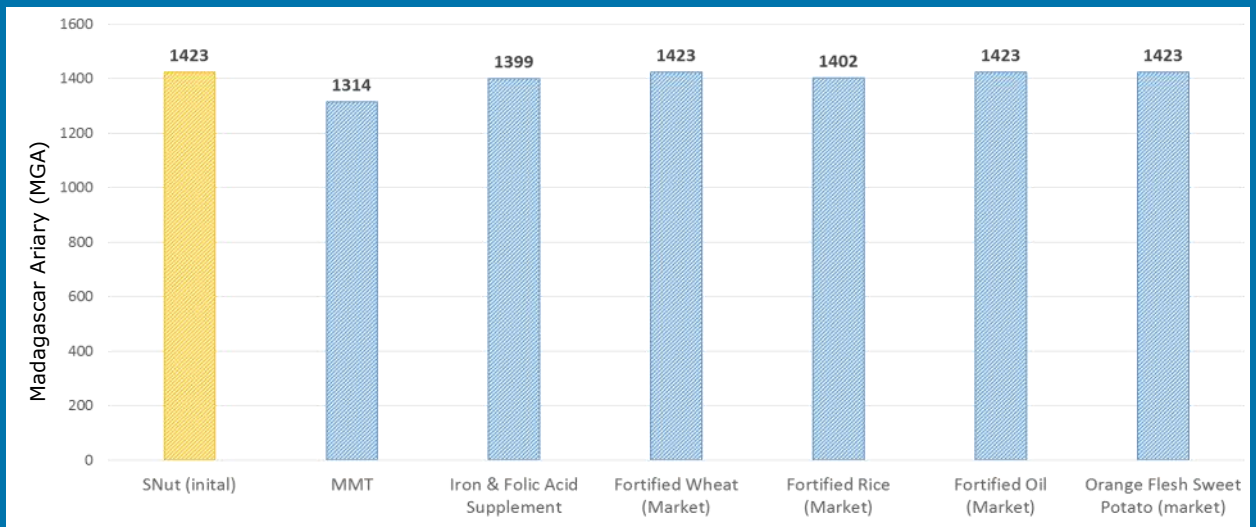

Figure 8: The daily cost of the SNUT diet for adolescent with modelled interventions (foods / supplements mentioned provided for free) in rural zones of Madagascar

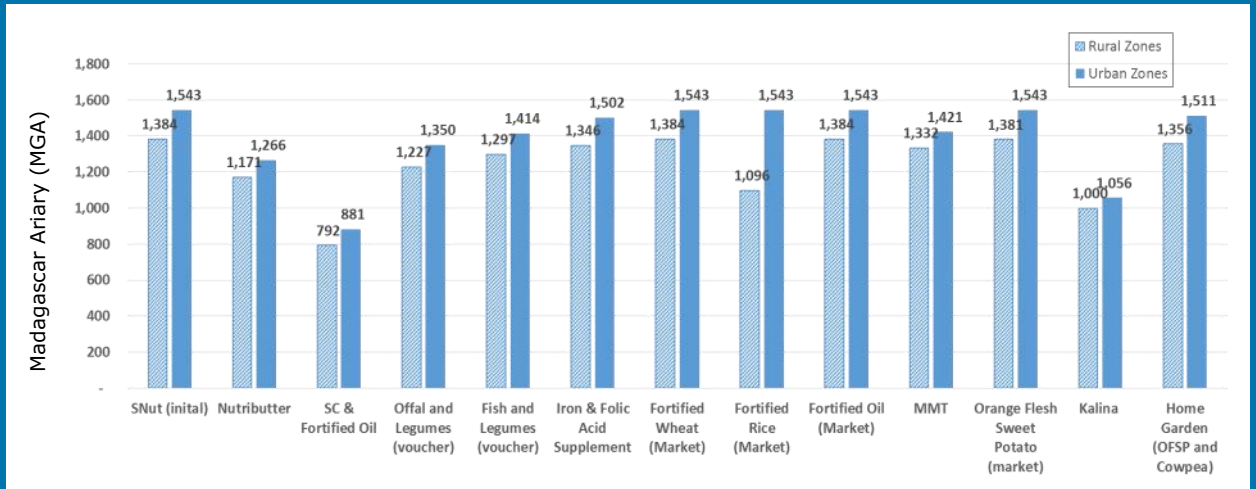

Figure 9: The daily cost of the SNUT diet for PLW with modelled interventions (foods mentioned provided for free) in rural and urban zones of Madagascar

Cost of the Diet Modelling

Optimal intervention packages and potential effect on economic access to nutrients for vulnerable groups.

Based on results at the individual level, the most effective package of interventions was identified as: a combination of Koba Aina for children 6–23 months; SC and fortified oil for PLW in rural and urban areas; and MMT for adolescent girls in rural areas. This package could reduce the percentage of households unable to afford SNUT by 20 percent in urban Antananarivo. In the five rural zones, the reduction could be an average of 9 percent. Adding a monthly cash transfer of MGA 60,000 (USD 19.70) and assuming it would be spent on food shared equitably within the household, would further reduce the percentage of households unable to afford nutritious diets by 12–46 percent (Fig.10).

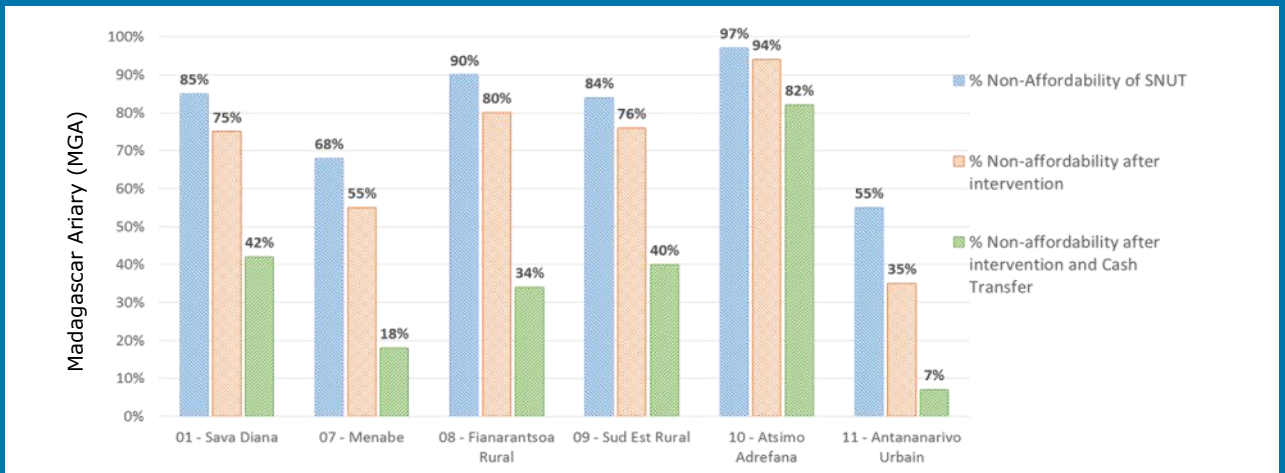

Figure 10: Change in the percentage of households that would not be able to afford the SNUT diet after the introduction of an optimal package of targeted interventions (Koba Aina, SC & fortified oil/MMT)

Kalina was highly effective for both PLW and children under 2; programmatically it may be easier to use the same food for the two groups. Given the high food insecurity in the south (represented by zone 10) and the likely large macronutrient gaps, and the effectiveness already seen in CotD modelling at the individual level, Plumpy'Doz for children under 2 and SC and fortified oil for PLW seem the most appropriate intervention.

The following package of interventions was modelled: MMT for adolescent girls (all zones); Kalina for PLW and under 2 (all zones except 10); SC & fortified oil for PLW and Plumpy'Doz for under 2 (zone 10) (Fig. 11). This intervention reduced non-affordability by 8 percent (Figure 8). This was coupled with a cash transfer of MGA 30,000 (USD 9.85), possibly more feasible for a larger group. This further reduced non-affordability 15 percent on average, assuming it would be spent on food shared equitably within the household.

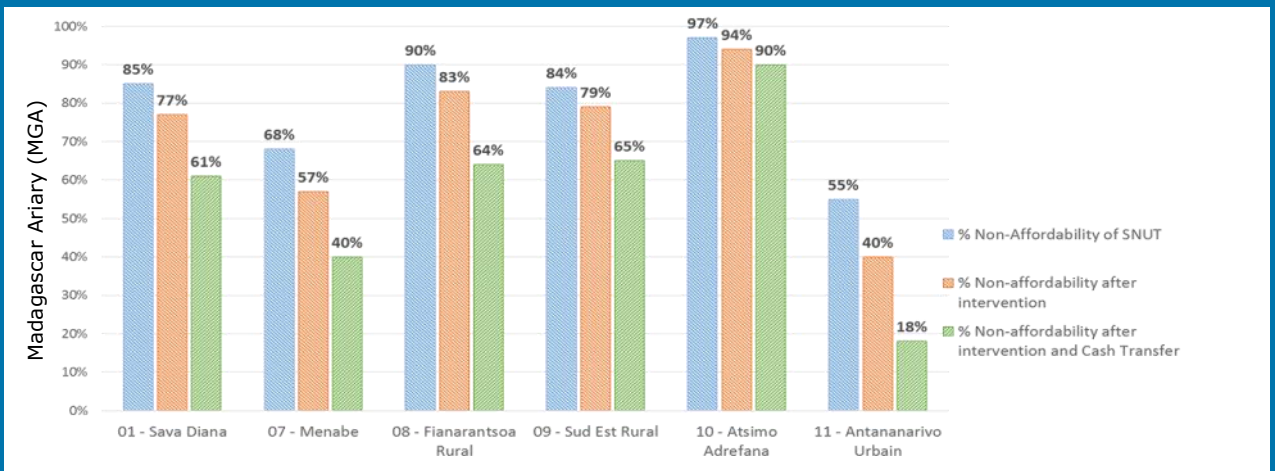

Figure 11: Change in the percentage of householdss unable to afford a nutritious diet after the introduction of an optimal package of interventions: MMT for adolescent girl (all zones); Kalina for PLW & U2 (all zones except 10); SC& Fortified Oil for PLW and Plumpy Doz for U2 (zone 10); with cash transfer 30,000 AR per month per household

Summary of Recommendations (Developed with Stakeholders)

1. *Targeted strategies to improve the nutrient intake of adolescent girls:*

- Provide nutrition-specific interventions such as MMT.
- Use school platforms to deliver fortified meals, promote dietary diversity, educate on (reproductive) health, and deliver MMT. School feeding is an incentive to keep adolescents in school.
- For those out-of-school: use peer/role model education and build on past experience from community nutrition sites and health facilities to deliver education on nutrition, reproductive health and IYCF, and delivery channels for MMT.
- Sensitise the general population to adolescent needs and issues.

2. *Targeted strategies to improve the nutrient intake of PLW:*

- Nutrition-specific interventions should deliver a combination of micronutrient supplements such as MMT or iron and/or folic acid, and balanced energy protein supplements (BEP, e.g. SuperCereal, Kalina) for women at risk of poor birthweight.
- Strengthen Antenatal Care (ANC) for MMT and link it conditionally with food supplementation (BEP) to support ANC early and throughout pregnancy.
- ANC should be sensitive to the needs of adolescent girls.
- Channels: health facilities, nutrition sites, trained traditional birth attendants, and food systems, including markets.

3. *Increase demand, availability and access to nutritious and safe foods for children 6-23 months old:*

- Expand and strengthen social and behaviour change communication (SBCC) on IYCF. Focus on breastfeeding, dietary diversity; benefits of fortified foods; high needs among PLW and young children; and the importance of food safety.
- Expand and strengthen existing initiatives to improve availability and affordability of fortified complementary foods in markets, fortified blended foods such as Koba Aina, small quantity LNS such as Kalina, and MNP such as Zaza Tomady.
- Channels: health facilities, nutrition community sites, food systems including markets, and link with social protection.
- Set pricing depending on context (either subsidised, market price or free).

4. *Improve awareness and behaviour to improve nutrient intake through a communication for behaviour change strategy*

- Target groups should include adolescents, PLW, other caretakers, men and other influencers in the community.
- To reach all, adapt channels according to context and target groups.
- Expand and strengthen existing SBCC programmes: increase the number of Community Nutrition Workers (CNW) and their coverage area; support growth monitoring as an entry point for CNW; mobilize CNW to train traditional birth attendants and community health workers.
- Move beyond traditional health platforms. For example, use points of sale of complementary foods.
- Explore other community entry points such as smallholder training that could incorporate messages on nutrition and crop diversity.

5. *Food fortification*

- Foster collaboration between the public and private sectors for setting nutrient targets, formulating feasible standards and regulations, ensuring food safety, and considering costs.
- Foods to fortify for general population, which also benefits adolescents and PLW, may include: rice / wheat / noodles / other staples / vegetable oil / salt / sugar
- Special foods for specific target groups can include porridge for 6-23 mo old children, LNS and MNP
- Prioritize fortification where it is feasible and reaches the most vulnerable (food provided in emergencies, used for school feeding, or purchased by poorer households).
- Conduct a landscape analysis to assess where in the food processing chain of different foods there are opportunities to fortify, and which consumers are reached.
- Assess penetration of existing market based initiatives for items such as Koba Aina.

6. *Nutrition multi-sectoral collaboration*

In addition to nutrition-specific interventions delivered through ONN programming, multi-sectoral collaboration is required. Potential entry points are:

- **Health**: Improve integration of policies for health and nutrition at community level; improve coverage of micronutrient supplementation (various); and link food and health systems, for example, provide vouchers for specific nutritious foods available in the market.
- **Social protection**: Place nutrition at the heart of social protection schemes because poverty and low purchasing power are major drivers of inadequate nutrient intake and malnutrition. Combine household support such as cash with SNF or vouchers for PLW and children under 2.
- **Education**: Continue support for school feeding; add adequate nutrient content and nutritional outcome as aims; consider use of MNP for point-of-use fortification; encourage establishment of school vegetable gardens; include nutrition and reproductive health education; and develop national training for nutritionists.
- **Agriculture**: Improve availability, access, storage and preservation of perishable foods; increase income of smallholders by increasing production; and increase awareness of importance of diverse diets.
- **Water, Sanitation and Hygiene (WASH)**: Increase coverage and use of improved water sources, latrines, and hygiene awareness, especially in rural settings.
- **Private sector**: Engage food companies to produce nutritious foods; and reach workforce to raise awareness on healthy diet and provide micronutrient supplements.
- **Infrastructure**: Increase exposure to media, transport and trade of goods, and delivery of social services.

7. *Strengthen the Policy and Strategy on nutrition and food security*

- Review the new National Nutrition Policy and Plan (PNAN).
- Implement the SUN coordination mechanisms to increase multi-sectorial collaboration.
- Ensure coordination of multi-sectoral efforts and integration of policies for nutrition and health at decentralized level.
- Develop national fortification strategy.
- Ensure nutritional quality and food safety of processed foods by developing standards and appropriate regulation, and monitoring by competent authorities. Develop independent capacity for nutrient, microbiological and toxin analysis, and manufacturer auditing.
- Secure funding necessary to achieve outcomes.

8. *Mitigate food insecurity*

Emergencies

- The timing of social safety net interventions, such as cash transfers or provision of natural food, fortified food and SNF, should respond to periods of greatest need.
- 1,000 days focus is also important during emergencies.

Enhancing Food Security and Resilience

- Interventions targeting safe, improved food storage for smallholders.
- Promote techniques for food conservation and processing, and community gardens.
- Stabilize livelihoods.

9. *Develop specific strategies to fight undernutrition in urban areas*

- Assess:
  - Reach of market-based approaches.
  - IYCF and caring practices: characteristics specific to urban areas, constraints to providing adequate care, for example, time and crowding.
  - Specific periods and determinants of household hunger vulnerability.
- Use a variety of media to strengthen SBCC.
- Link nutrition interventions to efforts to improve water and sanitation facilities to prevent disease,

Glossary:

- **Antenatal Care (ANC)**
- **Balanced Energy Protein (BEP)**
- **Community Nutrition Workers (CNW)**
- **Cost of the Diet (CotD)**
- **Demographic and Health Surveys (DHS)**
- **Fill the Nutrient Gap (FNG)**
- **Infant and Young Child Feeding (IYCF)**
- **International Food Policy Research Institute (IFPRI)**
- **Iron and folic acid (Fe/FA)**
- **Lipid-based Nutrient Supplements (LNS)**
- **Malagasy Ariary (MGA)**
- **Micronutrient Powders (MNP)**
- **Minimum Dietary Diversity (MDD)**
- **Multiple Micronutrient Tablets (MMT)**
- **National Nutrition Policy and Plan (PNAN)**
- **National Nutrition Office (ONN)**
- **National Statistics Institute (INSTAT)**
- **Population Services International (PSI)**
- **Pregnant and Lactating Women (PLW)**
- **Scaling Up Nutrition Movement (SUN)**
- **Social and Behaviour Change Communication (SBCC)**
- **Specialized Nutritious Foods (SNF)**
- **Staple Adjusted Nutritious Diet (SNUT)**
- **SuperCereal (SC)**
- **United Nations Children's Fund (UNICEF)**
- **Water, Sanitation and Hygiene (WASH)**
- **Women of Reproductive Age (WRA)**
- **World Food Programme (WFP)**

Special Thanks to:

- **National Nutrition Office (ONN)**
- **National Bureau of Statistics (INSTAT)**
- **United Nations Children's Fund (UNICEF)**
- **World Health Organization (WHO)**
- **United Nations Population Fund (UNFPA)**
- **Population Services International (PSI)**
- **World Bank**
- **Institut Pasteur**
- **GRET**
- **Food and Agriculture Organization (FAO)**
- **United States Agency for International Development (USAID)**

For more information please refer to the "Fill the Nutrient Gap Report Madagascar"

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