# Fill the Nutrient Gap Madagascar

## Summary Report

World Food Programme

Office National de Nutrition

September 2016

## 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:** identify barriers and opportunities to improve nutrient access and intake through the enabling environment (policy, legal and regulatory framework, national programmes and partnerships)

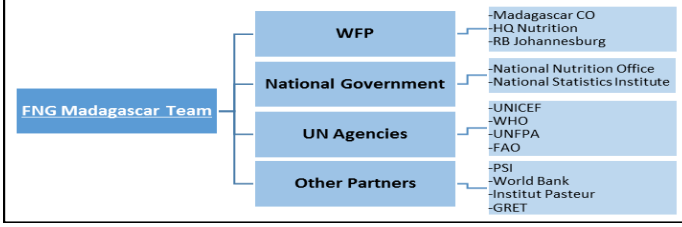
**3) Analysis of Nutrient Availability and Access**: analyse factors including local preferences and practices, and estimate nutrient gaps for key target groups and context-appropriate interventions to fill nutrient gaps

**4) Recommendations** for interventions to fill nutrient gaps, identifying roles for different sectors and stakeholders and public platforms for policy and programmes

## Fill the Nutrient Gap in Madagascar

'Fill the Nutrient Gap' (FNG) is a situation analysis and decision-making tool developed by WFP, in collaboration with UC Davis, IFPRI, EPICENTRE and UNICEF to identify context-specific strategies for improving nutritional intake of vulnerable populations, especially during the first 1000 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 WFP Madagascar Country Office presented the FNG framework and methodology to key government partners including the National Nutrition Office (ONN) and the National Statistics Institute (INSTAT), as well as to UNICEF. Secondary data was compiled and preliminary affordability analysis was undertaken using Cost of the Diet (CoD) software and primary data collected by WFP and INSTAT. Team members presented initial results CoD to ONN, INSTAT, and other UN agencies in May 2016. The findings and recommendations are intended to feed into review of the national nutrition policy and action plan in August 2016.




## 1) Define Focus

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

## Key Target Groups

**Children 6-23 months**

⇒ Stunting: 50%, with little reduction in the past 20 years and higher levels in rural areas and the capital (Fig. 1). Levels also are also high in other urban areas and, given the relative population density, this means there are large numbers of children affected in both urban and rural areas.

⇒ Wasting: 8% among children under 5 (very high)

⇒ Anaemia: 50% (severe) (Fig. 2)

**Adult women (PLW)**

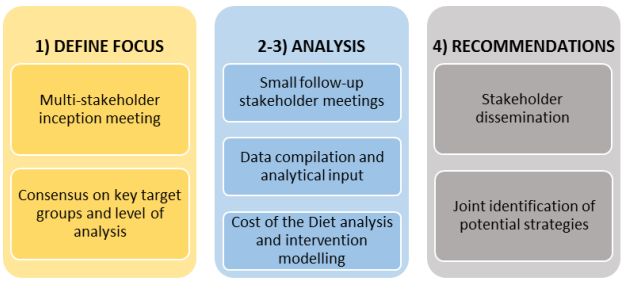
⇒ Anaemia: 35% (moderate) among women of reproductive age (WRA, 15-49 years) (Fig. 3)

⇒ Underweight: 24% (severe) (Fig. 2)

**Adolescent girls (15-19 years)**

⇒ Adolescent pregnancy rates: 37% are pregnant or have a baby; this is higher in the 4 southern regions (51%)

## Stakeholder Engagement Process



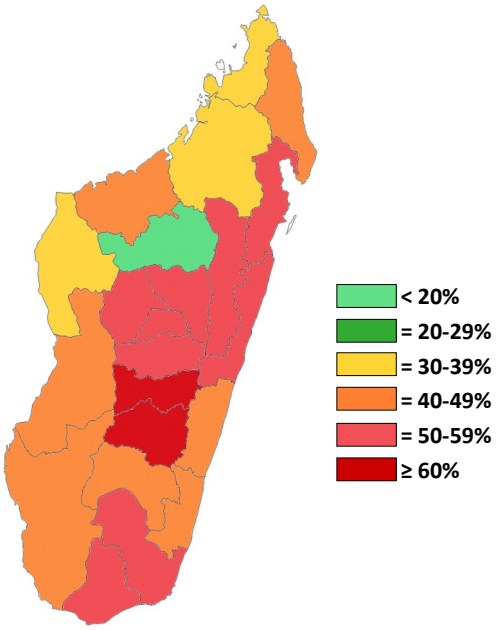



*Figure 1: Stunting in children under 5 by region[1] (Source: DHS 2008)*

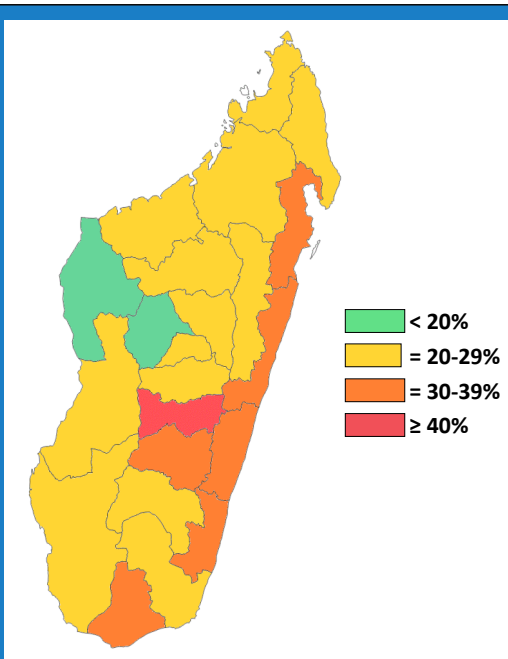



*Figure 2: Underweight in WRA by region (Source: DHS 2008)*

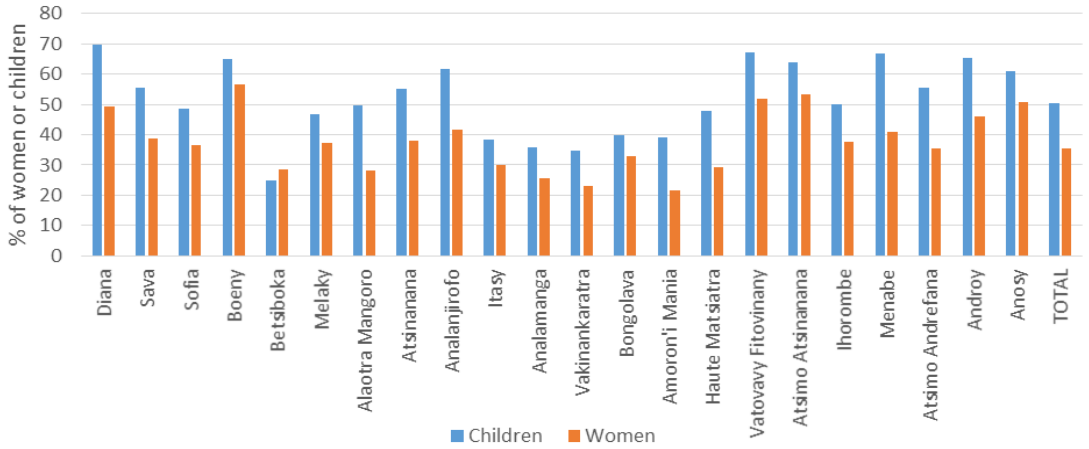



*Figure 3: Anaemia in children under 5 and WRA by region (Source: DHS 2008)*

## 2) Policy Analysis

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

### *National Policy and Legal Framework*

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

### *Fortified Complementary Foods and Specialised Nutritious Foods*

- Several public-private partnerships produce specialised nutritious foods for women and young children; these currently operate in select areas and aim to scale up in the future:
  - Koba Aina FBF (GRET-Nutri'Zaza partnership)
  - Kalina Zaza and Kalina Reny LNS (World Bank-PNNC partnership)
  - Zazatomady MNP (ONN-Ministry of Health-PSI partnership)

### *School Feeding*

- Home-Grown School Feeding Programme: Ministry of Education programme with WFP support, currently reaches 300,000 children
- MNPs also delivered through school feeding

1. 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 it is highly vulnerable to seasonality impacting the quantities produced. This results in seasonal food insecurity which is exacerbated by climatic shocks, particularly in the South.

92% of the population in Madagascar live on less than $2 USD a day, so economic access is a major constraint to the consumption of nutritious foods. Poor infrastructure further reduces market access, making it difficult for many to attain a diet that meets their nutrient needs.

### *Availability*

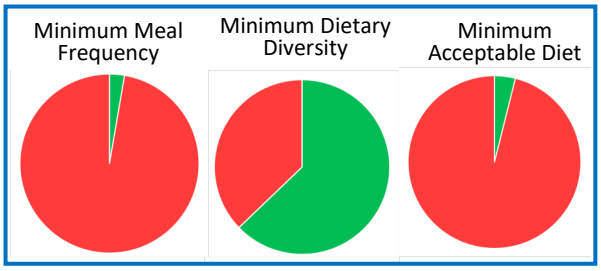
- Rice is the main staple
- Agricultural production is mostly small-scale and for subsistence only
- Storage of crops for lean season is uncommon
- Production is hampered by use of inefficient or inadequate farming and post-harvest practices and limited access to inputs, credit, technical services, markets,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

### *Access*

- Southern Madagascar particularly suffers from seasonal food insecurity, with up to 68% of households affected
- Food insecurity has been exacerbated by in 2015-2016 by El Niño
- High levels of poverty combined with high food prices and inflation make nutritious diets inaccessible for large parts of the population
- Poor infrastructure limits market access, with some communities a 2-hour walk from the closest market; roads are sparse and often impassable, particularly during rainy season

### *Nutrient Intake*

- Almost all children are breastfed, but early initiation after delivery is practiced by only 2/3 of mothers
- A Minimum Acceptable Diet is met by only 2.7% of children 6-23 months, primarily reflecting the fact that minimum meal frequency is met by only 3.9% (DHS 2008)[2]




- Analysis of determinants of stunting carried out by SUN found inadequate dietary intake and pre-natal factors (such as low quantity and quality of food consumption during pregnancy, low use of iron supplements, and large proportion of adolescent pregnancies) to be key determinants correlated with stunting
- Currently vitamin A and iron supplementation coverage is limited, but the government is exploring possibilities for expansion

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

### *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 not well recognized as a form of malnutrition
- Pregnant women often limit dietary intake in an attempt to limit size of the baby at birth.



2. 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*

The ability of optimised diets based on locally-available foods to meet nutrient needs for chosen target groups was assessed using CoD with market price data from 14 regions. Livelihood Zone household composition and expenditure data was provided by INSTAT.

For standard households in each region, CoD modelled lowest cost diets to meet energy needs only and lowest cost diets to meet requirements for energy, protein, fat and 13 micronutrients, with at least one serving per day of the key local staples (SNUT). For all of the livelihood zones with the exception of the in south (zone 10), the key staple was rice.

It was possible to meet nutrient requirements using the SNUT diets in all regions, however, in 7 of the regions, at least 84% of households could not afford this diet (Figure 5). Limiting nutrients, meaning those for which requirements are difficult to meet for at least some household members using available foods, were calcium and iron, as well as zinc for children 6-23 months in most rural areas. Pantothenic Acid was also a limiting nutrient for lactating women in most zones.

To improve the affordability of nutritious household diets, a combination of interventions targeting individual target groups or entire households was modelled using CoD. The modelled interventions included multi micronutrient tablets (MMT), iron and folic acid supplements, specialized nutritious foods, fortified foods, nutrient-rich foods such as the orange-flesh sweet potato (OFSP), as well as vegetables and eggs and produce from home gardening, as detailed in the box below. Separate modelling was conducted for rural and urban zones in each region. Impact of Cash Transfers to the household on affordability were also modelled.

The modelling looks at cost to the household of meeting the nutrient needs of its members when they receive certain specific nutritious foods or income support for free. Here, it is assumed that the costs of this assistance (i.e. of the specific commodities and/or cash and their provision) is provided by the public sector. As such, the modelling is done to assess what difference specific options could make in terms of accessing a nutritious diet, focusing on the households needs and means.

- **Children 6-23 months:** Free provision of locally available specialized foods with vouchers was modelled (Figure 4). The most effective (i.e. reducing costs to the household for obtaining an adequately nutritious diet) were a voucher for a daily portion of Koba Aina, Plumpy Doz or Kalina, which each reduced diet costs (SNUT) for a child of this age by around 69%.
- **Pregnant and Lactating Women:** The most effective interventions were a voucher for a daily portion of Super Cereal (SC) & fortified oil, which reduced the cost of SNUT for this target group by 43% in both rural and urban zones (Figure 5). Kalina (a small quantity lipid-based nutrient supplement) was also highly effective.
- **Adolescent girls:** Adolescent girls were part of modelled households in rural but not urban areas, based on average household demographic data. Their nutrient needs were the most expensive to meet in all households, due to increased requirements for growth during this period. The most effective intervention was daily provision of multi micronutrient tablets (MMT), which reduced the cost of SNUT by 8% (Figure 6).

These interventions were combined to form packages, as shown on page 7. These findings show the possibility of improving household's economic access to nutrients through food-based interventions provided by the public sector. Model diets are theoretical and behaviour change is required to encourage necessary dietary choices and practices to meet nutrient needs.

**Interventions Modelled**


Multi-micronutrient tablets (vouchers)

Iron and folic acid supplements (in-kind)

Specialised nutritious foods (vouchers)

Fortified staple foods (market)

Orange-flesh sweet potato (in-kind)

Locally available nutritious foods (vouchers)

Home gardening with natural nutritious foods

Cash transfers

# Cost of the Diet Modelling

*Average cost of the diet for key target groups in rural and urban zones of Madagascar with different interventions (Figure 4 child 6-23 months; Figure 5 PLW; Figure 6 adolescent girls in rural zones only)*

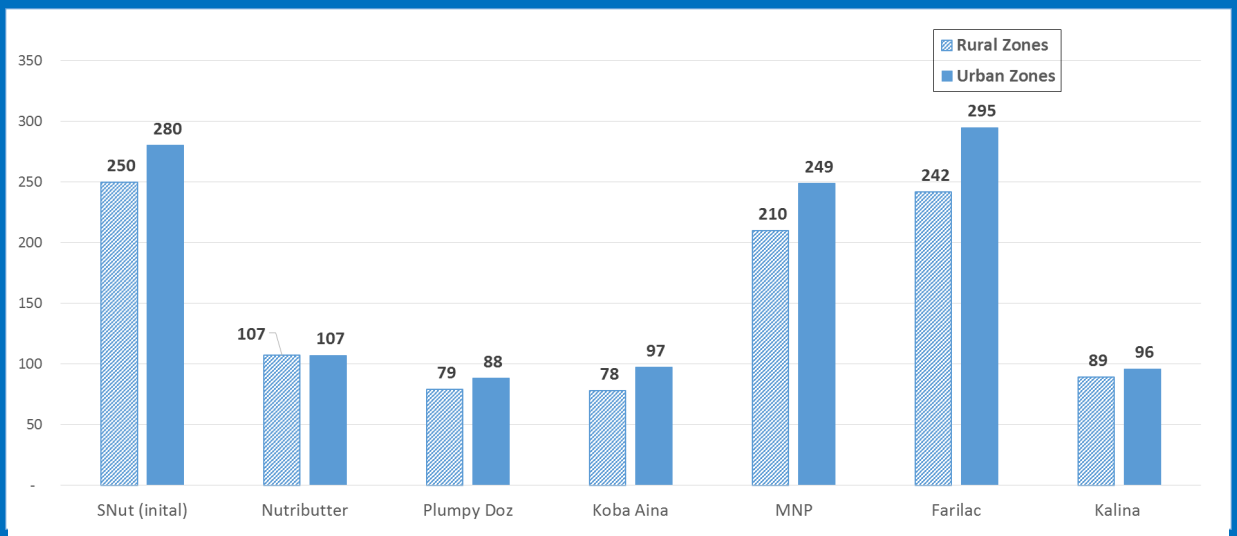



***Figure 4: The daily cost of the SNUT diet for 6-23 month-old children with modelled interventions (1 portion per day of foods mentioned provided for free) in rural and urban zones of Madagascar***

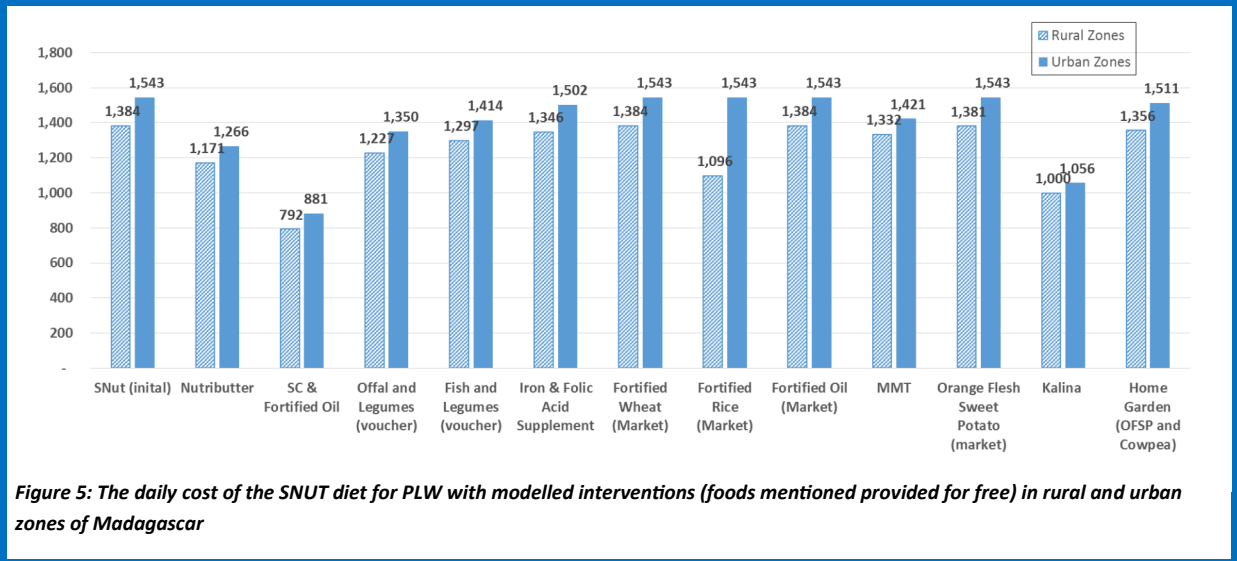



***Figure 5: The daily cost of the SNUT diet for PLW with modelled interventions (foods mentioned provided for free) in rural and urban zones of Madagascar***

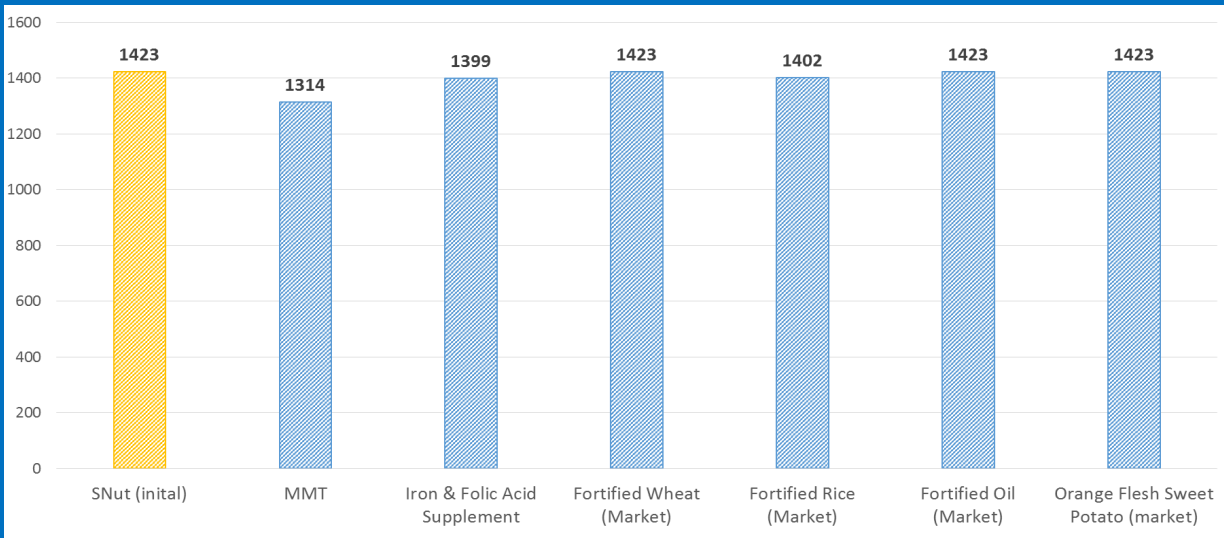



***Figure 6: The daily cost of the SNUT diet for adolescent with modelled interventions (foods / supplements mentioned provided for free) in rural zones of Madagascar***

# Cost of the Diet Modelling

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

Based on results at the individual level, a combination of Koba Aina for children 6-23 months, SC and fortified oil for PLW in rural and urban areas and MMTs for adolescent girls in rural areas was identified as the most effective package of interventions. This package could reduce the percentage of households unable to afford the SNUT nutritious diet by 20 percentage points in the urban zone of Antananarivo. In the five rural zones modelled, it could reduce the percentage of households unable to afford the SNUT diet by an average of 9 percentage points. Adding a monthly cash transfer of 60,000MGA ($19.70USD) to this package and assuming that this transfer would be spent on food shared equitably within the household would further reduce the percentage of households unable to afford a nutritious diet by 12-46 percentage points (Figure 7).

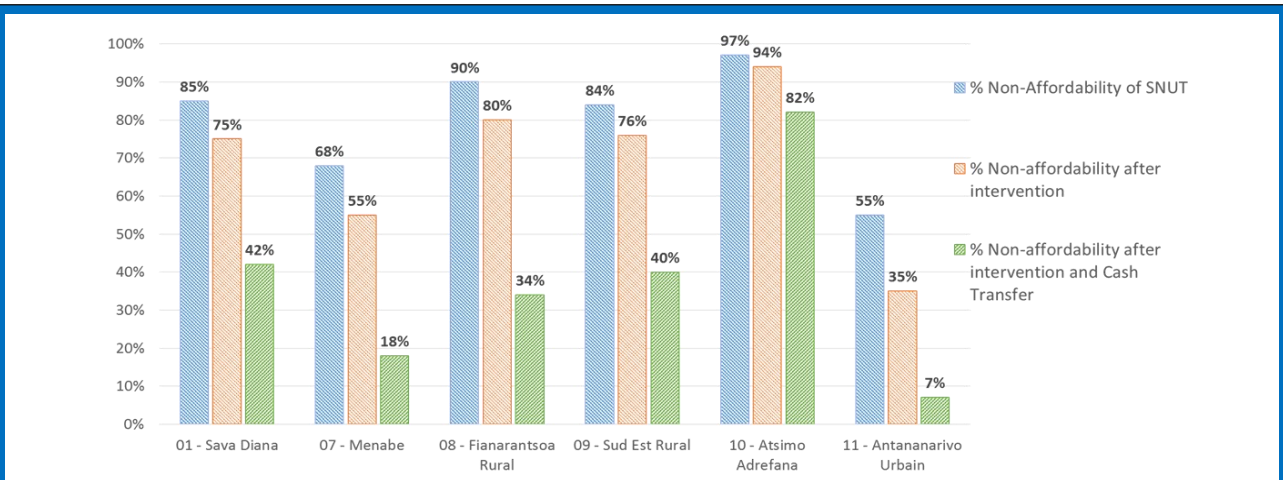



***Figure 7: Change in the percentage of households that would not be able to afford the SNUT diet after the introduction of an optimal package of targeted interventions (Koba Aina, SC & fortified oil/MMT) and a cash transfer of 60,000AR per month per household***

It should be noted that Kalina was found to be highly effective for both the PLW and child under 2, so programmatically it may be an easier intervention to pursue using the same food for the two target groups. Also given the high food insecurity in the South (represented by Zone 10) and the likely large macronutrient gaps and the effectiveness already displayed in the CoD modelling at the individual level, Plumpy Doz for the Child Under 2 and SC and fortified oil for PLW would appear to be the most appropriate intervention for zones facing these circumstances. For this reason the following package of interventions were modelled: 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) (Figure 8). This intervention was also highly effective in reducing non-affordability as shown in Figure 8 (on average non-affordability reduced by 8 percentage points). This was also coupled with a cash transfer of 30,000 Ar (which might be a more feasible amount to provide to a larger group of people). This further reduced non-affordability by 15 points on average, assuming that this transfer would be spent on food shared equitably within the household.

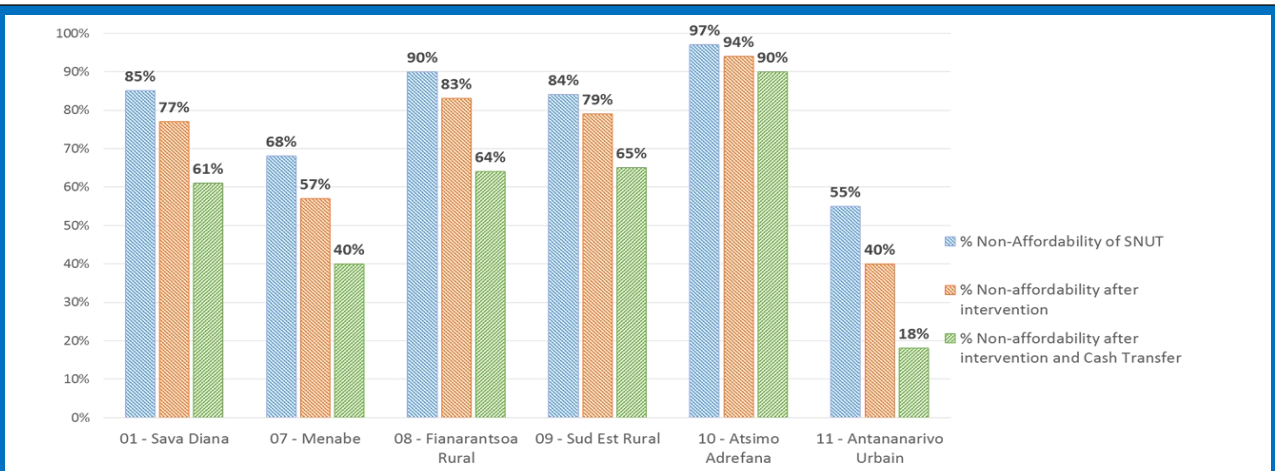



***Figure 8: Change in the percentage of householdss unable to afford a nutritious diet after the introduction of an optimal package of interventions: MMT for adolescent girl (all zones); Kalina for PLW & U2 (all zones except 10); SC& Fortified Oil for PLW and Plumpy Doz for U2 (zone 10); with cash transfer 30,000 AR per month per household***

## Summary of Key Recommendations (developed with stakeholders)

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

- Target group has high and specific nutrient needs related to growth (and menstruation)
- Specific needs for this group should be recognized and provided for, ensuring adequate intake of micronutrients, good health, diet awareness and reproductive health knowledge.
- Provide nutrition-specific interventions such as multi-micronutrient tablets (MMTs)
- Channels should be identified taking into consideration the diversity in this group: out-of-school girls and in-school girls, younger adolescents (10-14), and older adolescents (15-19).
- For in-school girls: use school platforms as an entry point to deliver fortified meals, promote dietary diversity, educate on (reproductive) health, and deliver MMTs. School feeding also constitutes an incentive to keep adolescents in school.
- For girls not in 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 as well as delivery channels for MMTs.
- Food fortification for the general population also benefits adolescent girls.
- Sensitise the general population on adolescent needs and issues.

### 2. *Targeted strategies to improve the nutrient intake of pregnant and lactating women*

- Target group with high nutrient needs related to pregnancy, lactation and own growth in the case of teenage pregnancies
- Specific needs for this group include adequate nutrient intake throughout the pregnancy, knowledge of nutritional needs during pregnancy/lactation/IYCF, access to good quality antenatal care early and throughout the pregnancy, weight monitoring during pregnancy, obstetric care, birth spacing and family planning.
- Nutrition-specific interventions should deliver a combination of micronutrient supplements such as MMT (or iron folic acid) and balanced protein energy supplements (e.g. Supercereal, Kalina) for women at risk of poor birthweight.
- Strengthen ANC for micronutrient supplementation (MMTs) and link ANC (conditionality) with food supplementation (balanced protein energy supplement) to support antenatal care early and throughout pregnancy.
- In the case of teenage pregnancies, ANC should be sensitive to the needs of adolescent girls.
- Food fortification for the general population also benefits women of reproductive age.
- 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 under two*

- Nutrient needs vary per age-group:
  - ⇒ 0-5 months: early initiation and exclusive breastfeeding, knowledge on benefits of adequate breastfeeding practices, and enabling the women to breastfeed exclusively
  - ⇒ 6-23 months: continued breastfeeding until 2 years or beyond, adequate dietary diversity and meal frequency, using fortified commodities to ensure adequate nutrient content in the diet
- Expand and strengthen existing initiatives to improve availability and affordability of fortified complementary foods in markets, fortified blended foods (e.g. Koba Aina, other commercial products), small quantity LNS (e.g. Kalina), and MNPs (e.g. Zaza Tomady).
- Expand and strengthen SBCC on IYCF to increase demand for nutritious foods and improve practices.
- Channels: health facilities, nutrition community sites, food systems including markets, link with social protection.
- Mix of channels depends on context – urban, rural, remote, etc.
- Subsidized price, market price, and for free – depends on context

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

- Messages should focus on dietary diversity, benefits of fortified foods, high needs among pregnant women, lactating women and young children, and importance of food safety.
- Target groups, to be defined, should include adolescents, pregnant and lactating women, other caretakers, men as head of households with decision power, and other influencers in the community.
- For reaching, adapt channels according to context and target groups.
- Expand and strengthen existing SBCC programmes: increase the number of Community Nutrition Workers (CNWs) and their coverage area, support growth monitoring as an entry point for CNWs to educate mothers and grandmothers on best practices for breast feeding and complementary feeding, mobilize CNWs to train Traditional Birth Attendants (TBAs) and community health workers.
- Moving beyond traditional health platforms to change behaviours in this area would be recommended, for example using points of sale of complementary foods such as the Koba Aina sales points for BCC related to complementary feeding.
- Other community entry points could be further explored, based on formative research (.e.g. small holder farmers' trainings could also be used to incorporate some key messages related to nutrition, crop diversity).

## 5. Food fortification

- Requires collaboration between public and private sector for setting nutrient targets, formulating feasible standards and regulations, ensuring food safety, considering costs
- Foods for general population may include:
  ⇒ Staple foods: rice / wheat / noodles / other staples
  ⇒ Condiments: vegetable oil / salt / sugar
- Special foods for specific target groups:
  ⇒ Porridge – children under 2 years
  ⇒ Lipid-based nutrient supplements
  ⇒ Micronutrient powder
- As fortifying 100% of a commodity may not be feasible, prioritize fortification where it is feasible and preferably of a portion that reaches the most vulnerable (e.g. food provided in emergencies, used for school feeding, purchased by the poorer segment of the population).
- Conduct commodity landscape analyses to assess where in the food processing chain (e.g. of rice, wheat flour or noodles) there are opportunities to fortify and which consumers are reached by specific commodities (e.g. high vs lower quality rice).
- Consider a context specific (e.g. urban, rural, remote) combination of market based and public sector (food assistance/social protection, community nutrition sites) channels. This may also vary by commodity (foods for special target groups vs. for general population).
- Assess market penetration of existing market-based initiatives, e.g. Koba Aina.

## 6. Nutrition multisectoral collaboration

In addition to nutrition-specific interventions delivered through ONN programming, multi-sectoral collaboration is required to enhance impact, including throughout the food system and by adding additional deliver platforms, and to impact underlying and basic factors that affect nutrition. Key entry points: health, social protection, education, the private sector, agriculture and infrastructure.

- **Social protection**: Place nutrition at the heart of social protection schemes, since poverty and low purchasing power are major drivers of inadequate nutrient intake and malnutrition. Combine household support (e.g. cash) with (voucher for) special nutritious food for pregnant and lactating women and the child under two.
- **Health**: Better integrate policies for health and nutrition at community level; improve coverage of micronutrient supplementation (VAC, Fe/FA or MMT); increase awareness of importance of adequate nutrient intake requiring diverse, nutritious diet, including fortified commodity for children 6-23 months; link food and health systems, e.g. through providing vouchers for specific nutritious foods available in the market; ensure services are adolescent friendly.
- **Education**: Continue support for school feeding; add nutritional outcome as an aim; ensure school meals are nutritionally balanced by also having adequate micronutrient content, e.g. by using MNP for point of use fortification; encourage establishment of school vegetable gardens; include nutrition and (reproductive) health education; develop national training for nutritionists.
- **Agriculture**: Improve availability, access, and storage and preservation of vegetables, fruits, and animal source foods; increase income of smallholder farmers through increasing production; increase awareness of importance of diverse diets.
- **Water, Sanitation and Hygiene (WASH)**: Reducing incidence and severity of illness is very important for improving nutritional status. 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; reach work force to raise awareness on healthy diet and provide supplements (e.g. MMT to WRA).
- **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 at decentralized level (through decentralized coordinating bodies of the ONN), for effective action at local level.
- Develop national fortification strategy.
- Ensure nutritional quality and food safety of processed foods through developing standards and appropriate regulation, and monitoring by competent authorities (national FDA). Develop independent capacity for nutrient, microbiological and toxin analysis, and manufacturer auditing.
- Achieve better integration of policies for nutrition and health at the community level.
- Secure funding necessary to achieve outcomes. Include scenarios, based on immediate and longer-term priorities, for different levels of funding.

## 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: rainy season in urban areas, lean season in rural areas, and the period following a climate emergency, such as drought, flood.
- 1000 days focus is also important during emergencies.

**Enhancing Food Security and Resilience**

- 78% of the labour force works in agriculture, mostly at the small-scale level. Most households do not store food for the lean season. Interventions targeting safe, improved food storage could address food security for small-holder farmers during the lean season.
- Promote techniques for food conservation and processing, community gardens, stabilize livelihoods.

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

- Assess:
  - ⇒ Reach of market based approaches (% that accesses, which households, what foods for specific target groups, how often etc)
  - ⇒ IYCF and caring practices (characteristics specific for urban areas, what are constraints to providing adequate care, e.g. time, crowding)
  - ⇒ Take into account specific periods and determinants of hh vulnerability
- Use a variety of media for strengthened SBCC.
- Link nutrition interventions to efforts to improve water and sanitation facilities, especially in areas of high population density such as larger urban and peri-urban areas, to prevent disease.

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

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