SOMALI NATIONAL MICRONUTRIENT DEFICIENCY CONTROL STRATEGY
(2014 – 2016)
“Overcoming micronutrient malnutrition is therefore a precondition for ensuring rapid and appropriate national development”

Foreword
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## ABBREVIATIONS AND ACRONYMS

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<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>ARI</td>
<td>Acute Respiratory Illnesses</td>
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<tr>
<td>CBO</td>
<td>Community Based Organization</td>
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<td>CHD</td>
<td>Child Health Days</td>
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<td>EPHS</td>
<td>Essential Package of Health Services</td>
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<td>FSNAU</td>
<td>Food Security and Nutrition Analysis Unit</td>
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<td>HSSP</td>
<td>Health Sector Strategic Plan</td>
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<td>IYCF</td>
<td>Infant and Young Child Feeding</td>
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<tr>
<td>KAP</td>
<td>Knowledge, Attitudes and Practices</td>
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<td>MDC</td>
<td>Micronutrient Deficiency Control</td>
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<td>MN</td>
<td>Micronutrient</td>
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<tr>
<td>NID</td>
<td>National Immunization Day</td>
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<tr>
<td>NGO</td>
<td>Non-Governmental Organization</td>
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<tr>
<td>PLW</td>
<td>Pregnant and Lactating Women</td>
</tr>
<tr>
<td>SES</td>
<td>Socio-Economic Status</td>
</tr>
<tr>
<td>SWOT</td>
<td>A planning Tool that examines Strengths, Weaknesses, Opportunities and Threats</td>
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<tr>
<td>UN</td>
<td>United Nations</td>
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<tr>
<td>UNICEF</td>
<td>United Nations Children’s Fund</td>
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<tr>
<td>VAD</td>
<td>Vitamin A Deficiency</td>
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<tr>
<td>WHO</td>
<td>World Health Organization</td>
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<tr>
<td>WRA</td>
<td>Women of Reproductive Age</td>
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EXECUTIVE SUMMARY

Micronutrient deficiencies caused largely by a dietary deficiency of vitamins and minerals continue to remain an insidious public health problem in many countries, threatening physical and economic welfare of families. More than 2 billion people in the world today suffer from this form of malnutrition. Although all population groups in all regions of the world may be affected, the most widespread and severe problems are usually found amongst resource poor, food insecure and vulnerable households in developing countries. The key factors to these deficiencies are: lack of access to a variety of foods, lack of knowledge on appropriate dietary practices, poverty and high incidences of diseases and disease infections. Micronutrient malnutrition has long-ranging effects on health, learning ability and productivity hence a major impediment to socio-economic development.

Globally, the main micronutrients of public health concern are iodine, iron, and vitamin A. Though deficiencies in these micronutrients affect all population groups, the worst affected are children mainly of 2 years and below, pregnant and lactating women since micronutrient malnutrition’s most serious and lasting damage occurs during the formative years of pregnancy and the first two years of life. Health consequences suffered during this period due to a certain deficiency are irreversible even if good nutrition is provided later in life. This therefore creates a vicious cycle of under-development and especially to the already underprivileged groups.

WHO recommends several strategies for improving dietary intakes of micronutrients: breastfeeding, diet diversification, food fortification, supplementation including nutrition education and observance of public health measures to treat and control diseases. The micronutrient status of a given population is therefore dependent on the food security and nutrition conditions in that country.

In Somalia, the food security and nutrition status of majority of the population has remained as Critical or Stressed over the years. The economic livelihood of the Somalia population is largely comprised of pastoralists with over 65% of the population keeping goats, camel and a few sheep. Other livelihoods are the agro-pastoralist- a mix of agriculture and livestock production and agriculturalists - that are mainly found around the riverine regions. Agriculture is primarily rain fed making this livelihood extremely vulnerable to climatic hazards. The livestock is mainly reared for commercial purposes with very little available especially in the rural areas. Cultivated crops mainly include cereals – sorghum and maize- with very little legumes, pulses, fruits and vegetables. The main diet of majority population comprise of rice, pasta accompanied with tea.

This diet has no variety and is clearly lacking in micronutrient rich foods such as milk, eggs, meat, legumes, fruits and vegetables. The unavailability and affordability pushes these foods further from the reach of majority of the population. This has consequently led to a poor micronutrient status and especially in young children of under 5 years and women of reproductive age. Almost 60% of children of 6-59 months in the country suffer from iron deficiency and anemia, which seriously hinder their optimal mental and physical development with the burden higher in children of less than 2 years. In addition, almost 50% of women of child-bearing age are anemic which seriously affects their productivity and their ability to safely conceive and bear children. Vitamin A deficiency (VAD) is also a concern across the population. Over one
third of all children under-5 years are vitamin A deficient which increases their risk of morbidity and mortality. VAD is even higher in women with over 50% affected. With respect to iodine, there are concerns of excessive intakes as high levels of urinary iodine have been observed in population from different regions across the country. The national average was shown to be 417 µg/L, with some regions in the North East showing a median urinary iodine concentration of 619 µg/L in children aged 6-11 years, levels way above the WHO thresholds. However, the physiological effects of such excess of iodine are not well understood, especially with respect to pregnancy and young children. There are also concerns that the overall high levels may not be uniform across the country and that there are masked pockets of deficiency. More information on the sources of iodine in the country needs to be collected to have a more accurate picture of the situation.

An analysis of the micronutrient environment revealed that, the high deficiencies can largely be attributed to inadequate intake of micronutrient rich foods, presence of diseases and infections and other compounding factors such as poverty and illiteracy. There is also limited awareness on the importance of consuming micronutrient rich-foods and the available micronutrient interventions among majority of the population. This coupled with the high existence of cultural beliefs and barriers that hinder consumption of these foods and the use of deficiency control interventions has also exacerbated the problem of micronutrient malnutrition.

The huge burden of disease incidences in the country has also contributed to the high prevalence of micronutrient deficiencies in children and women. The main diseases are ARI by the general population, diarrhea, malaria, measles in children and parasitic infections in women and children. These are generally caused by poor hygiene and sanitation mainly occasioned by water scarcity, poor child feeding practices and general limited use of health facilities and health care services.

The health system infrastructure is resource constrained and under-developed in most rural areas making accessibility of secondary interventions meant for vulnerable groups like supplementation difficulty.

The government and Partners have continued to promote and support the implementation of some micronutrient interventions focused on young children and pregnant and lactating women. These include promotion of exclusive breastfeeding for the first 6 months and thereafter continued breastfeeding to 2 years and beyond; preventive supplementation: vitamin A supplementation for children of 6-59 months and postpartum women, supplementation with multiple micronutrients for pregnant and lactating women; zinc supplementation for treatment diarrhea, iron and folic acid supplementation for treatment of anaemia in pregnant and lactating women; iron syrups for the treatment of anemia in young children, and deworming in young children among other public health measures and education programs.

Though implementation of these interventions has continued for a long time, the program has remained weak, faced with a myriad of challenges which have contributed to a low coverage hence the persistent high micronutrient deficiency prevalences. Some of these challenges include inadequate financing of health facilities where difficulties abound in provision of a comprehensive package of the micronutrient interventions; under-utilization of the existing health facilities and services where most of these interventions are provided, inadequate use of campaigns and outreach programs; supplies stock-outs in some regions; low knowledge and skills amongst health workers; limited use of community distribution
systems; low awareness on the benefits of the micronutrient interventions, cultural beliefs and misconceptions; insecurity in certain areas, infrastructural difficulties, among others.

In recognition of these difficulties and the need to improve micronutrient nutrition especially in children and women, the health authorities together with partners working in the country prioritized the need for a National Micronutrient Strategy. This strategy was therefore developed between August 2013 and December 2013.

The process of developing the Strategy involved a desk review of background documentation on health and nutrition, and consultations with key stakeholders involved in planning, implementation and monitoring interventions related to micronutrients. Consultative workshops were organized in each zone with stakeholders from the Ministry of Health, Ministry of Agriculture, Education, Commerce, Planning and local NGOs and CBOs with a stake in micronutrients. A detailed situation analysis was conducted which informed formulation of the Goal of the Strategy including its Strategic Objectives, the priority micronutrient interventions that will be implemented in the next 3 years (2014-2016); and Strategic Areas that will be focused on during the life of the Strategy in order to achieve the goal of the Program. The strategy also provides clear definition of roles and responsibilities of all stakeholders that will be involved in its implementation.

The goal of this Strategic Plan for 2014 – 2016 is therefore to: “Improve micronutrient status among children and women of reproductive age in Somalia”.

Strategic Objectives that will contribute to the attainment of the goal are:

SO1: To provide guidance and harmonize the implementation of interventions in MN deficiency control at all levels.

SO2: To improve the technical capacity of health workers at all levels involved in planning, implementation and monitoring of micronutrient deficiency control and management.

SO3: To develop capacity of other key program personnel from other sectors on micronutrient deficiency control.

SO4: To improve community awareness on benefits of micronutrients and ownership of MN interventions by using the existing social structures.

SO5: To improve the effectiveness and efficiency of the supply chain system and distribution of MN supplies.

SO6: To introduce and increase the coverage of MN interventions by integrating interventions and messages into existing health, nutrition, education, livestock and other relevant programs.

SO7: To strengthen the MN programme through advocating for support and resource allocation, and improved coordination amongst all stakeholders.
SO8: To strengthen monitoring and evaluation of micronutrient control programmes at all levels including information management, documentation and reporting; and integrate research on MN programming into the overall health and nutrition research

The expected outcomes for this Strategy will be:

i) 80% of health facilities at all levels using guidelines and protocols by 2016.

ii) 70% of health workers are trained and sensitized on micronutrients deficiency control and management by 2016.

iii) 10% of key program personnel trained/sensitized on MN deficiency control and management annually.

iv) Improved health and nutrition supply chain management system that adequately incorporates micronutrient supplies.

v) Increased population coverage with micronutrient interventions and messages.

vi) Improved community uptake and demand for micronutrients and micronutrient interventions.

vii) Improved support and resource allocation by central government and Partners and enhanced coordination amongst all stakeholders in MDC.

viii) Improved program efficiency and effectiveness from the use of M&E reports and research findings.

The Strategy identifies and prioritizes micronutrient interventions that will be implemented within the next 3 years (2014-2016) to prevent and contribute to the reduction and control of micronutrient deficiencies and treat outcomes of micronutrient deficiencies. These interventions include: i) Breastfeeding; ii) Supplementation – both for prevention and treatment; iii) Home-based Food Fortification; iv) Diet Diversification; v) Commercial Food Fortification and vi) Promotion of Public Health Measures and Public education. In addition some key areas for research have been highlighted which will improve the quality of scope of future micronutrient programming

In order to achieve the goal and objectives of the Strategy and to effectively implement the above prioritized interventions, the following 7 strategic areas are proposed as priority areas to be focused on during the 3 years.

i) Policy, Guidelines and Protocols;

ii) Capacity Development;

iii) Micronutrient Supplies;

iv) Service Delivery and Integration;

v) Community Awareness and Ownership;

vi) Advocacy, Resource mobilization and Coordination; and

vii) Research, Monitoring and Evaluation.

These strategic areas form the basis for zonal action plans which have been developed to operationalize the strategy.
The key stakeholders that will be involved in the implementation of this strategy include the Government, Development Partners/Donors, Health Facilities, Private Sector; and Communities/Families. They have different roles that if fully implemented would significantly contribute to the achievement of the goal of the Programme.

This Strategic Plan has a life span of 3 years. In order to ensure continued relevance and usefulness, and that all the stakeholders stay focused, a Mid-Term review of the Plan is recommended (at the mid of the 2nd year of implementation) and an End-Term Review following a systematic process.

This Micronutrient Deficiency Control Strategy supports the goals and objectives set out in the National Nutrition Strategy with the Plans of Actions, the IYCF Strategy, the EPHS among other health promoting strategies. It responds and seeks to fulfill the vision sought in the National Health Policy “to improve the health and wellbeing of its population with a focus on maternal, neonatal and child health and those social groups that are most at risk ---”. The strategy provides a framework for action to implement the commitments of the national government and Partners whose plans and strategies will provide further technical guidance on programme implementation.
PART 1: SITUATION ANALYSIS

1.1 Background Information on Somalia’s Food Security and Nutritional Status

The economic livelihood of the Somalia population is largely based on pastoralism, agro-pastoralism—a mix of agriculture and livestock production—and agriculturalists (that are mainly found around the inter-riverine regions). Pastoralism is the largest contributor to Somali livelihoods with over 65% of the population engaged in some way in the industry. The pastoralists tend camel, goats and a few sheep whose products are largely exported to the Arabian Peninsula, and trekked or transported to markets in Kenya, Djibouti, and Ethiopia making livestock the largest traded commodity for Somalia. Livestock is also a key local consumption commodity contributing to household food security.

Agriculture is an equally important livelihood activity in Somalia not only in terms of meeting the food needs of the population (roughly 50% of populations’ cereal requirements are met through domestic production) but also in terms of generating income through crop sales and agricultural labor opportunities. The main crops grown are mainly maize and sorghum, with fruits such as mangoes, papaya, melon and watermelon. Agriculture is primarily rain fed making this livelihood extremely vulnerable to climatic hazards.

A Food Security and Nutrition Analysis conducted early in the year (2013) showed a general improvement in the food security situation in these livelihoods which has been attributed to the 2012 rainfall in most parts of the region. The rains led to pasture and water availability hence improved livestock production and farming, consequently increasing income from sale of livestock and livestock products (milk and ghee) which increased households’ purchasing power for both food and non-food items. Equally, there was improved crop production among the agricultural communities which led to an increment of cereal availability, improved income generation through crop sales and agricultural labor opportunities. However, some regions received low rainfall especially in the Northwest regions where pastoralism is dominant leading to livestock migration, reduced milk availability and high level of indebtedness further limiting food availability and access in these livelihoods.

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The improved food security situation in most regions of the country saw an improvement in the nutrition situation in the same regions as compared to the situation in the previous six months. Access and availability of food from crop and livestock farming in the different communities boosted the nutrition indicators towards the positive end. The continued humanitarian aid equally contributed to improved food access and bettering nutrition in the country.

As per the 2013 FSNAU report, the total median number of acutely malnourished children under 5 years decreased from 236,000 in August 2012 to 215,000 in February 2013. Out of these 45,000 were severely malnourished, a slight improvement from 54,000 (3.5%) in August 2012³. However, these improvements were varied from one region/zone to another. The Southern part of the Country in Central-Somalia Zone where majority of the country’s population is located, had the highest number of malnourished children under 5 years, at, 147, 000 which is 66% of the country’s total of acutely malnourished children, though down from 168 000 in August 2012. Similarly, there was a proportionate reduction in the number of cases of acutely malnourished pregnant and lactating women⁴. Disease outbreaks such as measles were reduced leading to reduced child morbidity in most parts of the country.

Despite these improvements, the food security and nutrition situation in most parts of the country still remains stressed where majority of the population cannot afford essential non-food expenditures. This compels them to sell the available food (including cattle and milk) to buy these non-food requirements.

1.2 Micronutrient Nutrition in Somalia

Given the above food security and nutrition situation, micronutrient malnutrition in Somalia has persistent as a significant public health problem. Majority of the population especially children and women of reproductive age suffer from iron deficiency disorders, anaemia and vitamin A deficiency. A micronutrient survey conducted in 2009⁵ showed prevalences of these micronutrients abound in children of under 5 years, women of reproductive age and school aged children. In the Under 5’s, iron deficiency, which is the most common form of deficiency in most populations of the world was almost at 60%, which

³ The figures were collected using the Standardized Monitoring and Assessment of Relief and Transitions (SMART) methodology where survey sites included rural and urban livelihoods in addition to IDP settlements. 22 were conducted in the northern regions, 5 in Central and 14 in southern regions. Thirteen of the surveys were done in IDP camps, 11 in urban settlements and 18 in rural livelihoods.

⁴ Based on MUAC measurements <23cm

⁵ National Micronutrient and Anthropometric Nutrition Survey
reduced in age to about 20% in school aged children (6-11yrs). In women of reproductive age, the national prevalence was above 40% with all zones showing high prevalences in the deficiency.

Similarly, anaemia which is caused by iron and other nutrients deficiency including the presence of diseases and infections was highest in the under 5’s (at almost 60%) followed by WRA at about 48% and then school going children. Vitamin A deficiency was however more prevalent in women of reproductive age.

On the other hand, the survey showed high levels of urinary iodine in majority of the population, with some regions of the North East showing a median urinary iodine concentration of 619µg/L in children aged 6-11years. The national average was 417µg/L, way above the WHO thresholds.

The following chart summarizes the national prevalences of anaemia, iron deficiency and vitamin A deficiency in the 3 population groups. These national figures translate to a similar trend in all the 3 zones.

**Chart 1: National prevalences of micronutrient deficiencies in children and women of reproductive age**

Though there is clinical evidence that deficiencies of other micronutrients such as zinc, folate, B-12 and others abound, their prevalences have not been documented. However, given the poor nutrition situation, the demonstrated prevalences of iron and vitamin A, the presence of diseases like malaria, diarrhea and intestinal parasites, and the fact that micronutrient deficiencies occur in combination, it can
be concluded with certainty that these population groups also suffer from these other micronutrients and interventions for control are warranted.

1.3 Underlying causes of micronutrient malnutrition in Somalia

The UNICEF Conceptual Framework on Malnutrition elaborates the causes of general malnutrition and provides the underlying causes as household food insecurity, inadequate care and unhealthy household environment, and the lack of health services which are all associated with low education levels or illiteracy and poor income (high poverty levels).

The chart given below illustrates these causes and has been used here to demonstrate the probable causes of micronutrient malnutrition in Somalia.

Chart 2: Causes of Malnutrition
Since micronutrient malnutrition is a component of overall malnutrition, the above chart can be used to illustrate and analyze the causes of micronutrient deficiencies. However, in the country, the immediate causes of micronutrient malnutrition can be classified into 3 main categories: i) Diet-related causes; ii) Knowledge and beliefs, and iii) Diseases. Social beliefs and practices are a major hindrance to access of good nutrition and health care hence have been classified as an immediate cause of micronutrient malnutrition in this analysis.

i) **Diet-related causes**

The primary cause of micronutrient malnutrition is insufficient micronutrient intake from the diet. With the exception of niacin (which is synthesized from the amino-acid tryptophan) and Vitamin D (from the sun radiation and tocopherol), all the other micronutrients are obtained from the diet. Iron is more present in meat and meat products while vitamin A is obtainable from dairy and dairy products, meat and meat products, fruits and vegetables.

In the country, the diet-related causes are associated with access (availability and affordability barriers) and utilization of these micronutrient rich foods. For a long time, Somalia has been importing most of its staple food (rice and pasta) to meet its food consumption needs. However, this trend is beginning to change, with an increasing local food production especially in periods of good rainfall. Local farming, which includes both livestock and crop farming, has increased in the various communities, with the pastoralists rearing goats, camel, some sheep and few cattle while the agriculturalists grow sorghum, maize, beans, fruits (mangoes, melon, water melon, oranges, guavas and grapes) and vegetables (spinach production is on the increase).

Despite this increase in farming, production of the above MN-rich foods has remained low with most farmers preferring to grow cereals which are not labour intensive and can easily be marketed and stored for longer periods unlike the fruits and vegetables. The main reasons for this low production include: i) prolonged seasons of low rainfall; ii) low demand of these foods by majority of the population; iii) high manpower required in the production of fruits and vegetables (labour-intensive); iv) infestations by pests and diseases and poor control; v) high perishability of the foods, vi) poor road infrastructure affecting transportation to markets and vii) lack of storage facilities in most producing regions. These factors that occasion huge losses of produce have continuously discouraged most farmers from large scale productions of these foods. In addition, competition from exported fruits and vegetables especially those from Ethiopia have also contributed to the low production since farmers complain of low returns of
investment. This leads to limited availability of the MN-rich foods with the available ones being too expensive.

Besides, in the agricultural communities where these foods are grown, there is very little consumption at household level as most of it is sold to buy other foods such as rice, sugar, pasta and other non-food items.

The pastoral communities on the other hand consume a small percentage of their livestock products such as milk, meat and ghee. The livestock is mainly kept for commercial purposes and as a show of wealth. Livestock and their products are largely exported to other countries and also sold in urban towns. Although organ meat is known to be rich in micronutrients, consumption of these parts is culturally unacceptable. The exception possibly being liver and kidney, however these products are often kept for men.

In some regions, farming is affected by clan conflicts making communities in these areas dependent on food purchases from other regions and humanitarian aid which often times is not sufficient to meet quality food and nutrition requirements.

Though some communities especially those in the central and southern regions of the country have started chicken rearing to supplement livestock keeping and agricultural farming, this practice is not considered as a worthwhile venture and is looked down upon in some other parts of the country like the North West region. This further pushes away the accessibility of a diversified diet.

The Somalia coastline is the longest in Africa. However, there is no significant local fishing done to supplement the livestock production partly because there is little local demand for the fish and other sea water food and secondly, many communities lack proper fishing equipment. Sections of the coastline are given out (hired out) to foreigners who export their catch to other countries.

In addition, there are no large scale supported programs to encourage and support diverse agricultural production practices and post-handling techniques which prolong the shelf life of most MN-rich foods.

Most of the country’s population is unemployed (partly because there are no job opportunities) or have menial temporary jobs pushing poverty levels high. With no income, agricultural households have no money to buy food supplies and worse still, to buy micronutrient rich foods such as meat and milk products including fruits and vegetables. This contributes to the inaccessibility of these MN foods. In the pastoral communities, they exchange their cattle and milk for staple foods such as sugar and rice and
often times sell their cattle in the urban areas. In other communities, proper land ownership discourages farming thus making food more inaccessible in these communities.

Given the huge humanitarian aid provided in the country, some communities prefer not to do any kind of farming or seek gainful employment because they know their basic food needs will be met by the humanitarian agencies.

**ii) Limited knowledge on micronutrients and social beliefs**

Globally, the role of micronutrients to achieving socio-economic development came to the fore after the Millennium. Many academic institutions in most developing countries have therefore not institutionalized curriculums focusing on micronutrients in their health/nutrition programmes. This situation is also applicable in Somalia where nutrition or other course graduates do not have much knowledge on micronutrients and hence may not provide adequate and proper information to health recipients, or even technically support programs where they are providing the services. However, in some zones like in Somaliland, a nutrition curriculum that includes components of micronutrients has been developed and will be integrated into the nursing and midwifery curricula. Despite this, there is need for parallel programs at diploma level that specifically address nutrition and especially micronutrients.

The general lack of awareness on micronutrient rich-foods has also exacerbated the problem of MN malnutrition. A recently conducted study showed that women are decision makers on what food is to be eaten in the household. However, majority of them are illiterate hence, the mothers do not just know what foods they should give to their children, or what they should eat while pregnant, when breastfeeding or what basically constitutes of a balanced diet. Although there is some information provided at health facilities, through the radios or through care groups, some may have difficulties to absorb this information and translate it to suit their circumstances. In urban centers though where most mothers are literate and may be aware of what constitutes a nutritious diet, some do not provide it to their families or to themselves preferring to pursue diets that seem ‘prestigious’ such as pasta and rice without much fruits and vegetables.

Cultural food biases and preferences also limit the intake of micronutrient rich-foods in most communities. Some foods such as beans are considered as food for the poor yet they are rich sources of iron and folate.
Currently, the BCC programs at community level on nutrition are not extensive. The available ones have limited messages on micronutrients with a glaring lack of IEC materials specific to micronutrients. In the absence of proper health and nutrition information among the communities, cultural beliefs take precedence. Most communities therefore continue to practice some beliefs which may not allow for consumption of some foods (which are micronutrient rich) or even seek health services hence exacerbating the MN malnutrition problem. Community awareness is also low and though there are nutrition messages been provided through the existing care groups, the nutrition component is so little or sometimes irrelevant. There is therefore a need to modify the nutrition messages and use appropriate approaches such as woman-to-woman or care groups to encourage consumption of MN rich foods; use of opinion leaders to encourage the consumption of some of the foods such as organ meats that are rich in micronutrients; print and post pictures of MN rich foods in schools, health facilities and in markets and also encourage mothers to seek medical attention when their children fall ill rather than using harmful traditional methods for treatment.

iii) Diseases

Micronutrient malnutrition can also be caused by diseases and infections. UNICEF reported in 2011 that the main direct causes of under-five mortality in Somalia are acute respiratory tract infection (including pneumonia) (24%), diarrhoea (19%), neonatal disorders (17%), and measles (12%). The main general diseases in the country are: ARI by the general population, malaria, measles in children and parasitic infections in women and children.

Acute infections and diseases such as malaria and measles increase the demand for micronutrients beyond body supply that is required to cope up with the increased physiological body requirements. Parasitic infections lead to increased excretion of micronutrients hence losses and mal-absorption of the micronutrients in the gut.

In the country, these diseases and infections are mainly caused by overcrowding (like in the IDPs), poor hygiene and sanitation mainly occasioned by water scarcity and contamination, poor child feeding practices such as bottle feeding, limited appropriate handwashing, poor food handling and preparation, among other factors. These are mainly caused by a lack of awareness on the need to observe and keep a clean environment including proper waste disposal and especially in communities where there are no latrines and proper means of waste disposal. The environment where people live especially in the IDPs may just not be clean thus increasing the chances of contracting these diseases.
In addition, majority of the population have low knowledge on disease prevention. In case of an illness, majority especially those in rural areas do not seek medical attention from the health facilities preferring traditional methods.

Breastfeeding improves child immunity. However, many mothers in most communities do not practice optimal breastfeeding behaviours either because they do not feel they have enough breast milk or believe that breast milk is not enough for their children. In other cases, some mothers especially those in urban areas believe that breast milk substitutes are better than breast milk as it makes their babies grow ‘fat’ quickly, a sign of good health. Contamination often occurs during the preparation of these formulae. Low breastfeeding and especially a lack of exclusive breastfeeding for the first 6 months, exposes the child to a myriad of diseases and infections, thus compromising their micronutrient status. Additionally, in most communities, family planning is hardly practiced and so frequent pregnancies leave the mother with little time to tend to the young ones, who may easily contract diseases for lack of care.

Other factors that lead to high incidences of infections and diseases include: low coverage of immunization and vaccination campaigns in some regions, displacement of people due to immigration, under-utilization of health facilities (due to low knowledge on the existing health services, inaccessibility of the health facilities, bad attitude from health workers, frequent stock-outs, lack of provision of information to communities on what services are offered in the health facilities), poor compliance with treatment prescriptions coupled with unclear instructions on medicine use from the health workers, and growing urbanization which has continued to exert pressure on the existing facilities.

1.4 Micronutrient interventions implemented in Somalia

The WHO has recommended various micronutrient strategies that can be used to prevent and control micronutrient deficiencies. These include food based approaches such as dietary diversification, home-based food fortification, commercial/industrial food fortification and bio-fortification. Others include preventive supplementation of vulnerable population groups such as children, pregnant and lactating women with essential micronutrients.

Due to a wide array of factors, only supplementation is being implemented on a wider scale which is provided as part of the nutrition and health package programs under humanitarian aid to children under-5 years and PLW. The supplementation interventions and the state of other interventions are discussed below.

1.4.1 Supplementation
Though supplementation regimes are largely recommended for prevention of micronutrient associated deficiencies and to improve micronutrient status, in the country some are used for both treatment and prevention.

**i) Vitamin A Supplementation for children of 6-59months**

Preventive vitamin A supplementation is provided twice yearly to children below 5 years of age as part of a package of child survival services. Children of between 6 to 11 months and children of 12-59 months are supplemented with a single dose every 4-6 months at 100,000 IU and 200,000IU respectively. In cases of prolonged or severe diarrhea, chicken pox, severe malnutrition and other severe infections, vitamin A is provided as a single dose to infants and children as part of treatment. Children of 6-11 months are provided with 100,000IU and those of 12 months and beyond are provided with 200,000IU as part of treatment and if the child has not received vitamin A within the last 4-6 months.

This is routinely provided through the health facilities including the health centers and posts as part of the MCH. However, in order to increase coverage and reach those children that are not brought to health facilities, complementary strategies such as campaigns like the measles and polio campaigns, Child Health Days, the EPI program and outreach programs for hard to reach areas are used as delivery channels. The supplements are also provided as part of nutrition programs such as OTP and TSFP. Despite the various channels of delivering the supplements, there is reportedly low coverage of children reached with this intervention. Some of the main factors for this low coverage are discussed below in 1.5.

In addition, some logistical problems are experienced right from procuring of the supplements by UN agencies (UNICEF) through to the distribution of the supplements at the health facilities. Sometimes, delays in procurement and transportation of the same occasions a cascading delay throughout the system, sometimes leading to almost-about-to-expire supplements being delivered at the health facilities. In other times, this delay results in stock outs in health facilities leading mothers and children to miss their scheduled regimes.

**ii) Vitamin A supplementation for post-partumwomen.**

Infants are born with low vitamin A status in their body. Mothers are therefore supposed to have adequate access to a vitamin A rich diet in order to be able to provide the same to the infant through breast milk.
In the country however, most lactating mothers have no access to a diversified diet hence, their vitamin A requirements must be supplemented through vitamin A supplements\(^6\), which is provided in form of a single dose of 200,000IU within the first 6 weeks of delivery. The service is provided as part of post-natal care offered in Maternal and Child Health clinics in all public health facilities/centers and also health posts. This service is however not provided in private hospitals where some mothers go to deliver or in pharmacies where they seek health care services.

Though this kind of supplementation is widely accepted among post-partum women, coverage still remains low, at a national prevalence of 22%. This low coverage could mainly be associated with low usage of health facilities for delivery, health facility inaccessibility where mothers are not able to visit post-natal clinics due to the factors explained at the end of this section, inadequate outreach programs in the rural areas, inadequate use of campaigns and just plain failure to provide the supplement to mothers who attend post-natal clinics.

\textit{iii) Iron and Folic Acid supplementation for pregnant women}

In the country, iron and folic acid supplementation is provided as part of ante-natal care offered in MCH clinics and health centers as treatment of severe anaemia in pregnant women. These supplements are also provided, in varying degrees, through health posts, mobile teams, outreach programmes (health/EPI/Nutrition), hospitals, IYCF centers, TSFP, among others. The mothers are given ferro-folic acid tablets of iron (120mg iron) and folate (400µg).

Though health facility data may show increased distribution of these supplements, the actual intake of the supplement by the mother may be much less though not documented. Most mothers complain about the odour and the taste which often makes the tablets unpalatable hence reducing compliance. In addition, majority of the mothers who are pregnant complain of heart burn & nausea due to the fact that they take the supplements before meals (while they are hungry). Moreover, they have the misconception that the supplement may make the baby grow too big leading to complications during delivery.

\footnote{\textit{This form of supplementation is only done to enhance the vitamin A status of mother and infant but not for the purpose of prevention of maternal and infant morbidity and mortality (WHO does not recommend vitamin A supplementation in lactating women for prevention of maternal and infant morbidity and mortality - WHO. Guideline: Vitamin A supplementation in postpartum women. World Health Organization, 2011.}
Out of all the supplementation regimes, this form of supplementation is ranked the least acceptable among women especially due to un-palatability and side effects of the tablet. Other factors contributing to the low coverage are highlighted at the end of this section.

iv) **Multiple Micronutrient Tablets for pregnant and lactating women.**

During times of pregnancy and lactation, multiple micronutrient deficiencies co-exist hence the need to provide multiple-micronutrient supplements during this period.

In Somalia, multiple micronutrients are provided to pregnant and lactating women for prevention of multiple micronutrient deficiencies. The pregnant woman is given 1 tablet daily for the duration of the pregnancy while the lactating mother is provided with 1 tablet until the infant is six months. These tablets have been formulated in accordance with UNICEF/UNU/WHO guidelines which provide for inclusion of vitamin A, vitamin B1, vitamin B2, niacin, vitamin B6, vitamin B12, folic acid, vitamin C, vitamin D, vitamin E, copper, selenium, iodine; with 30 mg of iron and 15 mg of zinc for pregnant women.

The tablets are provided through MCH clinics- health centers, health posts, mobile teams, outreach programmes (health/EPI/Nutrition), hospitals and also through TSFP nutrition programs.

This form of supplementation regime is more acceptable to mothers compared to the iron and folate tablets due to its good taste and odour though some may associate it with complications during delivery. However, the main challenge is the irregular supply which could be attributed to logistical problems faced by Partners and through-out the supply chain especially in the North West and South Central Zones. Other general difficulties are discussed at the end of this section.

v) **Zinc supplementation for management of diarrhea in children**

Zinc supplementation is provided to children under-5 years only in diarrhea occurrences through hospitals, MCH centers and health posts. Large quantities are also provided through private pharmacies and even retail shops where majority of the population prefer to buy the supplement and ORS. Zinc is also provided in some private hospitals especially in the pediatric wards, outreach services and by community health workers.

Despite the provision of zinc sulphate and low osmolarity ORS continuing in most health facilities, diarrhea has persistent in most parts the country. The National Somalia Micronutrient Survey of 2009 showed a
national diarrhea prevalence in <2 yrs of 20%, though this may have improved with large scale provision of the supplement.

The main challenge with zinc supplementation is the inability to plan and forecast for supplies. Since zinc is used for treatment, it is only dispensed in instances of diarrhea hence hard to predict the amounts of supplements that will be required in a certain period. This would be easier if there was proper documentation showing the amount of supplements used in a year and which would be used to forecast the required amount for the following year. In most cases therefore, health facilities have more surplus than they need which often times go to waste even as most mothers seek for diarrhea treatment from private hospitals. In addition, the supplements could also be provided to mothers to keep at home so that she could provide immediately in case of a diarrheal episode.

**vi) Deworming**

The use of deworming to control intestinal parasites is provided to children over 12 months and pregnant women (only those who are in their 2nd trimester of pregnancy) for both prevention and treatment. It is provided in health facilities, health posts, through OTP programs where every malnourished child is dewormed, through EPI campaigns and others. In some regions of the country, distribution of the deworming tablet has been started in schools often integrated into school feeding programs.

The main challenge of deworming is the lack of health education on the reasons for deworming where most communities in rural areas perceive some cultural beliefs and practices as more effective than the anti-helminthes provided in health facilities.

**1.5 General Challenges faced by the Supplementation Program.**

As discussed above, though supplementation has been on-going for a long time and is deeply funded by UN agencies, coverage of the target population groups has remained low in all the regions of the country. Some of the key factors contributing to this low coverage include the following:

**i) Under-utilization of the health facilities where these supplementation supplies are provided:**

Many mothers do not deliver in health facilities, attend ante-natal or post-natal clinics as required, or take their children to health facilities to receive health care services. This is mainly due to: i) inaccessibility and especially in the rural areas, ii) facilities open for a few hours in the morning (when mothers are busy with house chores) and close for the rest of the day, iii) unfriendly
attitude from the health care workers, iv) prefer traditional doctors, v) low confidence in the health workers/providers and don’t believe in the supplies or information given by the health worker vi) in urban centers, some mothers prefer to seek services from private pharmacies and hospitals which do not provide these supplements.

**ii) Inadequate use of campaigns.** Campaigns supplement services offered in health clinics by capturing those individuals who do not make repeat visits to the facilities. These have however been inadequate mainly due to low integration of nutrition supplies and information (read micronutrient) into the health package provided; inadequate monitoring and low supervision in provision of these supplements; awareness and appreciation of the benefits of MN supplies by the campaign staff; among other factors.

**iii) Inadequate planning of supplies in health facilities.** In some regions of the country, some health facilities run out of supplies which take time to replenish. This is normally occasioned by inadequate planning, forecasting and coordination along the supply chain. In other regions though, there are over-surpluses, yet occasioned by insufficient planning and coordination especially among the donors and Partners.

**iv) Lack of appropriate supplies.** Although 60% of children under 5 years are anemic they are not diagnosed and treated in health facilities. This is due to lack of appropriate supplies. Many facilities do not have the capacity for diagnosis, nor do they have the necessary syrups to treat young children.

**v) Insufficient financing of health services** to provide a comprehensive package of micronutrient interventions as part of the nutrition/health package. There are limited health facilities spread across the country and especially in the rural areas. The health workers are few and those available are over worked and often times may not have the time to explain to the mother the need for taking the supplements. They are also lowly remunerated and supportive supervision hence low motivation.

**vi) Low knowledge and skills amongst the health workers/providers.** Health workers have inadequate information on micronutrients in general including the importance of MN supplements. They may not have the skills to diagnose sub-clinical signs of MN deficiencies which in many cases may pass unnoticed. In the absence of information on why and how to take the supplements, compliance by the mother may be very low.
vii) Inadequate program monitoring and proper health baseline data. Though the provision of supplements has been on-going for a long time in the country, there are no proper reports on how effective this intervention has been in terms of population coverage and biological effectiveness. There is scanty data on the denominator- segregated census on number of children born, number of children under 5, school going children, etc. Though most of the information on coverage is provided through MICs, there are indications that, not all population is covered due to the migratory patterns of some of the population groups such as the pastoralists. In this case, there exists conflicting sources from partners on coverage and population estimates. Furthermore, though Partners provide monitoring reports to the donors on basic program indicators such as the total number of supplies provided per period (yearly) per facility, total number of supplies used, etc, often times, these are not verified to expose any gaps and identify areas that require strengthening. Additionally, there is minimal information collection at household level to show the exact coverage of mothers and children benefiting from the interventions.

viii) General oversight from the central government authority needs strengthening.

ix) Low awareness amongst the recipients of the intervention. Misconceptions on some supplementation regimes such as the IFA and the MMN also abound.

x) Inadequate use of outreach programs that are meant to provide services in hard-to-reach areas where there are no health facilities. These programs are meant to routinely provide services, at least once a month in localized areas and create such a pattern that, the people in that catchment area are accustomed to receiving the health service at certain time of the month or year. However, in most parts of the country where these outreach services are provided, there is no proper scheduling of visitations hence no routinization, with incomprehensive health care and nutrition packages provided. The up-hazard service has lowered community attendance and commitment thus low coverage.

xi) Increased use of private hospitals and over-the-counter subscriptions: In most urban areas across the country, there is an increased use of private hospitals where most mothers seek medical care including the use of pharmacies. This is occasioned mainly by the lack of confidence in the free health service provided in the government health facilities, the quality of care and attention provided during medical visits and the short periods of operation. However, in private facilities there is no proper quality control in the way the medication is dispensed especially at the pharmacies and with regard with micronutrient interventions, the way zinc supplementation is
provided to children. The knowledge on how to dispense or advice/prescription by dispensing personnel is not known with risks of over-dose.

Other factors include:

- Maintenance of proper documentation at the health facilities and by mothers.
- Reliance on humanitarian/emergency funding (as opposed to development funding) which can compromise even medium term sustainability
- Insecurity affecting distribution of supplies and implementation of programs in some regions of the country.
- Lost to follow especially among the pastoral communities who move from one place to another.

1.3.2 Dietary Diversification

Food-based interventions have the potential to be the most sustainable interventions for micronutrient deficiencies, though they are unlikely to be sufficient in the short term in poverty and emergency settings. Due to the diet-related challenges discussed above, there is not much consumption of a variety of foods in most regions of the country. Most of the population has inadequate access to a balanced diet constituting mainly of rice and pasta. Though majority of the population keep livestock (cattle, goats, camel and few sheep), they are meant for commercial purposes with very little meat and milk consumed in the pastoralists households.

On the other hand, the agriculturalists do not grow large quantities of fruits and vegetables due to their high input requirements and their high perishability. They prefer to grow cereals such as maize and sorghum which are easy to grow, tend in the field and store after harvesting. Scarcity of the fruits and vegetables in the market pushes the price of the available supplies out of reach of the common citizen.

Majority of the communities in the country do not rear chicken and hence very limited access of chicken meat and eggs. Fish does not also form part of the community diet hence very little is available in the market.

Coupled with these unavailability factors are cultural beliefs. Existing food biases and preferences limit the intake of micronutrient rich-foods by majority of the population. The majority of women prefer to feed their young children on mainly potatoes, shuuro, bread (boiled), rice with milk and sometimes biscuits and mooshali; with cabbage as the only vegetable and the occasional provision of fruits.
1.3.4 Home-based fortification

Home based food fortification involves the addition of micronutrient premixes (a blend of vitamins and minerals in either powder form or in a paste form with added lipids) to already prepared foods just before it is consumed. The intervention is intended to improve the quality of the diet of individuals within the family at the point of consumption hence maximizing micronutrient benefit.

Home based fortification has not been practiced in the country in the past. However, in recognition of the role that home fortification can play in reducing and controlling anaemia especially in children, efforts have been initiated to identify opportunities for introducing the use of micronutrient powders (MNPs) and their acceptability at household level.

A study conducted by PSI in early 2013 in Somaliland showed that majority of women (at 96%) accepted to use the MNPs as part of the children’s food. Most of these mothers and children said they liked the taste of the product and that the MNPs were important for their children’s growth and resistance of diseases or as a treatment for pneumonia, diarrhea, and the common cold. Over half of the respondents said they would use the product in future. Though most of the respondents showed that MNPs are most appropriate for the poor or rural dwellers (populations that have constraints accessing nutritious foods), the acceptability was definitely high hence an important advantage in introducing this product. MNPs can be distributed through community systems, pharmacies, MCH clinics and even private hospitals.

1.3.5 Commercial Food Fortification

In the country, there is no commercial/industrial fortification of commonly consumed foods. This is mainly due to the lack of the appropriate infrastructure to carry out fortification. i.e there are no large-scale food industries with the capacity to fortify these foods, no standards on how much of the fortificant to add, no quality control agency to enforce the standards and check for compliance.

Data on consumption per capita of the commonly consumed foods is important in justifying a food fortification program and in the formulation of standards and regulations. Although this kind of data is not available in the country, anecdotal evidence point to the increased consumption of sugar, wheat flour products and oil (used in preparation of the wheat flour products). Even though some parts of the country grow maize, this is mainly for export and used as livestock feeds and does not form part of the majority population diet.
There is need for a Food Control or Food Safety agency with the capacity to check the quality of food imports and provide minimum standards for production and marketing of foods available for human consumption. The Agency should also have reasonable capacity to conduct laboratory testing for analysis of safety and nutritional parameters in the foods.

Some of the UN agencies such as WFP provide fortified foods such as maize flour, wheat flour and others as part of the humanitarian aid. The agencies should ensure that, these foods meet international standards such as those provided by CODEX standards and are fortified in accordance with the WHO guidelines on food fortification.

1.6 SWOT Analysis - An analysis of the environment in which MN interventions are to be implemented

In the above analysis of interventions been implemented in the country, the challenges identified necessitated the need for a deeper scan of the environment within which these interventions/programs are implemented. The strengths, weaknesses, opportunities and threats to the Programme are highlighted in the summary below. Findings from this analysis will inform appropriate re-designing and planning of the programme; formulation of a feasible goal and objectives; intervention prioritization; and aid in identification of strategic areas that if focused on in the next 3 years, will help achieve the goal and address most of the identified program challenges.

<table>
<thead>
<tr>
<th><strong>BOX 1: SWOT ANALYSIS OF THE SOMALIA MICRONUTRIENT PREVENTION AND CONTROL PROGRAMME</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Strengths</strong></td>
</tr>
<tr>
<td>Established functioning system – Ministry/ Directorate of Health</td>
</tr>
<tr>
<td>○ Each zone has an established office which focuses on nutrition and to some degree micronutrients, with cascading networks in the regions, districts and at health facility level. In some Zones, public health officers and medical officers have been assigned at regional level to provide government support and functions in general health and nutrition.</td>
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<tr>
<td>○ Functioning HMIS</td>
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<tr>
<td>Government willingness and support to nutrition and micronutrient programming</td>
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<tr>
<td>○ In all zones, the government authorities have embraced the contribution of donors and partners in provision of MN interventions</td>
</tr>
<tr>
<td>○ Prioritization and support for the development of a Micronutrient Strategy as a blueprint to strengthening and improving program performance and effectiveness</td>
</tr>
<tr>
<td>Availability of strategies and plans that provide for implementation of micronutrient interventions</td>
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<tr>
<td><strong>Weaknesses</strong></td>
</tr>
<tr>
<td>Limited government resource allocation for general nutrition programs and hence the micronutrient program</td>
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<tr>
<td>Poorly developed health infrastructure</td>
</tr>
<tr>
<td>○ Few health facilities and centers especially in rural areas</td>
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<tr>
<td>○ Low distribution of MN guidelines and protocols in some areas</td>
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<tr>
<td>○ Inadequate outreach programs and use of mobile teams</td>
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<tr>
<td>○ Limited hours of operation at the health centers</td>
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<tr>
<td>Low capacity of health staff</td>
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<tr>
<td>○ Limited skills and knowledge on MN by health workers at all levels of the programme.</td>
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</tbody>
</table>
National nutrition and IYCF strategies and zonal action plans developed in the country provide for implementation of MN interventions, actions and practices that encourage micronutrient nutrition and prevent and control their deficiencies.

The overarching HSSP and Health Policy provide the basis on which all other health related strategies are premised hence providing a strong basis for a MN strategy and infrastructure for its implementation.

- **CBOs and local Partners that are full engaged with International Partners**
  - The extended networks of the CBOs and other local organizations into communities coupled with their enhanced understanding of the culture and practices at this level helps to cascade and tailor most donor/International Partner funded MN interventions hence benefiting a greater community populace.
  - Availability of community volunteers

- **Locally available micronutrient dense foods**
  - The mix of economic livelihoods–pastoral, and agricultural- provides a mix of micronutrient rich foods to the communities.

- **Improving NGO cooperation under the Cluster Nutrition Group**
  - Good/Fair Programme Integration boosting resource utilization
  - Information sharing via clusters (among partners) which promotes planning, coordination during implementation and reduces duplication

- **Availability of Medical schools –**
  - Can be used as training centres.
  - The primary schools can be used as information conduits and as delivery channels for some MN interventions like supplementation

- **Interventions been implemented in the country are affordable and available**
  - Indifference in attitude towards their work either due to high workload not commensurate with remuneration leading to low motivation.
  - **Poor coordination among stakeholders**
    - Inadequate oversight of programs and Partner activity by the MoH
    - Poor consultations between MOH and donors and implementing Partners
  - **Intermittent sustainability of programs**
  - **Inadequate planning of supplies leading to over-surplus and under-surplus in different regions of the country**
    - Improper planning - at times, supply is not informed by demand.
    - Delays in procurement of MN supplies
    - Delays during distribution due to infrastructure/logistical difficulties or improper forecasting
    - Inadequate warehousing
  - **Poor KAP among the Community on micronutrients**
    - Weak community awareness on the benefits of the MN programs and foods that are rich in MN
    - MN rich foods are lowly produced and not encouraged
    - Low utilization of MN-rich foods at household level
  - **Lack of harmonized M&E system on micronutrient activities**
    - Inadequate baseline information for proper planning of interventions
    - Insufficient program monitoring reports to inform implementation of interventions
    - Inadequate operational and formative research to support program re-designing and implementation
  - **Existing sectoral linkages – with other Ministries are weak**
    - Planning and Implementation of MN interventions require the participation of different sectors with a bearing to micronutrients such as agriculture, commerce, education, information and social welfare. The existing linkages among these government authorities enhance coordination and consistency of practices thus improved effectiveness of interventions.
  - **Oversight of nutrition programme not decentralized at regional and district level**
  - **Low of community participation hence ownership**
  - **Delayed implementation of policies.**

### Opportunities
- Recognized Government

### Threats
- Insecurity in some parts of the country including civil conflicts
| PART 2: GOAL, OBJECTIVES AND OUTCOMES OF THE STRATEGY |

- Attracts investments and trading from other countries
- Positions the country to tap into existing structural and development aid and funding
- Allows for participation in international discourse hence providing a platform to lobby for support

- The increasing prevailing peace in the country
- Willingness from International Community to provide humanitarian aid in the country in terms of funding, logistics, supply, capacity building despite the security situation.
- Increasing global interest and recognition on the contribution of micronutrients to socio-economic development
- Returning professionals from the diaspora in both health and non-health services that can be used to support the program
- Access to secondary data – on evidence on the magnitude of the problem; the science behind interventions
- Active use of media and good communication coverage
  - Majority of the population have and listen to radios which can be used to share programme information
  - Mobile networks are available in most regions of the country – can be used to share nutrition messages and send reminders to mothers on scheduled health facility visits
  - The increasing coverage and use of internet – timely provision of information to improve MN programming and eases sharing of reports and information amongst stakeholders within the programme
- Private sector – private hospitals and pharmacies
- Existing Community/social structures –
  - Availability of community social structures that can be used to champion for change and especially self-initiating change e.g the use of Imams and Sheikhs
- Existing partnerships for program implementation

| Threatens scale up of program and implementation of interventions
| Restrictions in certain areas – e.g in Alshaabab dominated areas
- Natural Disasters – Floods, Droughts, Epidemics, etc
- Global Economic Crisis
- Attrition of Health Workers
- Weak governance
- Over-reliance on donor-funding
  - Donor funding not aligned with priority needs of the country
  - Independent mandates of donors which sometimes are not congruent with the current health/nutrition priorities in the country.
  - Donor fatigue
  - Changing Donor mandates and threatened cooperation amongst all stakeholders at managerial level of the program (International offices and the Government top level government officials)
- Cultural practices and pressure
  - Pregnant mothers do not take certain foods due to culture (our tribe does not allow us to eat these foods) etc
- Help seeking behaviours –
  - Some communities have over-relied on humanitarian aid with little empowering to improve livelihoods
- Conflict of interest
  - Especially among donors and Partners
- Poor economic status of the community (high poverty and illiteracy levels)
2.1 Goal of the Strategy
The Goal of this Strategic Plan for the period of 2014-2016 is to: “Improve micronutrient status among children and women of reproductive age in Somalia”.

2.2 Scope
For the purpose of this Strategy, the term “child” means a child of up to 15 years and “women of reproductive age” are women who are 15-49 years of age.

Though the goal of the Strategy aims at improving micronutrient status of these two broad population groups, the major focus will be on children of under 5 years (0-59 months) with special emphasis on children aged less than 2 years and lactating and pregnant women, since micronutrient malnutrition’s most serious and lasting damage occur during pregnancy and the first two years of life. If a pregnant mother experiences critical deficiencies in key micronutrients, it is obvious that the growth of her unborn child will be affected by these deficiencies hence threatening the life of the mother and the in-born. A child born of such a mother will also suffer similar deficiencies and if they remain uncorrected by the time the child reaches 2 years of age, these may cause irreversible damage to that child’s brain and physiological development even if they are corrected later in life. This is the main reason of focusing on pregnant, lactating women and children of below 2 years.

This Strategy provides an overview of the micronutrient deficiency control interventions being implemented in the country, prioritizes these interventions for both treatment and prevention of micronutrient deficiencies and sets strategic direction for programming for the period of 2014 to 2016. It further provides a framework for strengthening the implementation and monitoring of these interventions, and outlines ways of increasing the coverage of vulnerable populations with the interventions. The Strategy consolidates and builds upon previous micronutrient-related activities provided in various national strategies and plans.

Acknowledging organizational peculiarities in each of the 3 zones, separate zonal action plans to operationalize this strategy have been developed with lead institutions identified and timeframes provided so that the outlined activities in support of the MN interventions can be effectively undertaken.

2.3 Overall Objective
The overall objective of the Strategy is to set direction and provide a framework for action by all stakeholders in the prevention and management of micronutrient deficiencies especially those of iron and vitamin A; manage and control iron deficiency anaemia; and manage zinc and folate deficiencies through
coordinated implementation of micronutrient interventions that include breastfeeding, supplementation, home-based fortification, dietary diversification, and public health measures including education, infections and disease control.

### 2.4 Strategic Objectives

Strategic objectives that will contribute to the attainment of the goal of this Strategy are:

**SO1:** To provide guidance and harmonize the implementation of interventions in MN deficiency control and management at all levels.

**SO2:**

i) To improve the technical capacity of health workers involved in planning, implementation and monitoring at all levels of micronutrient deficiency control and management.

**SO3:** To develop capacity of other key program personnel from other sectors on micronutrient deficiency control.

**SO4:** To improve community awareness on benefits of micronutrients and ownership of MN interventions by using existing social structures.

**SO5:** To improve the effectiveness and efficiency of the supply chain system and distribution of MN supplies.

**SO6:** To introduce and increase the coverage of MN interventions by improving service delivery and integrating interventions and messages into existing health, nutrition, education, livestock and other relevant programs.

**SO7:** To strengthen the MN programme through advocating for support and resource allocation, and improved coordination amongst all stakeholders.

**SO8:** To strengthen monitoring and evaluation of micronutrient control programmes at all levels including information management, documentation and reporting; and integrate research on MN programming into the overall health and nutrition research.

### 2.5 Outcomes

The expected outcomes for this Strategy will be:

i) 80% of health facilities at all levels using guidelines and protocols by 2016.

ii) 70% of health workers are trained and sensitized on micronutrients deficiency control and management.

iii) 10% of key program personnel trained/sensitized on MN deficiency control and management annually.

iv) Improved community uptake and demand for micronutrients and micronutrient interventions.
v) Improved health and nutrition supply chain management system that adequately incorporates micronutrient supplies.

vi) Increased population coverage with micronutrient interventions and messages.

vii) Improved support and resource allocation by central government and Partners and enhanced coordination amongst all stakeholders in MDC.

viii) Improved program efficiency and effectiveness from the use of M&E reports and research findings.
PART 3: PRIORITY MICRONUTRIENT INTERVENTIONS TO BE IMPLEMENTED UNDER THIS STRATEGY

From the situation analysis and given the dire need in the country to reduce the high micronutrient prevalences especially amongst children under-5 years and in pregnant and lactating women, this strategy prioritizes the micronutrient interventions that will be implemented in the country in the next three years. The interventions are prioritized following these minimum criteria:

- Evidence based on biological effectiveness of the intervention;
- Magnitude of the problem – aligned with needs;
- Potential to achieve large coverage of the target population;
- Cost-benefit ratio; and
- Feasibility of implementation given the local conditions and resources from government and Partners working in the country.

Following these criteria, the following Micronutrient Interventions are proposed as Priority Interventions that should be introduced/continue to be implemented and strengthened.

i) Breastfeeding

ii) Supplementation
   a. Preventive supplementation
      i. Vitamin A supplementation in children of 6-59 months;
      ii. Vitamin A supplementation in Postpartum women (up to 6 weeks);
      iii. Supplementation with Multiple Micronutrient Tablets
   b. Supplementation for Treatment
      i. Iron and Folic Acid supplementation – for treatment of anaemia in pregnant and lactating women
      ii. Iron Syrups – for treatment of anaemia in children
      iii. Zinc Supplementation – for treatment of diarrhea in children

iii) Diet Diversification

iv) Food Fortification
   a. Home based Food Fortification
   b. Commercial Food Fortification

v) Education and Public Health Measures

vi) Research – Formative and Operational research

This section therefore reviews the scientific justification for the proposed priority interventions, provides a summary of the issues affecting implementation of the intervention and recommends ways of improving coverage and effectiveness of the intervention. Specific actions under each of these interventions are provided in the below table.
### BOX 4: A summary of Prioritized Micronutrient Interventions to be implemented within the Strategy

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Justification</th>
<th>Issues affecting implementation</th>
<th>Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Breastfeeding</td>
<td>WHO/UNICEF recommend the initiation of breastfeeding within the 1st half to 1 hour of delivery and thereafter, exclusive breastfeeding of infants within the 1st six months of life and continued up to 2 years and beyond. Breast milk is the natural and ideal first food for newborns and infants, as it gives infants all the nutrients they need for healthy development. It is safe and contains antibodies that help protect infants from common childhood illnesses such as diarrhea and pneumonia, the two primary causes of child mortality worldwide. It is regarded as a natural method of birth control (98% protection in the first six months after birth) and is known to reduce risks of breast and ovarian cancer later in life, helps women return to their pre-pregnancy weight faster, and lowers rates of obesity.</td>
<td>The prevalence of exclusive breastfeeding has remained low in the country mainly due to: i) Myths and misconceptions – some mothers believe that they do not produce enough breast milk and that breastmilk alone is not enough for the baby and needs to be supplemented with water and other light foods. ii) Increased use of breast milk substitutes especially in the urban areas. These substitutes are easy to prepare, to feed the baby and are more convenient as baby foods hence most working class mothers prefer to replace breast milk with these baby formulae. Besides, mothers believe that the substitutes are more nutritious than breast milk.</td>
<td>Clearly, breast milk is more nutritious and has many more advantages to the health of both the mother and the baby. This Strategy therefore prioritizes it as an intervention and recommends the following: • Provide support to breastfeeding mothers • Diffuse IEC materials on the importance of breastfeeding • Use social structures such as religious leaders, mother-to-mother care groups to encourage, promote and motivate mothers to breast feed. • Where possible, implement the Code on Marketing of Breast milk Substitutes among other measures.</td>
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<table>
<thead>
<tr>
<th>2. Supplementation</th>
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<tbody>
<tr>
<td>2.1 Preventative Supplementation</td>
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<tr>
<td>2.1.1 Vitamin A supplementation for children</td>
<td>Vitamin A plays an important role in vision, growth and physical development. It is important for immune functions. In settings where vitamin A deficiency is a public health problem, WHO/UNICEF</td>
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</table>
strongly recommends the provision of vitamin A supplementation to infants and children of 6–59 months as a public health intervention to reduce child morbidity and mortality. Infants and children require increased amounts of vitamin A to promote rapid growth and to help combat infections. On a per-child basis, vitamin A supplementation is considered a low-cost intervention with an estimated cost of US$ 1–2 for delivery per child per year\(^7\) and the total cost of supplementation per death averted estimated at US$ 200–250\(^8\). with a fairly good coverage. However, challenges still abound that cause some children not receive this form supplementation. Some of these include: This is mainly due to:

- Logistical problems and delays in supply and distribution of the supplements throughout the chain in some zones
- Low utilization of public health facilities: most mothers in urban areas prefer private hospitals and pharmacies for treatment
- Low awareness of health providers on the health significance of vit A supplements hence not providing as per guidelines
- Low coverage during the campaigns and outreach programs,
- Inadequate BCC programs at community level coupled with low community mobilization and
- Inadequate health education on the significance of vitamin A by health workers
- Inadequate community ownership - not been told why it is important for them.

Stakeholders must ensure,

- proper forecasting and planning for supplies with clear distribution plans is done;
- technical trainings are conducted to health providers and health workers at all levels on MN importance, simple diagnosis for MN deficiencies, their treatment, prevention and control;
- extend and routinize mobile teams and outreach programs especially in remote areas;
- conduct community mobilization, provide nutrition and health education and develop IEC materials for different audiences with tailored messages for each target audience.
- Strengthen the existing health education package to include vitamin A

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### 1.1.2 Vitamin A supplementation for postpartum mothers (up to 6 weeks after delivery)

A deficiency of vitamin A in women increases the risk of night blindness and other ocular conditions such as xerophthalmia. During lactation, vitamin A is essential for maternal health and vision and for boosting the vitamin A’s status of the infant. Maternal dietary intake is therefore an important determinant of breast milk vitamin A concentrations and an infant’s vitamin A status. The WHO recommends nutrient intake of vitamin A for postpartum women as 850 μg retinol equivalents (RE)/day\(^9\), which may be difficult to achieve from the diet alone hence the need for other measures such as supplementation. This protects the vitamin A reserves of lactating women while addressing the problem of low intakes of vitamin A from breast milk in infants. In the country, there is a low consumption of pro-vitamin A rich foods (vegetables such as carrot, pumpkin, papaya and red palm oil; animal foods rich in preformed vitamin A include dairy products (whole milk, yogurt, cheese), liver, fish oils) by mothers.

Vitamin A is provided to postpartum women as part of preventive supplementation through the health facilities/centers as part of post-natal care and hospitals. The use of this supplement among the target population is low due to a myriad of factors mainly to do with
- Limited use of hospitals or health facilities to deliver hence women are not provided with the supplement at birth,
- Limited information provided to the mother regarding the benefit of the supplement.
- Supplementation is not provided in private hospitals mainly where some mothers (40%) in the urban areas deliver their babies.

Given the high prevalence of vitamin A deficiency in WRA, this form of supplementation should be continued and strengthened. In addition, the following actions are recommended:
- Ensure availability of the supplement in all health facilities or hospitals where mothers deliver;
- Consider providing vitamin A supplements in private hospitals and probably to Traditional Birth Attendants (now Community health workers) with clear instructions of use;
- Conduct trainings/re-fresher courses to health workers and providers at all levels on the importance of the supplements;
- Extend and routinize mobile teams especially in remote areas.

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Supplementation however, is limited to 6 weeks postpartum to account for the short intervals between pregnancies. High dose vitamin A supplementation is teratogenic for the unborn fetus.

### 1.1.3 Multiple Micronutrient Supplementation – using Multiple Micronutrient Tablets

Micronutrient deficiencies usually occur in combinations. In situations where the food security and nutritional status is stressed, the high needs of pregnancy are almost impossible to cover through dietary intake hence the need for women to take multiple micronutrient supplements during pregnancy and lactation. WHO/UNICEF recommend that multiple micronutrient tablets be provided to pregnant and lactating women daily, whether they receive fortified rations or not.

In countries where anaemia prevalence is more than 40%, WHO guidelines recommend supplementation of adolescents and other women of reproductive age with micronutrient tablets.

This form of preventive supplementation is been provided to both pregnant and lactating women through the MCH clinics, Health Centers and through hospitals as part of ante-natal and post-natal. Women prefer this form of supplementation, except that some fear that it may cause the baby to grow too big hence cause them complications during delivery. Despite the high prevalence of micronutrient deficiencies including anaemia, there is currently no provision of micronutrient supplementation to non-pregnant women who are the ‘mothers of tomorrow’. However, larger supplementation of women of child-bearing age needs to take into account resources as MMN tablets are very expensive and there currently exists few opportunities for ongoing contact with WCBA. Therefore this group remains as a second priority.

This form of supplementation should be continued and distribution extended to all MCH clinics and other facilities which provide ante- and post-natal services. In addition, the following is recommended:

- Educate women on the importance of this supplement and manage myths
- Consider also providing the supplements to TBA/CHW with clear instructions on use (in accordance with the roles and responsibilities identified for TBAs/CHWs in the Community Health Strategy)
- The current packaging is too big. Consider packaging into smaller containers which can be given to the mothers in sealed packages.
- Develop guidelines for provision of supplement to adolescents and non-pregnant women of reproductive age where resources exist.

### 2.2 Supplementation for Treatment of Micronutrient Deficiencies
### 2.2.1 Iron and folic acid supplementation for pregnant and lactating women

<table>
<thead>
<tr>
<th>Source</th>
<th>Description</th>
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<tbody>
<tr>
<td>A pregnant woman is considered to be anaemic if her haemoglobin concentration during the first and third trimester of gestation is lower than 110 g/L, at sea level; in the second trimester of pregnancy, the haemoglobin concentration usually decreases by approximately 5 g/L. Low haemoglobin concentrations indicative of moderate or severe anaemia during pregnancy have been associated with an increased risk of premature delivery, maternal and child mortality, and infectious diseases. Iron deficiency anaemia may affect growth and development both in utero and in the long term.</td>
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<tr>
<td>At least half of world’s anaemic women are assumed to be due to iron deficiency, with the rest due to conditions such as folate, vitamin B12 or vitamin A deficiency, chronic inflammation, parasitic infections and inherited disorders. In the country, 40% of women are iron deficient, with almost 50% being anaemic. This supplementation regime is currently used for both prevention and treatment of severe iron deficiency and anaemia in pregnant women. Utilization is estimated to be quite low. The main reasons are two-fold: • Tablets are regarded as not very palatable - majority of the mothers who are pregnant and lactating do not like Ferro folic acid - most mothers say it causes heart burn &amp; nausea (especially if taken before eating)and constipation. While others do not like the odour or taste of the tablet hence, though they may collect it from the health center, they may not swallow the supplement. • Misconceptions – some mothers believe that the supplement may cause the baby to grow big leading to complications when giving birth.</td>
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<tr>
<td>It is recommended that, IFA supplementation be provided as a form of treatment to women diagnosed as anaemic as per the guidelines and protocols until their situation improves. Due to the high prevalence of anaemia and iron deficiency in women, implementation of this intervention should be strengthened with provision of education to the pregnant mothers. In addition, the following is recommended: • Educate women on the importance of this supplement and manage side effects through provision of instructions on how the tablet should be taken • Increase palatability - consider procuring tablets that are sugar coated (if resources exist) • Consider providing the supplement in private hospitals accompanied with guidelines and relevant protocols. In malaria-endemic areas, iron and folic acid supplements should be provided in conjunction with measures to prevent and diagnose malaria. In cases of both malaria and...</td>
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10 A pregnant woman is considered to be anaemic if her haemoglobin concentration during the first and third trimester of gestation is lower than 110 g/L, at sea level; in the second trimester of pregnancy, the haemoglobin concentration usually decreases by approximately 5 g/L.

2.2.2 Treatment of anaemia in children

Anaemia caused by iron-deficiency is the most common form of nutritional deficiencies in infants and children. Though infants are born with adequate iron stores in their bodies, due to their rapid growth and limited capability to absorb iron, they need to receive about 8-10 mg of iron per day. However, breastfed babies need less, because iron is absorbed better when it is in breast milk. Provision of cow’s milk to young infants is a common cause of iron deficiency. It contains less iron than many other foods and also makes it more difficult for the body to absorb iron from other foods. Cow's milk also can cause the intestines to lose small amounts of blood. Thus, children who are fed on cow’s milk and other breast milk substitutes are at risk of developing iron-deficiency anaemia. This form of deficiency commonly affects children between 9 - 24 months old hence necessary to screen test for iron deficiency at this age. Babies born

In the country, anaemia in children (under 5 years) is the most common form of micronutrient deficiency, being the highest amongst all vulnerable groups at 60% (MN Survey, 2009). This could be mainly attributed to the low breastfeeding prevalence where majority of the mothers do not exclusively breastfeed or do not continue to breastfeed their children even after introducing semi-solid foods. The current guidelines/protocols for treatment of anaemia in children recommend the provision of IFA tablets (crushed). However, it has not been feasible for most mothers to crush the tablet or break it into small pieces and give to the baby. Though iron syrups are the best for children, they are not provided in most health facilities mainly due to logistical difficulties or simply not part of the MN supplies provided by partners.

Due to the urgent need to address anaemia in children, this Strategy strongly recommends:

- Standardized protocols and equipment for testing anemia in children in health facilities
- Provision of iron syrups in all health facilities. Suppliers/Donors should ensure that iron syrups are part of the MN supplies provided in all public health facilities.
- Provision of iron syrups in all private hospitals and especially in the Pediatric Wards
- Storage facilities in all health centres and hospitals should be improved to ensure that the iron syrups are kept and stored under suitable conditions to preserve their potency and efficacy.
2.2.3 Zinc Supplementation in Children

A continuing lack of safe water and adequate sanitation in many parts of the world means that diarrhea remains the leading cause of death among infants and young children in low- and middle-income countries. Supplementary zinc benefits children with diarrhoea because it is a vital micronutrient essential for protein synthesis, cell growth and differentiation, immune function, and intestinal transport of water and electrolytes. Zinc is also important for normal growth and development of children both with and without diarrhea. Dietary deficiency of zinc is especially common in low-income countries because of a low dietary intake of zinc-rich foods (mainly foods of animal origin) or inadequate absorption caused by its binding to dietary fiber and phytates often found in cereals, nuts and legumes. Zinc supplementation has been found to reduce the duration & severity of diarrheal episodes and likelihood of subsequent infections for 2-3ms.

Zinc supplementation is affordable and easy to implement

<table>
<thead>
<tr>
<th>Challenge</th>
<th>Resolution</th>
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<tr>
<td>Supply chain management – logistical delays sometimes due to insecurity</td>
<td>Improve awareness of the health workers &amp; community on the benefits of zinc and on instructions of use;</td>
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<tr>
<td>Poor knowledge of health workers on the benefits of zinc for the management of diarrhea</td>
<td>Expand distribution and support to cover private hospitals and many other pharmacies with clear instructions of use</td>
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<tr>
<td>Misuse by caregivers – instructions not well followed.</td>
<td>Consider various community-based distribution mechanisms</td>
</tr>
<tr>
<td>Low awareness on the role of zinc to growth and development – it is only related to diarrhea – at facility and community level and not considered for prevention</td>
<td>Strengthen logistics process to ensure delivery of zinc tablets in outreach health centers</td>
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<tr>
<td>Not well provided in private hospitals</td>
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</table>

In order to increase coverage and effectiveness, the following actions are recommended:

3. Dietary Diversification

Dietary Diversification

This is the most sustainable and recommended MN Intervention. The objective of this intervention is to diversify food cultivation and make a wider

Though the country is endowed with opportunities to provide a variety of diets (pastoralists, agriculture and fishing), this intervention is not well

Since this is the most sustainable strategy to improving micronutrient status and general nutrition status for the population, it is important to
selection of foods with a high vitamin and mineral content available for purchase so that consumers prepare more varied meals and have a more balanced diet. In addition, it looks to increase acceptance of utilization of a wider variety of foods among community members. A balanced, adequate and varied diet is an important step towards a happy and healthy lifestyle. It protects the human body against certain types of diseases, in particular non-communicable diseases such as obesity, diabetes, cardiovascular diseases, some types of cancer and skeletal conditions and contributes to an adequate body weight. Vitamins and minerals in the diet are vital to boost immunity and healthy development. Improving production of a variety of foods not only improves the general nutrition status of the population but also it improves their livelihoods through the sale of the extra food commodities produced as well as providing employment to those working in the farms and distributing and marketing the produce.

developed in the country given the intermittent rainfall that does not support agricultural production of these MN-rich foods, poverty, and above all cultural beliefs and practices. Other reasons include:
- Low awareness on the benefits of consuming a variety of foods leading to low demand of MN rich foods such as fruits and vegetables hence limited production
- Strong diet biases and preferences – majority of population prefer pasta and rice as major staple food with very little vegetable and fruits
- Taste and preference – majority of the population do not like fish and chicken hence very little fishing and chicken rearing. These foods are also associated with low SES status
- High cost of protein – The cattle is usually for commercial purposes and so meat and meat products are often expensive.
- Myths and cultural barriers – in most communities, certain MN-rich foods are not culturally accepted. For instance, beans are regarded as food for the poor while most organ meat is regarded as unclean.

scale up and expand the agricultural practices to include production of fruits and vegetables, promote and encourage consumption of local meat products and production of legumes and pulses. In addition, the following specific actions are also recommended.
- Support the implementation of behavior change and education programs to increase demand and consumption of MN rich foods
- Use existing social structures and platforms to change attitude towards certain foods and consumption practices.
- Promote the marketing of meat locally in order to lower the price and increase affordability
- Sensitize farmers and strengthen their capacity to grow a variety of foods including vegetables and fruits.
- Design specialized measures for different communities depending on the hindrances of diversifying foods.

4. Food Fortification

| 4.1 Home based Food Fortification | Home fortification is used in situations where diets do not provide enough nutrients currently. | Currently, it is not been implemented in the country. | This approach provides the flexibility to target specific ingredients and enhance the nutritional value of foods. |
nutrients such as vitamins, minerals, essential fatty acids, and/or other nutrients critical for optimal growth and development. Because unfortified cereal-based complementary foods do not supply enough essential nutrients needed for optimal growth, home fortification can fill nutrient gaps by improving the quality of the diet of individuals within the family through the addition of nutrients to locally available foods prepared at home. The practice involves adding specialized products such as multi-micronutrient powders (MNP) or food-based complementary food supplements (CFS) such as small quantity lipid-based nutrient supplements (LNS) foods prepared at home. These products come in measured doses that are safe to consume and easy to store and use. There is growing evidence of the impact of home-based fortification of complementary foods. Several studies conducted in Asia, Africa and Northern America show that, the use of MNPs can be used to prevent and reverse iron deficiency anemia in children of 6-23months.

A study conducted in some parts of the country on the acceptability and willingness to use micronutrient powders (MNP) showed that, majority of the women accepted the intervention and were willing to add the powders to their children’s food. They said the taste was good and attributed benefits of the MNPs to growth and development of the child including prevention of infections and diseases. However, some of the respondents perceived the intervention as appropriate for rural dwellers or for poor families. Regarding the preferred delivery channels, majority of the respondents said that they would like to receive the MNPs at the health facilities, at pharmacies, and private hospitals. UNICEF and partners are currently piloting trials on the introduction of MNPs through social marketing as well as community IYCF programs, in order to find out the most effective channel of delivery.

WFP has been supplying plumpy dose though only in selected regions of the country.

| 4.2 Commercial Food Fortification | Fortification of commonly consumed foods that are commercially produced has been practiced successfully in different parts of the world. Food fortification is currently, there is no commercial food fortification happening in the country. There is anecdotal evidence on high consumption of some ‘fortifiable’ foods | Despite the lack of large industries to fortify some of these commonly consumed foods, it is important to |
proven to be one of the most cost-effective MN interventions which can sustainably prevent and control micronutrient deficiencies. The intervention requires that, the food to be fortified is widely and commonly consumed by majority of the population throughout the year; there must be adequate and organized manufacturing settings which ensure cost effective production, supervision and monitoring; feasible technology that guarantees compatibility of fortificants (the source of micronutrients) with the nature and matrix of the food vehicle; affordability of additional costs resulting from the fortification process for consumers and manufacturers; a reliable quality control system and reliable enforcement actions by government authorities to assure compliance of standards and regulations. Such as wheat flour, oil, sugar and may be seasoning cubes. However, these are largely imported as there are no large industries that can manufacture and distribute the foods. Also, there is a lack of the comprehensive data on consumption patterns of these foods that is required to initiate a fortification program. In addition, there is no Food Quality Control Authority/Agency to set standards and check the quality of the fortified foods.

begin some preparatory work towards legislating this strategy:
- Advocate for extended distribution of fortified foods in schools, as part of feeding programs and for vulnerable groups.
- Ensure that these distributed fortified foods comply with International Standards such as CODEX
- Conduct food consumption pattern studies to determine consumption levels of fortifiable foods (wheat flour, sugar and oil)
- Establish a Quality Control Authority and allocate adequate resources with the mandate to establish standards and conduct food quality control
- Advocate for incentives from the government to encourage set up of food factories with the capacity for fortify the commonly consumed foods.

5. Education and Public Health Measures

<table>
<thead>
<tr>
<th>Education and Public Health Measures</th>
<th>Diseases are a major cause of micronutrient malnutrition. They increase the demand for micronutrients especially if episodes are frequent and chronic; hinder proper absorption (e.g. in cases of hookworms) and lead to increased excretion (in cases of schistosomiasis). It is</th>
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<td>In the country, programs such as WASH have been on-going, immunization and vaccination campaigns continue to be implemented and deworming focusing on school going children and pregnant women are been scaled up. BCC programs are also been implemented.</td>
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<td>Public health measures combined with provision of health education is an integral part of any public health program. All programs geared towards disease and infections prevention and treatment should continue to be implemented and</td>
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</table>
therefore important to implement public health measures that include prevention and treatment of childhood diseases and general diseases such as malaria and ARI as part of the micronutrient program, and to educate the population on the need to observe and maintain these measures. Some of these public health measures include deworming, proper improvement of water and sanitation, infection prevention and control such as immunization, malaria and parasitic control, maternal education and proper child care.

Communication and support for behavior change is key preventing many diseases and deficiencies.

However, the coverage is not very widespread especially in the rural areas probably due to:
- Under-utilization of health services – either because they are inaccessible, or the fact that some communities prefer traditional doctors and medicines
- Limited use of community systems or programs
- Limited coverage with some infection control measures. For instance, school deworming is not been done in all zones, only in Somaliland and some parts of Puntland
- Inadequate health campaigns
- A strong belief in traditional methods of treatment
- Limited knowledge on proper hygiene and prevention of diseases
- Public health education going on but it is not well organized

6. Research

| Formative and Operational Research | Formative research should be an integral part of developing programs, and should be used while the program is on-going to help refine and improve program activities. In program implementation, research is required to continuously define and understand population needs, create programs that are specific to the needs and ensure programs are relevant, coverage, and effectiveness, various research needs have been identified and it is recommended that these be conducted and findings used to improve the MN program in the country has been faced with numerous challenges that have significantly contributed to the low coverage of MN interventions amongst the target populations. For instance, the limited access of a diversified diet amongst mothers and children has remained one of the daunting
| Implementation of the MN program in the country has been faced with numerous challenges that have significantly contributed to the low coverage of MN interventions amongst the target populations. For instance, the limited access of a diversified diet amongst mothers and children has remained one of the daunting
| In order to effectively implement priority interventions recommended in this Strategy and improve on their relevance, coverage and effectiveness, various research needs have been identified and it is recommended that these be conducted and findings used to improve on their relevance, coverage and effectiveness, various research needs have been identified and it is recommended that these be conducted and findings used to

| scaled up along-side the following recommendations:
- Where possible, integrate MN messages into other programs
- Engage the community in prevention measures using a bottom-up approach
- Create and build partnerships with communities, private hospitals, pharmacies and other medical institutions to assist in educating mothers and other population groups on hygiene and proper sanitation, disease prevention etc
- Integrate prevention and treatment measures into health campaigns and livestock interventions

|
Generally, the following are recommended for all the above interventions:

- Improve on time delivery of supply - streamline the supply chain with proper forecasting of needs to avoid wastages of supplies.
- Consider sensitizing medical schools to roll out trainings in medical schools.
- Conduct on-job training for the health staff.
- Develop and provide IEC materials as part of health education in the facility level for beneficiaries.
- Extend the implementation of a behaviour change communication strategy to communicate the benefits of all interventions.
- Advocate for the completion of a school health policy in all zones which will highlight the need for integration of school programs with micronutrient strategies.
- Engage existing social structures in communities to create awareness, change and ownership of MN Strategies.
- Extend and strengthen the BCC program in all areas of the country, with social mobilization using mass media.

Operational Research is important in providing scientific evidence for programs in order to improve their quality and align them better as they get scaled up. It is therefore important to incorporate formative and operational research into program implementation and provide adequate resources to continuously conduct this form of research in order to improve uptake and effectiveness of interventions/strategies.

Challenges in improving their MN status. It is however important to fully understand the reasons behind the limited access and define and implement socially acceptable strategies that will improve the intake of MN-rich foods hence improving MN status of women and children. There are similar gaps in knowledge and a clear understanding of most of the program challenges or approaches provided in this Strategy that will require in-depth analysis through the use of formative and operational research.

Inform program implementation. These include:

- An analysis on the sources of the high iodine levels in urine, as well as its physiological consequence.
- Pilot trials on the distribution and use of Micro-Nutrient Powders.
- Conduct an analysis on the barriers and enablers for diet diversification especially in women and children.
- A review of social marketing approach for MN programming.
- Compliance study for iron/folic acid and multiple micronutrient supplementation.
4. **STRATEGIC AREAS OF FOCUS**

4.1 **Introduction to the Strategic Areas of Focus**

The comprehensive situation analysis of the existing Micronutrient Deficiency Control Programme provides a clear basis for identification of areas of focus and activities that if implemented, will mitigate the challenges and threats identified, strengthen the implementation of the priority interventions for MN deficiency control and management and help achieve the goal of this Strategy. This section therefore provides these 7 Strategic Areas that the Ministry/Directorate of Health in partnership with Donors, Partners and key stakeholders will need to focus on in the next three years (2014-2016).

The areas are: Policies, Guidelines and Protocols; Capacity Development; Supplies; Service Delivery and Integration; Community Awareness and Ownership; Advocacy, Resource Mobilization and Coordination; and Research, Monitoring and Evaluation.

In order to effectively implement and extend the coverage of the priority MN Interventions provided in the previous section, all stakeholders in the MN programme will have to pool synergies and focus resources and efforts on these 7 Strategic Areas. The Zonal Action Plans have therefore been formulated based on these Areas. It is envisaged that, specific actions identified under each of the Strategic Area will help address most of the identified bottlenecks, ensure increased coverage of vulnerable population groups with MN interventions and improve utilization of the interventions.

4.2 **Linkages of the Strategic Areas of Focus with other National Strategies**

This Strategy recognizes that realization of the outlined outcomes under each of the Strategic Areas of Focus will be based on: i) The implementation of the overall health and nutrition programs and ii) The functionality and effectiveness of the health system. Therefore, identification and planning of priority actions is laid out and well linked to the existing health and nutrition frameworks; and the six building blocks provided in the Health Sector Strategic Plan that contribute to the strengthening of a health system. Ways in which the Micronutrient Strategic Areas of Focus link to the HSSP blocks are demonstrated below:

*BB1:* **Leadership and governance:** Provides for the strengthening of the MoH/government authorities’ capacity in leadership and governance in order to better conduct the core functions of the government for the delivery of an effective quality health service.
This Micronutrient Strategy identifies the need for the government to appreciate the magnitude of the MN problem and strengthen their capacity to i) legislate appropriate policies; ii) lead the process of reviewing guidelines and protocols on MN interventions that compel all stakeholders to act in a synergized way to improve the micronutrient status of all the citizens of Somalia and especially children and women of reproductive age; and iii) provide effective oversight of the micronutrient program, coalition and partnership building and be accountable to the citizens.

**BB2:** *Human Resources for Health – Provides for building an adequate, better skilled, well managed and motivated workforce to provide Essential Package of Health Services (EPHS).*

The MN Strategy recognizes the need for a knowledgeable and skilled workforce to effectively deliver MN interventions and related information to all its recipients. It identifies ways of improving the required knowledge and skills of the health workers and providers and other related personnel to be more responsive, effective and proactively engage in actions that promote the use of micronutrient interventions.

**BB3:** *Health services - Seeks to improve the quality coverage and utilization of services with a focus on women and children.*

The block, considered as the core of a health system provides for an organized and effective infrastructure and programming for delivery of micronutrient interventions. The MN Strategy recommends ways of improving the quality of delivery of micronutrient supplies and services provided in public health facilities, and the provision of adequate information regarding the benefits of micronutrients. In addition, the Strategy proposes ways of engaging the private hospitals and facilities to partner in delivery of MN services, interventions and provide public health education. Furthermore, strategies of increasing awareness on the importance of micronutrients and acceptance of MN interventions at community level are proposed in the Strategy.

**BB4:** *Health Financing – This block provides for the development of a health financing system which relies more on national financing and local resources, allocating budget to priorities and accounts for spending accurately and use of national and international funds more efficiently.*

The MN Strategy identifies priority MN interventions to be implemented in the next 3 years. It promotes the allocation of funding from the national government and zonal authorities which will: i) ensure sustainable funding to support implementation of priority interventions hence
mitigating donor fatigue and ii) demonstrate government commitment to the fight against micronutrient malnutrition hence attracting more support from donors and partners. The strategy also promotes the use of mechanisms that improve coordination amongst development partners where reports are shared which then reduces duplication of programs and encourages accountability and transparency in the use of resources.

**BB5:** *Medicines and Consumables – The Block seeks to improve the availability, safety and rational use of medicines and health products.*

The MN Strategy identifies some of the logistical issues facing the program including inadequate planning and forecasting of supply-needs which leads to delays in procurement and distribution of MN supplies in health facilities which in turn leads to over-surplus in some zones and shortages in other zones. The Strategy recommends for proper record keeping at health facilities which show the use of MN supplies, the quarterly/yearly requirements hence inform decisions on future supply needs. This will reduce on wastage of supplies and improve on rational use of MN supplements per the national guidelines. The Strategy also proposes the establishment on a zonal supply management chain in some regions in order to ensure improved distribution and availability of MN supplies at all levels.

**BB6:** *Health Information – This Block provides for planning and managing the health system based on better quality up-to-date information, analysis and reporting.*

The government has established a Health Management and Information System (HMIS) that is to be expanded to cover health facilities and some private health providers. It is envisaged that, this will improve data interpretation, analysis and its use on planning and tracking of programme performance. In order to implement an effective micronutrient deficiency control programme, the Strategy has proposed the development of monitoring and evaluation indicators which should be integrated into the overall HMIS and provide data on programme performance, expose the gaps, and provide a basis for informed intervention design/re-design, planning and implementation to improve coverage and effectiveness. In addition, the Strategy seeks to improve program monitoring and evaluation of interventions for effectiveness; and sharing of these reports amongst all stakeholders to expose weaknesses and gaps and inform future planning.

### 4.3 Rationale for the Strategic Areas of Focus
The rationale/justification of each of the areas of focus, including specific objectives, outcomes and some broad activities are provided in the table below.

<table>
<thead>
<tr>
<th>Area of Focus and Rationale</th>
<th>Objectives, Outcomes and Recommended Actions</th>
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| **Strategic Area 1: Policies, Guidelines and Protocols**  
  **Rationale:** Clear policies and guidelines provide a framework in which decisions can be made. They help in standardizing services and practices, and achieve greater understanding and co-operation amongst all stakeholders.  
  In the country, there is need for a policy on the use of Micronutrient powders (home-based food fortification), which is a new intervention. On the other hand, the existing guidelines and protocols on micronutrients need to be revised/updated in line with international guidance and ensure they are distributed and used in all health facilities across the country. | **Objective**  
To provide guidance and harmonize the implementation of interventions in MN deficiency control and management at all levels.  
**Outcomes**  
80% of health facilities at all levels using guidelines and protocols by 2016.  
**Recommended Actions:**  
- Finalization, validation, launch and dissemination of the MN Strategy  
- Review of guidelines and protocols  
- Interpretation of guidelines and Protocols into Somali language and dissemination to all health facilities  
- Development of a policy on home-based food fortification |
| **Strategic Area 2: Capacity Development**  
  **Rationale:** The success and impact of a program largely depends on the quality of the human resource involved in planning, implementing and monitoring the program. In the country, there is a shortage of qualified health staff who do not have adequate knowledge on micronutrients and skills for diagnosis of MN deficiency symptoms, treatment and the general importance for adequate micronutrient nutrition. In order to improve the effectiveness of the MN program, the health workers including health providers must have sufficient knowledge to enable them provide MN supplies to the population as per guidelines and above all, be able to educate recipients of their services especially mothers on importance of adequate MN nutrition, use of local food recipes to improve general nutrition and health care. Besides, this will also boost the confidence of service seekers on the health provider and the system. | **Objectives**  
i) To improve the technical capacity of health workers involved in planning, implementation and monitoring at all levels of micronutrient deficiency control and management,  
ii) To develop capacity of other key program personnel from other sectors on micronutrient deficiency control.  
**Outcomes**  
i) 70% of health workers are trained and sensitized on micronutrients deficiency control and management  
ii) 10% of key program personnel trained/sensitized on MN deficiency control and management annually.  
**Recommended Actions:**  
- Strengthen the capacity of tertiary institutions in provision of courses on nutrition including micronutrients  
- Design modules and train health workers on the importance of micronutrients, prevention of deficiencies, diagnosis and treatment of severe cases |
### Strategic Area 3: Supplies

**Rationale**
In order to ensure the use of MN supplies by target population, these must be available and distributed in all health facilities where PLW seek ante- and post-natal services; and must also be available for distribution using other health platforms such as CHDs, campaigns, outreach programs, mobile teams and other channels.

**Objective**
To improve the effectiveness and efficiency of the supply chain system and distribution of MN supplies

**Outcome**
Improved health and nutrition supply chain management system that adequately incorporates micronutrient supplies.

**Recommended Actions:**
- Provide MN supplies for prevention and treatment of micronutrient deficiencies in all health facilities.
- Consider provision of MN supplies in private hospitals to cover groups that seek medical attention in these facilities.

### Strategic Area 4: Service Delivery and Integration

**Rationale**
Integration of programs ensures that the same resource is used to provide different programs at the same time, and to the same recipient. The biggest challenge facing the MN program is that of coverage. In order to increase the reach of vulnerable population groups (children and PLW) with MN interventions, it is important to integrate MN services and practices into the existing programs with the MN relevance such as agriculture, education, livestock and others with the capacity to reach vulnerable populations and especially in the rural areas. This would also include integrating MN messages into BCC programs, communication strategies and other media to share information on the benefits of MN interventions and ward off community beliefs and misconceptions.

**Objectives**
1) To introduce and increase the coverage of MN interventions by improving service delivery and integrating interventions into existing health, nutrition, education, livestock and other relevant programs.
2) To harmonize and integrate MN messages and communication

**Outcomes**
Increased population coverage with micronutrient interventions and messages.

**Recommended Actions**
- Integrate implementation of MN supplementation, deworming and others into other relevant programmes
- Integrate deworming into school feeding programs
- Strengthen the linkages with the MoA, Livestock and development to promote production and consumption of MN dense locally available foods
- If possible, integrate short courses into the nutrition education in schools on the causes and prevention of micronutrient malnutrition
## Rationale
One of the identified challenges facing the MN program is the low utilization of MN interventions. This is due to lack of knowledge by the community on the role of micronutrients in pregnancy and child development, the sources of micronutrients, and the contribution of the existing MN interventions to their health and child optimal growth. In the absence of knowledge, myths and misconceptions that deter use and utilization of MN interventions abound. It is therefore crucial to package simple messages on MN and use accepted social structures and platforms to reach majority of the community with these messages and information.

### Strategic Area 5: Advocacy, Resource Mobilization and Coordination

**Rationale**
Advocacy involves carrying out a set of actions targeted to create support for a policy or program. Given the competing health and nutrition priorities in the country, it is likely that micronutrients are not prioritized. Given the crucial role of MNs in maternal and child health and its multi-sectoral nature, it is important to continuously advocate for support from government authorities with a stake in MN and for allocation of adequate resources to the program. The situation in the country has attracted a lot of partners who are providing a myriad of support from the national level to the community level. The support on MN from these partners needs to be properly coordinated to reduce duplications and ensure better coverage especially in the rural areas.

Recognizing the role of the private sector in providing health services and supplies to a significant population especially in the urban areas, it is important to consider capitalizing on existing and establishing new public-private partnerships in order to improve coverage of vulnerable population groups whilst ensuring that their service provision is in accordance with the national guidelines.

**Objective**
To strengthen the MN programme through advocating for support and resource allocation, and improved coordination amongst all stakeholders.

**Outcome**
Improved support and resource allocation by central government and Partners, and enhanced coordination amongst all stakeholders in MDC.

**Recommended Actions:**
- Advocate for introduction of MN interventions for prevention and treatment of MN deficiencies in relevant line ministers such as agriculture, Education and other stakeholders and civil society
- Advocate for appropriate allocation of MN financing within national nutrition budgets
- Coordinate the implementation of the MN Strategy Action Plan and implementation of priority interventions
- Implement mechanisms of sharing of reports among Partners within the Nutrition Cluster to improve effectiveness and efficiency in implementation of interventions

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To improve community awareness on benefits of micronutrients and ownership of MN interventions by using existing social structures.

**Outcomes**
Improved community uptake and demand for micronutrients and micronutrient interventions

**Recommended Actions**
- Disseminate key messages aimed at various audiences for promotion and support to breastfeeding by mothers.
- Develop and disseminate simple messages on the importance of MN Interventions targeting different audience in the community
- Engage with religious leaders, respected elders, opinion leaders etc) to promote uptake of MN interventions
- Support periodic broadcasting of messages on nutrition through radios and TVs
### Strategic Area 6: Research, Monitoring and Evaluation

#### Rationale
In program implementation, research is required to continuously provide program data, model new systems, and make better decisions with less risk. It is therefore important to develop research capacity and allocate specific resources. Due to the myriad challenges facing the MN program and the difficulties in implementation of some of the interventions, it is important to establish and institute operational and formative research which will continuously provide data for informed decision making depending on the scenarios. This will also help in introduction of new interventions such as the home-based food fortification, commercial/industrial food fortification among others. Monitoring and evaluation of the MN program will be important throughout the life of this strategy in order to inform on the extend of reach, utilization, effectiveness and biological impact of the program.

<table>
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<tr>
<th><strong>Objective</strong></th>
<th>To strengthen monitoring and evaluation of micronutrient control programmes at all levels including information management, documentation and reporting; and integrate research on MN programming into the overall health and nutrition research</th>
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<td><strong>Outcome</strong></td>
<td>Improved program efficiency and effectiveness from the use of M&amp;E reports and research findings.</td>
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| **Recommended Actions:** | - Strengthen the MN component in the MICS, HIMS and other nutritional surveys to ensure MN data is collected as part of these data collection surveys  
- Strengthen the monitoring and reporting system for the micronutrient programme including school deworming  
- Identify keys areas that require more research in the area of MNs and carry out operational or formative research to improve micronutrient programming in the identified areas  
- Conduct mid-term and final evaluations the Micronutrient Deficiency Control Strategy |
PART 5: OBLIGATIONS AND RESPONSIBILITIES

Achieving the country’s micronutrient programme targets requires that all stakeholders fulfill their obligations and carry out their responsibilities. The recognition that the government, development partners, NGOs, professional bodies, communities and families need to work together will enhance achievement of the goal and objectives of this national strategy. By improving coordination and building partnerships, stakeholders would avoid conflicts, duplication of efforts and enhance the effective use of resources.

The Strategy recognizes that these priority MN interventions need to be coordinated at all levels – national, zonal, regional, and community levels – with actions to address the underlying causes of micronutrient deficiencies, treat existing cases and promote general good nutrition and sanitation. Some of the recommended actions are intended to be implemented by other sectors such as agriculture, commerce, education, livestock and others. Very few new mandates or commitments are required of these sectors; simply by widening their scopes and carrying out their current responsibilities effectively, they will make significant contributions to sustainably reduce micronutrient malnutrition in the country. The Strategy requires that each of these sectors work in a more collaborative and coordinated manner with each other and include micronutrient objectives in justifying, planning and budgeting for their regular activities.

5.1 Government

The Ministry of Health should support implementation of the strategy at all levels by identifying the required human, financial and organizational resources and allocating these to facilitate timely and successful implementation of the strategy.

National nutrition sectoral committees/structures should be initiated with Micronutrients as a substantive agenda and linked to the health and nutrition sectoral/cluster groups to support implementation of the strategy and the action plans.

The Ministry should advocate and sensitize all stakeholders notably agriculture and other line ministries, institutions, development partners and industry on the national strategy on Micronutrient Deficiency Control and Management. It should pay particular attention to integrating micronutrient control into the health, nutrition, education, social welfare and other relevant programmes and the broader health care programs for women and children.

Government should engage the CBOs and NGOs operating in the communities, to facilitate collaboration and promote self-change initiatives. The linkage between the health facilities and the community should be strengthened through active engagement and use of the existing social structures to promote utilization of health care services and MN interventions.
5.2 **International organizations**

International organizations should recognize the important role micronutrients play in addressing development challenges. They should serve as advocates for increased human, financial and institutional resources for implementation of this strategy.

Specifically, international organizations should contribute to implementation of the action plan through:

- Strengthening the organizational capacity of government authorities to establish supporting systems, provide oversight to the programme and support its implementation at all levels;
- Providing timely and relevant technical updates and scientific information to inform and strengthen the programme;
- Advise on innovative channels and ways of extending coverage of MN interventions based on best practices;
- Support implementation of MN interventions at all levels;
- Advocate for allocation of resources for MN and overall nutrition actions and insist on accountability on use of funds as per the HSSP provisions.

5.3 **Donors**

Donors should work with government and international organizations to support the role out of this strategy and its priority interventions. Donors should ensure that MN interventions are adequately considered and integrated into the programs they support. In addition, they should insist on accountability on use of funds as per the HSSP provisions.

5.4 **Private Sector**

Private hospitals and pharmacies have a key role to play in achieving the goal of this strategy. Some of these medical institutions sell and distribute zinc tablets for management of diarrhea and other childhood diseases; with others being identified as potential distributors of micronutrient powders for children. They are therefore encouraged to promote purchase and right use of these MN supplies, provide authentic information on the benefits, and generally participate in the national effort by importing and distributing quality supplies from recognizable and approved sources.

5.5 **Health facilities**

The four levels of service provision (Primary Health Unit, Health Centre, Referral Health Center and the Hospital) provided under the EPHS of the HSSP should provide efficient package of services that includes micronutrients interventions and in addition, should be able to:

- Screen,
- Treat severe cases,
- Provide MN supplies as per the guidelines and protocols, and
- Provide education on proper sanitation and infections and disease control.
5.6 Communities and Families
Should provide support and care to the vulnerable populations (children and PLW), ensure proper micronutrient nutrition to these groups and continuously encourage support programs that foster good health and nutrition, hygiene and general care of these groups.

PART 6: RESULTS FRAMEWORK

If the Strategic Plan is to have continuing utility to the Programme, it must be reviewed and revised as necessary to address the changing circumstances of the Programme whose activities it is intended to guide. In order to keep track on the development of this strategy, a Results Framework has been developed to help review the accomplishment of objectives under each of the Strategic Areas of Focus. Indicators to measure the achievement of each of the objectives are included that form the basis of the Strategy M&E Framework.

The Framework has been designed to provide the baseline under each of the specific milestones to be achieved each year (2014, 2015 and 2016).

This is provided as part of the Action Plan.

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<th>HSSP Building Block:</th>
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ANNEXES

Annex 1A

1.1 Micronutrients of Public Health Significance

Vitamins and minerals are nutrients that are required in the body in minute quantities for the normal physiological body functioning, hence referred to as micro-nutrients. Until the 1980s, efforts to alleviate under-nutrition in developing countries were more focused on Protein and Energy Malnutrition. While this kind of malnutrition still remains an important concern, policy makers and program managers have come to appreciate the significance of micronutrient malnutrition due to its effect on human health and function; and as a risk factor for many diseases hence contributing to high rates of morbidity and even mortality.

Globally, the main micronutrients of public health concern are: Iodine, Iron and Vitamin A; though zinc and folic acid have also become important nutrients due to their role and function in child growth and development. Other vitamins and minerals are also important, such as vitamin B-1, B-2, B-3, B-6 and B-12; vitamin C, vitamin D, calcium, selenium and fluoride. Though the scale and effects of deficiencies in these other micronutrients is much more difficult to quantify and is less understood, they are equally important in public health and should be considered in the overall micronutrient preventive and control program. After all, micronutrient deficiencies usually occur in combination and therefore evidence of a deficiency in one micronutrient can predict the existence of deficiencies in others. For instance, a high prevalence of iron deficiency and vitamin A is accompanied by zinc, vitamin B-12 and vitamin B-2 deficiencies because the underlying problem in all cases is inadequate intake of animal source foods.

Though inadequate intakes of these micronutrients affect all age groups of a population, children, and pregnant and lactating women are mostly affected. Children need high amounts of micronutrients for their mental and cognitive development, a process which begins when a woman is pregnant, hence the increased demand for these micronutrients in the body. When a woman is lactating, she needs adequate intake of these micronutrients in order to meet her increased demands and be able to provide adequate amounts to her baby through breast milk.

**Iodine** is required for the synthesis of the thyroid hormone. The most devastating outcome of iodine deficiency is mental retardation and other related deficiencies collectively referred to as Iodine Deficiency
Disorders (IDD) that reflect thyroid dysfunction. Deficiency of iodine is currently one of the world’s main causes of preventable cognitive impairment. A deficit in iodine resulting in thyroid failure during the critical period of brain development, i.e from fetal life up to the third month after birth results in irreversible alterations in brain function. The main factor for development of iodine deficiency is a low dietary supply of iodine which tends to occur in populations living in soils which have been leached and depleted of the mineral.

Iron, the most important micronutrient in the body, has the function of carrying oxygen through-out the body where it is present in erythrocytes as haemoglobin. Iron deficiency occurs as a result of long-term negative iron balance and in its severe form, results to iron-deficiency anaemia. The risk factors for iron deficiency include a low intake of haem-iron (present in poultry and fish); inadequate intake of vitamin C (ascorbic acid) which enhances absorption of iron from the diet; poor absorption of iron from diets high in phytates (found in legumes and cereals) and phenolic compounds (present in tea, coffee, sorghum, and millet); increased iron requirements in certain periods of life such as during pregnancy; and heavy blood losses mainly due to menstruation, parasite infections and others. The main consequences of iron deficiency are anaemia, reduced physical endurance even in the absence of anaemia, impaired cognitive and physical performance which increases the risk of maternal and child mortality. Population groups at risk of developing iron deficiency are pregnant women, infants and children below 2 years, pre-school aged children, school going children, adolescents, and non-pregnant women, in order of the risk. Improving iron status is also linked to increased utilization of vitamin A and iodine.

Interventions aimed at preventing iron deficiency and iron deficiency anaemia in pregnancy include iron supplementation, fortification of staple foods with iron, health and nutrition education, control of parasitic infections, and improvement in sanitation. Delayed umbilical cord clamping is also effective in preventing iron deficiency among infants and young children.

Vitamin A is required in small amounts mainly for normal functioning of the visual system, maintenance of cell function for growth, immune function and reproduction. The vitamin is mainly found in animal source of foods as retinol and in vegetables and fruits as pro-vitamin A carotenoids, which has to be converted into retinol by tissues and the liver in order to be utilized by body cells. The best sources of vitamin A are therefore those of animal source foods in particular liver, eggs and dairy products which

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12 Anaemia is defined as low blood haemoglobin concentration. About 50% of the cases of anaemia are due to iron deficiency, as opposed to malaria (malaria parasites destroys erythrocytes), the presence of infection or other nutrient deficiencies. The haemoglobin cut-off indicating anaemia vary with physiological status like age, sex and have been defined for various population groups by WHO.
contain vitamin A in the form of retinol. Various food preparation techniques such as cooking, grinding and addition of oil can improve the absorption of food carotenoids.

Vitamin A deficiency develops in cases of low dietary intake as discussed above, poor nutritional status, and high rate of infections especially measles and diarrheal diseases. Vitamin A deficiency is the leading cause of preventable severe visual impairment and blindness in children and women. Its deficiency significantly increases the risk of severe illness in children resulting to death.

**Zinc:** Zinc plays a central role in cellular growth and differentiation since it is an essential component of a large number of enzymes. Though there is no much information on the extend of deficiency of zinc, the mineral is of significant public health concern due to its positive impact on stunting in children and on reducing the occurrences and severity of childhood diseases such as diarrhea. The central role of zinc in cell division, protein synthesis and growth means that an adequate supply is important and especially for infants, and pregnant and lactating women. The risk factor for zinc deficiency include diets low in zinc or high in phytates, mal-absorption disorders due to the presence of parasites and diarrhea, impaired utilization of zinc and others. The occurrence of zinc deficiency is closely linked with iron deficiency because both iron and zinc are found in the same foods and their absorption from foods is inhibited by the presence of phytates. The minerals however differ in that zinc is not affected by blood loss like iron.

**Folate:** Folate plays a key role in cell multiplication and tissue growth. Low intakes of folate are therefore associated with a higher risk of giving birth to infants with serious malformations (neural tube defects) and other birth defects resulting in death or major lifelong disability in survivors. In adults the deficiency increases the risk of cardiovascular diseases, cancer and impaired cognitive function. The main sources of dietary folate are legumes, leafy green vegetables, fruits, yeast and liver. The deficiency therefore tends to be more prevalent in populations that have a high intake of refined cereals (which are low in folate) and a low intake of green vegetables and fruits. Though many countries do not have data on their population folate status or means of assessing the likely prevalence of folate deficiency which is mainly hampered by difficulties in measuring the folate content of foods, some food fortification impact evaluation studies have shown that, foods (mainly wheat flour) fortified with folic acid has increased blood folate concentrations and significantly reduced the incidences of children born with neural tube defects. Programs on fortification of wheat flour with iron, folic acid and other micronutrients have virtually eliminated low serum folate in countries like the USA and China and significantly reduced neural tube defects in South Africa.
1.2 Strategies that address Micronutrient Malnutrition

Due to the diverse underlying factors involved in vitamin and mineral deficiencies, addressing them require a combination of complementary strategies. The World Health Organization has recommended a mix of strategies to be used to increase the intake of micronutrients. The primary strategy is dietary diversification which involves increased production, preservation, marketing and consumption of micronutrient-rich foods. Other dietary related strategies include food fortification and bio-fortification. To supplement these strategies and especially in the vulnerable populations such as infants, children, pregnant and lactating women, and the hard to reach populations, supplementation with key micronutrients is recommended. In all these strategies, it is important to provide nutrition education, observe public health measures and implement programs that control diseases and infections.
i) Dietary Diversification

This involves the addition of a variety of high micronutrient density foods to commonly consumed diets in order to improve micronutrient nutrition. Examples of such foods include meat and meat products, milk products, pulses or legumes, vegetables (including green leafy vegetables), and fruits.

Dietary diversification is also important in improving micronutrient nutrition because of the interrelationships between foods. For instance, fruits rich in vitamin C improve the absorption of non-heme-iron in the body. Though this is the best sustainable approach with a long term impact needing minimal input, it requires education in identifying the foods that are rich in micronutrients, in post-handling, preservation, preparation and cooking to ensure minimal loss of the micronutrients. In addition, some community norms or cultural practices may discourage the intake of some of these foods and hence need for education to change these beliefs. These therefore call for behavior change which all combined take a long time. It is also influenced by other factors such as changes in weather (droughts and floods).
ii) Breastfeeding

WHO/UNICEF recommend the initiation of breastfeeding within the 1st half to 1 hour of delivery and thereafter, exclusive breastfeeding of infants within the 1st six months of life. Breast milk is the natural and ideal first food for newborns and infants, as it gives infants all the nutrients they need for healthy development. It is safe and contains antibodies that help protect infants from common childhood illnesses such as diarrhoea and pneumonia, the two primary causes of child mortality worldwide. Breast milk is readily available and affordable, which helps to ensure that infants get adequate nutrition. The benefits of breastfeeding continue to be experienced through-out the life of human – adolescents and adults who were breastfed as babies are less likely to be overweight or obese in some instances, are less likely to have type-2 diabetes and perform better in intelligence tests. After the baby is weaned and introduced to foods, UNICEF/WHO recommend that breastfeeding should continue up to 2 years so as to supplement nutrients obtained from the diet and continue to benefit the baby. Additionally, breastfeeding is regarded as a natural method of birth control (98% protection in the first six months after birth)\(^\text{13}\). It reduces risks of breast and ovarian cancer later in life, helps women return to their pre-pregnancy weight faster, and lowers rates of obesity.

iii) Food Fortification

a) Commercial Food Fortification

Food fortification is the practice of deliberately increasing the content of essential micronutrients (vitamins and minerals) in a food so as to improve the nutritional quality of the food and to provide a public health benefit with minimal risk to health\(^\text{14}\). Hence, since the main aim of a fortification programme is to “provide a public health benefit”, priority should be given to controlling those nutrient deficiencies that are most common in the population and that have the greatest adverse effect on health and function. The attractiveness of a food fortification program is that, it is a socially acceptable strategy which does not require change in food habits and can be introduced quickly under industrial-production settings at minimal costs of about 0.5 – 2% increment of the final product’s retail price which should be in tandem with the usual price increments. It has a wide coverage of all the population groups (above 2 years) and


relies on the usual food distribution market channels to reach even the remote areas. The low daily dose optimizes efficacy and safety, and the costs can be passed on to the consumer.

**b) Home based fortification**

Food Fortification also includes *home based fortification using micronutrient powders or low dose lipid-nutrient supplements*. This intervention involves the addition of a mixture of micronutrients to a semi-solid food. The mixture is provided in single-serving sachets, where the contents are mixed the ready-to-eat food and mixed well before consumption. This intervention is mainly recommended as part of complementary feeding when young children cannot get enough iron or other nutrients from the family foods. It can be used for vulnerable groups such as in such settings as in schools, refugee camps hence also referred to as “point-of-use fortification”. Home fortification of foods with micronutrient powders containing iron, vitamin A, zinc and other recommended micronutrients has been known to improve iron status and reduce anaemia among infants and children 6-23 months of age. In 2007, the use of micronutrient powders was endorsed by the WHO, UNICEF and WFP in a joint statement as an effective way of improving micronutrient status of nutritionally vulnerable population groups such as children. Consequently, in 2011, the WHO published guidelines that provide global evidence-informed recommendations on use of multiple micronutrient powders for home fortification of foods consumed by infants and young children of 6-23 months.

**iv) Biofortification**

This is the process by which the nutritional quality of commonly consumed foods from agricultural crops is enhanced through either conventional plant breeding and/or modern technology. Examples of biofortified foods include:

- iron-biofortification of rice, beans and sweet potato;
- zinc-biofortification of wheat, rice, beans, sweet potato and maize and
- provitamin A carotenoid-biofortification of sweet potato, maize and cassava.

**v) Supplementation:**

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15 Reference – check note book
Supplementation involves temporal or periodical provision of large doses of micronutrients in the form of a capsule/tablet or by injection. This strategy is only recommended for groups who are not able to meet their nutritional requirements through food due to their increased physiological growth or populations that are hard to reach with other strategies due to remoteness of location or security constraints.

WHO has recommended several supplementation programs that include: vitamin A supplementation focusing on children under 2 and 5 years; iron and folic acid supplementation to pregnant women; calcium supplementation for management of hypertension and pre-eclampsia; multiple micronutrient tablets focusing on pregnant and lactating women; zinc in management of childhood diarrhea; and intermittent iron and folic acid to women of reproductive age.

Though multiple micronutrient supplementations have been proved to be safe and efficacious, the practical programmatic implications need to be addressed such as supplement composition and bioavailability, cost, the mode and timing of delivery, and compliance.

\textbf{vi) \quad Education and public health measures including control of diseases and infections.}

Micronutrient malnutrition is often associated with a high prevalence of diseases and infection, hence, in the fight against this form of malnutrition, disease and infection control programs become integral. Infections suppress appetite thus reducing food intake, impairs fat digestion and reduces vitamin absorption, which may lead to reduced growth. Disease and infection control programs include immunization, malaria and parasite control-deworming; and the observance of measures such as proper hygiene, sanitation and general keeping of clean environments which reduce the events and occurrence of diseases. Proper education on provision and use of clean water, wash of hands, proper disposal of waste, clean handling of foods, use of pit latrines, among others should be provided to communities and families. Other factors, such as the quality of child care and maternal education, also need to be taken into consideration when developing public health responses to micronutrient malnutrition.

The above micronutrient however strategies vary from country to country depending on many country-specific characteristics.

\textbf{1.3 \quad Contribution of micronutrients to the achievement of MDGS}

Adequate micronutrient malnutrition is closely linked to the achievement of 6 out of the 8 Millennium Development Goals. These are: 1. Eradicate extreme poverty and hunger, 2. Achieve universal primary

The following table demonstrates the contribution of micronutrients to each of the above stated Goals.

| Box 2: Contribution of Micronutrients to achieving Millennium Development Goals |
|------------------------------------------|---------------------------------------------------------------|
| **Goal**                                | **Contribution**                                             |
| Goal 1: Eradicate extreme poverty and hunger | • Iodine and iron contribute to child brain and cognitive development  
• Children who are not well physically and mentally developed cannot grow into responsible adults who can gainful be employed to improve their economic status hence eradicating hunger and poverty. |
| Goal 2: Achieve universal primary education | • Sufficient iodine and iron stores improves cognitive skills, school participation and school achievement. A deficiency in these leads to impaired speech and hearing defects in children making them drop out of school.  
• Vitamin A helps to boost immunity which reduces incidences of diseases and infections thus ensuring school attendance. |
| Goal 3: Promote general equality and empower women | • Improved iron status in women leads to increased productivity, cognition, capacity and increased women participation in the overall national development agenda. |
| Goal 4: Reduce child mortality | • Severe micronutrient deficiencies lead to serious consequences such as anemia, children born with neural tube defects, decreased immunity and hence increased susceptibility to diseases and infections which may lead to increased infant and child mortality. |
| Goal 5: Improve maternal health | • Iron deficiency and induced anaemia lead to still births, complications during birth and constrained fetal development which could threaten the life of the mother.  
• Vitamin A deficiency compromises immunity which predisposes a pregnant woman to infections and diseases. |
| Goal 6: Combat HIV/AIDS, malaria and other diseases | • Micronutrients boost the ability of the body to fight diseases and in cases of attack, help the body to recuperate faster, resuming normal physiological functions. |

Globally, there is an awakening and an increasing interest in nutrition and specifically in micronutrient malnutrition. The contribution of micronutrients to achieving global and national development goals, is increasingly getting recognized in the global arena and many traditional donors not known to support micronutrients are now supporting interventions towards increasing micronutrient intake in the diet. Consequently, almost all countries have initiated programs that are aimed at preventing micronutrient deficiencies and managing the existing cases with the goal of eliminating micronutrient malnutrition.
In Somalia, there has been concerted effort by government authorities, donors, implementing partners, NGOs and other organizations to implement micronutrient strategies to control and manage micronutrient deficiencies. However, these efforts need to be well focused and coordinated for enhanced impact hence the need for a strategy.

1.4 Purpose and use of the micronutrient strategy

Micronutrient malnutrition is usually invisible to malnourished families and communities who often do not recognize the human and economic costs associated to this kind of malnutrition. In addition, governments may neglect the contribution of micronutrients to the overall socio-economic agenda in the country and may therefore remain un-committed by not prioritizing and not allocating adequate resources to support the implementation of some of the proven high-impact interventions for combating micronutrient malnutrition. Due to the multiple organizational stakeholders involved in micronutrient nutrition, this important area of nutrition often falls between the cracks for often lack of consensus on the priority or most effective interventions given a certain context.

In order to call for attention to this important part of nutrition, the need for a micronutrient strategy was identified as a priority by the Somalia health and nutrition authorities and Partners; with the development of the strategy been awarded funds within the Joint Health and Nutrition Program. Development of this Strategy is also in fulfillment of the Health Systems Strategic Plan which, under the building Block on Leadership and Governance, requires for development of appropriate policies and strategies that will strengthen the capacity of the Ministries of Health in the various zones to effectively conduct their roles in providing better health and nutrition to their citizens. The need for a micronutrient strategy was identified and prioritized under the Nutrition Strategy.

In cognizant of other national strategies and programmes such as the Nutrition Strategy (2011-2013), the IYCF Strategy (2012-2016), Basic Nutrition Service Package, Essential Package of Health Services, Joint Health and Nutrition Program, and Strategies and Plans from other sectors or ministries with relevance to micronutrients such as Ministry of Agriculture, Industry and Commerce, Fisheries, Finance, among others; this strategy seeks to collate the proposed interventions, practices and messages and organize them in a manner that will enhance coordination during implementation thus increasing population coverage and effectiveness. Furthermore, delivery of interventions within this strategy will be premised on a
strengthened health system infrastructure that is sought by the HSSP and the Health Policy Framework including the overarching Policies of other development sectors such as Agriculture, Industry and others.

This strategy document has therefore been developed to set direction and provide ‘same point of reference’ to all relevant stakeholders on the priority strategies that the country will focus on in the next 3 years (2014-2016). The strategic plan will enhance alignment of resources with the identified priority interventions and facilitate harnessing of efforts from all stakeholders to support key areas that need to be strengthened in order to realize the strategy Goal.

The Strategy provides the priority micronutrient interventions that should be implemented in order to treat, reduce the severity, prevent and control micronutrient deficiencies in Somalia in an effective and sustainable manner. The Strategy identifies key strategic areas that if focused on in the next 3 years, will help strengthen planning, implementation and monitoring of the on-going interventions. The document also outlines specific actions for introducing complementary micronutrient interventions- home-based fortification and commercial food fortification in order to concertedly fight the micronutrient scourge.

This strategy will also help in harmonization of messages from stakeholders at each level of operation, reduce duplication and encourage coordination amongst the various stakeholders involved in designing, planning, implementing and monitoring of micronutrient-related programs at national and health facility level, and community level.

1.5   Process of developing the strategy

The process of developing this Strategy began with identification of the need for the Strategy under the Health Systems Strategic Plan and under the Joint Health and Nutrition Program. Funding was allocated under this Program after which, technical assistance was sought to lead the process.

The process involved multi-stakeholder consultations where consultative meetings were held with different Partners who included UN agencies and International NGOs working in programs relevant to micronutrient in Somalia. Additionally, 2 technical workshops were organized in each of the three zones: Puntland, Somaliland and Central-South Zone.

The first round of workshop were held in Garoowe, Puntland from 25-26 August; in Hargeisa, Somaliland from 28-29; August and in South-Central from 3 to 5 October 2013. In each zone, participants were drawn from the Ministry of Health and other line Ministries like Ministry of Agriculture, Ministry of Education,
Ministry of Commerce, Ministry of Information, and Ministry of Social Welfare; local NGOs and CBOs working in the area of micronutrients. The objective of this round of workshops was to share the plan and vision of the Strategy, secure commitment from all the relevant stakeholders to support the process and implementation of the Strategy and conduct a situation analysis to inform on the interventions being implemented in each zone, partners involved in this implementation including their target groups and level of operation (whether at national level, health facility or community level). The challenges faced by these Partners in the course of implementing the MN interventions were identified. The program environment from national to community level was critically examined by using the SWOT analysis tool. This analysis revealed the Strengths of the system and its weaknesses, opportunities out there that the program can take advantage of in order to be strengthened and potential Threats. With a clear understanding of the situation on the ground, and with guidance from findings of the SWOT analysis, feasible goals for the strategy were proposed which were later discussed by the Taskforces from each zone and harmonized into a national goal for this national Strategy. This followed identification of Strategic Areas in the micronutrient program that the country should focus on in the next 3 years in order to achieve its goal. These Strategic Areas were aligned with the HSSP, Nutrition Strategy, IYCF Strategy priority areas and the Action Plans for all three zones.

Information from this 1st Workshop and from consultations with the Partners highlighted above was synthesized and consolidated into a first (1st) draft of the Strategy.

The 2nd series of workshops in each zone were held from 20th October to 14 November 2013 as follows: Puntland (20-24 Oct), CSZ (28Oct-1Nov), and Somaliland (10-14 Nov). Different ministries and NGOs working in the zones participated. The workshop reviewed the 1st draft of the Strategy and based on the Strategic Areas of Focus identified in the 1st Consultative Workshop, developed Zonal Action Plans. In the meantime, the 1st draft was also circulated among the Health and Nutrition Cluster Groups in Nairobi for review and comments.

Comments derived from the above review were discussed and if found relevant and appropriate were incorporated into the 1st Draft. A 2nd and final draft of the Strategy was therefore prepared. The Action Plans were further discussed in each of the zones. Several meetings were held at different times within the period of development of the Action Plans to discuss detailed activities, clarify timeframes and costs in the Plans. These were finalized and validated in each zone on different dates as indicated.
The process of developing this Micronutrient Strategy and the Action Plans was under the direct supervision of the Ministry/Directorate of Health in each Zone.

This document is divided into 7 sections as follows:

1) Situational analysis – This section provides an insight into the micronutrient status of the Somali population focusing on children and women of reproductive age and discusses the underlying causes of the micronutrient deficiencies. It provides an analysis of the interventions that are currently being implemented in the country including the challenges faced. A SWOT analysis of the programme is provided at the end of the section.

2) Goal, objectives and outcomes for the micronutrient programme. This section specifies the goal and the objectives of the strategy, and outlines specific objectives as well as outcomes for the three year period of the Strategy.

3) Priority Micronutrient Interventions to be implemented within the Strategy: This section provides the priority interventions that will be implemented in the country in the next three years (2014-2016). The interventions have been selected following a criterion on the effectiveness of the intervention; magnitude of the problem; potential to achieve large coverage of the target population; and feasibility of implementation given the local circumstances and resources from government and Partners working in the country.

5) Strategic Areas of Focus: In this section, the strategic areas that if focused on will critically contribute to the achievement of the goal of this plan and ultimately that of the nutrition programme are outlined. Each strategic area includes a rationale/justification for focusing on the area, strategic objectives and outcomes under the area.

6) Action/Implementation plan: This section provides information on how the strategies will be implemented and highlights activities, outputs, responsible institutions, monitoring indicators, time frame and budget.

7) Obligations and responsibilities: The section highlights the roles of the key players and their responsibilities in implementing this plan. These players are the government, donors/development partners, private sector, the primary health care facilities and the families/communities.
8) Results Framework: This section provides a systematic approach for the review of progress of implementation of this strategy following a set of outcomes and process indicators. It seeks to ensure that all stakeholders play their roles as set out in the earlier section and that they are on track and focused on the goal of the Plan.