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ASSESSMENT OF CONSUMPTION MONITORING SYSTEMS FORTIFIED AND NUTRITIOUS FOODS IN THE EAST, CENTRAL, AND SOUTHERN AFRICA (ECSA) REGION -FINAL REPORT



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ABBREVIATIONS

AAPH	Africa Academy of Public Health
ARSO	African Organisation for Standardisation (formerly the African Regional Standards Organization)
AU	African Union
CAADP	Comprehensive Africa Agriculture Development Programme
CBO	Community Based Organization
CHS	Community Household Surveillance Study
CHSU	Community Health Services Unit
COMESA	Common Markets for Eastern and Southern Africa
CORPs	Community Own Resource Persons
COSOFAP	Consortium for Scaling-up Options for Increasing Farm Productivity
CRS	Catholic Relief Services
CSO	Civil Society Organization
DALYS	Disability Adjusted Life Years
DM&E	Design, Monitoring and Evaluation
DNHA	Department of Nutrition and HIV/AIDS
DRI	Dietary Requirements Intake
DRM	Disaster Risk Management
DRR	Disaster Risk Reduction
EAC	East African Community
EAR	Estimated Average Requirement
ECSA - HC	East, Central and Southern Africa - Health Community
FACT	Fortification Assessment Coverage Tool
FAO	Food and Agricultural Organisation of the United Nations
FFI	Food Fortification Initiative
FGDs	Focused Group Discussions
FNCO	Food and Nutrition Coordinating Office
FORTIMAS	Fortification Monitoring and Surveillance
FRAT	Fortification Rapid Assessment Tool
GAIN	Global Alliance for Improved Nutrition
GMOs	Genetically Modified Organisms
GoK	Government of Kenya
HKI	Helen Keller International
ICCIDD	International Council for the Control of Iodine Deficiency Disorders (now Iodine Global Network- IGN)
IDA	Iron Deficiency Anemia rate
IDD	Iodine Deficiency Disorders
IFNA	Initiative for Food and Nutrition Security in Africa
IHI	Ifakara Health Institute
IMMPaCt	International Micronutrient Malnutrition Prevention and Control
INGOs	International Non-Governmental Organizations

ISO	International Organization for Standardization
KAPS	Knowledge, attitude and practice survey
KHIBS	Kenya Household Income and Budget Survey
KIIs	Key informant interviews
KNFFA	Kenya National Food Fortification Alliance
KPC	Knowledge, Practice and Coverage
LVAS	Lesotho Vulnerability Assessment Study
M&E	Monitoring and Evaluation
MCHIP	Maternal and Child Health Integrated Programme
MDGs	Millennium Development Goals
MI	Micronutrient Initiative (now Nutrition International)
MICS	Multiple Indicator Cluster Survey
MIYCN	Maternal, Infant, and Young Child Nutrition
MoA	Ministry of Agriculture
MoH	Ministry of Health
NAIP	National Agriculture Investment Plan
NEPAD	New Partnership for Africa’s Development
NFFA	National Food Fortification Alliance
NGO	Non-Governmental Organizations
NMNAP	National Multi-Sectorial Nutrition Action Plan
PSC	Pre-School Children
QA/QC	Quality Assurance/ Quality Control
RNI	Recommended Nutrient Intakes
SAC	School-Aged Children
SADC	South African Development Cooperation
SDGs	Sustainable Development Goals
SNNC	Swaziland National Nutrition Centre
SPRING	Strengthening Partnerships, Results and Innovations in Nutrition Globally
SUN	Scaling Up Nutrition
SWOT	Strengths, Weaknesses, Opportunities, Threats
TFNC	Tanzania Food and Nutrition Centre
TWGs	Thematic Working Groups
UL	Tolerable Upper Intake Level
UNDAF	UN Development Assistance Framework
UNICEF	United Nations Children’s Fund
USAID	United States Agency for International Development
US CDC	United States Centers for Disease Control and Prevention
VAD	Vitamin A Deficiency
WFP	World Food Programme
WHO	World Health Organization
WRA	Women of Reproductive Age

EXECUTIVE SUMMARY

Since the mid-1990s and with the financial and technical support of USAID and other international development partners, countries of the East, Central, and Southern Africa Region have established food fortification programs as a strategy to improve the nutritional value of common diets. From 2003 to 2011, the ECSA Health Community (ECSA-HC) worked with partners on a regional effort to coordinate the implementation of food fortification programs among countries within the region. ECSA-HC passed a resolution to strengthen food fortification initiatives in the region in 2002.

With support from USAID, the ECSA capacity building initiative was initiated in June 2015 and co-implemented by ECSA-HC with GAIN providing technical support. The main goal was to fast-track the implementation of food fortification in the ECSA Region through adequate policy and legislation; technology and research; promotion and advocacy; and monitoring and surveillance. The initiative works through working groups in four thematic areas:

- I. Inspection and enforcement
- II. Production, Food safety QA/QC
- III. Laboratory
- IV. Consumption monitoring and program impact

Each of the working groups developed a road map and in relation to the consumption monitoring and program impact working group, the project coordination team commissioned an assessment of consumption monitoring and surveillance systems and frameworks covering the 13 countries in the ECSA Region as per the road map.

The objective of the assessment was to determine the status of consumption monitoring and assessment of indicators of impact that may result from the programs that ensure the availability of fortified food in the ECSA region. A secondary objective was to identify the sources and methods used in consumption monitoring and assessment of program impact, including responsible parties and frequency of these surveys in the countries. It also reviewed the linkages and exchanges among stakeholders in the countries to establish capacity gaps to be addressed during future programming.

The assessment included a review of documents from Partners, Government reports, and the Ministries of Health, Quality Control Bodies, Survey and Consumption Monitoring reports and the Stakeholder Mapping report of 2016. Key informant interviews, focus group discussions and round table discussions were conducted with Government Officials tasked with nutrition, food security, food fortification, National Food Fortification Alliance members, Millers' Representatives, Consumer Organizations staff, as well as Civil Society Organization partners.

Currently, many of countries in the ECSA region have developed guidelines, policy, standards, regulations, and mandatory legislation on food fortification. In Burundi, Mozambique, and Rwanda, implementation and enforcement of food fortification is based on Presidential decree. In the other countries enforcement is done through regulations and Acts of parliaments.

Policy formulation is under review in several countries to incorporate food fortification through drafted bills on Food and Nutrition in Malawi, Fair Trade and Consumer Protection as well as Food Safety in Swaziland. Other related policies include the Burundi National Health Policy (2016 – 2025), Lesotho Food Security Policy, Lesotho Food Safety Policy, Lesotho School Feeding Policy, Lesotho Quality Policy, Lesotho Food and Nutrition Policy, Rwanda National Nutrition Policy 2013 - 2018, Swaziland National Environmental Health Policy, Tanzania Food Safety Policy, and Uganda Food Fortification Communication Policy.

Some countries have developed strategies on food fortification that include, Kenya Food and Nutrition Security Strategy (FNSS) that led to the development of the Kenya National Nutrition Action Plan 2012 – 2017, Kenya Draft National Food Fortification Strategic Plan 2018 – 2022, Kenya Social Marketing and Communication Strategy on Food Fortification, Mozambique Food Fortification Communication Strategy 2016 - 2020, Mozambique National Food Fortification Strategy 2016 – 2021, Uganda’s Nutrition Advocacy and Communication Strategy (NA&C), which promoted the use of the fortification logo—the big blue “F”—in communication messages, and Zimbabwe National Food Fortification Strategy 2014 - 2018.

Most ECSA countries have chosen the appropriate vehicles and fortificants, established fortification alliances as well as working groups and are engaging in advocacy efforts to involve all stakeholders. Salt as a vehicle has mandatory legislation in all the thirteen ECSA countries. Wheat flour fortification is mandatory in Burundi, Kenya, Malawi, Mozambique, Rwanda, South Africa, Tanzania, and Uganda. Maize flour and vegetable oil fortification is mandatory in Burundi, Kenya, Malawi, Mozambique, Rwanda, South Africa, Tanzania, and Uganda. Fortification of sugar is mandatory in Malawi, Mozambique, Rwanda, South Africa, and Zambia.

Monitoring information systems and frameworks are in place in some countries to ensure quality improvements and are institutionalized under various government departments and industries. Kenya developed its Monitoring and Evaluation Framework for Food fortification for 2014-2017, Tanzania National Monitoring & Evaluation Framework for fortified products exists with inclusion of iodized salt, Kenya and Tanzania have online platforms with comprehensive databases on fortification while Zimbabwe is making efforts to incorporate fortification data into Zimbabwe’s Health Information System since 2016. Uganda has integrated food fortification indicators into its annual National Household Survey.

Consumption monitoring is an essential element of food fortification programme implementation as it enables accountability, advocacy, strengthening of programs, and provides guidance to country-level managers and policy makers.

It has not been effectively rolled out in the ECSA countries due to inadequate systems of regulatory monitoring, enforcement, and insufficient resources to support costly surveys.

Across the ECSA region, surveillance of food fortification is not systematically pursued; however, a few countries have conducted National Micronutrient Surveys. These include Ethiopia, Kenya, Malawi (thrice), Mozambique (twice), and Zimbabwe. Several attempts have been made to include micronutrient status indicators in the Demographic and Health Survey in Malawi and Tanzania. These efforts have not been sustained in the subsequent surveys due to insufficient resources.

Effective Consumption monitoring, surveillance and impact evaluation requires supportive legislative frameworks and policies, enhanced public private sector partnerships, capacity building for stakeholders in food fortification, resource mobilization, and development of information platforms on food fortification. This assessment proposes a Consumption Monitoring and Surveillance framework consisting of the various processes, phases, components, and domains that provide an enabling environment for this to happen.

CHAPTER 1: INTRODUCTION

Since the mid-1990s, countries of the ECSA Region¹ have endeavoured, with the financial and technical support of USAID and other international development partners, to establish food fortification programs to improve the nutritional value of common diets. The ECSA Health Community (ECSA-HC)² worked with partners on a regional effort to coordinate the implementation of food fortification programs among countries within the region from 2003 to 2011, including support on harmonization of standards, development of 17 manuals for food quality control and inspection, and monitoring and evaluation.

Many of the linkages and exchanges among the countries were weakened and the overall quality and impact of programs for fortified and nutritious foods remained generally unknown since completion of the USAID Micronutrient Project (A2Z) in 2011. This prompted the commencement of the ECSA capacity building initiative in June 2015 to reverse this trend. The initiative is financially supported by USAID and is co-implemented by ECSA-HC with GAIN. ECSA-HC's specific Objectives for the Initiative include:

- Build human capacity to monitor industry-manufactured nutritious and fortified foods in East, Central, and Southern Africa by means of strengthening the inter-institutional and inter-country cooperation and coordination in the areas of food control, enforcement, and inspection, and
- Sensitize and train personnel and local professionals and facilitate their continued communication and collaboration within regional initiatives for food safety and quality.

1.1: Approach

The implementation of the second phase of “Human Capacity Building to Monitor Industry Manufactured, Fortified and Nutritious Foods Project” in 13 countries in the ECSA region has been done through establishment of four regional technical working groups to harmonize and accelerate food fortification activities in the Region to facilitate cooperation, collaboration and sharing of good practices across the region. These thematic working groups focus on:

- i. Production
- ii. Food Safety
- iii. Laboratory Testing
- iv. Consumption Monitoring and Program Impact

The planning and implementation of this project has been accomplished through a multi-stakeholder collaboration amongst different partners at regional level; ECSA, USAID, GAIN, FFI, Technoserve, Project Healthy Children, CDC/IMMPaCt, SPRING, Member States' Chief nutritionists, Food Standards Officers, Regional Trade Officers, Food Manufacturers and Fortificants' Suppliers.

¹Countries in the ECSA Region that are part of this initiative include: Burundi, Ethiopia, Kenya, Lesotho, Malawi, Mozambique, Rwanda, South Africa, Swaziland, Tanzania, Uganda, Zambia, and Zimbabwe.

² The ECSA-HC Regional Food Fortification Initiative commenced in response to a resolution passed by the ECSA Health Ministers in 2002 that subsequently instructed the Secretariat to collaborate with partners to promote food fortification. In 2004, the Secretariat in collaboration with USAID, UNICEF, GAIN and MI organized a regional workshop for ECSA countries in Lusaka, Zambia to develop strategies and action plans to implement the Ministers food fortification resolution.

The U.S. Centers for Disease Control and Prevention (CDC) and the Food Fortification Initiative (FFI) is providing leadership to the Consumption Monitoring and Program Impact technical working group.

1.2: Summary of Terms of Reference

According to the 2017 work plan, one of the strategic tasks of the ECSA capacity building initiative was to finalize the development of a regional framework for Consumption Monitoring and Program Impact. In relation to this project, the activities under the Consumption Monitoring and Program Impact Working Group were to assess the Consumption Monitoring and Nutrition Surveillance frameworks and Systems in the region. Further, during the Stakeholder mapping exercise conducted in 2016, ECSA countries as well as regional bodies were requested to indicate the top priority areas for improving aspects of programs and technical knowledge and capacity gaps related to programs for fortified and nutritious foods. The stakeholder mapping analysis indicated that building capacity for consumption and impact monitoring was a top priority at the regional level. To mitigate the existing gap and implement proposed activities, the project coordination team commissioned an assessment on consumption monitoring and surveillance systems and frameworks covering the 13 ECSA Region countries.

The objective of the assessment was to determine the status of consumption monitoring and assessment of indicators of impact that may result from the programs that ensure the availability of fortified food in the ECSA region. A secondary objective was to identify the sources and methods used in consumption monitoring and assessment of program impact, including responsible parties and frequency of these surveys in the countries. It also reviewed the linkages and exchanges among stakeholders in the countries to establish capacity gaps to be addressed during future programming.

The activities comprised of:

1. Conducting a desk review of existing literature to identify consumption monitoring systems in the ECSA Region for fortified and nutritious foods. This entails surveillance approaches, systems and frameworks in place as well as the stakeholder capacity gaps related to programs for fortified and nutritious foods;
2. Developing an assessment tool for consumption monitoring, surveillance systems and frameworks;
3. Reviewing the stakeholder mapping information provided by the countries and identify gaps in information to be provided to collect the missing information during the assessment;
4. Visiting 13 ECSA Region countries to interview the key stakeholders, conduct focus group discussions and participatory discussions and compile a report of consumption monitoring and surveillance systems and frameworks;
5. Developing an ECSA regional framework/guideline for consumption monitoring, surveillance and impact monitoring;

These results were disseminated to the country teams and working groups and presented during the ECSA Capacity Building Workshop on Consumption Monitoring and Impact Evaluation for Fortified and Nutritious Foods held in Kigali, Rwanda in August 2017 where selected capacity gaps identified in the assessment were also discussed. This two-day workshop attracted officials from the Ministries of Health

responsible for Nutrition and Food Fortification. It was hosted by the East, Central and Southern Africa Health Community (ECSA-HC) in collaboration with Global Alliance for Improved Nutrition (GAIN) and other partners with support from USAID. It was a follow-up to the online training which was implemented in September 2016. During the online training, the necessity to host a face-to-face training was recommended, thus culminating into the two days training.

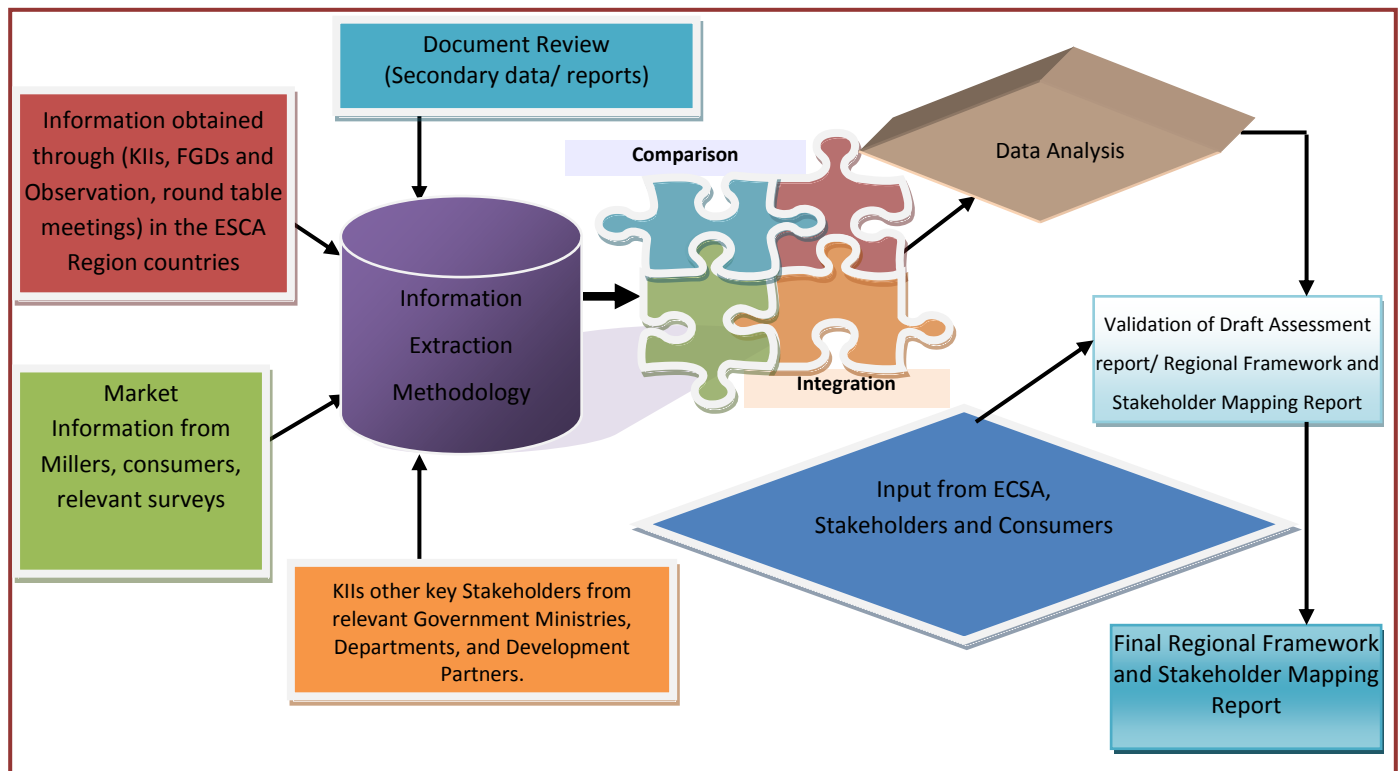
CHAPTER 2: METHODOLOGY OF THE STUDY

2.1 Study Approach

The assignment was conducted as follows:

- Debriefing and Discussion of Work plan with GAIN/ ECSA-HC Team.
- Design and development of assessment tools for review by the GAIN/ ECSA-HC Team.
- Review of documents from partners, Government reports, the Ministries of Health, Quality Control Bodies, Survey and Consumption Monitoring reports, Stakeholder Mapping report of 2016.
- Primary data collection in 13 ECSA region countries to conduct key informant interviews, focus group discussions, participatory discussions, and collect secondary data from the country teams. This included interviews and discussions with representatives from Government Institutions, National Food Fortification Alliance Coordinating Teams, consumer organizations and GAIN/ECSA-HC staff as well as CSOs partners.
- Data entry and cleaning (validation) during data entry and cross checking for errors.
- Data analysis (thematic analysis, stakeholder analysis, gap analysis) and report writing.
- Development of draft regional framework and stakeholder mapping report.
- Final assessment report preparation.

Figure 1: Schematic Representation of the Methodology used



2.2 Sampling Design

Key informants were obtained by snowball sampling based on recommendations from ECSA -HC Country Collaborating teams. An initial selection of participants was done in consultation with the Country representatives and enabled the assessment team to develop a list of key informants carefully drawn from the National Fortification Alliance members that included relevant Government Officers, Development Partners, NGOs, and Private Sector representatives engaged in food fortification. The key informants included those at working in different departments of the Ministry of Health – Nutrition, Public Health and Quality Assurance/ Quality Control Officers, Food Safety/ Standards officers, National Food Fortification Alliance (or equivalent), consumer organizations, Bureaus of Standards, Regional trade officers, Bureaus of Statistics; Development partners GAIN/ ECSA -HC, NI, USAID, UNICEF, Concern, World Food Programme (WFP), Technoserve, and representatives of civil society organizations. Those interviewed also recommended other resourceful persons for inclusion in the assessment due to their significant involvement in food fortification.

Focus group discussions and round table meetings were sampled purposively and conducted with homogenous groups consisting of six to twelve discussants drawn from the government departments working directly on food fortification. The contact persons in each of the ECSA countries invited the discussants at an agreed Government office and stipulated time. These were conducted for a duration of not more than 2½ hours. A detailed list interviewees and discussants is outlined in Annex 2.

Table 1: Key Respondents

Category	List of KIs or Departments
Policy and Regulatory level	<ul style="list-style-type: none"> • MOH - Department of Nutrition and Dietetics, Environmental Health Department, Public Health Department, Community Health Units, Disaster Prevention Unit • Ministry of Trade and Industry - Bureaus of Standards, Quality Assurance/ Quality Control Officers, Food standards officers, Regional trade officers; Bureaus of Statistics • Disaster Reduction Authorities • National Food Fortification Alliance, National Task Force on Food and Nutrition
Development partners	<ul style="list-style-type: none"> • GAIN (Global Alliance for Improved Nutrition), ECSA HC, USAID, NI, WHO, WFP, UNICEF, Helen Keller International, Project Healthy Children/SANKU, Catholic Relief Services, Technoserve, Save the Children, ADRA, Smarter Futures, Food Fortification Initiative, World Vision, Save the Children, CARITAS, ADRA
Civil Society Organizations	<ul style="list-style-type: none"> • Consumer Advocacy Groups, Consumer Organizations, Consumer Watch Groups

2.3 Data Collection

The study team used both primary and secondary data collection techniques. Primary data collection was obtained through key informant interviews (KIIs), focus group discussions, email surveys, telephone interviews, and round table meetings of participants engaged in the fortified and nutritious foods programme implementation. These were conducted using a predetermined interview and discussion guides consisting of relevant themes and sub-themes that were ranked during analysis. For purposes of plural investigation, the exercise was conducted with a broad array of representation from diverse institutions to enable triangulation of findings and incorporate their wide-ranging perspectives and experience.

Secondary data was obtained from a document review of past reports (from program implementation in clinics, mass screening, feeding programmes), local and international databases (based on demographic health surveys, multiple indicator cluster surveys – MICs, household consumption and expenditure surveys (HCES), small and large-scale surveys, national databases, sentinel surveys, school height census). This entailed internet searches and acquiring documents from respective country visits.

Accordingly, the tools and techniques used for data collection for the assessment included: review of secondary data (desk review) including initial programme and country reports, stakeholder mapping report 2016; in-depth interviews and discussions as indicated in Annex 2; and a debriefing session for validation of the preliminary findings by stakeholders for purposes of cross-checking facts and augmenting the key issues. Triangulation of methods (results from consumption monitoring, nutrition surveillance and program impact surveys, focus groups, and interviews) and data sources (gathering different sources of information through differing sampling strategies derived from diverse stakeholders) was used for cross comparison and validation.

2.4 Data Analysis

The interviews and focus group discussions were recorded and transcribed to produce expanded field notes then analyzed using thematic analysis techniques in which emerging themes were identified and consolidated from the interview transcripts. These addressed consumption monitoring and program impact of fortified and nutritious foods in the region. The Stakeholder Mapping was subjected to stakeholder analysis and gap analysis as a follow-up on the previous mapping to determine progress made so far on food fortification.

2.5 Assessment Matrix

Table 2: Assessment Matrix

Assessment Criterion	Necessary Indicator	Data Source and measurement process
Activities <ul style="list-style-type: none"> Consumption Monitoring Frameworks and systems in place Nutrition Surveillance Systems in place 	<ul style="list-style-type: none"> Effectiveness of consumption monitoring systems Effectiveness of Nutrition Surveillance systems Levels of information sharing and networking with other stakeholders and partners in development. 	<ul style="list-style-type: none"> Key informant interviews Ministry officials, private sector entities, clients, Focused group discussions SWOT Analysis Gap Analysis Review of secondary data sources on food fortification
Outputs <ul style="list-style-type: none"> Consumption monitoring surveys on coverage, provision and intake Knowledge (information on monitoring) and appropriate use 	<ul style="list-style-type: none"> Regularity of household and income expenditure surveys Perception and attitude of consumer towards fortified food % of population that consume fortified foods appropriately Number of departments or agencies disseminating information fortified and nutritious foods 	<ul style="list-style-type: none"> Focused Group Discussions (FGD) Key informant interviews (KIIs) SWOT and Gap Analysis Secondary data sources such as: <ul style="list-style-type: none"> National food consumption surveys that measure a population's food intake. Household income and expenditure surveys, FACT, Sentinel Surveys conducted on consumption monitoring of fortified foods that report on consumption, fortified food coverage.

Assessment Criterion	Necessary Indicator	Data Source and measurement process
Outcome Consumption Monitoring implementation <ul style="list-style-type: none"> Fortified food reach and coverage Fortified food provision Fortified food vehicle intake by consumers Additional micronutrient intake through food vehicle Enhanced quality and timeliness of data collected for effective decision making implement	<p>The extent to which food fortification effects vary over time, across different groups of intended beneficiaries, and regions,</p> <ul style="list-style-type: none"> Increased purchase of fortified food/flour and by products Proportion of households with food 'labeled' as fortified Proportion of non-pregnant women (15-49) and children under five regularly consuming fortified food Increased micronutrient intake <p>Extent to which data is used for decision support</p>	<p>Primary data sources</p> <ul style="list-style-type: none"> Focused Group Discussions (FGD) Key informant interviews (KIIs) SWOT and Gap Analysis <p>Secondary data sources</p> <ul style="list-style-type: none"> National food consumption surveys that measure a population's food intake. Household income and expenditure surveys (HCES) with indicators on consumption monitoring of fortified foods – especially on coverage, provision and intake. Micronutrient Surveys. FACT, FACT, KAPS, Sentinel Surveys
Impact <ul style="list-style-type: none"> Changes in behaviour (consumption awareness), biochemical, clinical and functional outcomes On intake, status and function of the population Effectiveness <ul style="list-style-type: none"> Improved micronutrient status of communities, households and individuals 	<p>Prevalence of micronutrient impact indicator</p> <ul style="list-style-type: none"> % of population with target micronutrient deficiency <p>Effect on vulnerable groups (under fives and women of child bearing age): Was there a change in a biological marker or health status from the pre-fortification to the post-fortification period?</p> <ul style="list-style-type: none"> Biological markers: Iodine – Median Urinary iodine concentration; Iron-serum ferritin; Vitamin A – Serum retinol ; Folic Acid - Serum folate Health Status: neural tube defects, anaemia – haemoglobin 	<p>Primary data sources:</p> <ul style="list-style-type: none"> Focused Group Discussions (FGD) Key informant interviews (KIIs) <p>Secondary data sources:</p> <ul style="list-style-type: none"> KAPs, FACT, DHS, FRAT, National Micronutrient Surveys, MICs, Household Surveys, Sentinel Surveys <ul style="list-style-type: none"> Biochemical/ physiological/ functional measurement

The table above depicts the assessment criterion, indicators, data sources and their measurement process on consumption monitoring, program impact, and nutrition surveillance system.

2.6 Study Limitations

The assessment used secondary data on micronutrient (coverage, provision, and intake) and nutrition indicators that were not consistently available across the region and over the period in which food fortification has been implemented. It was difficult to establish program impact since data was rarely collected but planned after longer implementation. In South Africa where this has been attempted, the baseline was projected from a previous survey that used a slightly different methodology. Surveillance systems for fortified and nutritious foods have not been set up in most countries in the region.

The study had time restrictions with the consultants only limited to an average of two days in the countries and this was not sufficient to interview a wide array of stakeholders effectively. Some of the respondents promised to send more information but this was not done even after reminders. It was not possible to conduct the assessment in South Africa due to non-response to the email sent to schedule appointments.

CHAPTER 3: KEY ASSESSMENT FINDINGS

3.1: Regional Outlook

Food security and nutrition is fundamental to Africa's development agenda with greater commitment to ending hunger, achieving food security and advancing optimal nutrition for all. Malnutrition remains a challenge in sub-Saharan Africa where countries continue to report high prevalence rates of stunting and wasting, as well as poor rates of exclusive breastfeeding, timely initiation of breastfeeding and timely complementary feeding. The region is also plagued with health and food security problems resulting from flooding, recurrent drought, post-harvest losses, and crop failure. The Malabo commitment to ending hunger, reducing stunting to below 10 % and underweight to below 5 % by 2025 is driving African countries to do business differently by engaging in multi-sectoral processes and evidence-based decision making with emphasis on availability, access and utilization (FAO, 2017).

Regional initiatives on Food and Nutrition Security

In the continent, there are several key policies and strategies on food and nutrition security such as the Africa Regional Nutrition Strategy in 2005, the Framework for African Food Security in 2007, the Pan African Nutrition Initiative in 2005, and the Africa 10-year Strategy for Reduction of Vitamin and Mineral Deficiencies that promote a multi-sectoral approach to food and nutrition security.

The New Partnership for Africa's Development (NEPAD) under the auspices of the African Union established the Comprehensive Africa Agriculture Development Programme (CAADP) in July 2003 and deployed technical and financial support to the East African Community (EAC) where Regional Agriculture Investment Plans, including a Strategic Plan on Agriculture and Food Security were developed. The Food and Nutrition Security Programme undertakes studies/research, builds capacity for policy makers and programme experts across sectors and supports implementation to reduce hunger and malnutrition of the vulnerable populations focusing on evidence based policies and programmes in broad thematic areas, namely maternal and child nutrition, food fortification³ and bio-fortification, dietary diversity and home-grown school feeding. Other similar initiatives include the IGAD Regional Nutrition Policy and Strategy and WAHO Nutrition Security Strategy.

The SADC Heads of State and Governments Summit of 2013 held in Lilongwe, Malawi directed Ministers responsible for Health, Agriculture and Food Security to develop strategies that would increase food production, food fortification and nutrition. This was based on the evidence presented to the Summit that showed that food and nutrition insecurity in the Region was still rampant with child stunting levels as high as 50% in some countries and population experiencing food insecurity averaging 15 million people per year since 2004. The proportion of food insecure households in the region remained high and the proportion of the malnourished population was within the 33 to 35 % range in 2015. This led to the development of the SADC Food and Nutrition Strategy 2015-2025 aimed at reducing food and nutrition insecurity.

³ Food fortification is the process of adding micronutrients such as vitamins, proteins, minerals to food and beverage product so as to enrich it with nutrients. This is driven by many factors such as increase in the demand for fortified food products, rising micro-nutrient malnutrition (iron, folic acid, iodine, vitamin A, and zinc), anemia in women has increased in an alarming number (Market Research Future, 2017).

Consequently, the Countries were urged to ensure the development of satisfactory, comprehensive and complementary national food and nutrition security policies and strategies that the SADC Secretariat would facilitate their execution, monitoring and evaluation to realize the overall goal.

Many concerted efforts are indicative of progress in the fight against malnutrition include:

- The African Regional Nutrition Strategy launched by the African Union Commission, entitled 'Financing Growth: Mobilizing Leadership and Investment in Nutrition';
- The first Partners meeting of the Initiative for Food and Food Security in Africa (IFNA) held in Addis Ababa from May 8th to 19th 2017 to review the existing collaboration among the partners;
- The Scaling-Up Nutrition (SUN) Movement in September 2010, which is a global call for greater national ownership and stewardship of nutrition interventions and better coordination of nutrition activities;
- The new Sustainable Development Goals (SDGs) launched in September 25th, 2015 and Agenda 2030. These particularly address the interrelated issues of "ending poverty in all its forms everywhere" (SDG 1) and "ending hunger, achieve food security and improved nutrition and promote sustainable agriculture" (SDG 2) by 2030 as well as United Nations Decade of Action on Nutrition 2016 to 2025;
- The World Health Organization (WHO), UNICEF, and The Gates Foundation, have endorsed food fortification as a primary means of improving micronutrient health.

Regional focus on Food fortification

The East, Central, and Southern African Health Community (ECSA-HC) passed a resolution to strengthen food fortification initiatives in the region in 2002. The aim of this initiative is to fast track the implementation of food fortification in the ECSA countries. ECSA-HC developed harmonized standards for vitamin A fortified oil and sugar, iron fortified wheat and maize flours, and salt iodization. In addition, guidelines and tools for internal and external QA/QC, technical auditing and commercial inspection were also developed and disseminated in the region. The First Global Summit on Food Fortification organized 2015 by GAIN in Arusha helped to create a sector-wide consensus on evidence gaps, delivery models and pathways for fortification. It provided evidence that food fortification can improve, and has indeed improved, the dietary intakes of essential nutrients for those living in rural and urban poor areas. It forged a renewed vision for the scale-up of fortification globally, where essential conditions for potential success and sustainability are met.

EAC Secretariat

Working Group on Food Fortification under the Technical Committee on Nutrition and Foods for special dietary uses, with support from ECSA harmonized and adopted standards for the region based on recommendations of the East African Standards Committee. The Countries participated in regional and international standardization through EAC, SADC, ARSO and ISO. This includes a **COMESA** standard for food grade salt. The Africa Maize Fortification Strategy 2017 – 2025 provides guidance and support to countries in preparing country-specific strategic plans and comprehensive programs for maize flour fortification. The Strategy has been aligned with regulations and guidelines regarding maize fortification of the World Health Organization (WHO); East, Central and Southern Africa – Health Community

Secretariat (ECSA), East African Community (EAC), and the Common Market for Eastern and Southern Africa (COMESA).

3.2: Progress made on fortification Policies and Legislative Framework

Regional Policies and Legislative Framework

Currently, many of countries in the ECSA region have developed guidelines, policy, standards, regulations, and mandatory legislation on food fortification. In Burundi, Mozambique, and Rwanda, implementation and enforcement of food fortification is based on Presidential decree. In the other countries enforcement is done through regulations and Acts of parliaments. Policy formulation is under review in many countries to incorporate food fortification through drafted bills on Food and Nutrition in Malawi, Fair Trade and Consumer Protection as well as Food Safety in Swaziland. Other related policies include the Burundi National Health Policy (2016 – 2025), Lesotho Food Security Policy, Lesotho Food Safety Policy, Lesotho School Feeding Policy, Lesotho Quality Policy, Lesotho Food and Nutrition Policy, Rwanda National Nutrition Policy 2013-2018, Swaziland National Environmental Health Policy, Tanzania Food Safety Policy, and Uganda Food Fortification Communication Policy.

Some countries have developed strategies on food fortification that include, Kenya Food and Nutrition Security Strategy (FNSS) that led to the development of the Kenya National Nutrition Action Plan 2012 – 2017, Kenya Draft National Food Fortification Strategic Plan 2018 – 2022, Kenya Social Marketing and Communication Strategy on Food Fortification, Mozambique Food Fortification Communication Strategy 2016 - 2020, Mozambique National Food Fortification Strategy 2016 – 2021, Uganda’s Nutrition Advocacy and Communication Strategy (NA&C), which promoted the use of the fortification logo—the big blue “F”—in communication messages, and Zimbabwe National Food Fortification Strategy.

The ECSA countries have chosen the appropriate vehicles and fortificants, established fortification alliances and are engaging in advocacy efforts to involve all stakeholders. Salt as a vehicle has mandatory legislation in all the thirteen ECSA countries. Wheat flour fortification is mandatory in Burundi, Kenya, Malawi, Mozambique, Rwanda, South Africa, Tanzania, and Uganda. Maize flour and vegetable oil fortification is mandatory in Burundi, Kenya, Malawi, Mozambique, Rwanda, South Africa, Tanzania, and Uganda. Fortification of sugar is mandatory in Malawi, Mozambique, Rwanda, South Africa, and Zambia. In Burundi, Kenya, Tanzania, Uganda and Zimbabwe, fortification of sugar is voluntary. In Burundi, rice fortification is planned while Ethiopia is planning to fortify vegetable oil and wheat flour.

The five countries of the East African Community follow the regional East Africa Standard for salt, maize flour, wheat flour, oil, and sugar. Ethiopia derives her standards for salt from the Ethiopian Standards Agency, Malawi utilizes national standards developed by the Malawi Bureau of Standards, Mozambique uses Catalogo de Normas Standards, and Zambia adheres to the national standards developed by the Zambia Bureau of Standards. The Standards Association of Zimbabwe guides the standards for food fortification in the country, while Lesotho and Swaziland use CODEX Standards as they have no national standards for fortification of maize flour, wheat, vegetable oil, and sugar.

The table 3 overleaf outlines the specific policy and legislative frameworks in various countries of the ECSA region.

Table 3: Progress made on Fortification, Food Vehicles, Legislation and Enabling Environment

Countries	FORTIFICATION IN ECSA COUNTRIES		
	Food Vehicles	Enabling Environment	
		Policies and Legislative Frameworks	Other Factors
Burundi	Mandatory legislation: Salt iodization since 1992 Mandatory fortification since 2015 for maize flour, and wheat flour, cassava, cooking oils	<ul style="list-style-type: none"> March 2015-Presidential Decree. After the 1-year grace period, in March 2016, fortification was made mandatory for all importers and domestic producers June 2016 National food fortification strategy launched 2016-2025 National Health Policy 	<ul style="list-style-type: none"> Multi-sectoral food and Nutritional security platform institutionalized (PSMSAN) by the decree coordinated by Office of 2nd Vice –President (REACH Coordinator)-developed a Multi-sectoral food and Nutritional security plan 2014-2017 Pre-mixes are VAT free after the presidential decree reducing the cost of Fortification ECSA Fortification Standards adopted as recommended by Project Healthy children (PHC) and regional experts. UN agency support led by WFP that still active when many developing partners halted their operations due to civil strife. More millers would like to fortify with large scale industries like SAVONOR already implementing fortification using ECSA standards
	Voluntary fortification of sugar Rice fortification planned		
Ethiopia	Salt iodization has mandatory legislation since 2011	<ul style="list-style-type: none"> February 2011- Legislation on Mandatory salt iodization was passed prohibiting processing, importing and selling non-iodized salt for human consumption Salt Iodization Council of Minister’s Regulation No. 204 / 2011 Ethiopian Standard 298 (Salt 2012) In 2014 Draft Fortification standards recommending the minerals and Vitamins to fortify edible oils and flour. National Nutrition Program (NNPII 2016-2020) 	<ul style="list-style-type: none"> Nutrition on national agenda of the Government The Nutrition Research, Monitoring and Evaluation Sub-Committee is led and coordinated by Ethiopia Public Health Institute (EPHI). It generates, translates and delivers evidence for decision support to policy makers. EPHI conducted the National Nutrition Survey in 2015. Support from development partners for fortification of foods. GAIN in partnership with UNICEF, NI, EPHI, Supported the Universal Salt Iodization Project Technoserve plays a role in linking Experts from General mills Cargill, Buhler, Royal DSM through PFS with Large (e.g ASTCO) and small millers for technical and business advice. 2013 Establishment of Ethiopian Civil Society Coalition (ECSC) to lobby support for the reduction of the malnutrition burden.
	Vegetable Oil and Wheat flour fortification is planned		

Countries	FORTIFICATION IN ECSA COUNTRIES		
	Food Vehicles	Enabling Environment	
		Policies and Legislative Frameworks	Other Factors
Kenya	Mandatory legislation: Salt since 2009 Maize Flour, Wheat Flour & Edible Oils since 2013	<ul style="list-style-type: none"> National Food and Nutrition Security Policy (2012) identified four key interventions that include: dietary diversification, food fortification with vitamins and minerals, bio-fortification and vitamin and mineral supplementation. The National Food and Nutrition Strategy was developed to address micronutrient deficiencies in the population. Through the amendment of the Food, Drugs and Chemical Substances Act of the Laws of Kenya CAP 254, Notice No 62 of June 2012, Kenya made fortification of wheat flour, maize flour, vegetable oils and fats mandatory with amendment in July 2015 under CAP 254, Notice No. 157 (GoK 2015). 	<ul style="list-style-type: none"> The regulatory framework for mandatory fortification of wheat flour, maize flour, vegetable oil and fats and salt are developed; The government has put in place quality standards for fortification of the selected food vehicles; Monitoring and Evaluation Framework for Food fortification, 2014-2017 in place; Five-year draft National Food Fortification Strategic Plan (2018-2022) has been developed by Government of Kenya (GoK) to address micronutrient deficiencies in the country. Kenya National Nutrition Action Plan (2012-2017) provides a framework to coordinate implementation of Kenya's commitment to nutrition of the population particularly among the vulnerable groups (pregnant and lactating mothers, infant and young children). Kenya National Food Fortification Alliance (KNFFA) with diverse public and private sector agency, and development partners representation created to coordinate fortification initiatives; Certification and registration of local premix suppliers alongside foreign firms ensures availability of local capacity to sustain premix supplies in the country; Capacity of industries on quality control and quality assurance developed to increase compliance to the standards; Nutrition and Micronutrient Status Database is in place A social marketing and behavioral change communication strategy was developed to increase consumer awareness and demand for fortified foods.
	Voluntary legislation for sugar since 2013		
Lesotho	Salt iodization is mandatory since 1999	<ul style="list-style-type: none"> Public Health Order 1970 Lesotho Iodization Regulations, 1999 Lesotho Food Security Policy – bio-fortification Food Safety Policy 	<ul style="list-style-type: none"> Political Support: His Majesty King Letsie III is an AU Champion for Nutrition and was awarded Special Ambassador status for nutrition by the Food and Agricultural Organization thus is creating better prospects for partnerships. The Kingdom of Lesotho joined the SUN Movement in July 2, 2014 with a letter of commitment from Prime Minister Motsoahar Thomas Thabane (now in power from June 2017). Salt fortification in Lesotho is Mandatory at 40 to 50 ppm levels of Iodine (compounds used are KIO₃).
	Maize flour, wheat flour, vegetable oils are fortified on a voluntary basis		

Countries	FORTIFICATION IN ECSA COUNTRIES		
	Food Vehicles	Enabling Environment	
		Policies and Legislative Frameworks	Other Factors
Lesotho		<ul style="list-style-type: none"> School Feeding Policy –fortified foods especially maize flour is sought from local sources Lesotho Quality Policy Food and Nutrition Policy launched in 2016 	<ul style="list-style-type: none"> Micronutrient Task-team coordinated by Food and Nutrition Coordinating Office (Cabinet) composed of Milling Company, Academia, MAFS, MTI, MOH, MCC, NGOs and UN - create awareness on food fortification. Micronutrient Task force (Agriculture, MOH, MOE, Food and Nutrition Coordinating Office) is working to drive the fortification process for foods that the country is producing, regulate imported foods and ensure compliance to the standards. Industry Support – Lesotho Flour Mills Limited, one of the two major commercial millers is undertaking voluntary flour fortification.
Malawi	Mandatory legislation: Salt since 1995, Maize Flour, Wheat Flour, Vegetable Oils, and Sugar (refined and raw) since 2015	<ul style="list-style-type: none"> Iodization of Salt Act 52-02 (Salt 1998) National Nutrition Policy and Multi-Sectoral Nutrition Strategic Plans aligned with Key Sector policies, national and global agenda such as sustainable development goals (SDGs) Food and Nutrition Security Policy 2005 is under review to become the draft Food and Nutrition Bill. Enforcement of law both at district and national level is in place through regulations. Technical standards and regulations passed and enforced for mandatory fortification of refined sugar, raw sugar, salt, edible oil, wheat flour, and maize since May 2015. 	<ul style="list-style-type: none"> The Malawi Government rescinded taxes and duties on micronutrients and fortification equipment A National Food Fortification Alliance that’s meets quarterly is in place and gives a recognized platform for further initiatives. Micronutrient Technical Working Group Meets quarterly. National regulatory standards for all the fortified food are in place and mandatory since May 2015, these have been published in the gazette for salt, sugar, flour, and edible oil. Fortification of salt (with iodine), cooking oil (Vitamins A and D), maize meal (with Vitamins A and B complex, iron, zinc, riboflavin, niacin, pyridoxine, thiamin, cyanocobalamin, and folic acid), wheat flour, sugar (vitamin A) is mandatory. The Ministry of Trade and Industry worked with the private sector to fortify sugar with vitamin A in Malawi. The SUN 1000 Special Days National Nutrition Education and Communication Strategy 2012-2017 exists to reduce child stunting among children under two years to under 20% through behavior change and awareness raising at the community level. Nutrition Sector Mapping done to address nutrition challenges in the country in order to ensure effective contribution to economic development and poverty reduction in Malawi PHC Fortification Monitoring Tool and its indicators are used as a means of effectively tracking fortification compliance information.

Countries	FORTIFICATION IN ECSA COUNTRIES		
	Food Vehicles	Enabling Environment	
		Policies and Legislative Frameworks	Other Factors
Mozambique	Mandatory legislation: Salt iodization, Maize Flour, Wheat Flour, Edible Oils and Sugar are all fortified since 2016	<ul style="list-style-type: none"> Decree No. 9/2016 approving the Regulation for Food Fortification with Industrially Processed Micronutrients 	<ul style="list-style-type: none"> There is goodwill by the Mozambican government as evidenced by: <ul style="list-style-type: none"> Approval of the Regulation that obligates large, medium and small commercial scale mills to fortify; Decreto 9/2016 of 18 of April and from 15th of October effective date. Development of the national food fortification strategy (2016-2021) Formulation of the communication strategy for the programme (2016-2020) Launching of social marketing campaign. Approval of Premix suppliers positive list
Rwanda	Mandatory legislation for salt iodization since 1991, vegetable oil, wheat flour, maize flour, vegetable oil and sugar since 2014	<ul style="list-style-type: none"> 2007 Presidential Decree on food fortification National Nutrition Policy Strategy for action (2013-2018) Rwanda National Food and Nutrition Policy 2014 On July 3rd, 2013, fortification Standards for all vehicles approved by Ministry of Trade. Since July 2014 all staple foods produced or imported to Rwanda were to contain adequate nutrients as the ECSA region. Ministerial Instruction No. 21/2013 OF 03/07/2013 declaring compulsory Rwandan Standards (List of Compulsory Standards, Food and Agriculture, 34-38): - Fortified Milled Maize (Corn) Products; RS EAS 768; - Fortified Salt-Specification; RS EAS 35; - Fortified Edible Oils and Fats; RS EAS 769; - Fortified Sugar; RS EAS 770; - Fortified Wheat Flour, RS EAS 767. 	<ul style="list-style-type: none"> Government buy in resulted in political Goodwill and accountability to reduce malnutrition Several partners UN agencies, NGOs, Industries, Consumer advocacy groups involved in policy implementation, Policy documents that include food fortification such as National Nutrition Policy Strategy for Action (2013-2018) National Fortification Alliance in place to spearhead food fortification Joined the SUN Movement in December 2011 Consumer Association, Rwanda Consumer's Rights Protection Association (ADECOR) promoting advocacy on fortified foods, standards and legislation

Countries	FORTIFICATION IN ECSA COUNTRIES		
	Food Vehicles	Enabling Environment	
		Policies and Legislative Frameworks	Other Factors
South Africa	Salt, Maize Flour, Wheat Flour, Edible Oils and Sugar are mandatory	<ul style="list-style-type: none"> The mandatory fortification of salt used for human consumption was implemented in 1995. In April 2003, the Department of Health gazetted “Regulations”, relating to the fortification of foodstuffs, under the Foodstuffs, Cosmetics and Disinfectants Act No. 54 of 1972 for comment, and in October 2003 it became obligatory to add eight micronutrients to all maize meal and wheat flours. 	<ul style="list-style-type: none"> Government goodwill as evidenced by adoption of mandatory fortification Vibrant and well developed private sector to undertake fortification Strong Public Private Partnerships
Swaziland	<p>Salt legislation is mandatory since 1997</p> <p>Maize Flour, Wheat Flour, Edible Oils legislation are voluntary</p>	<ul style="list-style-type: none"> Salt iodization regulation 1997 Quality and Standards Act (10) 2003. National Nutrition Act 1945 is being amended. Public Health Act of 1969 is under review to incorporate the Code of Marketing of Breast Milk Substitutes. The Public Health Bill and the Food Safety Bill converge to regularize fortification and food control. Fair Trade and Consumer Protection Bill 2016. Swaziland National Environmental Health Policy 	<ul style="list-style-type: none"> Plans are underway for the development of a Nutrition Strategic plan which will operationalize the priorities outlined in the National Nutrition Policy. Salt iodization is nationally regulated and non-compliance is deemed a conviction. Nutrition has been mainstreamed in several of the national documents: Swaziland Development Index; Swaziland National Action Plan for Nutrition 1997; Swaziland National Development Strategy Two; National Health Sector Strategic Plan Two; Comprehensive Agriculture Sector Policy; Neighbourhood Care Points Strategic Plan; Poverty Reduction Strategy and Action Plan; National Agriculture Investment Plan (NAIP); The Swaziland UN Development Assistance Framework (UNDAF) Micro-nutrient Alliance formed and housed by Swaziland National Nutrition Council. It meets quarterly and is developing monitoring tools on consumption and production.

Countries	FORTIFICATION IN ECSA COUNTRIES		
	Food Vehicles	Enabling Environment	
		Policies and Legislative Frameworks	Other Factors
Tanzania	<p>Mandatory legislation: Salt iodization since 1995, Maize Flour, Wheat Flour, Edible Oils fortified since 2011</p> <p>Voluntary legislation for Sugar since 2012</p>	<ul style="list-style-type: none"> • The Tanzania Food, Drugs and Cosmetic Act, 2003 • National regulations for mandatory food fortification were signed by the Minister of Health and Social Welfare in June 2011 and officially gazetted in July 2011, making them mandatory • Food Fortification Regulations Act 2011; Salt iodization regulations Legislation on salt iodization for mainland Tanzania was affected in January 1995 and revised in 2010. This requires that all salt for human and animal consumption must be fortified with iodine • Food Fortification Standards Act 2011; Regulations for marketing of breast milk substitutes. • Food Safety Policy is in draft form at the level of Ministry of Health. 	<ul style="list-style-type: none"> • The National Food Fortification Alliance (NFFA) formed in February 2003 and consists of all relevant government ministries and institutions, private sector, NGOs, and development partners. NFFA holds quarterly meetings and developed a Food Fortification Action Plan in 2009. • National Monitoring & Evaluation Framework for fortified products exists and iodized salt has been included. • Salt iodization logo was developed in 1992, fortification logo for other vehicles also promoted. • National fortification launched in Tanzania in May 16th, 2013. • Food Fortification Guidelines, Regulations, and Standards exist. • Tanzania National Multi-Sectorial Nutrition Action Plan (NMNAP) with thematic areas of food fortification and bio-fortification circulated to partners. • The National Nutrition Multi-Sectoral Meetings are held to review the food and nutrition situation, data needs, disseminate salt surveys (NBS release survey results). These meetings lobbied for tax exemption and create awareness • Establishment of a local premix hub has enabled Tanzanian food producers to access affordable, quality vitamin and mineral premix in a cost-effective way. • Manuals developed for each food vehicle; salt (iodine), wheat flour (iron, zinc, folic acid, B12), maize flour (iron, zinc, folic acid, B12), edible oil (vitamin A), working on food bio-fortification. • National Nutrition Strategy (2009-2015) developed • The National Multi-Sectorial Nutrition Action Plan (NMNAP) for the 2016/17-2020/21 articulates the coordination under thematic groups such as micro-nutrients and bio-fortification.

Countries	FORTIFICATION IN ECSA COUNTRIES		
	Food Vehicles	Enabling Environment	
		Policies and Legislative Frameworks	Other Factors
Uganda	Mandatory legislation for Salt iodization since 1994, Maize Flour, Wheat Flour, Edible Oils fortified since 2013	<ul style="list-style-type: none"> Universal Salt Iodization programme (mandatory since 1994) Process for Mandatory fortification for other vehicles (maize, wheat, edible oil) initiated in 2011 The Food and Nutrition Policy Food Fortification Communication Policy Uganda Nutrition Action Plan(2011-2016) Micronutrient Guideline (in final stages for implementation) 	<ul style="list-style-type: none"> Political commitment/Government support with Multi-Sectoral approach Govt. Budgetary allocation to support FF Implementation In 2012, VAT on premixes was zero-rated Strong support from development partners and UN agencies such as UNICEF, WFP, USAID/SPRING. National Working Group on Food Fortification (NWGFF) formed for effective implementation on mandatory fortification with support from partners like SPRING SPRING also assisted the MOH and the Uganda Bureau of Statistics (UBOS) to integrate food fortification indicators into the Uganda Annual National Household Survey. National Industrial Food Fortification Strategy (2017-2022) Uganda's Nutrition Advocacy and Communication Strategy (NA&C), which promoted the use of the fortification logo, the big blue "F", in communication messages
	Voluntary legislation for Sugar		
Zambia	Salt iodization is mandatory since 1994 while sugar fortification began in 1998	<ul style="list-style-type: none"> Statutory Instrument No. 133 (September 1978) mandates fortification of salt and margarine Public Health Act CAP 295 form a basis for enforcement of food fortification regulations Food and Drug Act (Salt 1994) National Food and Nutrition Commission Act CAP 308 of 1967, amended 1975, 2015 undergoing review process Statutory instrument No. 90 (2001) lowers fortification levels of 	<ul style="list-style-type: none"> Many development partners are ready to support food fortification initiatives Bio-fortification of orange maize, orange fleshed sweet potatoes and beans underway in Zambia National Food and Nutrition Strategic Plan for Zambia 2011-2015 with Strategic Direction 2: Increasing Micronutrient and Macronutrient Availability, Accessibility and Utilization through Improving Food and Nutrition Security.
	Maize flour and wheat flour fortification are voluntary since 1998		
	Vegetable oil fortification is planned		

Countries	FORTIFICATION IN ECSA COUNTRIES		
	Food Vehicles	Enabling Environment	
		Policies and Legislative Frameworks	Other Factors
Zambia	but no regulatory framework in place	<p>mandated salt</p> <ul style="list-style-type: none"> • Statutory instrument No. 55 (1998) mandates Vitamin A fortified sugar. • Voluntary fortification of wheat flour already in the Food and Drug Act (Regulation 321, of SI No. 90 of 2001). • Voluntary fortification of maize meal also already in the Food and Drug Act regulation 330, of SI No. 90 of 2001) 	
Zimbabwe	<p>Mandatory legislation for Salt iodization since 1993</p> <p>Maize flour, wheat flour, edible oils and sugar are mandatory from 1st July , 2017</p>	<ul style="list-style-type: none"> • Statutory Instrument 120 Of 2017 (Mandatory Fortification of Maize and wheat flour, cooking oils and sugar • Statutory Instrument 265 of 2002, Amended by S.I 95 of 2003 regulations Food and Food Standards (Import and Export) Regulations -SI 8 of 2015 • Food and Food Standards (Inspection and Certification Regulations) - SI 5 of 2015. • Statutory Instrument 69 of 1995 on Salt Fortification Levels • Food and Food Standards (Advisory Board) • Regulations, 1995- 322/1995 • Food and Food Standards (Food Additives and Prohibited 	<ul style="list-style-type: none"> • Strong Government commitment and will • Existence of Zimbabwe National Nutrition Strategy 2014-2018 • Development of Zimbabwe National Food Fortification Strategy 2014-2018 • Strong support from development partners and Civil Society Organizations • PHC Monitoring Tool and its indicators are used as a means of effectively tracking fortification compliance information • Support of private sector mainly large and medium maize millers • Complementary efforts by bio-fortification programmes for orange maize, orange fleshed sweet potatoes and beans • There are efforts to incorporate fortification data into Zimbabwe’s Health Information System since 2016

Countries	FORTIFICATION IN ECSA COUNTRIES		
	Food Vehicles	Enabling Environment	
		Policies and Legislative Frameworks	Other Factors
Zimbabwe		Substances) Regulations, 2001- .136/2001 Amendment No. 1. of 342/2001 <ul style="list-style-type: none"> • Food and Food Standards (Food Analysis) Regulations 792/1971 • Food and Food Standards (Food Labelling) Regulations, 2002 -. 265/2002 Amendment No. 1.95/2003 • Food and Food Standards (Forms of Notice) Regulations, 791/1971 Amendment No. 1 of 365/1972 	

3.3: Consumption Monitoring of Food Fortification

Consumption monitoring is the periodic assessment of the household coverage and consumption of adequately fortified foods and the additional micronutrient content provided to a population via the fortified food (ECSA, 2017). This entails an ongoing collection, review, analysis, and use of information and outcomes, to assess how the food fortification program is performing against predefined criteria and indicators. The indicators of consumption monitoring include fortified food coverage, micronutrient provision (or content) of fortified food, fortified food utilization (or intake), and micronutrient utilization (or intake) from fortified food (Pachón, 2017). Data on the production and importation of fortified foods relative to per-capita consumption are used to estimate coverage levels and validate population-based fortified food coverage surveys. Sustained high coverage of adequately fortified foods, combined with declining trends in the prevalence of target micronutrient deficiencies, indicate food fortification may be contributing to the improved micronutrient status of the population. Trend analysis in coverage and impact on micronutrient status must be consistently conducted in all food fortification programs, especially in nascent fortification programs (Mawuli and Grant, 2013).

Consumption monitoring is also done to continuously track the performance of additional micronutrient content provided to a population via the consumption of **fortifiable food**⁴, that is, food that by law or standards should be fortified. It is an essential element of food fortification programme implementation as it enables accountability, advocacy, strengthening of programs, and provides guidance to country-level managers and policy makers. The results of such monitoring done at the community, household level and individual level are used to inform fortification programs and improve their effectiveness at the different levels. Monitoring at household level is used to determine if the fortified food is adequately consumed by the most vulnerable.

Consumption monitoring of fortified foods have been conducted using independent surveys versus those incorporating micronutrient indicators into other survey. According to the Food Fortifications Global Mapping Report 2017, the approaches that have been used in various countries to assess the population coverage of fortified food and/or micronutrient status of the population include:

- i. Fortification Assessment Coverage Tool (FACT) survey developed and supported by GAIN
- ii. Demographic and Health Survey (DHS) developed and supported by USAID
- iii. Multiple Cluster Indicator Survey (MICS) developed and supported by UNICEF
- iv. Independent national nutrition/micronutrient surveys supported by various donor agencies

These are commissioned by various donors, are resource intensive and not frequently done as required making them not quite ideal for consumption monitoring that should be on-going and regular. Subsequently, some countries have integrating consumption monitoring indicators into existing regular surveys such as panel surveys including Malawi, Uganda (integrated food fortification indicators into the Annual National Household Survey), and Zimbabwe.

⁴ Adapted from the FORTIMAS Approach that indicates that, 'when fortifiable flour is confirmed to be fortified through qualitative or quantitative analyses, the term *fortified flour* is used'.

In the ECSA region, the information on consumption monitoring has been collected from following independent sources such as Individual Food Consumption Data through 24-Hour Survey (diary, directly observed, weighed, or recall) and Food Frequency Questionnaire; Fortification Rapid Assessment Tool (FRAT); Fortification Assessment Coverage Tool (FACT); Household Consumption and Expenditure Surveys (HCES); FAO Food Balance Sheets; and Industry Production Data.

Surveys using the Fortification Rapid Assessment Tool (FRAT) have been done by many countries to assist public health program managers to acquire the information needed to implement an effective mass food fortification program. Notable examples include Malawi, Mozambique, Rwanda, Tanzania, Uganda Zambia, and Zimbabwe.

The FACT is a survey instrument that was designed to assess coverage and utilization of fortified foods in both population-based (staple foods and condiments) and targeted (complementary foods for infants and young children) fortification programs, independently of any routine monitoring systems that the program may have. These were done between 2013 and 2015 in Tanzania, Uganda and South Africa (Aaron et. al, 2017).

Tanzania and Zimbabwe have conducted FRAT Surveys to establish suitable food vehicles for enrichment with micronutrients and their per-capita consumption by women and children at complementary age (children aged 12-36 months and women between 16-45 years of age). The survey considered the adequate population coverage, consumption level, loss during storage and food preparation.

Household Consumption and Expenditure Surveys (HCES) have also been conducted in the ECSA region every 3-5 years and constitute a generally unexploited opportunity to address the food consumption information gap by using survey data that most countries are already routinely collecting. They provide consumption data at the household level through the calculation of individual consumption and nutrient intake thus effectively capture a mix of consumption and expenditure by the population. They offer a better understanding of diet and dietary patterns, key food sources of essential micronutrients, regional variations in diet, seasonal variations in diet and food security, food fortification programs' design and impacts' estimation, food markets, harmonizing portfolios of nutrition programs. They present an inexpensive and readily available data source for understanding food consumption patterns and nutrient intakes thus provide information for evidence-based food and nutrition policies (Sununtnasuk, 2013).

HCES have been used in Burundi (Enquête Prioritaire—Etude Nationale Sur les Conditions de vie des Populations, 1998), Ethiopia (Household Income Consumption and Expenditure, 2004,2010), Kenya (Integrated Household Budget Survey, 2005), Lesotho (Household Budget Survey, 2000), Malawi (Integrated Household Survey, 1997/1998, 2004, 2010/2011, 2017), Mozambique (Inquérito aos Agregados Familiares sobre Orçamento Familiar, 2002), Rwanda (Enquete Intégrale sur les Condition de Vie de Menage, 2005), South Africa (Income and Expenditure Survey, 2005), Swaziland (Household Income and Expenditure Survey, 2000), Tanzania(Household Budget Survey, 2007), and Uganda (Uganda National Household Survey, 2009). Further, the fortification monitoring and surveillance tool has also been developed to support ongoing monitoring of coverage of fortified foods and adequacy of micronutrient levels in fortified food (Smarter Futures, 2016).

In relation to the National Food Fortification Delivery Model by GAIN⁵, the three key stages implementation include build and expand, improve, then measure and sustain progress. Consequently, five steps in food fortification implementation include:

- i. Foundation Building
- ii. Set-up
- iii. Launch
- iv. Scale-up and Delivery
- v. Demonstrating Health Impact

In the build or expand stage, foundation building is an initial step to establish and advocate for the need to improve population nutrient intake while putting in place strategies to do so. This may include using the Fortification Rapid Assessment Tool (FRAT) that was developed to assist public health program managers to acquire the information needed to implement an effective mass food fortification program.

Table 4 illustrates how several countries such as Ethiopia, Malawi, Mozambique, Rwanda, and Uganda have used FRAT surveys for this purpose. This is followed by the set-up step in which standards are developed, appropriate legislation put in place, program goals set, and partnerships or alliance built as envisaged by the national food fortification alliances established in Burundi (Multi-sectoral Food and Nutrition Security Platform), Kenya (National Food Fortification Alliance), Lesotho (Micro-nutrient Task Team), Malawi, Rwanda (National Fortification Alliance), Swaziland, Tanzania, and Uganda, Zambia (National Fortification Alliance Committee) that conduct targeted advocacy. These two steps are part of a building and expanding stage of the food fortification implementation programmes. A number of countries in the ECSA region may be placed in the build or expand stage of fortification in which they have chosen the appropriate food vehicles and fortificants, developed legislation and standards, established alliances and advocacy efforts targeted to bring stakeholders on board. In some countries, less than half of their fortifiable food vehicles are being adequately fortified according to the relevant standards⁶. This includes Burundi, Ethiopia, Lesotho, Swaziland, Zambia and Zimbabwe.

The next stage involves improvement and consists of the launch, scale-up and delivery steps. During the launch step, line ministries in collaboration with the National Food Fortification Alliance set up compliance and enforcement framework, procure equipment and premix, conduct training, develop marketing and communication strategies, develop monitoring and evaluation frameworks or systems, and work plans on food fortification (Burundi Multi-Sectoral Food and Nutritional Security Plan 2014-2017, Kenya National Nutrition Action Plan 2012 - 2017, Tanzania Food Fortification Action Plan in 2009, Tanzania National Multi-Sectoral Nutrition Action Plan - NMNAP for the 2016/17-2020/21) that addressed micro-nutrient deficiency and bio-fortification), then initiate production and distribution of

⁵ According to the GAIN National Food Fortification Impact Model that outlines the key stages and steps towards programme implementation. These comprises of the build or expand stage at the onset of the steps consisting of targeted advocacy, then goal setting followed by policy and standards development, and finally alliance building (European Commission, 2017).

⁶ According to the GAIN National Food Fortification Impact Model that outlines the key stages and steps towards programme implementation. These comprises of the build or expand stage at the onset of the steps consisting of targeted advocacy, then goal setting followed by policy and standards development, and finally alliance building (European Commission, 2017).

the fortified foods. The next step is scale-up and delivery that entails expanding coverage, enforcing quality, and ensuring utilization as depicted in most ECSA countries that follow global, regional and national standards as indicated in section 3.2. At the improvement stage, fortification has already started in earnest but targeted technical inputs are required to strengthen capacity at industry level for QA/QC and increased production volumes. These countries are undertaking external monitoring at the industry and market monitoring at retail stores but these efforts are not systematic. These Governments ought to improve the quality and consistency of inspections, enforcement, and testing thus enhance regulatory monitoring, that is a precursor to consumption monitoring. This was noted for Kenya, Malawi, Mozambique, Rwanda, Tanzania, and Uganda.

Monitoring information systems and evaluation frameworks are in place to ensure quality improvements and are institutionalized under various government institutions and industries. Kenya developed a Monitoring and Evaluation Framework 2014-2017 for Food fortification and Tanzania National Monitoring & Evaluation Framework for fortified products that includes iodized salt is being implemented.

Kenya and Tanzania have online platforms with comprehensive databases on fortification, Kenya has established an online hub consisting of a web-based tool developed to monitor food fortification in the country. Tanzania has also set up a centralized data system of food fortification while Zimbabwe is making efforts to incorporate fortification data into Zimbabwe's Health Information System since 2016. At this stage, between 50-79% of the fortifiable food vehicles are adequately fortified.

The last stage is measurement and sustenance of progress that involve demonstrating health impact and countering the negative health outcomes of low dietary intake of micronutrient through monitoring and modeling the increases in micronutrient intake then measuring impact and program effectiveness. In this stage of implementing food fortification, gains in coverage and quality are sustained over time through targeted training and advocacy inputs, while the programme effectiveness and impact on micronutrient status are measured. The results are fed back into the first two stages for targeted expansion and to improvements based on the shifts in consumption patterns, production and import patterns, or changes to the enabling environment. At this stage, 80% or more of the fortifiable food vehicle is adequately fortified. This may be applicable to iodized salt, vegetable oil and wheat flour which most of the population obtain from large-scale millers as noted in countries with mandatory fortification of wheat and vegetable oil such as Burundi, Kenya, Malawi, Mozambique, Rwanda, Tanzania, and Uganda.

All the stages of food fortification implementation occur in a continuum of programme improvement and consumption monitoring occurs in the last stage of implementation of food fortification as part of demonstrating health impact. In this regard, consumption monitoring has not been effectively rolled out in the ECSA countries due to inadequate foregoing systems of regulatory monitoring, enforcement, and inadequate resources to support independent surveys that are costly. As noted earlier, most countries in the region are still in the second, third, and fourth stage, yet to progress to the last stage as depicted by the GAIN model. Table 4 overleaf details various surveys done for consumption monitoring of food fortification across the ECSA region.

Table 4: Food Fortification Consumption Monitoring in the ECSA Countries

Country	CONSUMPTION MONITORING				
	Survey Type	Responsible	Purpose	Methodology	Findings
Burundi	Household and Economic Survey 1998	ISTEEBU (Institut de Statistiques et D'Etudes Economiques du Burundi)/ Burundi Institute of Statistics and Economic Studies World Bank	To make inferences about household food consumption, nutrient intakes and expenditure	This was a six-month national representative household expenditure survey that sampled 6,688 households. It used a recall method of interviews that considered a period of 15 days. The questionnaire incorporated food fortification indicators to provide baseline figures and 32 food items were considered.	Most of the households consume their own food and by 2007, only 8.3 percent did not consume any home produce. A large majority of households derive income from subsistence farming in the first seven to eight months of the year. 60% of all households derived income from the sale of food products in 1998. These include major food crops that are typically part of the staple diet such as maize, beans, potatoes and cassava.
	Burundi Multiple Indicator Cluster Survey - 2000, 2005	UNICEF Burundi Institute of Statistics and Economic Studies - ISTEEBU	To determine nutrition status for policy decisions and programme interventions.	The data was collected to analyze gaps for monitoring the situation of children and women through the household survey. It was also used to capture rapid changes in key indicators and establish program impact.	MICS 2000 indicated that 96% of households consumed iodized salt.

Country	CONSUMPTION MONITORING				
	Survey Type	Responsible	Purpose	Methodology	Findings
Ethiopia	National Food Consumption Survey 2011	Ethiopian Public Health Institute (EPHI), Central Statistics Agency, Nutrition International (NI).	To investigate the food consumption patterns of the Ethiopian population	The population was drawn from households selected randomly to represent all the 9 regions of Afar, Amhara, Benshangul, Gumuz, Gambella, Oromia, Somali, Harari, Southern Nations Nationalities and People's Tigray and the 2 Administrative cities; Addis Ababa and Dire Dawa. Individual dietary data were collected from 8133 women, 8079 children and 380 men from an overall total of 8267 households, accounting for a response rate of 98% for women and children 97 %.	The highest proportion of foods consumed by women and men come from the cereals/grains group. The coverage of fortifiable edible oil was much greater than wheat in both urban and rural areas. At the national level approximately 16% of women of childbearing age reported consuming a fortifiable wheat flour product in the 24 hours preceding the interview, compared to over half of the surveyed women reporting consumption of fortifiable oil (56.6%). In rural areas, consumption of fortifiable wheat and oil by women of childbearing age was 9% and 47% respectively; compared to 36% and 84% in urban areas.
	Ethiopia Micronutrient Survey 2005, 2013-2014	The Ethiopian Federal Ministry of Health (FMoH) and The Ethiopian Health and Nutrition Research Institute (EHNRI), CDC	To provide evidence based information on micronutrient status of the Ethiopia population at both national and regional levels, with focus on iodine, iron, vitamin A, zinc, vitamin B12 and folate.		According to the 2005 micronutrient survey, 68% of children had a poor iodine status. The recent available data in 2014 found that 95% of household salt has iodized salt but only 43% as per standard (15 PPM and more), as measured by titration method.
	Household Income and Expenditure Survey (as part of HCES) 1995/96, 1999/2000, 2004/5, 2010-2011	Central Statistical Agency of Ethiopia(CSA)	To monitor the consumption of iodine in the households.	The 2010/11 HCES is the fourth survey in the series. A total of 16,672 household sampled.	The population intake of iodine was 'insufficient' as 68.4% of the population had low urinary iodine (U)I concentration of <100µg/L (Global Database on Iodine Deficiency, 2004.

Country	CONSUMPTION MONITORING				
	Survey Type	Responsible	Purpose	Methodology	Findings
Ethiopia	Ethiopia Demographic Health Survey 2011, 2016	CSA, USAID, World Bank, UNFPA, UNICEF, ICF, Irish Aid, Global Fund	To provide data for monitoring the population and health situation in Ethiopia	A nationally representative sample of 15,683 women aged 15-49 and 12,688 men aged 15-59 in 16,650 selected households interviewed. 45% of children age 6-59 months received Vitamin A Supplement in the six months prior to the survey. 9% of children received iron supplementation a week before the survey.	9 in 10 Households in Ethiopia have iodized salt. Vitamin A deficiency was considered a public health problem in Ethiopia, with the 2011 DHS reporting that 46% of preschool-aged children have serum retinol levels <7.0µmol/L. The level of night blindness among pregnant women was 22%, and was considered a public health problem by WHO (WHO, 2009). In the DHS 2011, amongst women 15 – 49 years, 13.1% had mild anaemia, 2.9% had moderate anaemia and 0.6% had severe anaemia with a total rate of any anaemia of just over 16%. This level is considered mild by WHO standards. Anaemia prevalence was highest among children age 9-11 months (73%) and decreased steadily with age from 12 to 59 months in the 2011.
Kenya	Kenya National Micronutrient Survey (KNMS) 1999, 2011	MOH, Ministry of Devolution and Planning (MODP) – Kenya National Bureau of Statistics (KNBS), WHO, UNICEF, MI, WFP, GAIN, PSRI	To establish coverage of food fortification	KNMS 2011 was the first NMS by the KNBS. It was baseline study for food fortification. It covered household members (usual residents), women aged 15-49 yrs, children aged 0-6-49months, school age children of 5-14 yrs and men aged 15-54 yrs using a 24-hour recall, open-ended questionnaire.	About 50% of the households consume fortified foods. The 2011 NMS was a comprehensive national household survey that obtained baseline figures on intake and coverage of food fortification for salt, maize flour, wheat flour, vegetable oil, and sugar.

Country	CONSUMPTION MONITORING				
	Survey Type	Responsible	Purpose	Methodology	Findings
Kenya	<p>Kenya Integrated Household Budget Survey – KIHBS (as part of HCES) 2005/2006, 2015/2016</p> <p>KIHBS 2005/2006 was the first national survey of this type by KNBS</p> <p>KIHBS 2015/2016 assessed the three pillars of food security</p>	<p>Kenya National Bureau of Statistics (KNBS) – Ministry of Planning and National Development</p> <p>DFID</p> <p>USAID</p> <p>General Data Dissemination System</p>	<p>To capture information on food acquisition and/or consumption.</p>	<p>KIHBS was part of the Household Consumption and Expenditure surveys with a sample of 13,212 households and 66,725 individuals. This covered all household members (usual residents), all women aged 15-49 years resident in the household, and all children aged 0-4 years (under age 5) resident in the household. It was representative at national, urban/rural, provincial, and district. This household consumption and expenditure survey collected information on household consumption (sources of food and acquisition methods) and expenditure patterns. A total of 160 food items were considered within a 7-day recall period.</p>	<p>The items on which consumption information was collected in the KIHBS 2005/06 were classified as food and non-food. The food component consisted of cereals, bread, roots and tubers, poultry (chicken), meat, fish and sea foods, dairy products and eggs, vegetable oil and animal fats, fruits, vegetables, pulses, sugar, non-alcoholic beverages, alcoholic beverages, food eaten in restaurants and canteens, and spices and condiments. The consumption from purchases of maize (flour – loose/sifted, grain, green maize) in rural areas per province were: Central (54.7%), Coast (46%), Eastern (42.7%), North-Eastern (58.7%), Nyanza (40.8%), Rift Valley (43.2%) and Western (43.4%). Wheat (flour and grain) purchases were at Central (22.9%), Coast (15.7%), Eastern (20.5%), North-Eastern (19.1%), Nyanza (32.1%), Rift Valley (34.1%) and Western (31.3%).</p>
	Smart Survey, July 2016	<p>MOH, NDU</p> <p>International Mercy Corps, UNICEF, European Union, APHIA Plus Imarisha</p>	<p>To establish the nutrition status</p> <p>To evaluate the fortified food consumption</p> <p>To establish the knowledge of fortification logo</p>	<p>The survey was done in Tana River County in the Coast and Nairobi region as a pilot project for hammer mills. They asked questions on consumption and knowledge of fortified foods and logo. The survey was cross sectional and descriptive by design. Standardized Monitoring and Assessment on Relief and Transition methodology and a</p>	<p>There was a high consumption of 4 food groups namely; Cereals (98.5%), Oils and Fats (94.8%), milk and milk products (84.1%) and sweets (79.5%). 43.6% of households which were classified under poor and borderline categories consume proteins and iron rich foods, while 59.6% consumed none of vitamin A rich foods, 5.1% consumed protein and vitamin A rich foods frequently. Among those households</p>

Country	CONSUMPTION MONITORING				
	Survey Type	Responsible	Purpose	Methodology	Findings
Kenya				quantitative approach was adopted in the study. A sample size of 462 households was obtained through a two-stage sampling design.	classified as acceptable, 97.0% consumed protein rich foods frequently, 79.0% consumed none of vitamin A rich foods and only 27.9% consumed iron rich foods frequently.
	Community level monitoring since 2013	NDU, UNICEF	To review the coverage of iodized salt. To determine the goiter levels.	Monitoring system to track USI program activities at both national and sub national levels (provincial/ district/county).	Responding to survey data showing relatively high iodine levels in Kenya, the country has enacted new regulations which reduce the level of iodine from 168.5 mg/kg to between 50 and 84 ppm.
Lesotho	Multiple Indicator Cluster Survey MICS 2000	Bureau of Statistics, UNICEF	To provide up-to-date information for assessing coverage of iodized salt	A multi-stage cluster sampling was applied in selecting the sample for the 2000 Lesotho MICS exercise, using an updated sampling frame from the 1996 population census.	Approximately 66% of households in Lesotho have adequately (15+ PPM) iodized salt. The percentage of households with adequately iodized salt ranges from a low 45.4% in Quthing to 78.7% in Maseru. Urban areas with adequately iodized salt ranged high above the national estimate at 89.1 percent, while the rural was lower at 59.3 %
	Lesotho Demographic and Health Survey 2009	The Ministry of Health and Social Welfare, FNCO, Bureau of Statistics Multi-agency Global Fund to Fight AIDS, Tuberculosis, and Malaria; Irish Aid; PEPFAR, National AIDS Commission, UNFPA, UNICEF, USAID, and WHO.	To determine the coverage of iodized salt.	The 2009 LDHS was designed as a nationally representative sample of 9,391 households. The 2014 LDHS followed a two-stage sample design and was intended to allow estimates of key indicators at the national level as well as in urban and rural areas, four ecological zones, and each of Lesotho's 10 districts.	Overall, 93% of the households where interviews were conducted in 2009 LDHS had their salt tested for iodine had iodised salt, while 7% had no iodized salt available in the household. 83% of children age 6-59 months live in households with adequately iodized salt.

Country	CONSUMPTION MONITORING				
	Survey Type	Responsible	Purpose	Methodology	Findings
Malawi	Malawi FRAT Survey 2002	Ministry of Health and Population, National Statistics Office (NSO), UNICEF, CDC	<p>To collect information of food consumption by determining:</p> <ul style="list-style-type: none"> The proportion of target group that consumed the food in a specified period, and the frequency and/or amount of consumption. <p>To establish the consumption patterns of the preselected potential food vehicles.</p>	<p>Nationally and regionally representative sample; integrated into micronutrient survey; 2-stage cluster sampling design using PPS; 30 clusters/Stratum PPS; 6 randomly selected households/ clusters from: Stratum 1, north; Stratum 2; central; Stratum 3, south. A sample size of 165 households consisting of primary female cook (15–45 yr); men (22–55 yr); children (6–36 months). The FRAT instrument combined a food frequency questionnaire and a simplified 24-hour recall.</p>	<p>Out of the sample of households interviewed, women of reproductive age consumed sugar and cooking oil at 65% and 56% respectively in the week preceding the survey.</p>
	Malawi Demographic and Health Survey 1992, 1996, 2000, 2004, 2010, 2012-2016	NSO in joint collaboration with the Ministry of Health (MoH) and the Community Health Services Unit (CHSU), Department of Nutrition and HIV/AIDS (DNHA)	To provide data for monitoring the iodised salt coverage and micronutrient consumption.	For the 2015-2016 Malawi Demographic and Health Survey (DHS), 24,562 women ages 15-49 and 7,478 men ages 15-54 were successfully interviewed from 26,361 households.	Nine in ten households in Malawi had iodised salt. In the 24 hours before the survey, 79% of children age 6-23 months ate foods rich in Vitamin A. Two in five children ate iron-rich foods the day before the survey.
	Sentinel Survey 2016	DNHA, Community Health Services Unit (CHSU), Environmental Health Department	To determine the provision of iodine in the salt.	Sentinel Survey on salt, sugar, cooking oil targeting school children aged between 6-12 years in 13 districts with support from UNICEF (2016), every three years in rural districts in the country, urine samples	The fortification started in April 2012 and by the end of the year Vitamin A fortified sugar was available in the retail outlets in Malawi. 88% of the salt on the market in Malawi contains the right amount of iodine.

Country	CONSUMPTION MONITORING				
	Survey Type	Responsible	Purpose	Methodology	Findings
Mozambique	Household Consumption and Expenditure Survey (HCES) 2002	UNICEF USAID, MoH MISAU 2002, 2004 IDS 2003, 2011 SETSAN 2003	To determine the coverage and intake of iodized salt in households.	The questionnaire incorporated food fortification indicators were used to provide baseline figures and sampled 8700 households.	68% of population in school age, 30% of MIFs consume iodised salt. Median urinary iodine 65,4 µg/L (MISA-2004), Iodine nutrition in Mozambique was 'mildly deficient'. The WHO Global Database on Iodine Nutrition reports approximately 65% of the population as having UI levels <100µg/L in 1998
	MICS 2008/2009	UNICEF USAID, MoH	To determine iodine coverage.	The 2008-2009 Mozambique MICS is representative at the national and provincial levels, rural and urban areas, wealth quintiles, and education level. The survey had a sample of 13,955 households and over 64,000 individuals.	25% of the households consuming adequately fortified salt
	FRAT Survey 2010	The Ministry of Health, the Technical Secretariat for Food Security and Nutrition, HKI and World Vision	To inform a fortification strategy. To develop a consumer information campaign that could be tailored to the specific consumption patterns of groups living in different urban centers. To better understand the price implications of fortification on consumption trends.	Women (15–45 yr) and children between 12-59 months of age were part of this sample in 70 clusters/stratum PPS (Stratum 1, urban south; stratum 2, urban central; stratum 3, urban north), PPS in a sample. The survey sampled 2,506 households in urban centers in 3 regions of the country. The survey collected the frequency of consumption of five foods: maize flour, wheat flour, cooking oil, sugar and salt. Additional information collected include demographic, household dietary diversity.	In the households sampled, 92% of the women of reproductive age consumed sugar and 91% consumed vegetable oil in the past week of the survey. 92% of women of child bearing age interviewed nationally consumed wheat flour in the past one week. In the urban strata 91% consumed wheat flour. Among children aged 12 – 59 yrs, 81% consumed wheat flour at both at national scale and urban areas. The resulting data were indicative of likely coverage of potential vehicles, however without quantitative estimates of portion size, the calculation of micronutrient fortification levels would require further assessment.

Country	CONSUMPTION MONITORING				
	Survey Type	Responsible	Purpose	Methodology	Findings
Mozambique	Sentinel surveys 2004	MoH, UNICEF, UNFPA, HKI	To monitor salt iodization	Health-based representative cross-sectional surveys. This surveillance system based on a network of sentinel sites located in selected health clinics in district capitals.	Iodine in 68% of children in school age-30% of MIFs (Median Urinary Iodine; 65, 4µg/L (MISAU, 2004).
Rwanda	Integrated Household Living Conditions Survey (as part of HCES) 2000/2001, 2005/2006	National Institute of Statistics DFID, UNDP World Bank, ADB UNICEF	To provide information on changes in the well-being of the population such as household consumption.	The 2005 national survey was conducted in 6,378 households in urban and rural areas.	Over the period between the surveys household consumption grew at 3% per annum per adult equivalent. The flour products were almost exclusively produced for own consumption rather than sale, and this situation has not changed between the two surveys.
	Demographic and Health Surveys 2005, 2010/2011, 2014/2015.	National Institute of Statistics in Rwanda (NISR), MOH, International Child Fund (ICF), Global Fund, World Vision International, Partners in Health (PIH), UNICEF, USAID, UNFPA	To establish the current information on health and nutrition indicators.	DHS done every 5yrs captures indicators on salt iodization. The survey targeted children under 5yrs, women age 15-49yrs and men aged 15-59yrs from randomly selected households across the country. 86% of children 6-59 months received Vitamin A supplementation six months preceding the survey.	Iodine nutrition in Rwanda was classified as 'more than adequate' (WHO 2004). The 2010 DHS reported rates 90% and above for coverage of iodised salt in surveyed households (National Institute of Statistics of Rwanda 2012). This is comparable to 2005 when 87% of the households were consuming adequately iodized salt. More recently in 2015, 90% of households were using iodized salt.
	FRAT Survey 2008	Ministry of Health, Project Healthy Children	Food system assessment to determine the feasibility of food fortification of Cassava flour, maize flour, rice, salt, sugar, vegetable oil as likely vehicles To establish the	Nationally and regionally representative sample of 977 households; targeting Women (16-45 yr); children (< 59 months) in 30 clusters/stratum probability proportionate to size sampling; 7 randomly selected households/ cluster.	Out of the sample of 977 households, women of reproductive age consumed sugar and cooking oil at 58% and 91% respectively in the week preceding the survey.

Country	CONSUMPTION MONITORING				
	Survey Type	Responsible	Purpose	Methodology	Findings
South Africa	Income and Expenditure Survey (as part of HCES) 2000, 2010/2011	Statistics South Africa	<p>The main purpose of the survey was to determine the average expenditure patterns of households in different areas of the country.</p> <p>To provide relevant statistical information on household consumption expenditure patterns that will inform the updating of the consumer price index (CPI) basket of goods and services.</p>	The Income and Expenditure Survey (IES) conducted by Statistics South Africa (Stats SA) between September 2010 and August 2011 using diary and recall methods. This survey forms the basis for the determination of the “basket” of consumer goods and services used for CPI. It was first conducted in October 2000 and repeated every five years. A total of 25,328 household sampled.	The results of the Income and Expenditure Survey 2010/2011 show that the total annual household consumption expenditure between September 2010 and August 2011 is estimated at R1,25 trillion. The average South African household spent approximately R95, 183 during the survey with the main components of that expenditure coming from housing, transport, food and miscellaneous goods and services. Accounting for 12.8%, food and non-alcoholic beverages is the fourth largest contributor to household consumption expenditure.
	National Food Consumption Survey (NFCS) 1999, 2005	South Africa Medical Research Council (MRC), Department of Health – Republic of South Africa, University of Stellenbosch, GAIN. UNICEF	<p>To establish the knowledge, attitude and practices about food fortification and fortified food products.</p> <p>To determine information, knowledge, attitude behaviour on food fortification and nutrition, the status of intake of iodine, vitamin A, folic acid, zinc.</p>	The NFCS, 1999 was conducted on 2894 children (1-9 yrs of age) had a nationally representative sample with provincial representation. NFCS 2005 was considered a fortification baseline. It was a cross-sectional survey of a nationally representative sample of children aged 1–9 yrs in South Africa using the Census 2001 data and women of reproductive age (16–35 yrs) living in the same household. A total of 226 Enumerator Areas consisting of 107 urban-formal, 23 urban-informal, 15 rural-formal and 81 tribal areas.	Staple foods consumed included maize, white sugar, tea, whole milk and brown bread. The NFCS 1999 showed that a large proportion of children had low intake of micronutrients such as calcium, iron, zinc, vitamin A, vitamin C, riboflavin, niacin, and vitamin B6. These were less than 67% of the recommended dietary allowances (RDAs).

Country	CONSUMPTION MONITORING				
	Survey Type	Responsible	Purpose	Methodology	Findings
Swaziland	Swaziland Demographic and Health Survey 2006/7	Swaziland National Nutrition Centre (SNNC), SWASA Central Statistics Office UNICEF, UNAIDS, WHO, COOPERAZIONE ITALIANA, UNFPA, HAPAC, Population Services International	To measure the iodization level of the salt used by the household for cooking and anaemia status.	The 2006-07 SDHS was designed to provide estimates of health and demographic indicators at the national level, for urban-rural areas, and for the four regions of Manzini, Hhohho, Lubombo, and Shiselweni. A total of 275 clusters were drawn from the Swaziland census sample frame, 111 in the urban areas and 164 in the rural areas. This resulted in members of 4,843 households being interviewed (95% response rate). Salt was tested in 93% of the households.	The overall percentage of households using iodized salt is 80 percent. The largest differential in household use of iodized salt is between households in the lowest wealth quintiles and those in the highest wealth quintile (76 percent and 83 percent, respectively).
	Multiple Indicator Cluster Survey (MICS) 2010 and 2014 comparative report (iodine in salt).	SWASA – Central Statistics Office, Government of Swaziland, National Emergency Response Council on HIV and AIDS, UNESCO, UNFPA, World Bank, UNICEF. In MICS 2010, National Emergency Response Council on HIV/AIDS (NERCHA) and the Joint United Nations Programme on HIV/AIDS.	To monitor the situation of children and women through an international household survey initiative. To determine iodine coverage.	MICS 2014 survey was conducted in July to October in 4,865 households and among 4762 women drawn from urban areas (26.7%) and rural areas (73.3%) living in four administrative regions of Hhohho (25 %), Manzini (37.1%), Shiselweni (17.9%), and Lubombo (20 %). The questionnaires were administered on women and men (age 15-49) and children under five.	The findings of MICS 2010 indicated that iodized salt consumption was at 51.6% (2010) while the MICS of 2014 noted an improvement of iodized salt consumption at 66.1 % (depicting the percentage of households with salt testing 15 parts per million or more of iodate).

Country	CONSUMPTION MONITORING				
	Survey Type	Responsible	Purpose	Methodology	Findings
Tanzania	Household consumption and expenditure survey – HCES/ Household Budget Surveys 2000/1 and 2007	International Household Survey Network	<p>To determine the consumption patterns of potentially fortifiable foods including wheat flour, maize flour, sugar, and oil and micronutrient intake of the population.</p> <p>To identify potential food vehicles for fortification and to set fortificant levels in these vehicles.</p>	HCES as multi-component surveys conducted on a nationally representative sample to characterize important aspects of household socio-economic conditions. The food data collected in HCES was analyzed to produce a variety of indicators used for food fortification feasibility assessment and design. During the Tanzania Household Budget Survey (part of HCES Surveys) a total of 22,718 household were sampled.	Food Security and Nutrition Analysis of Tanzania Household Budget Surveys 2000/1 and 2007 indicated that poorer households have decreased intake of micronutrient rich foods of animal sources hence are assumed to be at increased risk of iron and vitamin B12 deficiency. The results of the analysis contributed to the choice of wheat flour, maize flour, and cooking oil as viable fortification vehicles in Tanzania. For setting fortificant levels, HCES data were triangulated with information from Food Balance Sheets, the Fortification Rapid Assessment Tool (FRAT), as well as industry data. Though HCES estimates showed lower food consumption levels than the other data sources, stakeholders used HCES to help set fortification levels in Tanzania as they considered the estimates from this source to be the most accurate information available
	FACT survey in 2015.	It was conducted by Africa Academy of Public Health (AAPH) in collaboration with the National Bureau of Statistics, the Office of Chief Government Statistics, Zanzibar; Ministry of Health, Community	<p>To assess the coverage and consumption of fortified salt, wheat flour, maize flour, and vegetable oil among households.</p> <p>To measure levels of select nutrients in samples of salt (iodine), wheat flour (iron), maize flour (iron), and vegetable oil (vitamin A) gathered at the</p>	A cross-sectional, two-stage, cluster household survey targeting households and women of reproductive age (15-49 years) that was representative nationally with rural and urban stratification. The first stage involved selection of 70 Enumeration Areas (EAs) using probability proportional to size (PPS) sampling while the second stage was selection of 15 households per EA using	Nationally, household consumption of oil, salt, and maize flour was high (over 85%, 95%, and 75% respectively) while household consumption of wheat flour was lower (51.5%). In terms of consumption of fortified foods, out of the 95% of the households that consumed edible oil, 50% consumed those containing vitamin A. The national coverage of maize flour as depicted by consumption of maize flour at 93%, fortifiable maize flour at 36.6% while fortified maize flour was at 2.5%.

Country	CONSUMPTION MONITORING				
	Survey Type	Responsible	Purpose	Methodology	Findings
Tanzania		Development, Gender, Seniors and Children, Mainland; Ministry of Health, Zanzibar; Ifakara Health Institute (IHI); TFNC. GAIN and CDC provided technical assistance.	household; To estimate the contribution of fortified salt, wheat flour, maize flour, and vegetable oil to the intake of select nutrients in the diet of women of reproductive age (15 to 49 years); and To evaluate indicators for other health and nutrition conditions to determine their association with the consumption of fortified foods (e.g. poverty, dietary diversity, rural residence)	systematic random sampling. The survey response rates were 99.1% nationally, 99.0% in rural and 99.3% in urban areas. Three measures of coverage were assessed and expressed as the proportion of sampled households covered. The measures are: consumption of a food (i.e. households report preparing the food at home); consumption of a fortifiable food (i.e. consumption of a food vehicle that was not made at home and is assumed to be industrially processed); and consumption of a fortified food (i.e. consumption of a food vehicle that is confirmed to be fortified).	FACT survey indicated that the fortification quality of household samples considered as adequately fortified nationally using Tanzania Standards was 16.3% for oil (Vitamin A at >16- 28 mg/kg), 18.9% for wheat flour (iron at >30- 50 mg/kg), 3.3% for maize flour (iron at 5- 25 mg/kg), and 43.2% for salt (iodine at 15-<40 ppm). Similar household consumption patterns in rural and urban settings were reported for wheat flour at 33.1% and maize flour at 2.5%. There is high coverage of fortifiable oil and salt in all areas indicating high potential for impact from these fortified foods. Coverage of fortifiable maize flour is lower due to high levels of home production but there is still potential for impact, particularly in urban areas.
	National Panel Surveys (NPS) 2008/2009, 2010/2011, 2012/2013, 2014/2015	Tanzania National Bureau of Statistics European Commission World Bank	To gather information on consumption of fortified food items by the households since the 2011 initiation of the programs on fortification of maize flour, wheat flour, salt and cooking oil,.	The 2014/2015 NPS is the fourth round in a series of nationally representative household panel surveys that collect information on a wide range of topics including agricultural production, non-farm income generating activities, consumption expenditures, and a wealth of other socio-economic characteristics. The households were asked to display the packaging for the food item and the presence of the fortification logo recorded by the enumerator.	The proportion of the population that worried about not having enough food in the last seven days prior to the survey increased from 32.9 % in NPS 2012/13 to 34.5 % in NPS 2014/15. Previously, the proportion of the population that felt food insecure had declined from 35.9 % in NPS 2010/11 to 32.9% in NPS 2012/13, before increasing in NPS 2014/15. The proportion of the population that reduced their food intake decreased from 32.2 % in NPS 2010/11 to 28.8 % in NPS 2012/13, then increased to 31.2 % in NPS 2014/15.

Country	CONSUMPTION MONITORING				
	Survey Type	Responsible	Purpose	Methodology	Findings
Tanzania	Tanzania Demographic and Health Survey and Malaria Indicator Survey (TDHS-MIS). Iodine salt test, micronutrients, 2009/2010, 2015/2016.	Ministry of Health, Community Development, Gender, Elderly and Children – MoH CDGEC/ Tanzania Mainland Ministry of Health - NOH/ Zanzibar, National Bureau of Statistics – NBS/ Tanzania, Office of the Chief Government Statistician – OCGS/Zanzibar WHO, UNICEF, World Bank and USAID	To obtain the current and reliable information on nutritional status of mothers and children, To provide up-to date information on the prevalence of anaemia among women age 15-49 and the prevalence of malaria infection and anaemia among children under age 5.	This was a comprehensive, nationally representative household survey. Covers population, education, health, nutrition, family planning and household characteristics. The Tanzania 2009-2010 DHS had a sample of 10,300 households and included sections on bed nets and anti-malarial, fistula, female genital cutting, maternal mortality and domestic violence. The survey also included testing salt and urine for iodine. DHS 2010 (included analysis of biomarkers and production of a report on micronutrients and general nutrient consumption), while the Tanzania DHS 2015-16 and had no funding for micronutrient consumption analysis). TDHS-MIS 2015/2016 DHS is the sixth in the series.	TDHS 2015/2016 noted that 8 in 10 households had iodized salt and the presence of iodized salt was higher in urban households (94%) than in rural households (75%). The presence of iodized salt in the household increased with wealth, ranging from 69% in the poorest households to 96% in the wealthiest households.
	FRAT Survey 2002	Makerere University	To establish the food consumption sugar and vegetable oil among population subgroups To determine the consumption of Vitamin A	From a sample of 1102 households in Kamuli District, eastern Uganda, clusters were randomly selected as representative sample of communities consisting of Women (16–45 yr.); children (12–36 mo)	Out of the 1102 households interviewed, women of reproductive age consumed sugar and cooking oil at 88% in the week preceding the survey.
Uganda	Uganda Food Consumption Survey 2008	Harvest Plus, A2Z, USAID, GAIN, WFP, Academy for Educational	To determine dietary patterns of Ugandan children 24-59 months, and WRA (15-49 years), in three regions of	The survey was carried out in 7,421 households and on 38,543 individuals residing in one urban and two rural regions of Uganda in 2008 to more fully	The findings confirm a substantial variation in usual food and micronutrient intake across regions of Uganda in 2008. The diet in the rural South-West provided larger amounts of

Country	CONSUMPTION MONITORING				
	Survey Type	Responsible	Purpose	Methodology	Findings
Uganda		Development, Uganda National Working Group on Food Fortification (NWGFF), Uganda Chartered Healthnet	Uganda: Central/Kampala, South-West and North To provide baseline figures for strengthening Uganda's National Food Fortification Program.	characterize the dietary patterns of children 24-59 months of age and women of reproductive age (WRA) aged between 15-49 yrs. The three regions included in the survey were purposefully selected, within each region, districts and then households were randomly selected in a two-stage process that provided samples representative of that region. Food consumption was measured using the 7-day recall method with duplicate measurements on a subset of the sample to allow estimation of usual intake. A total of 61 food items were used.	most nutrients, and had the lowest prevalence of inadequate intakes. Despite higher overall levels of wealth in Kampala, mild inadequacies of B complex vitamins were found, such as B-1, B-2, niacin, and folate. This may well be due to the limited access urban inhabitants have to natural sources of these micronutrients and their reliance, instead, on products with low micronutrient density, such as refined flours, sugar and oil/fats. Dietary patterns in the North were restricted with dependency on Food Aid thus inadequacies of vitamin B-2 and B-6, in addition to vitamin A, vitamin B-12, iron, zinc, and calcium, affected this population. In Uganda 90% of oil consumed is fortified.
	School Surveys on Salt consumption October 1999	MOH, Makerere University, UNICEF	To determine goitre prevalence in the country. To establish the proportion of household population consuming adequately iodized salt. To determine the levels of iodine intake using urinary iodine excretion.	This was a descriptive cross-sectional point prevalence population survey based in primary schools. The districts were separate geographic units of study and so was the country. Hence each study district constituted "a sampling universe" according to indications of assessing IDD status. A sample of 2880 school children aged 6–12 years from 72 Primary schools in 6 districts of Uganda was studied in October 1999. As recommended	Some districts (Hoima & Kisoro) are lagging behind because of poor coverage with iodized salt. The proportion of households consuming adequately iodized salt is still moderately low at 64%. Moreover, there are still areas in the country which do not receive iodized salt at all. Such areas are still very goitrous and partly exaggerate the overall district and country picture. Median urinary iodine levels in all the study districts and overall in the country were above the WHO recommended 100µg/L, indicating abnormally high iodine intake

Country	CONSUMPTION MONITORING				
	Survey Type	Responsible	Purpose	Methodology	Findings
Uganda				by WHO, 50 urine and 50 salt samples were collected from each district. These were divided equally among the school clusters. 40 pupils were systematically selected to get a sub-sample of those to give a spot sample of urine and sent home for a salt sample used for cooking the previous day's meal.	in the population. Iodine nutrition in Uganda was considered 'excessive', with a median UI of 310µg/L (11.9) reported in 1999. WHO considered iodine nutrition in Uganda as 'at risk of adverse health consequences' (WHO 2004).
	FACT Survey September 2015	Ministry of Health, Makerere University, Uganda National Working Group on Food Fortification, CDC, Food Fortification Initiative, Bill and Melinda Gates Foundation	The survey was aimed at obtaining information on the coverage, utilization and potential contribution of fortified foods to the micro-nutrient intake of population, identify program barriers and recommend potential ways to address them. Assessing the quality of fortified foods to determine the adequacy of fortification levels at the household level independently of routine monitoring activities.	A cross-sectional cluster national household survey was representative by urban and rural stratification. It targeted households and women of reproductive age (15 to 49 years) with a sample size of 489 consisting of women of reproductive age per stratum, 526 households per urban stratum, 575 households per rural stratum. A two-stage stratified random sampling strategy was applied: <ul style="list-style-type: none"> • 1st stage of sampling selected 35 PSUs per stratum by probability proportional to size. • 2nd stage of sampling selected 15 or 16 households per PSU by random selection. 	The national coverage of maize flour consumption was 91.8%, fortifiable maize flour at 42.4% while fortified maize flour was at 6.5%. In terms of urban and rural coverage of maize flour, consumption of maize flour at 95.2% for urban areas and 91.2% for rural areas, fortifiable maize flour at 73% for urban areas and 36.3% for rural areas, while fortified maize flour was at 8.6% in urban areas and 6.1% in rural areas. Nationally, there was high coverage of fortified salt and oil and potential for significant contributions to dietary intake of iodine and vitamin A, respectively. There was adequate fortification of household samples of maize flour at 3.4% nationally compared to 2.6% in the rural areas and 3.6% in the urban areas according to quality stipulated by Uganda Standard 2006.

Country	CONSUMPTION MONITORING				
	Survey Type	Responsible	Purpose	Methodology	Findings
Zambia	Zambia Domestic Household Survey 2015	USAID, UNICEF UNFPA, CDC Central Statistical Office (CSO), MoH	To determine nutrition status and iodine coverage for policy decisions and programme interventions. To monitor the nutrition situation of women and children and included questions on nutritious and fortified foods.	ZDHS 2013-2014 tested for presence of iodized salts in 84% of household covering both urban and rural households. In total 18,052 households were sampled.	In line with Food and Drug regulations household salts should be fortified with iodine sufficient to ensure concentration of at least 15 parts per million consumed. The survey found that 96% of the household tested were consuming iodized salts.
	Iodine Deficiency Disorders Impact Survey 2002, 2011	UNICEF, USAID National Food and Nutrition Commission (NFNC)	To monitor iodine consumption amongst the school children by measuring urinary iodine concentration in school's children To estimate the coverage of adequately iodated salt in their household	Cross sectional national cluster survey covering children aged between 7- 12 years	The survey revealed median urinary iodine concentrations (MUIC) value amongst the children at 245µg/L which is higher than the recommended WHO range (100-199 µg/L) for iodine nutrition. The proportion of children with UIC under 100 µg/L (14%) which we below WHO standard of 50%. The coverage of adequately iodized salt (15-40 ppm as iodine) was estimated at 53%, a great improvement from 2002 (30%) but was below the 90% standards (WHO/UNICEF/ICCIDD,2007). A proportion of the remaining 47% of the household salt was found to either be under iodated (20%) below 15ppm or over iodated (27%) above 40 ppm.

Country	CONSUMPTION MONITORING				
	Survey Type	Responsible	Purpose	Methodology	Findings
Zambia	Zambia Food Consumption and Micronutrient Survey 2008, 2014	UNICEF, College of Public Health, University of Arizona, TDRC-Zambia	<p>To establish the dietary patterns and health and nutrition outcomes of children 6-59 months of age and women of reproductive age 15-49 years old.</p> <p>To assess the macronutrient and micronutrient deficiencies in rural populations.</p>	<p>This was a sub-national cross-sectional rural study focused on children 6 to 59 months old and women 15 to 49 years old in the Northern and Luapula Provinces in 2008. Food consumption was measured using the 24-hour recall method and interviews were conducted to collect information on dietary habits, socio demographic status and lifestyle. Blood samples were also drawn to determine serum ferritin, zinc, folate, vitamin B12, retinol, C-reactive Protein (CRP) and Alpha-1-acid Glycoprotein (AGP). The sample size was 213 children and 222 women in Luapula and 367 children and 378 women in the Northern Province.</p>	<p>In 2014, the dietary profile, which featured low levels of consumption of milk, meat, fish, and dairy products. In women, those at risk of vitamin A deficiency were 3.2%. The iron profile from this survey showed that only 6.3% of the women surveyed had depleted iron store. About 55% of women were deficient in zinc. Those at risk of vitamin B12 and folate deficiency were 98% and less than 92% respectively. Mean hemoglobin of women was 12.6g/dl, with 30.6% of women (Hb5mg/l and/or AGP >1g/L, was found in 20% of subjects; while 18.6% of the women suffered from iron deficiency anemia (Hb <12g/dl and iron deficiency). In children, it was found that 35.3% were vitamin A deficient (VAD), but on correction using Thurnham method the VAD dropped to 25.8%. The iron profile from this survey showed that only 4% of the children surveyed had depleted iron stores. About 22-34% of them were deficient in zinc depending on the time blood was collected, higher (24% or 38%) in Luapula and lowest (31% or 20%) in Northern. Most of children were deficient in vitamin B12 (97%) and Folate (83.6%).</p>

Country	CONSUMPTION MONITORING				
	Survey Type	Responsible	Purpose	Methodology	Findings
Zambia	Living Conditions Monitoring Survey (as part of HCES), 1996, 1998, 2002/2003, 2004, 2006 and 2010, 2015 (7 th Survey)	Central Statistical Office	To assess the feasibility of or to design fortification programs by introducing specific food item categories to be able to obtain more precise data (2006).	<p>The LCMS is a population-based, household survey that collects data using structured personal interviews with household members.</p> <p>In 2006, Zambia Living Standards Measurement Study included questions on households' consumption of maize to distinguish those consumers who purchase their product from large-scale, modern roller mills. A total of 18,662 households and 80,919 individuals were sampled. A total of 39 food items were considered within a 14-day recall period.</p> <p>The 2015 survey was designed to cover a representative sample of 12,260 non-institutionalized private households residing in both rural and urban parts of the country. The sample was intended to give reliable estimates at national, provincial and rural/urban levels.</p>	In 2015, Consumption of maize grain (shelled and unshelled), breakfast mealie meal, roller meal, hammer mealie meal, pounded maize meal, the cost of milling, salt, spices and cooking oil was captured over the last four weeks.

Country	CONSUMPTION MONITORING				
	Survey Type	Responsible	Purpose	Methodology	Findings
Zambia	Zambia Demographic and Health Surveys 1999, 2013-14	Central Statistical Office (CSO), MoH, UNICEF, UNDP, USAID, UTC, UNZAICF, CDC and UNFPA	To find out the status of women and children are deficient of major micronutrients which are necessary for growth and development.	A representative sample of 18,052 households was drawn for the 2013-14 ZDHS. The survey used a two-stage stratified cluster sample design, with EAs (or clusters) selected during the first stage and households selected during the second stage. In the first stage, 722 EAs (305 in urban areas and 417 in rural areas) were selected with probability proportional to size.	In line with Food and Drug regulations household salts should be fortified with iodine sufficient to ensure concentration of at least 15 parts per million consumed. The survey found that 96% of the household tested were consuming iodized salts.
Zimbabwe	Zimbabwe Demographic Health Survey 1988, 1994, 1999, 2005/06, 2010/11, 2015	USAID, ZIMSTAT, UNPFA, UNICEF, IRISH AID, SIDA, Australian Aid, UKaid, EU	The purpose of the 2015 ZDHS survey was to provide current demographic and health information for use by policymakers, planners, researchers and programme managers	The 2015 ZDHS sample was designed to yield representative information for most indicators for the country, for urban and rural areas, and for each of Zimbabwe's ten provinces:	Among households in which salt was tested, 95 % had iodized salt. It should be noted that household salt was tested for the presence or absence of iodine only; the iodine content in the salt was not measured. The proportion of households consuming iodized salt in 2010-11 (94 %) is nearly identical to what is observed in 2015 (95 %).
	Multiple Indicator Cluster Survey (MICS) 2009, 2014	ZIMSTAT, UNICEF USAID, MoH and Child Welfare Maternal and Child Health Integrated Programme (MCHIP)	To monitor the situation of children and women through a national household survey initiative.	In 2014, Interviews were successfully completed for 14,408 women ages 15-49 and 7,914 men ages 15-54 from 15,686 households. Additionally, 9,884 children under 5 questionnaires were completed.	Salt is adequately iodized when it contains at least 15 ppm. About 54.4% of households were using iodized salt.

3.4: Fortified and Nutritious Food Programme Surveillance

Fortified and Nutritious food programme surveillance entails an on-going and systematic collection, analysis, and interpretation of data and dissemination of the trend information on micronutrient and health status of a population with regular access to fortified and nutritious food, to help strengthen and sustain a fortification or nutritious program as impact indicators (Parvanta, I, et al., 2014). These use methods distinguished by their practicability, consistency, uniformity, and frequency. Nutritional Surveillance⁷ is “an ongoing system for generating information on the current and future magnitude, distribution and causes of malnutrition in populations for policy formulations, programme planning, management and evaluation”. Nutrition surveillance provides information for routine monitoring of nutritional status and early warning and intervention for disaster mitigation. Some nutritional indicators considered are biochemical, clinical, anthropometrical, and dietary intake. Nutrition monitoring and evaluation systems are essential in measuring program performance and evaluating the impact of interventions. These systems include routine recording and reporting of nutrition services integrated in the existing health information system, periodic surveys and assessments.

Fortified and Nutritious food programme surveillance systems range from repeated measurements on small populations of a sample of households or school-based surveys such as sentinel site monitoring, through national level surveys involving thousands of households, to regional and global systems of surveillance. These include nutrition surveillance systems, special surveys such as Demographic Health Surveys, National Micronutrient Surveys and National Nutrition Surveys, (DHS, NMS, NNS), routinely reported data obtained from Health Monitoring Information Systems – HMIS or program monitoring and evaluation, as well as sentinel sites. Nutritional Surveillance systems have four principle objectives: programme design, programme management and evaluation, policy-making, and crisis management (Mock and Mason 2000). These objectives are not mutually exclusive and may also be modified over time depending upon changes in the external environment. Nutritional surveillance systems operate in both stable and emergency situations with methods of data collection grouped into four categories: repeated surveys (national sample surveys and smaller-scale surveys), growth monitoring (clinic based and community based), sentinel site surveillance (community based and centrally based) and school census data. In practice, nutritional systems are frequently used for a range of activities such as prioritisation of social sector resources, early warning of food crisis, targeting specific interventions, on-going monitoring and evaluation of nutrition programmes, developing the capacity of individuals, households and communities to manage their nutritional problems, and for macro and international level policy and advocacy (Shoham, Watson, and Dolan, 2001). Table 5 depicts the various surveillance systems for fortified and nutritious foods in various countries in the ECSA region.

⁷ This was first defined was first defined at the World Food Conference in 1974 (UN, 1975).

Table 5: Fortified and Nutritious Food Programme Surveillance in ESCA Countries

Countries	FORTIFIED AND NUTRITIOUS FOOD PROGRAMME SURVEILLANCE				
	Survey Type	Responsible	Purpose	Methodology	Findings
Burundi	Household and Economic Survey 1998	ISTEEBU(Institute de Statistiques et D'Etudes Economiques du Burundi)/ Burundi Institute of Statistics and Economic Studies World Bank.	To make inferences about household food consumption, nutrient intakes and nutrition status To provide complementary source of food and nutrition related data.	This was a six-month national representative household expenditure survey that sampled 6,688 households. It used a recall method of interviews that considered a period of 15 days. The questionnaire incorporated food fortification indicators to provide baseline figures. 32 food items were considered.	There was improvement of prevalence in anaemia among non-pregnant women from 64% in 1983 to 28% in 2003.
	Burundi Multiple Indicator Cluster Survey - 2000, 2005	UNICEF Burundi Institute of Statistics and Economic Studies - ISTEEBU	To determine nutrition status for policy decisions and programme interventions.	The data was collected to analyze gaps for monitoring the situation of children and women through the household survey. It was also used to capture rapid changes in key indicators and establish program impact	In 2005, 39% of children Under 5yrs were underweight, 53% were stunted and 7.4% were wasted. In 2005, Vitamin A deficiency as measured by serum retinol levels affects 28% of children and 12% of women, with these levels of deficiency classified as 'severe' for children, and 'moderate' for women (WHO 2009). Night blindness affected 8% of pregnant women in Burundi and is considered by WHO as a public health problem.
	Burundi National Nutrition Survey 2005	MOH, LMTC, Burundi Institute of Statistics and Economic studies (ISTEEBU), UNICEF, WFP	To establish the level micro-nutrient deficiency in the population. To determine iodine and vitamin A deficiency	It obtained information on several nutritional indicators: Goiter, Iodine deficiency, Vitamin A deficiency, Morbidity	The 2005 National Nutritional Survey indicated a decrease in acute malnutrition from 10.4% to 7.4%.

Countries	FORTIFIED AND NUTRITIOUS FOOD PROGRAMME SURVEILLANCE				
	Survey Type	Responsible	Purpose	Methodology	Findings
Burundi	Burundi Demographic and Health Survey 2010/2011, 2016/2017	EDSB-III, MOH, ISTEERU, ICF International, UNICEF, UNFPA, USAID, World Bank	To provide monitoring and impact indicators for health and nutrition status.	It captured nutrition indicators on child feeding practices, Vitamin supplementation, and anemia. The total sample size for the 2010 Burundi Demographic and Health Survey was 9,024 households. A two-stage stratification sample method was used and a total of 376 clusters (301 rural and 75 urban) were selected by probability proportional to size. The survey included three questionnaires: household, women, and men. There was a total of 9,389 female respondents aged 15-49 and 4,280 male respondents aged 15-59. In half of the selected households, blood sampling was done for women, men, and children to test for anemia prevalence.	In 2016/2017, 56% of children under 5 years suffered from chronic malnutrition while 31% had moderate malnutrition, 25% had severe malnutrition, 6% had acute malnutrition. 29% of children under 5 years were stunted, while 21% were moderately stunted and 8% were severely stunted. In 2010 the national rate of anemia in Burundi amongst children 6 – 59 months was 44.6%, with 1% having severe anemia (<7.0 g/dl hemoglobin). This rate of anemia among children is severe by WHO standards. The national rate of anemia amongst women 15 – 49 was 18.5%: a rate considered mild by WHO standards (WHO 2008).
Ethiopia	National Food Consumption Survey 2011	Ethiopian Public Health Institute (EPHI), Central Statistics Agency, Nutrition International (NI).	To assist policy makers in developing interventions aimed at reducing malnutrition and micronutrient deficiency in Ethiopia's vulnerable populations	The population was drawn from households selected randomly to represent all the 9 regions of Afar, Amhara, Benshangul, Gumuz, Gambella, Oromia, Somali, Harari, Southern Nations Nationalities and People's Tigray and the 2 Administrative cities; Addis Ababa and Dire Dawa.	The prevalence of moderate anemia decreased from 28% in 2005 to 20% in 2011. 45% of rural based compared with 35% of urban based children had anemia.

Countries	FORTIFIED AND NUTRITIOUS FOOD PROGRAMME SURVEILLANCE				
	Survey Type	Responsible	Purpose	Methodology	Findings
Ethiopia	Ethiopia Demographic and Health Survey, 2000, 2005, 2011, 2016	Central Statistical Agency (CSA) Government of Ethiopia USAID), The government of the Netherlands, the Global Fund, Irish Aid, the World Bank, UNFPA, UNICEF	To assess the nutritional status of children under age 5, women age 15-49, and men age 15-59. To.	The 2016 EDHS (part 7 of the series) sample was stratified and selected in two stages. Each region was stratified into urban and rural areas, yielding 21 sampling strata. Interviews were done with 15,683 women and 12,688 men from 16,650 households. Blood samples were collected from individuals for the presence of and anemia.	Thirty-eight percent of children under age 5 are stunted (short for their age); 10% are wasted (thin for their height); 24% are underweight (thin for their age), and 1% are overweight (heavy for their height). More than half of children age 6-59 months (57%) and 24% of women age 15-49 are anemic.
Kenya	Kenya National Micronutrient Survey 1999, 2011	MOH, Ministry of Devolution and Planning (MODP) – Kenya National Bureau of Statistics (KNBS), WHO, UNICEF, MI, WFP, GAIN, PSRI	To monitor trends in nutritional status – monitoring of iodine deficiency disorder, iron deficiency anaemia, and vitamin A and zinc deficiency.	The Kenya National Micronutrients Survey (NMS) 2011 was the first NMS to be carried by the KNBS. The survey covered household members (usual residents), women aged 15-49 yrs resident in the household, children aged 0-6-49months, School age children aged 5-14 yrs resident in the household and men aged 15-54 years.	The 1999 NMS noted that VAD among under-fives (84.4%); IDA among 6-72-month olds (69%) and among pregnant women (55.1%); IDD (36.8%); and zinc deficiency among mothers (52%) and among children under 5 years (51%). In 1999, Vitamin A deficiency as measured by serum retinol levels in preschool-aged children was considered severe (WHO 2009) with over 84% of children with levels <7.0µmol/g. In 2003, night blindness affected 6.4% of pregnant women in Kenya and was considered a public health (WHO 2009).

Countries	FORTIFIED AND NUTRITIOUS FOOD PROGRAMME SURVEILLANCE				
	Survey Type	Responsible	Purpose	Methodology	Findings
Kenya	Integrated Health and Nutrition SMART Survey Nutritional surveillance - long rains, short rains assessment May 2012	NDU WFP UNICEF, International Medical Corps– Kenya (IMC-Kenya), Ministry of Medical Services (MoMS)/ Ministry of Public Health Services (MoPHS)	To evaluate the extent and severity of malnutrition among children aged 6 to 59 months To analyse the possible factors contributing to malnutrition as well as recommend appropriate interventions	The survey covered 702 households in the greater Isiolo district located in the ASAL, during long rains. Three different sampling methodologies were applied. Infant and Youth Child Feeding (IYCF) multi survey sampling calculator was used to calculate IYCF sample while Emergency Nutrition Assessment (ENA) for Standardised Monitoring and Assessment of Relief and Transition (SMART) was used to calculate anthropometric and mortality data. This was guided both by the National Guidelines for Nutrition and Mortality assessments in Kenya and the recommended UNICEF nutritional survey key indicators. Qualitative data was collected through: focus group discussions (FGDs), key informant interviews and general observations.	The survey results indicate that 73% of the households purchased food, 54.9% of children (6-59 months) sampled consumed low dietary diversity of less than four groups while 64% of the caregivers consumed at least four food groups in the previous 24 hours. Stunting occurred in 17.1% (N = 689) of the children aged 6 to 59 months out of which 20.4% (71) were boys and 13.8% were girls (47). Stunting is an indicator of chronic malnutrition due to long-term food deprivation and is usually a sign of poverty. 16.7% of children 6-59 months were underweight and 2.3% were severely underweight. Boys (20.8%) were more underweight compared to girls (12.5%) this showed a statistical difference that is significant with a P. value of 0.0126.
	Kenya Demographic and Health Survey - KDHS 1989, 1993, 1998, 2003, 2008/09, 2014	Kenya National Bureau of Statistics. Ministry of Health, the National AIDS Control Council, the National Council for Population and	To measure the nutrition status, micronutrient intake amongst children and women, coverage of iodized salt within the households.	The Kenya Demographic and Health Survey 2014 is part of phase 7 of the Demographic and Health Survey (DHS) series, a nationally representative household survey series. Topics commonly covered in DHS include immunization, child and maternal health, family planning, nutrition, health behavior and	The sixth DHS conducted in Kenya since 1989, the 2014 KDHS is the first to provide representative data for all 47 counties as well as national and regional findings. Stunting has reduced overall from 35% in 2008 to 26% in 2014, within some counties it is as low as

Countries					
FORTIFIED AND NUTRITIOUS FOOD PROGRAMME SURVEILLANCE					
Kenya	Survey Type	Responsible	Purpose	Methodology	Findings
			Development, and the Kenya Medical Research Institute. World Bank, DANIDA, USAID, UKAID, UNFPA, the German Development Bank the Clinton Health Access Initiative, The World Food Program and the Micronutrient Initiative, USAID, DFID, UNICEF.		knowledge, health care access and use, and immunization. For the 2014 Kenya DHS, 31,079 women ages 15-49, and 12,819 men ages 15-54 were successfully interviewed from 36,430 households.
Lesotho	Community and Household Surveillance Study (CHS) Annual, Round 16 October/ November 2014	Food and Nutrition Coordinating Office (FNCO), Bureau of Statistics, WFP	To monitor the short and long-term effects of food assistance interventions	Since January 2007, CHS has been anchored within Lesotho Vulnerability Assessment Committee (LVAC) under Disaster Management Authority (DMA), with the aim of strengthening and complementing LVAC food security monitoring initiatives in the country. The total number of children 6 to 59 months from the 748-sampled household was 619. Of the sampled children, were within the age of 6 to 23 months which is the target age group for addressing stunting and supported under complimentary feeding programme of WFP	(CHS) is conducted during February/ March and September/October and February/March For the entire sample the prevalence of stunting or chronic malnutrition was 41.2% (while the national rate according to the 2009 Demographic Health Survey was 39%), underweight 19.3% and wasting 4% showing an increase from the previous round of the latter two (10.6% and (1.5%) while stunting did not change (still 41.2% as in round 15). About 3.5% of the women were severely malnourished while 5.7% were moderately

Countries	FORTIFIED AND NUTRITIOUS FOOD PROGRAMME SURVEILLANCE				
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Lesotho				support. A total of 748 caretakers interviewed. Heights and weights of children aged 6-59 months and women of child bearing age (15-49 years) were measured to determine their nutritional status.	undernourished. The situation is very critical according to WHO classification of malnutrition. Households with poor food consumption formed 12% of the sample and were classified as severely food insecure, while 39% had the lowest dietary diversity. Furthermore 18% of the households engaged in crisis coping strategies and 2% in emergency strategies.
	Lesotho Vulnerability Assessment Study (LVAS) 2016,	Food and Nutrition Coordinating Office – FNCO, Bureau of Statistics, WFP Multi-agency	To examine the food supply levels in the country To assess the stability of food prices in the short and long term. To determine the functionality of food market systems (for maize, pulses and cooking oil) in the country.	The market assessment covered the country's 10 districts, all of which had been identified by a prior LVAC food security assessment to be highly food insecure for the 2016/17 consumption season. It employed both secondary and primary data sources to meet the stated objectives and to identify suitable markets for market based response options. Primary data was collected using structured trader, agriculture inputs and market key informant questionnaires.	In Lesotho a rapid food security assessment (LVAS) was a rapid assessment that was conducted in January 2016 and found that an estimated total number of food insecure people in Lesotho had increased by 15.2% to 534,502 people, from 463,936 in July 2015. The 2017 assessment highlighted that for children under 5 years of age, the national prevalence of stunting is 32.6% while the Global Acute Malnutrition (GAM) is 4.7%.
	Cost of Hunger in Africa (COHA) - Lesotho study. October 2016	WFP, AU/NEPAD United Nations Economic Commission for Africa	- To assess the socio-economic impact of under-nutrition. -Familiarize the team with the problems contributing to under nutrition and proven nutrition interventions -Adapt results and present them to	COHA is a pan-African initiative led by the African Union Commission and the New Partnership for Africa.	The COHA model is used to estimate the additional cases of morbidity, mortality, school repetitions and dropouts, and reduced physical capacity that can be associated with a person's under-nutrition status

Countries	FORTIFIED AND NUTRITIOUS FOOD PROGRAMME SURVEILLANCE				
	Survey Type	Responsible	Purpose	Methodology	Findings
Lesotho			target decision-makers -Follow up and provide support		before the age of five.
	Lesotho Demographic and Health Survey 2004, 2009, 2014	The Bureau of Statistics and the Food and Nutrition Coordinating Office The Christian Health Association of Lesotho, the National University of Lesotho USAID, UNFPA, World Bank, WHO, USAID, the U.S. President's Emergency Plan for AIDS Relief (PEPFAR), UNICEF, the Global Fund to Fight AIDS, Tuberculosis and Malaria.	To provide up-to-date estimates of basic demographic and health indicators.	The 2014 LDHS followed a two-stage sample design and was intended to allow estimates of key indicators at the national level as well as in urban and rural areas, four ecological zones, and each of Lesotho's 10 districts. The first stage involved selecting sample points (clusters) consisting of enumeration areas (EAs) delineated for the 2006 PHC. A total of 400 clusters were selected, 118 in urban areas and 282 in rural areas. The second stage involved systematic sampling of households. A total of 9,402 were successfully interviewed, yielding response rate of 99%. This compares favourably to the 2009 LDHS response rate (98%).	According to the 2014 LDHS, 33% of children under age 5 are stunted or too short for their age. This is a sign of chronic under nutrition. Three percent of children under age 5 are wasted (too thin for their height), a sign of acute under nutrition. In addition, 10% are underweight, or too thin for their age. Overall, 51% of children suffered from some degree of anemia (hemoglobin levels below 11.0 g/dl). About half of these cases were classified as mild anemia, while 25% of children had moderate anemia, and 1% were severely anemic. Over one-quarter (27%) of women in Lesotho are anemic compared to 14% of men age 15-49 who are anemic.
Malawi	Malawi Demographic and Health Survey 1992, 1996, 2000/2001, 2004, 2009/2010, 2015-2016	National Statistical Office (NSO) of Malawi in collaboration with the Ministry of Health (MoH) and the Community Health Services Unit (CHSU) Department of	To provide data for monitoring the population and health situation in Malawi.	For the 2015-2016 Malawi Demographic and Health Survey (DHS), 24,562 women ages 15-49 and 7,478 men ages 15-54 were successfully interviewed from 26,361 households. In addition to survey questions on demographics and health, biomarkers data were collected in the 2015-2016 Malawi DHS to	Nearly 4 in 10 (37%) of children under five in Malawi were stunted, or too short for their age. Stunting is an indication of chronic under-nutrition. Children from the poorest households and whose mothers had no education were more likely to be stunted. Overall, 63% of children age 6-

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Malawi		Nutrition and HIV/AIDS		determine anemia in women and children.	59 months was anemic. Anaemia in children had decreased since 2004, when 73% of children were anemic. One-third of women age 15-49 in Malawi were anemic. Nearly half of pregnant women were anemic.
	National Micronutrient Surveys 2001, 2009, 2015/2016	This was coordinated by the National Nutrition Technical Working Group.	To determine the coverage of nutrition and nutrition-related interventions (including micronutrient supplementation and food fortification)	This entailed testing for Vitamin A in Sugar and cooking oil, iron, folic acid, iodine through urine tests, blood samples for zinc among a nationally and regionally-representative sample of preschool children (PSC), school-aged children (SAC), women of reproductive age (WRA), and men. In 2001, Nationally and regionally representative samples collected through FRAT and integrated into micronutrient survey through a 2-stage cluster sampling design using PPS; 30 clusters/ stratum (Stratum 1, north; stratum 2; central; stratum 3, south) PPS; 6 randomly selected households.	NMS 2001 estimated that 57% of women of childbearing age were vitamin A deficient and 47% of pregnant women were anemic. According to the Micronutrient Survey 2009, Malawi's population has high micronutrient deficiencies. This includes, Vitamin A deficiency (22% in children under five), Iron Deficiency anemia (51% in children under five).
	Malawi Integrated Household Survey (as part of HCES), 1997/1998, 2004, 2010/2011, 2017	National Statistics Office of Malawi, IFPRI, The World Bank HIS 3 -Government of Malawi (GoM), WB LSMS-ISA	To provide a complete and integrated data set to better understand target groups of households affected by poverty. To establish the food consumption patterns. To determine food diets, distribution of fortified foods,	IHS-2 sample was drawn using a two-stage stratified sampling procedure from a frame using the 1998 Population Census Enumeration Areas (EAs). The population covered by the IHS-2 was all individuals living in selected households. The sample frame included all three regions	About 63% of children 6 – 59 months in Malawi were anemic, with 24% mildly anemic, 36% moderately anemic and 3% severely anemic. Children in rural areas had higher rates of anemia than those in urban

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Malawi		project, Norway, Department for International Development (DFID), Irish Aid, Millennium Challenge Corporation (MCC), and German Development Corporation (GTZ) National Statistics Office ICF Macro	monitor salt	of Malawi: north, centre and south. The IHS-2 stratified the country into rural and urban strata. The urban strata included the four major urban areas: Lilongwe, Blantyre, Mzuzu, and the Municipality of Zomba. All other areas such as Bomas were considered as rural areas. The total sample was 11,280 households (564 EAs x 20 households). The consumption of 34 products in last 3 days was considered, estimated value by product, source of consumed food. HIS 3 determined all food consumed by the household in the past 7 days.	areas with rates of 64% and 53% respectively (National Statistical Office (NSO) and ICF Macro. 2011). 28% of women 15 – 49 years in Malawi were anemic. While there is a moderate variation by rural–urban residence, differences vary greatly by district ranging from a high of approximately 50% in Mangochi to 20% in Chitipa (National Statistical Office (NSO) and ICF Macro. 2011). Vitamin A deficiency was also considered a severe public health problem among children in Malawi, with almost 60% of children with serum retinol levels <7.0µmol/L (WHO 2009). Night blindness affected almost 6% of pregnant women thus considered a public health problem (WHO 2009).
	Malawi Nutrition SMART Survey 2016	MOH, DNHA, LUANAR, UNIMA, World Vision, UNICEF	To conduct a nutrition survey in order to determine the nutrition situation in the flood and drought affected districts to inform stakeholders on appropriate nutrition response programmes.	The 2016 SMART Survey was the second round of Nutrition Survey's to be conducted in Malawi within a period of one year. 7 surveys done in 7 livelihood zones in 25 districts as part of nutrition surveillance to continue monitoring the nutrition situation. Two stage cluster sampling using SMART	A 2.5% national global acute malnutrition (GAM) rate (which was 1.1% GAM in 2015 during the same period). Overall 33.0% of the households are classified as having inadequate food consumption as they consume limited or insufficient nutritious foods to maintain an active and healthy life. The most affected livelihood zone is Lower Shire

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Malawi				Methodology. It used the 2015 MDHS sampling frame, 87% to 97% response rates. Food insecurity was assessed using a Food Consumption Score (FSC) to indicate whether or not households were meeting the acceptable consumption levels (both frequency & quality).	where almost half of the households are classified as having inadequate food consumption. The overall nutrition situation in all the five livelihood zones surveyed in 2015 and again in 2016 has deteriorated with significant worsening of the nutrition situation in Lower Shire, Shire Highlands and Lake Chirwa Phalombe Plain.
Mozambique	Micronutrient Surveys(MISAU, 2002 and IDS-2011)	Ministry of Health, Ministry of Trade and Commerce, Ministry of Agriculture, UNICEF, HKI, FAO, WFP, GAIN, Irish AID, Population Services International (PSI), SPEED/USAID	The survey assessed the coverage of nutrition and nutrition-related interventions (including micronutrient supplementation and food fortification) To investigate trends in anthropometric health indicators over the years		Stunting levels of children under five was at 53.9% in 2011. Micronutrient deficiencies were also high, with levels of anemia and vitamin A deficiency in children under five being 68.7 % and 69 in % in 2011 and levels of anemia in women at 43.1%. In 2002, aneamia prevalence was at 72% and vitamin A deficiency was at 48% for children under five years.
	Demographic Health Survey 1997, 2003, 2011.	MoH, UNICEF, UNFPA National Statistical Institute (INE), ORC Macro	To determine the nutrition status of children and women		The rates of stunting and underweight remained about the same in 2003 (37 and 26 percent) as they were in 1997 (36 and 26 %). 41% of children ages 0-59 months were chronically malnourished in 2003. As many as 43% of children under five years of age

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Mozambique					were stunted in 2011, half of them severely so. Anaemia was widespread affecting 69% of children and 54% of women in reproductive age. The prevalence of underweight children was 15%, compared to the target of 16 %.
	Research on prevalence of anemia and micronutrient deficiencies in children and non-pregnant women in urban areas of Mozambique Cavale et. al., 2016	National Institute of Statistics in Rwanda , MOH International Child Fund, Global Fund, World Vision International, Partners in Health	To determine the prevalence and severity of anemia and micronutrient deficiencies among children and women in urban areas of Mozambique prior to the implementation of wheat flour and vegetable oil fortification.	A stratified cross-sectional survey of six main urban centers (Beira, Maputo City, Matola, Nampula/Nacala, Quelimane, Tete). The complete data was randomly collected from 962 children of 6-59 months and 1086 no-pregnant women aged 15 to 49 years. Blood samples were collected from children and women to measure hemoglobin concentration, presence of malaria using rapid tests, and deficiency prevalence for iron, vitamin A, vitamin D, folate, and vitamin B12.	In children, 70.8% were anemic, 19.3% were iron deficient, and 17.3% had iron deficiency anemia; the prevalence of vitamin A deficiency was 18.8%. In women, 39.8% were anemic, 25.1% were iron deficient, and 16.1% had iron-deficiency anemia. About 2% of women had vitamin A deficiency, 2% had folate deficiency, 11% had vitamin B12 deficiency, and 1% and 26% had vitamin D deficiency or insufficiency, respectively.
	Nutrition Surveillance National Program, 2009 to date	Technical Secretariat for Food Security and Nutrition; Ministry of Health, CDC, WHO	To regularly provide more reliable information on the nutritional situation in the most vulnerable age group (6–59 months of age) to allow or realign timely interventions with the objective to control or improve the nutritional status of populations at local levels	Data is collected continually and reported quarterly from community-based sentinel sites and public health clinics in 38 districts (out of 128 districts) with plans to expand to 64 districts. This collects information on monitoring and evaluation of the Nutrition, Rehabilitation Program	From 2003 to 2011 stunting reduced from 48% to 43%, wasting increased from 5.1 to 5.9%, underweight 20.9 to 14.9%. Anemia in children decreased from 75% in 2002 to 69% in 2011, for women it was 54% in 2011, Vit A deficiency in children was 69% in 2002 and

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				(PRN) in a system that includes 38 sentinel posts across the country.	urinary iodine in children of school age was 60.3% in 2004.
Rwanda	Demographic Health Surveys 2010/2011, 2014/2015. 1992, 2000, 2005, 2007/08, 2010/ 2011, 2013, 2014/15	National Institute of Statistics in Rwanda (NISR), MOH, International Child Fund (ICF), Global Fund, World Vision International, Partners in Health	To establish the current information on health and nutrition indicators.	Demographic Health Surveys done every 5yrs captures indicators concerned with nutrition including child feeding practices, vitamin supplementation, anthropometry, anemia, salt iodization	Overall, 37% of children age 6-59 months are anemic. Anemia in children has decreased since 2005, when 52% of children were anemic. Nearly 1 in 5 women ages 15-49 in Rwanda are anemic. About 4 in 10 (38%) of children under five in Rwanda are stunted.
South Africa	National Food Consumption Survey (NFCS) 1999, 2005	South Africa Medical Research Council (MRC) Department of Health – Republic of South Africa University of Stellenbosch GAIN UNICEF	To define the anthropometric, iron, iodine, zinc, folate and vitamin A status of children aged 1–9 years and women of reproductive age in South Africa To establish the knowledge, attitude and practices regarding food fortification and fortified food products. To assess impact on whether the fortification program was achieving its public health objectives	The NFCS, 1999 was conducted on 2894 children (1-9 yrs of age) had a nationally representative sample with provincial representation. NFCS 2005 was considered a fortification baseline. It collected information on anthropometric status, knowledge, attitude behaviour on food fortification and nutrition, food procurement, hunger, and the status of iodine, vitamin A, folic acid, zinc. It was a cross-sectional survey of a nationally representative sample of children aged 1–9 yrs in South Africa using the Census 2001 data. Those surveyed were all the children aged 1–9 yrs (12–108 months) and women of reproductive age (16–35 yrs) living in the same household. A total of 226 Enumerator Areas	The 2005 survey found that at the national level, stunting and underweight remained by far the most common nutritional disorders affecting almost one out of five and almost one out of ten children respectively. Nationally, the level of nutritional status of younger children (12–71 months of age) has marginally but significantly improved in comparison with the 1999 NFCS data. About 18.0 %, 9.3 % and 4.5 % children aged 1-9 years were stunted, underweight and wasted respectively with little progress since 1999. NFCS 2005 was linked to DOH’s sentinel Birth Defects Surveillance System (BDSS) and found significant decreases in the rate of folic-acid-associated neural

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South Africa				consisting of 107 urban-formal, 23 urban-informal, 15 rural-formal and 81 tribal areas.	tube defects after fortification had been affected.
	South African Demographic and Health Survey (SADHS), 1998, 2003, 2016	Statistics South Africa (Stats SA), National Department of Health), South African Medical Research Council and Inner-City Fund International, UNICEF, USAID, UNFPA and Global Fund	To track changes in the demographic and health-related indicators from 1998	SADHS was conducted between June and November 2016. It integrated indicators on maternal and child health, child survival, nutrition, and adult health. A total of 15,292 households were selected for the sample, of which 13,288 were occupied. Of the occupied households, 11,083 were successfully interviewed, yielding a response rate of 83%. SADHS 2016 collected the biomarkers of anemia testing and anthropometry.	SADHS 2016 noted that stunting was higher among male children (30%) than among female children (25%). A mother's education and wealth quintile are both inversely related to stunting levels. 3 in 10 women (31%) age 15 and older are anemic. About 23% are mildly anemic; 7% are moderately anemic, and less than 1% are severely anemic. Black/African Women's prevalence of anemia was 32%) while white women 11%.
	The South African National Health and Nutrition Examination Survey (SANHANES-1) 2012 was established as a population health survey.	Consortium of Human Sciences Research Council (HSRC), Medical Research Council (MRC) It was financed by the National Department of Health, the UK Department for International Development (DFID) and HSRC	To provide critical information for mapping the emerging epidemic of non-infectious, or non-communicable diseases (NCDs) and nutrition status in South Africa. To analyze the underlying social, economic, behavioural and environmental factors that contribute to the population's state of health. To establish impact of food fortification interventions.	The first round of SANHANES provided baseline data of a representative sample of the population for future analysis over long periods of time through longitudinal surveys.	The overall prevalence of anemia in all participants older than 15 years of age was 17.5% with female participants having almost double the prevalence (22.0%) when compared with males (12.2%). Prevalence of anemia in women of reproductive age was 23.1%. Iron depletion was 5.9% and iron deficiency anemia was 9.7% in women of reproductive age. Vitamin A deficiency in women of reproductive age was 13.3%. A significant improvement in the iron and vitamin A status in women of reproductive age compared to previous surveys

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South Africa					may reflect the beneficial impact of the food fortification intervention implemented by the Department of Health in 2003. The significant improvements in the iron and vitamin A status in children under five years of age as depicted by a decrease of iron deficiency anemia by 83% and Vitamin A deficiency by 63% (compared with of those of the 2005 NFCS) may reflect the beneficial impact of the food fortification intervention programme. Compared to the previous national survey in 2005, there has been a slight increase in stunting, but a clear decrease in wasting and underweight among children under five years in South Africa.
	South African Vitamin A Consultancy Group Survey (SAVACG) among children of 6–71 months, 1994.	South Africa Vitamin A Consultancy Group	To determine the micronutrient status of children between 6-71 months.	This was considered a fortification baseline 1 (NFCS-FB-1). A total of 156 Enumerator Areas were included in the study of which 82 were urban and 74 were rural. A total of 3120 children aged 1–9 years were included in the survey.	33.3% of children were vitamin A deficient (as indicated by serum retinol <20 µg/dL). There was 21.4% anemia prevalence, 10% prevalence of iron deficiency, and 5% prevalence of iron deficiency anemia.
Swaziland	Swaziland Demographic and Health Survey 2006/7	Swaziland National Nutrition Centre (SNNC), SWASA Central Statistics Office, USAID, UNICEF, UNAIDS,	To measure the iodization level of the salt used by the household for cooking and anemia status. To determine anemia status to assess the nutritional status of the	The 2006-07 SDHS was designed to provide estimates of health and demographic indicators at the national level, for urban-rural areas, and for the four regions of Manzini, Hhohho, Lubombo, and	SDHS 2006/7 revealed that 42% of the children 6 to 59 months in Swaziland have some degree of anemia, which is an indication of iron –deficiency. The SDHS data indicates that

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Swaziland		WHO, COOPERAZIONE ITALIANA, UNFPA, HAPAC, PSI, NERCHA	Swazi population.	Shiselweni. A total of 275 clusters were drawn from the Swaziland census sample frame, 111 in the urban areas and 164 in the rural areas. This resulted in members of 4,843 households being interviewed (95% response rate).	many children in Swaziland are at risk of or already have some degree of micronutrient malnutrition.
	Swaziland National Nutrition Status Survey 1985	SWASA Central Statistics Office Ministry of Agriculture Ministry of Health Swaziland National Nutrition Council (SNNC) CDC, USAID	The purpose of this survey was to <ul style="list-style-type: none"> provide estimates of the nutritional status of children in Swaziland by using anthropometric indicators, determine factors associated with under nutrition and thus identify children at high risk of under nutrition, and determine where further studies, if needed, would be most productive. 	A national nutrition status survey was conducted in the rural and peri-urban areas of Swaziland from September 1983 to January 1984. It excluded the urban areas of Mbabane and Manzini. A rural and peri-urban universe were constructed for the survey. In the rural universe, a two-stage population-proportionate sampling method was used to select 125 enumeration areas, and a random process was used to identify the starting homestead within each sample enumeration area.	The survey revealed evidence of chronic under nutrition as measured by short stature in Swazi preschool children. Chronic under-nutrition was identified in 20.3% of rural children and 23.0% of peri-urban children 3-59 months old. The prevalence of stunting was 12.8% at 3-5 months, which potentially reflects both prenatal and postnatal influences.
	Swaziland Nutrition Surveillance Sentinel Sites 2007	Ministry of Health Swaziland National Nutrition Council WHO, UNICEF	To develop a sentinel surveillance system for tracking nutritional status of children To strengthen nutrition information systems	Nutrition Surveillance Sentinel sites were located in three of the country's four regions: <ul style="list-style-type: none"> Lubulini Clinic in Lubombo Tikhuba Clinic in Lubombo Gilgal Clinic in Lubombo Motshani Clinic in Hhohho Sigangeni Clinic in Shiselweni The data was collected during child welfare clinics where between 125 and 250 children	Vulnerability Assessment Committee Survey (VAC) in March 2007 showed that nearly 40% of children under 5 years old are stunted and 4.5% to 11% were underweight compared to stunting and underweight levels for under-fives in the 2006 VAC survey were 30% and 9.6%, respectively. Acute malnutrition rates remained steady with 15

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Swaziland				were screened.	to 20% of children under-five being malnourished. 2 to 3% of the same group of under-fives were severely malnourished.
	Swaziland Household Income and Expenditure Survey – SHIES, 2000/1 and 2009/10 (as part HCES)	Central Statistical Office Ministry of Agriculture	To study trends in household well-being over the 10-year period and ensure evidence-based public policy decision-making in poverty reduction efforts. To evaluate on household expenditure and food consumption	The SHIES is a multipurpose survey of households in Swaziland, which collects information on the many different dimensions of the population’s living conditions including, among others, education, health and employment.	Decline in poverty from 69.0 to 63.0 percent was noted between the two survey periods. 1 in 2 persons in Swaziland who are poor are also food poor. Over all, total household expenditure spent on food increased slightly from around 27 percent in 2000/01 to almost 31% in 2009/10.
Tanzania	Tanzania Demographic and Health Survey and Malaria Indicator Survey (TDHS-MIS). Iodine salt test, micronutrients, 1991/92, 1994, 1996, 1999, 2004-2005, 2007/08, 2010-2012, 2015/16	Ministry of Health, Community Development, Gender, Elderly and Children – MoHCDGEC/ Tanzania Mainland Ministry of Health - NOH/ Zanzibar, National Bureau of Statistics – NBS/ Tanzania, Office of the Chief Government Statistician – OCGS/Zanzibar WHO, UNICEF, World Bank and USAID	To obtain the current and reliable information on demographic and health indicators regarding family planning, fertility levels and preferences, maternal mortality, infant and child mortality, nutritional status of mothers and children, antenatal care, delivery care, and childhood immunizations and diseases.	DHS 2010 (included analysis of bio-markers and a report on micronutrients and general nutrient consumption), the Tanzania DHS 2015/16 had no funding for micro-nutrient consumption analysis). TDHS-MIS 2015/2016 DHS was designed to provide up-to date information from a sample of 12, 563 households through anthropometry measurements, blood smear and finger/ heel prick blood samples, and urine tests to establish the presence of malaria, anemia, and iodine deficiency among women age 15-49 and the prevalence of malaria infection and anemia among children under age 5.	Stunting was more common among children who were very small at birth (51%), those with a thin mother (40%) and those from the poorest households (40%). Overall, 58% of children were anaemic, and almost half (45%) of Tanzanian women are anaemic. This has remained unchanged since 2004-05 when 48% of women were anaemic.

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Tanzania	Community-based District Surveillance System (DSS) since mid-2000	UNICEF, Ministry of Health and Social Welfare (Department of Policy and Planning) TFNC DFID	<p>To assess and document the impact of integrated interventions about women and children in the districts.</p> <p>To provide information required for planning, priority setting and policy formulation.</p>	The DSS was linked with the National Sentinel Surveillance System (NSS). The information gathered included child underweight, morbidity and mortality. The DSS operated in six districts receiving intensive focus from UNICEF (as a pilot and expanded to other districts). Nutritional status data was gathered on a house by house basis quarterly in many instances.	Community-based data from selected areas for the 1980-1990 decade show a mean underweight prevalence rate of 6.2 percent for severe under-nutrition and 48 percent for total underweight which is very close to earlier estimates of 5 percent and 47 percent respectively.
	Rapid Nutrition Assessment, 2007.	Tanzania Food and Nutrition Centre (TFNC), Ministry of Health National Bureau of Statistics, UNICEF, WFP	<p>To assess the prevalence of malnutrition in mothers/female caretakers through mid-upper arm circumference (MUAC) measurements.</p> <p>To assess the extent of food insecurity and coping mechanisms.</p> <p>To determine the levels of malnutrition in 4 regions through the anthropometric measurement using the weight for height (W/H), weight for age (W/A) and height for age (H/A) of children between 0-59 months or measuring below 110cm.</p>	The 30-cluster nutrition survey in was designed to establish baseline data on the nutritional status of children 0-59 months and factors affecting it. The female caretakers of the under-fives were also screened for MUAC measurements. The survey included a total of 1846 children and 1281 women in 1216 households in Arusha, Manyara, Morogoro & Shinyanga Regions to establish suitable food vehicles for enrichment with micronutrients and their per capita consumption by women and children at complementary age (children aged 12-36 months and women between 16-45 yrs). It measured consumption over a week to provide a better picture on “usual consumption”.	Maize was the staple food for all the households in all 4 regions. Majority (75%) had access to the maize cultivated and harvested by themselves and 20% bought it with cash earned through casual labor. Prevalence of underweight and stunting was 22.1% and 29.5% respectively among the under-fives. Prevalence of underweight starts to increase as early as at the age of 6 months until the age of 12-36 months when it begins to decrease. Stunting starts to increase at even earlier age than 6 months (probably due to malnutrition in utero) and continues with age. MUAC of 6.3 of women was noted to be below the recommended cut off point of < 22 cm.

Countries		FORTIFIED AND NUTRITIOUS FOOD PROGRAMME SURVEILLANCE				
Tanzania		Survey Type	Responsible	Purpose	Methodology	Findings
		National Nutrition Survey, 2014	TFNC of the Ministry of Health and Social Welfare (MoHSW) and the Nutrition Unit of the Zanzibar Ministry of Health, NBS, MAFS, OCGS, WHO, UNICEF, WFP, UN-REACH, FAO, Irish Aid and DFID	To assess nutritional status of children aged 0-59 months and of women 15-49 years, level of Infant and Young Child Feeding (IYCF) practices, coverage of micronutrients interventions and handwashing practices in Tanzania.	This was a cross-sectional survey with two stage cluster sampling. It uses SMART Methodology. It is done every two years, next survey to be done in 2018. The Food and Nutrition Surveillance estimated the coverage of iodized salt at household level for regional and national level. The target population for the anthropometric survey was all children between 0 and 59 months.	It found 34.7% of children under five to be stunted. The prevalence of chronic malnutrition or stunting, or low height for age among children under five years in the country fell from 42 % to 35 %.
		Case study in Dar es Salaam Noor RA, Abioye AI, Ulenga N, Msham S, Kaishozi G, Gunaratna NS, et al. (2017)	HKI, TNFC	To determine the market availability and consumer preference of fortified food To determine the prevalence of folate deficiency in this cohort of women of reproductive age prior to a food fortification program rollout and hence validate potential for benefit in Tanzania To assess the effectiveness of the national food fortification program by examining prospective folate levels as a proxy measure for public health impact.	A prospective cohort study comparing 600 participant's plasma folate levels before and after the rollout and scale up of the national fortification program. Non-pregnant women of reproductive age (18-49 years) living in Temeke and Ilala districts of Dar es Salaam were selected to provide a mix of urban and peri-urban populations assuming these communities would benefit from relatively faster access to fortified foods, given their proximity to the main food industries in Dar es Salaam. The respondents were recruited from 10 clinics, 5 from each of the two selected districts forming a total sample of 600 women.	In 6 months, a significant reduction in the prevalence of folate deficiency occurred in a cohort of women of reproductive age, with the benefit persisting up to 1 year after the program roll-out. This evaluation of folic acid intake among non-pregnant women of reproductive age using both dietary intake information and biochemical markers of folate status reveals that on average, women of reproductive age consumed diets containing adequate energy and macronutrient distribution. Plasma folate levels improved remarkably by month six of the study follow up, consistent with the rollout and scale-up of national food fortification.

Countries	FORTIFIED AND NUTRITIOUS FOOD PROGRAMME SURVEILLANCE				
	Survey Type	Responsible	Purpose	Methodology	Findings
Uganda	Uganda Demographic and Health Survey 1988/89, 1995/96, 2000/01, 2004/05 (restricted), 2006, 2009, 2011, 2016	MOH ICF International UNFPA SPRING/USAID CDC UNBOS UNICEF	To monitor and Evaluate population, health and nutrition programmes and provide policy makers with information for future decision making.	For the 2016 Uganda DHS, 18,506 women age 15-49 and 5,336 men age 15-54 were successfully interviewed from 19,588 households. Anthropometry measurements were conducted for all consenting respondents, and blood tests were conducted for the presence of malaria, anemia, and vitamin A deficiency (children ages 6-59 months), anemia (all consenting men and women).	The data show that 29% of children under 5 are considered to be short for their age or stunted (below -2 SD), and 9% are severely stunted (below -3 SD). Stunting is slightly higher among male children (31% percent) than among female children (27%). Stunting is greater among children in rural areas (30%) than urban areas (24%). 53% of children age 6-59 months (suffered from some degree of anemia) and 32% of women age 15-49 were anaemic.
Zambia	National Nutrition Surveillance System 2007 - 2009	National Food and Nutrition Commission; Ministry of Health UNICEF; WFP; Consortium for Food Security, Agriculture and Nutrition, AIDS, Resiliency and Markets	To monitor and provide information on key nutrition indicators at the district level for program planning and interventions To monitor the nutritional status of vulnerable groups to assess existing dietary diversity patterns at the district level To develop a national database on nutrition in Zambia	These were repeated nutrition survey conducted annually in 32 (of 74) districts in all nine provinces, with goal to expand to all districts using a two-stage, stratified, cluster sample design in 9,600 households.	The data analyzed in July 2008 showed that among children less than five years of age, 47% were stunted, 28% are underweight and 5% are acutely malnourished. Additionally, Zambia has the highest malnutrition case fatality (40%) in the region.

Countries					
FORTIFIED AND NUTRITIOUS FOOD PROGRAMME SURVEILLANCE					
Zambia					
Survey Type	Responsible	Purpose	Methodology	Findings	
Living Conditions Monitoring Survey (as part of HCES), 1996, 1998, 2002/2003, 2004, 2006 and 2010, 2015 (7 th Survey)	Central Statistical Office	The main objective of the LCMS is to measure the wellbeing of the Zambian population, and to provide trends in the different measures of societal wellbeing over time (2015).	This a population-based, household survey that collects data using structured personal interviews with household members. In 2006, Zambia Living Standards Measurement Study included questions on households' consumption of maize to distinguish those consumers who purchase their product from large-scale, modern roller mills. A total of 18,662 households and 80,919 individuals were sampled. A total of 39 food items were considered within a 14-day recall period. The 2015 survey was designed to cover a representative sample of 12,260 non-institutionalized private households residing in both rural and urban parts of the country. The sample was intended to give reliable estimates at national, provincial and rural/urban levels.	As reported in the WHO Global Database on anemia, the national estimates for anemia in Zambia in 2003 were approximately 30% for women 15 – 49 (non-pregnant women) and a little over 50% for children 6 – 59 months (52.9%). This rate of anemia among children was considered a severe public health problem, while rates among women were of 'moderate' public health significance (WHO 2008). Vitamin A deficiency was also a severe public health problem among children in Zambia, with almost 36% affected. Levels of night blindness among children were also considered 'severe' among children in Zambia, with the highest level among all the selected countries, of 6.2% (WHO 2009).	
Zambia Demographic and Health Surveys 1992, 1996, 2001/02, 2007, 2013/14	Central Statistical Office (CSO), MoH, UNICEF, UNDP, USAID, UTC, UNZAICF, CDC and UNFPA	To determine nutrition status and iodine coverage for policy decisions and programme interventions. To monitor the nutrition situation of women and children and included questions on nutritious and fortified foods.	ZDHS 2013-2014 tested for presence of iodized salts in 84% of household covering both urban and rural households. In total 18,052 households were sampled.	45% of children under 5 were stunted, 15% were underweight, and 5% were wasted. There was an improvement in anemia prevalence among non-pregnant women from 41% in 1998 to 29.1% in 2003.	

Countries	FORTIFIED AND NUTRITIOUS FOOD PROGRAMME SURVEILLANCE				
	Survey Type	Responsible	Purpose	Methodology	Findings
Zimbabwe	Zimbabwe Demographic Health Survey 1988, 1994, 1999, 2005/06, 2010/11, 2015	USAID, ZIMSTAT, UNPFA, UNICEF, IRISH AID, SIDA, Australian Aid, UKaid, EU	The purpose of the 2015 ZDHS survey was to provide current demographic and health information for use by policymakers, planners, researchers and programme managers	The 2015 ZDHS sample was designed to yield representative information for most indicators for the country, for urban and rural areas, and for each of Zimbabwe's ten provinces.	Anthropometric indicators: 33% of children under 5 were stunted, 12% were underweight, while 7% are wasted. 11% of infants are born with a low birth weight
	Multiple Indicator Cluster Survey (MICS) 2009, 2014	Zimbabwe National Statistics Agency - ZIMSTAT, UNICEF, USAID, UNFPA, EU, UNDP MoH and Child Welfare Maternal and Child Health Integrated Programme	To monitor the situation of children and women through a national household survey initiative, To provide decision makers with evidence about children's and women's rights and other vulnerable groups in Zimbabwe.	For MICS 2014, the sample had 682 clusters, 229 in urban areas and 453 in rural areas. A representative sample of 17,047 households were selected. The units of analysis for the MICS are the individual households and persons, including specific sub-population groups, that is, women of reproductive age 15 to 49, men age 15 to 54, and children under 5 years.	Using the latest WHO standard in estimating child nutrition, nationally 35% of the children aged under five years were stunted, 2 % were wasted and 12% were underweight in 2009. Overall, 11.2% of children were underweight, 27.6% were stunted, 3.3% were wasted, and 3.6% were overweight in 2014.
	Zimbabwe National Micronutrient Survey (NMS) 2012	Ministry of Health and Child Welfare UNICEF	To find out the status of women and children are deficient of major micronutrients which are necessary for growth and development.	This was a cross sectional national cluster survey covering children aged between 7- 12 years. The population of Zimbabwe, according to the 2012 Population Census National Report, is 13 061 239, comprising of 6 280 539 males and 6 780 700 females. The population is relatively young with 41 percent being below age 15 and about 4 percent age 65 and above. Sixty-seven percent of the population resides in rural areas.	The NMS covered the entire country and noted that for children aged 6 to 59 months, 19% of were vitamin A deficient, 32% were anemic, while 72% were iron deficient. About 24% of women of child-bearing age (15 to 49 years) were vitamin A deficient and 9 % had night blindness, while 26% of those in child bearing ages were anemic and 62% were iron deficient. About 1.5 million working age adults with anemia suffer deficits in work performance.

There has been a remarkable increase in the level of micronutrient surveillance due to the existence micronutrient deficiency disease (MDD)⁸ related projects, especially salt iodization, anemia and vitamin A deficiency (VAD) interventions. Much of the surveillance is sentinel site based with the objective of monitoring project coverage and impact. However, nationally representative baseline data on MDDs are limited, notably so when compared to data on child underweight. Micronutrient deficiency surveillance is a less developed area compared to anthropometric indicator surveillance, and requires support to develop. Further, the data sources are very few to allow for comparison over time (Shoham, Watson, and Dolan, 2001).

Across the ECSA region, surveillance of fortified and nutritious foods is not systematically pursued, however, a few countries have conducted National Micronutrient Surveys. These include Ethiopia, Kenya, Malawi (thrice), Mozambique (twice), and Zimbabwe. Several efforts have been made to include micro-nutrient status indicators in the Demographic and Health Survey in Malawi and Tanzania. These efforts have not been sustained in the subsequent surveys due to lack of resources. Some countries that have established nutrition surveillance systems include Nutrition Surveillance National Program in Mozambique from 2009 to date, National Nutrition Surveillance System in Zambia between 2007 and 2009. An Integrated Maternal and Child Health and Nutrition Surveillance System was proposed in 2013 and cancelled. Further, data from these surveillance is not adequately utilized for decision support.

Gaps and Limitations

There are significant gaps and limitations that make the available national fortified and nutritious foods programme surveillance data marginally useful for policy and program development, for evaluation of the outcomes of public policies and programs, and for research and other key purposes. The following are major issues that arise.

- The only regularly available national consumption information is derived from food expenditures, which provides only a gross estimate not suitable for understanding the nutritional state of the population, for identifying groups at nutritional risk, or for risk assessment of food safety.
- Physical measures and biomarkers of nutritional status, micronutrient intake, environmental exposures, health outcomes and their links are rarely undertaken. There is no capacity to link nutritional status and health outcomes.
- There are significant limitations in aggregating the data from sentinel site surveys to provide a valid national picture of food intake and nutrient status of the overall population as they are specific to the areas they are undertaken.
- There is no systematic, comprehensive national surveillance of environmental exposures and food contaminants/risks especially aflatoxins.

⁸ Three of the most prevalent micronutrient deficiencies in populations in developing countries in particular are iron deficiency, iodine deficiency, and Vitamin A deficiency (Black *et al.* 2008).

- The very limited data sources that are available cannot be interrelated to understand the relationships between dietary intakes, nutritional status, fortification related knowledge, attitudes and behaviors, health status and health determinants.
- In most countries, there are limited national information sources to better understand food fortification need, its impacts and solutions to regulate food in areas with the fortified does not comply.

3.5: Programme Impact

Large scale fortification is widely recognized as a cost-effective strategy to ensure population level shifts in micronutrient status and thereby contribute towards improvements in the health and wellbeing of vulnerable segments. Evaluation of food fortification programmes aims to determine their relevance, efficiency, effectiveness, impact, and the extent to which they have achieved these objectives (International Food Policy Research Institute, 2016, Aaron et. al., 2017). Impact evaluation is the assessment of change in nutritional or health status (pre-defined endpoints) within the target population that can be attributed to the fortification program (ECSA, 2017). The impact of food fortification is expected to occur among these populations with regular access to sufficient quantities of foods adequately fortified to meet targeted nutritional needs. It is therefore imperative to monitor the coverage of the fortification program over time among target the populations (Mawuli and Grant, 2013). The impact indicators include fortified food reach and coverage (fortified food vehicle purchase by consumers), fortified food vehicle intake by consumers, additional micronutrient intake through food vehicles, and improved nutritional status. The program impact is assessed to establish whether there has been a change in the biological marker or health status from the pre-fortification to the post-fortification period. This is established using the median urinary iodine concentration, serum retinol for vitamin A, serum folate for folic acid, and serum ferritin for iron through changes in the bio-markers. For the health status, hemoglobin concentration, prevalence of neural tube defects and anemia are used (Martorell, 2015).

3.5.1: Salt Iodization in ECSA Countries

Iodine deficiency has multiple adverse effects on growth and development due to inadequate thyroid hormone production that which is normally termed Iodine Deficiency Disorder (IDD) . Iodine deficiency remains a major global health challenge leading to preventable mental retardation and increased child mortality for children under 5 years while women of child bearing age suffer from miscarriages and still births. It is a result of this that salt fortification with iodine has become global agenda over the last 30 years. Salt fortification with iodine is an important food vehicle owing to its global consumption. Most countries have legislated mandatory fortification of salt with iodine to mitigate against the health risks. The consumption of adequately iodized salt is 70.3%⁹ (2011) against WHO (USI) standards of 90%.

All countries in the ECSA Region have mandatory legislation on salt, however only five countries; Burundi (96.1% (2010), Kenya 93.4% (2009), Rwanda 99.3% (2010), Uganda 99% (2011) and Zimbabwe 94% (2011) have achieved USI standards of 90% household coverage with adequately iodized salt. In these countries though there exist disparities in consumption levels within regions in respective

⁹ World Bank Data

countries, proper monitoring and surveillance systems should be in place not only for sustaining but also in reducing upper Intake Limits (UL) while increasing Lower Intake Levels (LL) where they occur.

Other countries have made great strides in improving household consumption levels of iodized salt. On the other hand, some countries are sliding back from achievements e.g. Lesotho 90.7% (2004) to 79.4% (2009), Swaziland 79.9% (2007) to 51.6% (2010), Zambia 63.9% (2002) to 53% (2012) and Mozambique 53.7% (2003) to 44.8% (2011). It should be noted that many of the countries that have reduction in household consumption levels are landlocked countries except for Mozambique. Quality controls holds key for iodized salt imports for lack locked countries while in Mozambique consumption of normal salts is from small salt producers and lack of enforcement. These ECSA countries will have to regulate their porous borders between these countries which undermine entry and exit points irrespective of control measures. The challenge in sustaining IDD elimination in Tanzania is now two-fold: to better reach the areas with low coverage of iodized salt, and to reduce iodine intake in areas where it is excessive. Attention is needed in improving quality control at production level and perhaps the national salt iodation regulations may need to be reviewed.

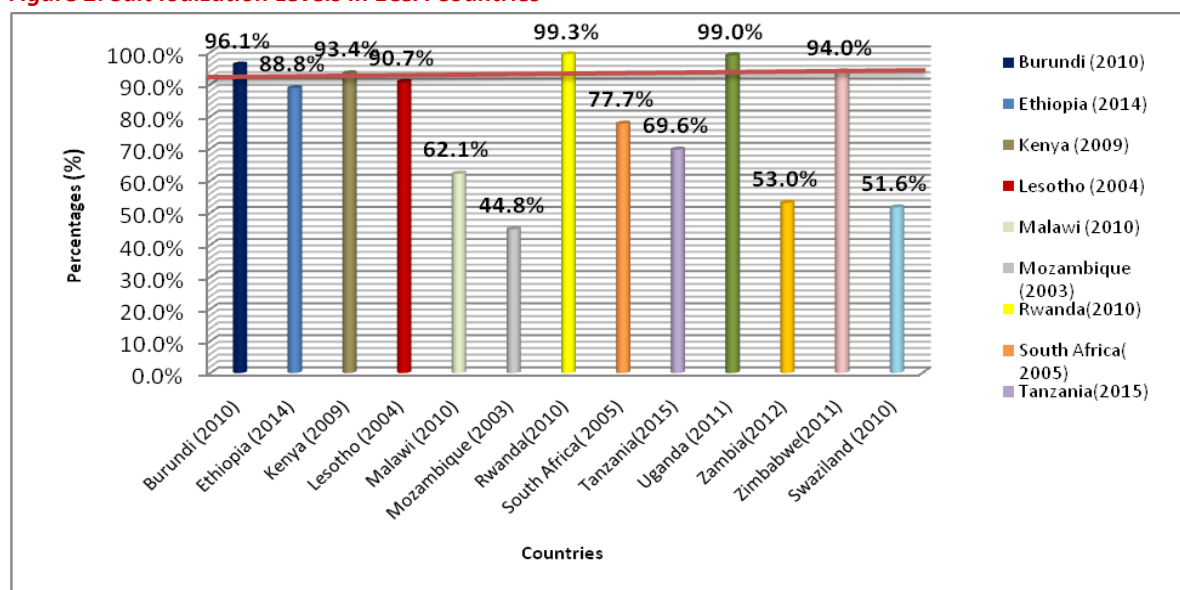
Zambia conducted an Iodine Deficiency Disorders (IDD) impact survey in 2002 and 2011. The results showed the MUIC amongst the children was estimated at 245µg/L which was higher than the recommended WHO range (100-199 µg/L) for adequate iodine nutrition. However, the proportions of pupils with UIC under 100 µg/L (14%) and under 50 µg/L (4.5%) were below the WHO standards of 50% and 20% respectively. These results show that IDD is no longer a health problem in the country and shows the impact the country has made since 1993 when MUIC was estimated at 49 µg/L.

For South Africa, the World Bank report of 1988 indicated iodization levels of 62.4%, however, according to survey of Sources of Household Salt in South Africa Report in 2005¹⁰, a higher level of 77.7% was realized.

Figure 2 illustrates the consumption levels of iodized salts amongst ECSA countries following national surveys undertaken during different periods of time.

¹⁰ Sources of Household Salt in South Africa Report (Jooste, 2005)

Figure 2: Salt Iodization Levels in ECSA Countries



— WHO (USI) >90%

Countries with successful iodized salt programmes achieving a household coverage of more than 90% are (data from 2007-2011) include Burundi, Kenya, Malawi, Rwanda, Uganda, and Zimbabwe. Lesotho had promising household coverage rates of between 70 and 90%. In the ECSA – HC region, the largest burden of iodine deficiency in 2013, because of large populations, remains in Ethiopia and Mozambique (ICCIDD Iodine Network, 2013; UNICEF Global Database 2013).

3.5.2: Fortification of Maize Flour

Maize consumption in Africa constitutes 52-65 % of the energy intake for much of the population in the region with some countries, such as Tanzania, Malawi, Kenya, Zambia, Zimbabwe, and Lesotho having close to 90% of the population that consumes maize flour products. This makes maize flour a very crucial food vehicle to try and reach with micronutrients for most of the vulnerable population in the urban and rural areas (Smarter Futures, 2017).

Table 6: Maize Consumption in the ECSA Region (g/person/day)

Countries	Maize consumption in the ECSA Region (g/person/day)
Lesotho	328
Malawi	293
Zambia	243
Zimbabwe	241
South Africa	222
Kenya	171
Swaziland	152
Tanzania	128
Mozambique	116

Countries	Maize consumption in the ECSA Region (g/person/day)
Ethiopia	94
Uganda	52
Burundi	-
Rwanda	-

Estimated at 80% extraction from 3-year average (2007–2009) FAOSTAT Data, 2013.

The above table illustrates that maize is a staple for ECSA member countries where the consumption ranges from 52 to 328 g/person/day (Ranum et. al. 2014). This makes it an important food vehicle for fortification. Fortification of maize flour with Vitamin-mineral premix (Iron, vitamin A, Vitamin B, folic acid, Zinc) would enable a large proportion of the populations in these respective countries to benefit from consumption of these micronutrients. The maize scoping study reveals that, less than 30% of the human consumed maize is fortified, mostly that milled in large scale roller mills, in South-Africa, Uganda, Kenya, Namibia, Nigeria, Zambia and Zimbabwe (Smarter Futures 2016).

Out of 13 ECSA countries, 7 made it compulsory for commercial and medium maize flour millers to fortify while for the rest it remains voluntary. However, the major challenge for these countries is that commercial and medium millers are accessible to urban population. However, the rural areas (where majority of the population reside) are dotted with hammer millers with limited capacity and resources to fortify. According to representatives of millers met, it's cost effective to fortify with large volumes of production. Several initiatives have been undertaken in Zimbabwe with CARE and Project Healthy Child in Zambia, Uganda, Malawi, and Tanzania as well to innovate dosing at hammer levels but these remain project driven and sustainability may be difficult to achieve. In Lesotho, one of the large-scale millers is fortifying on their own volition.

According to FORTIMAS, monitoring a flour fortification program for health impact provides evidence that the nutritional goals are being accomplished. This should take into consideration that at least 80% of the population being surveyed is consuming foods made with fortified flour as determined with household surveys and commercial monitoring. Secondly, the fortification program has been successfully operating non-stop for at least a year to 18 months as determined with internal and external monitoring.

Estimation on the extent to which fortified maize reaches population within ECSA countries is difficult to obtain as exclusive surveys have not been carried out. In countries like Zimbabwe, it is estimated that 36%¹¹ of the population access fortified maize meal based on production. By 2008, according to National Chambers of Maize Millers Association, South Africa had 70% of its maize meal in the market fortified. The situation in Mozambique was similar as approximately 35% was fortified based on urban population. According to Household Expenditure Surveys undertaken in Kenya, Uganda and Zambia in 2006, the consumption of fortified maize flour was estimated at 28%¹², 39%¹³ and 23%¹⁴ respectively.

¹¹ According to Grain Millers Association of Zimbabwe (GMAZ)

¹² KIHBS 2006

¹³ UNHS 2006

The major challenges for maize flour fortification in ECSA countries are the existence of an agri-based populace in the rural areas who produce maize for their own consumption and use hammer mills where fortification is rarely done. Further, in the rural areas, cost considerations are a constraint to fortification due economies of scale. The regional priority has been in attaining food security thus fortification may not be given prominence in the case of maize which is a major staple food.

3.5.3: Fortification of Wheat Flour

According to Mason et. al (2012), between 2000 and 2009, per capita wheat consumption¹⁵ in sub-Saharan Africa increased at a rate of 0.35 kg/yr. Its consumption is expected to increase at an even faster rate in the future estimated at 670,000 MT to 1.12 million MT per year between 2010 and 2020 and 770,000 MT to 1.28 million MT per year between 2020 and 2030.

Wheat flour is one of the food vehicles that have been identified for fortification by ECSA countries. Just like in the case of maize flour, eight (8) countries have mandatory fortification for wheat flour while in the other five it is still voluntary.

Unlike maize flour, wheat flour largely milled commercially with very few countries such as Ethiopia where milling is also done locally. However, wheat flour is not a staple food in the region thus not consumed as widely as maize meal. Therefore, in households where poverty levels are very high it is unlikely that they would consume wheat flour frequently. According to Household Consumption and Expenditure Survey in 2012, up to 79% of households reported purchasing of wheat flour.

Since wheat flour is mostly milled commercially, it requires adequate legislation and enforcement to improve consumption. The consumption of wheat flour less as its not staple food and requires consumers to have adequate income to purchase. This would not be possible as most of the rural populations have low income.

3.5.4: Fortification of Edible Oils

Edible oils constitute cooking oils as well as margarines. In fortification edible oils are normally fortified with vitamin A and D because they are fat-soluble vitamins. It's a good strategy to increase consumption of micronutrient for populations that are deficient in these micronutrients. Fortified oils provide 25% - 30% of recommended dietary allowances for vitamins A and D. Vitamin D is important for strong bones, because it helps the body use calcium from the diet. Children with vitamin D deficiency are known to suffer from rickets manifested in soft bones and skeletal deformities.

Most countries with the ECSA region have mandatory fortification for edible oils, only a few such as Ethiopia, Lesotho, Zambia and Swaziland which still have voluntary fortification regimes. No country with mandatory legislation for edible oils has undertaken a specific survey to estimate the coverage within the households. The closest country (Zimbabwe) did estimate according to respondents from

¹⁴ LCMS 2006

¹⁵ This is based on FAOSTAT data and the disappearance method.

household consumption and expenditure survey that roughly 69% of the population access fortified edible oils. It is difficult to gauge the impacts as this requires consistent surveys over a period of time and the health impacts of the populace. Since most of edible oils are produced in industrial settings the vehicle becomes very easy to monitor for standards. Strengthening QA/QC in most countries will ensure that more household accessing these products get fortified food.

3.5.5: Fortification of Sugar

Over the years awareness has been created on vitamin A deficiency as a serious public health problem in ECSA countries. Epidemiological studies have shown the implications of vitamin A deficiency in the particularly to children under 5-year-old and women of child bearing age especially its criticality to for visual health, immune function and fetal growth and development. Vitamin A deficiency is responsible for visual impairment (night blindness), measles and generally it increases the chances of illness and death from childhood infections.

Sugar is fortified with Vitamin A during the manufacturing process and in ECSA countries such as Malawi, Mozambique, South Africa, Zambia, it has been made mandatory for manufacturers to fortify edible oils with vitamin A. In other countries such as Burundi, Ethiopia, Kenya, Lesotho, Tanzania, Uganda, Rwanda and Swaziland, sugar fortification is still voluntary. In countries where fortification with vitamin A is mandatory, surveys have not been carried out to determine the extent to which the population is consuming fortified sugar. In Zimbabwe however, the consumption of fortified sugar is estimated at 75% based on household consumption and expenditure surveys. Ascertaining the effect of sugar fortification is difficult as comprehensive surveys on consumption have not been undertaken. Most of ECSA countries do not produce sufficient sugar for domestic consumption hence rely on importation. Improving on legislation, strengthening controls at border points and effective monitoring within the countries can ensure that the population access fortified sugar. In Zambia and Zimbabwe which are self-reliant it's about ensuring effective internal controls and monitoring of markets. This would ensure that consumption of fortified sugar can be estimated using production or imported sugar.

3.5.6: Level of program impact in the region

The South African National Health and Nutrition Examination Survey (SANHANES-1) 2012 was established as a population health survey that provided baseline data of a representative sample of the population for future analysis over long periods of time (longitudinal surveys). This survey also provided information on the impact of the food fortification program and noted that there was a significant improvement in the iron and vitamin A status in women of reproductive age compared to the National Food Consumption Survey (NFCS), 2005. Accordingly, this reflected the beneficial impact of the food fortification intervention programme implemented by the Department of Health in 2003.

The 2012 SANHANES – 1 survey was done ten years after the implementation of vitamin A supplementation (in 2002) and food fortification (in 2003) in South Africa, and about seven years since the National Food Consumption Survey – NFCS 2005, when vitamin A status was last assessed in females of reproductive age. A comparison with the 2012 SANHANES-1 results shows that among females of reproductive age, a decrease in the national prevalence of VAD by more than 50% (13.3% compared to

27.2% in 2005) was documented together with an increase in the mean serum retinol levels, 0.96 $\mu\text{mol/L}$, compared with the previous 1.10 $\mu\text{mol/L}$. As with the 2005 survey, females in urban formal and rural formal areas of residence had the lowest VAD prevalence and the highest mean retinol concentrations. There was, however, an overall improvement for all localities compared to NFCS 2005. Mean retinol and VAD improved in all the provinces. The colored females had significantly higher mean retinol levels compared to black African females, 1.27 $\mu\text{mol/L}$ compared to 1.07 $\mu\text{mol/L}$ in 2005. VAD was most prevalent among the majority of the black African group of females. In general, there was improved vitamin A status, among females of reproductive age, over that decade.

Anaemia in women of reproductive age in the SANHANES-1 study was 23.1% showing a 21.4% decrease compared to NFCS 2005 (Labadarios, 2007), which was lower than the regional prevalence of 48%, and higher than the prevalence for the high-income region of the world that was 16% (Stevens, Finucane, De-Regil et al. 2013). Low serum ferritin ($< 15 \text{ ug/dL}$) dropped by 65.6% from the 44.5% prevalence in NFCS 2005 to the current 15.3%. The NHANES 2005–2006 prevalence of low ferritin was 14% for women 12–49 years of age (US CDC 2012). Further, IDA prevalence decreased slightly compared to NFCS 2005, from 10.5% to 9.7%.

The 2005 National Food Consumption Survey (Labadarios 2007) revealed very high levels of VAD among children at 63.6% based on the WHO recommended serum retinol level cut-off of $< 0.7 \mu\text{mol/L}$. The SANHANES-1 survey assessed vitamin A status of this vulnerable group and noted that at the national level, the mean serum retinol was 0.75 $\mu\text{mol/L}$ and the VAD prevalence was 43.6%. The mean serum vitamin A concentration of children under five years of age was 0.72 $\mu\text{mol/L}$ (males) and 0.79 $\mu\text{mol/L}$ (females) with a respective VAD prevalence of 49.3% and 39.0%. Black African children had a lower mean retinol concentration (0.74 $\mu\text{mol/L}$) and a higher VAD prevalence (45.4%) compared to coloured children (0.81 $\mu\text{mol/L}$ and 33.4%, respectively). The significant improvements in the iron and vitamin A status in children under five years of age (compared with those of the 2005 National Food Consumption Survey) was a pointer to the beneficial impact of food fortification intervention.

A comparison with the SANHANES-1 results shows that among children younger than five years, a decrease in the national prevalence of VAD by 20% (43.6% compared with 63.6%) and a 17%-increase in mean retinol. The current mean, however, still remains just above the cut-off for VAD, at 0.75 $\mu\text{mol/L}$. While not significant, coloured children had a better vitamin A status than black African children. According to the WHO criteria, the national prevalence of VAD (43.6%) places South Africa in the severe public health importance category for children. Despite the welcome decrease by almost a third in childhood VAD prevalence, the mean retinol concentration remains around the VAD cut-off, but is likely to improve further as the long-term effects of the food fortification policy become more prominent. The findings of the SANHANES-1 survey indicate that anemia and iron status has improved substantially among children under five years of age in South Africa since the last national survey in 2005. Compared to 2005, the prevalence of anemia decreased by 63.0%, that of IDA by 83.2%. The change could be attributable to nutritional and/or health factors – the national food fortification programme; the effect of vitamin A supplementation; better infant and young child feeding practices; improved primary healthcare, and better care of sick children, among other factors (WHO, 2011).

3.6: SWOT Analysis for Consumption Monitoring, Surveillance and Program Impact

Table 7: SWOT Analysis for Consumption Monitoring, Surveillance and Programme Impact

<p>Strengths</p> <ul style="list-style-type: none"> • Consumption monitoring and surveillance of salt iodization is taking place in the ECSA countries • Several of the ECSA region countries have developed guidelines, policy standards and mandatory legislation for food fortification • Taxes and duties for micronutrient pre-mixes and equipment rescinded in some countries • National fortification alliances or working groups exist in all countries • Academic and research institutions working in partnership with government and development partners to advance food fortification • National Monitoring and Evaluation Frameworks that integrate food fortification indicators have been established for the nutrition sector in various countries such as Kenya and Tanzania where M & E Frameworks exist for fortified products and iodized salt. 	<p>Weaknesses</p> <ul style="list-style-type: none"> • Inadequate technical capacity and knowledge in various aspects of the food fortification process leading to poor consumption monitoring, surveillance and impact evaluation • The fortification programs, consumption monitoring, surveillance and program impact evaluation are mainly donor driven thus raising sustainability issues • Cost of Equipment, premixes and testing facilities prohibitive • Data generated from fortified food programs is not adequately utilized for policy and decision making. In some countries the sentinel surveys are done regularly but not promptly analyzed thus not serving their intended purpose of informing policy and decision making. • There are awareness gaps on nutrition indicators among the health care workers and the data managers resulting in incomplete reporting. Routine monitoring of nutritional status requires improvement in data tools and management (collection, analysis, reporting and dissemination) for effective nutrition surveillance. • While many nutrition surveillance systems involved significant data collection, too few data were being compiled, fewer still were being communicated, and ultimately very few were used to improve nutrition related action (UNICEF 1998).
<p>Opportunities</p> <ul style="list-style-type: none"> • Political goodwill and Governmental support for food fortification programs • Regional and international bodies advancing the food fortification cause such as EAC, ECSA-HC, COMESA, NEPAD, WHO • Active participation of research and academic institutions supporting monitoring, surveillance and evaluation of food fortification • Collaborative effort of development partners • Integration of consumption indicators into existing surveys and data collection mechanisms 	<p>Threats</p> <ul style="list-style-type: none"> • Small-scale millers/Hammer mills that do not fortify are assessed by a majority of the consumers thus affecting intake and coverage of fortified foods • The premix are not easily accessible or made locally in some countries • Low consumer awareness of fortified foods • Volatile currencies making food fortification investments difficult • Cost of conducting consumption monitoring and impact monitoring is high

3.7: GAP Analysis and Key Successes of Consumption Monitoring, Surveillance and Program Impact

Table 8: Key Success and Challenges/Gaps in Consumption Monitoring

Countries	Key Successes	Challenges/ Gaps
Burundi	<ul style="list-style-type: none"> Political goodwill as shown by a Presidential decree in March 2015 with a one year grace for implementation. 	<ul style="list-style-type: none"> Need to translate the Presidential decree Need to operationalize policies and guidelines Irregular nutritional surveys and external monitoring of millers Food security a priority due to existing situation Political context slowed gains in Nutrition programs and reduced budgetary allocation on the programs and availability of premixes Large population coverage by small millers who do not fortify flour
Ethiopia	<ul style="list-style-type: none"> Health devolved to the grassroots (household) level through the Health Development Army consisting of 3 million Community Health Extension Workers 2013 saw the launch of the revised and ambitious National Nutrition Plan that outlined food fortification as a key strategy for elimination of Vitamin A deficiency and other micronutrient deficiencies Availability of data on micronutrient status of population via National Micronutrient Survey Development partners providing technical assistance and support for mandatory fortification 	<ul style="list-style-type: none"> No legislative framework on fortification for most vehicles apart from salt Excessive iron Intake from Teff used to make Injera that is regularly consumed and presumed to be rich in vitamins and minerals, such as iron. This debate is an Impediment to finalizing legislative framework Food fortification is still voluntary except for Salt. Mandatory regulations oblige producers to fortify certain foods or food groups with micronutrients Maize that is widely consumed is difficult to fortify as it here is no central maize processor
Kenya	<ul style="list-style-type: none"> Monitoring and Evaluation framework exists for food fortification for 2014 -2017 Kenya National Nutrition Survey: Impact monitoring of iodine deficiency disorder, iron deficiency anemia, and vitamin A and zinc deficiency MICs Survey incorporated questions of nutritious and fortified foods. Salt assessment from 2013 to review goiter levels. The Food Fortification Hub, a web based monitoring tool to monitor food fortification in the country was established. NFA meets and is housed by NDU Food fortification logo in place Draft National Food Fortification Strategic Plan 2018–2022 with consumption monitoring and program impact as a distinct strategy 	<ul style="list-style-type: none"> Gaps in the implementation of the Monitoring and Evaluation Framework 2014-2017 especially awareness on indicators among health workers and the data managers resulting in incomplete reporting. They are undertaking consumption monitoring to obtain output information but not ascertain program impact Country priorities may not fully support food fortification thus hampering consumption monitoring. This includes unavailability of fortifications and maize importation to meet the shortfall in the country. Further, shortage of lab reagents, regulatory monitoring being hampered by shortage of personnel thus impacting on consumption monitoring. There are delays in collecting and analysis monitoring and evaluation data from the NDU database Shortage of reagents and labs for testing, accreditation required globally Consumption monitoring survey still being developed Consumption monitoring done on salt but not on other food vehicles.

Countries	Key Successes	Challenges/ Gaps
Lesotho	<ul style="list-style-type: none"> • Micronutrient Task-team coordinated by Food and Nutrition Coordinating Office (Cabinet) composed of Milling Company, Academia, MAFS, MTI, MOH, MCC, NGOs and UN -The team is mandated to create awareness on food fortification matters. • FAO is supporting the Food and Nutrition Coordinating Office to finalize the nutrition policy that WFP supported FNCO to develop • Political Support - His Majesty King Letsie III is an AU Champion for Nutrition and FAO Special Ambassador for Nutrition • Industry Support – Lesotho Flour Mills Limited is undertaking voluntary flour fortification on their own volition. 	<ul style="list-style-type: none"> • Lack of resources such as transport to carry out monitoring • Health inspectors do not have enough test kits to operate adequately, test kits sometimes expired, are insufficient - UNICEF supported by providing test kits but are no longer supplying them • Influx of Chinese or Mozambican products that are sub-standard. Other the products in the market are not adhering to what they put on the label – quantity of micro-nutrients. Labs and equipment are inadequate to verify the micronutrient levels, they are forced send them or borrow from SA. • The Government gives precedence to curative health thus undermines preventive health under which nutrition falls. • Fortification is largely voluntary with no national standards in place.
Malawi	<ul style="list-style-type: none"> • Consumption monitoring is done through sentinel surveillance in schools that is less costly, able to track programs, focused on specific areas of interest and complements other data sources • An integrated Micronutrient Survey (MNS) and Demographic and Health Survey (DHS) was conducted in Malawi from 2015–2016. This provided a nationally representative nutrition and inflammation biomarkers in the same cycle as DHS. It presented an opportunity to examine the determinants of micronutrient deficiencies using DHS data. The use of DHS and Micronutrient Surveys for consumption monitoring and surveillance is commendable as it provided high quality information, captures several data variables, and provides a representative sample of the whole group • National Nutrition Policy and Multi-sectoral Nutrition Strategic Plans aligned with national and global agenda • Food and Nutrition Security Policy 2005 is under review to become the draft Food and Nutrition Bill. • Enforcement of law both at district and national level is in place. • Micronutrient Technical Working Group • Technical standards passed and enforced for mandatory fortification of refined sugar, raw sugar, salt, edible oil, wheat flour, and maize since May 2015. • The Malawi Government rescinded taxes and duties on micronutrients and fortification equipment • A National Food Fortification Alliance is in place and meets quarterly. • Roll out of M & E Framework and the development of the Nutrition Resource Tracking System • Nutrition Sector Mapping conducted 	<ul style="list-style-type: none"> • It is difficult to generate data from sentinel surveillance done in schools as there is inadequate coverage of nutrition variables, further, data is not generalizable to other population subgroups and they are mostly donor supported (by UNICEF). • DHS and Micronutrient surveys are very costly, very complex logistically, incorporates very few nutrition variables • Gaps in previous legislation that were general, they used to borrow from MBS stipulated standards. With commencement of mandatory fortification of sugar and cooking oil enforcement became a challenge, so current policy underway until next year. The Food and Nutrition Bill will be more specific on prosecution. • Current Public Health Act is limited on code of marketing for breast milk substitutes therefore the Food and Nutrition Bill included them and consolidated Vitamin A fortification as well. • NFA lacks the legal authority for enforcement, In Malawi the Ministry of Trade and Industry is leading the initiative as they are housing MBS, and the government faces to the private sector. They reported non-conformity but there was an absence of policy accountable for food fortification and food safety. This was deemed was a serious gap. • Limited financing for collecting samples from the market, conducting inspection at the district level. • Regulatory monitoring is not completed as the external and market monitoring data is not analyzed and circulated to other stakeholders. •

Countries	Key Successes	Challenges/ Gaps
	<ul style="list-style-type: none"> • Sentinel Survey on salt, sugar, cooking oil targeting school children aged between 6-12 years. • National Micronutrient surveys were done in 2001, 2009, 2015/2016 that included testing for Vitamin A in Sugar and cooking oil, iodine through urine tests, blood samples for zinc. 	
Mozambique	<ul style="list-style-type: none"> • Development and Approval of the national food fortification strategy (2016-2021) • Development off communication strategy for the programme (2016-2020) and launch of social marketing campaign • Approval of Premix suppliers positive list (10 companies to supply fortificants) • Approval of Premix suppliers positive list • FORTIMAS training to MOH staff • Publication of 4 QC/QA procedures tools for Internal and External monitoring and data collection; • Organized and Conducted monitoring visits to factories and markets; • Training of industries and food industries on GMP, QC/QA • Increase quantity of iChecks and respective vials (training of lab staff) 	<ul style="list-style-type: none"> • Need for more capacity building for technical staff for monitoring for compliance • Need to equip laboratory with modern equipment • Development of monitoring frameworks
Rwanda	<ul style="list-style-type: none"> • Strong Consumer protection advocacy group (ADECOR) • Modern 45,000 tonnes a day factory AIF (Africa Improved foods) started for fortified foods export and local consumption • Integration of Nutrition into policy documents such as Vision 2020, • Supporting small scale millers o fortify flour by partners such as SANKU Fortification • Rwanda National Food and Nutrition Policy 2014 	<ul style="list-style-type: none"> • No legislative framework on fortified foods apart from salt • Coverage of Small scale millers higher than large scale yet they do not fortify • Higher cost of fortified food due to VAT on premixes
South Africa	<ul style="list-style-type: none"> • Well-developed legislative framework for fortified foods • Strong industry/Private sector investors support fortification efforts 	<ul style="list-style-type: none"> • Significant population who rely on subsistence production do not access adequate micronutrients • Segments of population where poverty prevalence are high cannot afford consumption of fortified foods because of cost considerations
Swaziland	<ul style="list-style-type: none"> • Multiple Indicator Cluster Survey (MICS) 2010 and 2014 comparative report to monitor the situation of women and children. • Monthly routine monitoring of iodine • Rapid assessment of salt to determine iodine coverage. • The Public Health Bill and the Food Safety Bill converge to regularize fortification and Food Control. • Fair Trade and Consumer Protection Bill 2016 • Salt iodization regulation 1997 • Quality and Standards Act (10) 2003. 	<ul style="list-style-type: none"> • Low awareness on the importance of food fortification (wheat and maize) - Consumers need education on the consumption of micronutrient rich food achieved through fortified food and bio-fortification. • The country relies on South African imports of Maize mill and cooking oil. Only self-sufficient in sugar that they intend to fortify (currently engaging). • Costs of raw materials are (fortificants) quite prohibitive • Voluntary fortification still in place (apart from salt that is mandatory) and working on legislation to have all the vehicles on board making consumption monitoring a lesser priority.

Countries	Key Successes	Challenges/ Gaps
Tanzania	<ul style="list-style-type: none"> • Micro-nutrient Alliance formed and housed by Swaziland National Nutrition Council. It meets quarterly and is developing monitoring tools on consumption and production. • The National Food Fortification Alliance (NFFA) formed in February 2003 and consists of all relevant government ministries and institutions, private sector, NGOs, and development partners. NFFA holds quarterly meetings and developed a Food Fortification Action Plan in 2009. • National Monitoring & Evaluation Framework for fortified products exists and iodized salt has been included. • Food Fortification Guidelines, Regulations, and Standards exist. • The country is developing a policy on rural fortification that operates on totally different dynamics with medium and small-scale millers and local oil manufacturers. • The country pioneered a consumption monitoring FACT survey that is an entry point on the status of food fortification. • Manuals developed for each food vehicle – salt (iodine), wheat flour (iron, zinc, folic acid, B12), maize flour (iron, zinc, folic acid, B12), edible oil (vitamin A), working on food bio-fortification. • Salt iodization logo was developed in 1992, fortification logo for other vehicles also promoted. • The National Multi-Sectoral Nutrition Action Plan 2016/17-2020/21 articulates the coordination, planning under thematic groups such as micro-nutrients and bio-fortification. Data centralizing systems (on status of fortified food production and micro-nutrients availability) are in place to enable information sharing monthly. A web -based system which consolidates fortification data from Industry and Ports of Entry for monitoring coverage and compliance with fortification regulations. • The efforts to develop a nutrition surveillance system in Tanzania started as far back as the early 1970s. During that period several institutions started nutrition related data collection systems to meet specific sectoral data needs. Since 1989 Tanzania Food and Nutrition Centre with the support of UNICEF through funding from the Netherlands Government and the Global Inter-agency Food and Nutrition Surveillance is implementing a three level nutrition surveillance systems (NSS) programme: - national, district and community based. The national nutrition surveillance is intended to systematize and communicate nutrition related data for use by national leaders for planning and decision making. Data on selected variables are organized at TFNC for the National Nutrition Surveillance 	<ul style="list-style-type: none"> • Inadequate systems of regulatory monitoring and enforcement thus impacting on their efficiency in consumption monitoring and nutrition surveillance. In regards to consumption monitoring, analysis of bio-markers was not adequately done as reagents are costly and costs of instruments are prohibitive thus subsequent analysis is also expensive. • TFNC has outdated instruments that are more than 10 years may yield poor results, they are currently renovating a laboratory but it is still incomplete • No routine monitoring systems and rely on 2-5 years survey data due to limited funding. • Data Centralization systems not fully operational monthly • Low standards of fortified food; a study by AAPH indicated that some of the vehicles are not adhering to regulations and did not have adequate micro-nutrients. Maize flour is produced by numerous millers (over 90%) in rural areas who had limited amounts of micro-nutrients that are in short supply. • High cost and availability of fortificants. • Low privatization of food fortification intervention strategies at all levels • There are no guidelines for small and medium scale industries especially those operating in rural areas and still operating on a voluntary basis. • Draft policy does not enforce fortification at the local level and is general so there should be a provision for local governments to have effective by-laws to their localities especially for small and medium mills, or on premix. These alternative options should address capacity, geographic distribution and enforcement. • Poor quality of maize with high levels of aflatoxin • Low consumer awareness on logo and conformity • Tanzania Food and Drug Authority (TFDA) comprises of Directors at the Central and Local Governments (Regional and District Councils). These management teams for regulations are not familiar with the fortification requirements therefore do not consider it a priority. In any case micro-nutrient addition is just one of the many products they deal with. The inspectors at the district level are not sensitized on food fortification and nutritious foods and therefore do not prioritize the same. Furthermore, there is a knowledge gap between involvement of policy staff and implementing staff (members of the NFFA) in fortification thus impacting on their influencing TFDA operations. The DG TFDA is not a member of the high level steering committee that is an effective enforcement organ. They should be coopted to enable alignment of FF issues. • The ability to conduct regular quality control checks, particularly at the borders

Countries	Key Successes	Challenges/ Gaps
	<p>Database.</p>	<p>and ports of entry is hampered by TFDA's reliance on food inspectors from the Local Government Authorities (i.e. district councils) to undertake regular qualitative/semi-quantitative tests at both retail outlets and at ports of entry. However, these inspectors fall under a different ministry (PMO-RALG) and the costs of inspections need to be included in the Comprehensive Council Health Plans (CCHP) and budgets, over which TFDA has limited control. This hampers regulatory monitoring by impacting on external and import monitoring as the results on quality of fortified food cannot be ascertained and the consumers may not be obtaining benefits from the food.</p>
Uganda	<ul style="list-style-type: none"> • 1st Market surveillance conducted in 2016 • Biomarker study (WHO/CDC) only preliminary results available • District Nutrition Action plans incorporated into District Development Plans • Nutrition is a priority in all plans such as Uganda Vision 2040, HSSP 	<ul style="list-style-type: none"> • Fortification and consumption monitoring is largely Donor Driven • Few laboratories mostly private (6); which are also costly • Mandatory Legislation on fortification of maize flour captures mainly large scale millers of more than 20metric tonnes a day thus leaving out small scale millers who may have a wider coverage
Zambia	<ul style="list-style-type: none"> • Development of Road map for Fortification • Development of QA/QC protocols for producers and regulators • QA/QC Training of producers 	<ul style="list-style-type: none"> • Strengthening of National Fortification Alliance Committees • Higher level advocacy to fast track the uplifting of mandatory fortification of maize flour • Strengthening Public Private Partnership for effective implementation of fortification initiatives
Zimbabwe	<ul style="list-style-type: none"> • Development of Zimbabwe National Food Fortification Strategy 2014-2018 • Formulation of the Zimbabwe National Nutrition Strategy 2014-2018 • Supportive private sector supportive of fortification initiatives with major millers signing up before onset of mandatory fortification date (1st July, 2017) • Identification of three countries of India, South Africa and Germany as the supplier of fortificants by the government • Support from development partners e.g. GAIN donated 6 iChecks while WFP is helping with capacity building national laboratory and provision of equipment • Training of producers and regulators in QA/QC • Effective citizen engagement through Food and Nutrition Security Committee (FNCS) has led to creation of NRTM Dashboard for community based near real time monitoring system to strengthen evidence based reporting • Complementary efforts by the Global Scale Up Nutrition (SUN) for fortification initiatives • Integrating fortification data into Zimbabwe's Health Information System 	<ul style="list-style-type: none"> • Strengthening of monitoring frameworks for effective implementation • Effect of fortification on pricing by the private sector players • Effective civic education to the public on importance of consuming fortified foods. • Ill equipped laboratories for testing of fortified foods

3.8: Consumption Monitoring and Surveillance Framework

Monitoring and evaluation can be effectively used by the National Fortification Alliances or Networks, that coordinate the countries efforts to assess activities, outputs (quality and quantity aspects), food fortification (coverage aspects) outcomes, and impact through consumption monitoring and surveillance systems. This would further inform policy formulation and timely interventions on public health and nutrition. As indicated earlier, several countries in the ESCA region are at the improvement stage of food fortification that entails technical capacity building for internal and regulatory monitoring at industry level for QA/QC as well as enhanced production volume testing and government level in inspections, enforcement and testing. Further, monitoring information systems and frameworks have been established to ensure quality improvements and results are used as information for planning by the food fortification stakeholders. This is a precursor to measuring impact and sustaining progress of food fortification that happens in the last stage of implementation. Consequently, the assessment proposes a Consumption Monitoring and Surveillance framework consisting of the following dimensions:

Process

Assessment is considered as systematic and objective as possible, of planned, ongoing, or completed food fortification interventions that covers its needs, design, implementation, impact, efficiency and sustainability, to incorporate lessons learned into the decision-making loop and inform public policy. This entails assessment of consumption monitoring capabilities, indicators, and data needs, progress in relation to food fortification implementation by the umbrella organization responsible for food fortification. The assessment gives due consideration to responsibility at each level. This ought to clearly elaborate the kind of data to be collected (question and indicators), for whom the data or indicator will be collected, the methodology and sources of verification, personnel, level of capacity and training, frequency of data collection, data analysis, reporting, and distinct roles of stakeholders based on the information obtained. The National Fortification Alliances established in by most ECSA countries is an ideal entity for spearheading this process. Their capability to adapt and self-renew would be enhanced through internal learning and adjusting to shift context depending on their flexibility to the process by assessing process and effective monitoring and evaluation competencies.

This is followed by selection of indicators, tools, methods, and team to undertake the consumption monitoring and surveillance. Such a team would be established through the National Food Fortification Alliance (NFFA) technical and inter-sectoral committees. The team would also develop a plan of action, at local and/or national level, for consumption monitoring and surveillance of food fortification.

Process (program) monitoring reviews the food fortification program inputs, activities, and output (provision) thus may include continuous measurement to detect progress towards a goal or target, while Surveillance is done to determine the impact on food fortification on behaviour (consumption awareness), biochemical, clinical and functional outcomes. The detect changes in trends and distribution thus initiate investigative measures. A further analysis is necessary on why the intended impacts were not achieved; unintended results are also explored to inform practice, decision making

and policy. Such as surveillance system is designed to evaluate the long-term impact of the program on the population's micronutrient status.

The questions related to consumption of fortifiable food products can be included in household surveys which countries conduct for other purposes; these include Sentinel surveillance, Demographic and Health Surveys, Household Consumption Expenditure Survey (HCES), Cross-sectional Community and Household Surveys, or Cluster Surveys. This monitoring component, at the household, community and individual level, is particularly vital. Even if all other aspect of programming have been successful, if fortified foods are not routinely monitored to ensure levels fall within the designated appropriate ranges, the program will have little to no impact, will risk losing support, and could have a negative effect. The team also determines the methods of disseminating information obtained from the fortification consumption monitoring and surveillance. This information ought to be analyzed and transmitted in an agreed format and timely manner to inform researches, policy makers, private sector and development partners in an interactive way.

Phases

The consumption monitoring framework comprises of five phases of implementation that include design, planning, implementation, reporting and feedback. The design and planning phase is linked to the assessment and selection stages of the process while the implementation stage is the data collection stage during the consumption monitoring and surveillance. The reporting phase entails analysis and dissemination of the consumption monitoring and surveillance results with clear feedback mechanisms. Regular reports from consumption monitoring and surveillance would inform on the nutrition status and trends thus inform policy goals and targets with identifiable achievements and further action. The consumption monitoring and surveillance is continuous while program impact is done periodically after the implementation of food fortification over time.

Components

The following components of consumption monitoring and surveillance for food fortification and nutritious foods is proposed for sustained evaluation and informed policy development continuum.

Knowledge management – a lot of data and information emanates from consumption monitoring and surveillance that should be collected, analysed, stored and shared with the stakeholders who may then use it for policy and planning of future interventions.

- The consumption monitoring and surveillance system will generate and collate information that would be available to an array of stakeholders. The current online platforms and databases developed by some countries such as Kenya and Tanzania would be a basis for generating and sharing information on consumption monitoring and programme impact. These would also be availed real-time to the users other stakeholders.

Data collection

Methods and Data Sets are reviewed during the assessment stage as indicated earlier. The data collection methods include secondary (document review and filtering data obtained over a long time to determine impact) and primary sources (using quantitative and qualitative methods using tools such as lot quality assurance sampling, focus group discussions, observation). Data collection systems such as baseline and endline surveys as well as trend analysis using various fortification monitoring and surveillance tools including household consumption and expenditure surveys (HCES) as well as fortification rapid assessment tool (FRAT) are designed to capture the degree to which fortified food staples plausibly contribute to improving the vitamin and mineral status of vulnerable population groups in order to correlate population coverage and nutritional impact of food fortification (Coates et. al. 2012, Fiedler, 2012, Hess 2013)

Data sets are drawn from impact and outcome indicators such as;

- food supply at national and household level (folic acid content of foods):
- food purchase
- food intakes:
- nutrient intakes:
- biochemical measures:
- health outcomes:
- coverage:
- provision:
- micronutrient intake:

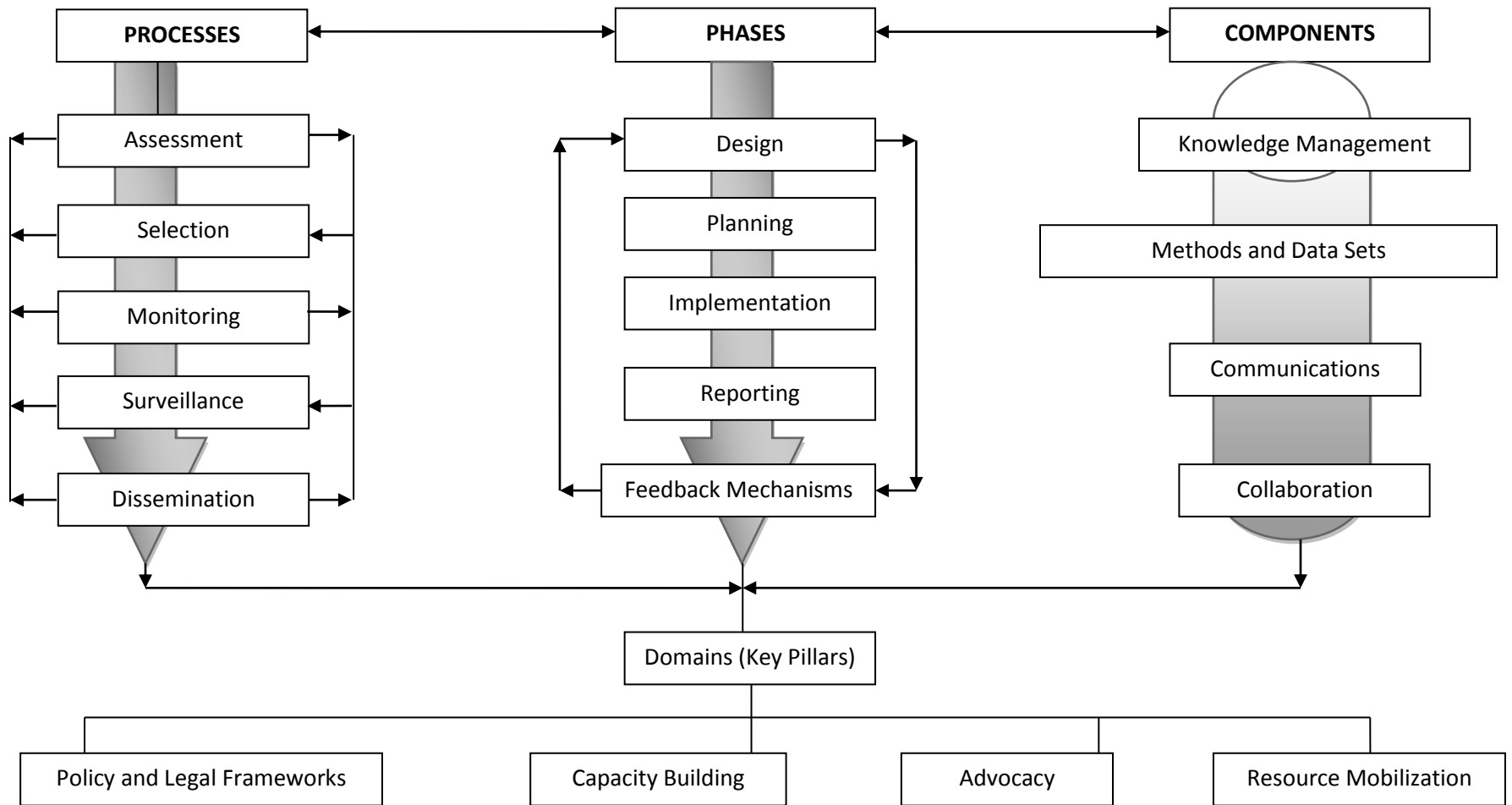
Communications

Collaboration - Social marketing;

Domains

The key domains that would support consumption monitoring and surveillance include Policy and Legal Framework, Capacity building of the NFFAs and other coordinating teams, Advocacy, and Resource Mobilisation. These provide an enabling environment that would propel consumption monitoring and surveillance of food fortification efforts as illustrated in the diagram below.

Figure 3: Consumption Monitoring Framework



CHAPTER 4: CONCLUSIONS AND RECOMMENDATIONS

4.1: Conclusions

Consumption monitoring is done to periodically assesses the additional micronutrient content provided to a population by eating food that by law or standards should be fortified. Due to proven effectiveness of food fortification programs in addressing micronutrient deficiencies, consumption monitoring as part of an on-going tracking and reporting system that is utilized to collect and report data on quality, population coverage and impact of fortified foods is essential. In the ECSA region fortification programmes have been implemented in earnest. Consumption monitoring and surveillance have not been conducted as frequently as required and have therefore not fulfilled their purpose of being an on-going mechanism of gathering data and evidence that would inform programming and influence policy decisions. Some of the surveys that have made an attempt to collect this information include Food fortification assessment coverage Tool (FACT) survey and Food Fortification Rapid Assessment Survey by Tanzania, Demographic health surveys (DHS) that incorporated micronutrient indicators, National Micronutrient Surveys, Multiple Indicator Cluster Surveys (MICS) supported by UNICEF and other national nutrition and micronutrient surveys. These surveys appraise the population coverage of fortified foods and micronutrient status of the population at a single point in time. However, these surveys are expensive and have not been used as frequently as required. A lot still needs to be done to improve this situation. In most cases program impact evaluation has not been done in most countries that are in earlier stages of food fortification implementation. In the case of salt, several countries such as Kenya, Malawi, Tanzania, Zambia and South Africa have done impact studies to establish the effectiveness of consumption of iodated salt in the region.

A number of International and regional partners such as UNICEF, USAID, NI, GAIN, WHO, World Bank, FFI are actively involved in ensuring that the food fortification programs in the ECSA region are successful. Despite the challenges and gaps identified in consumption monitoring, surveillance and Impact monitoring, the strengths and opportunities available in the ECSA-HC are numerous and this has been seen by significant improvements in the food fortification programs in various countries.

4.2: Recommendations

The improvement of coverage of micronutrients amongst ECSA countries population is critical for reducing health challenges resulting from the lack of adequate micronutrients in the diet. Fortification presents the best opportunity to addressing the problem. However, there are myriad challenges in the fortification of major food vehicles. The following is a means to bridging the gap and mitigate against the current problems bedeviling efforts towards consumption monitoring, surveillance of fortified and nutritious foods as well as impact evaluation.

4.2.1: Supportive Legislative Frameworks and Policies

ECSA countries should advocate for the legislation and enactment of policies that would facilitate mandatory fortifications of major staple foods within the region. These laws would facilitate enforcement of fortification of maize flour, wheat flour, edible oils and sugar. Mandatory legislation of these major food vehicles would ensure that a large population within these countries will be able to

access fortified foods. A number of countries are still in the process of developing legislation and policies on fortification while many others are on voluntary regimes. Development partners should synergize in legislative advocacy while supporting local civil society organization in pushing for legislation and policies that ensure mandatory fortification for staple foods. With legislation and policies frameworks it would possible to enforce quality standards and perform regulatory monitoring thus facilitate consumption monitoring and surveillance.

4.2.2: Enhanced Public Private Sector Participation

An enabling environment ought to be created for effective public private sector participation in fortification initiatives. Currently the fortification agenda is driven by development partners with private sector participation. Innovations aimed at reducing costs of fortification should be promoted, marketing fortified products as superior products with health benefits, small-scale fortification of maize flour through hammer millers would go a long way in expanding consumption of fortified flour as most of the population in ECSA countries are engaged in subsistence production of maize and rely on these mill which currently consider fortification as expensive. An effective supply and demand food fortification system will provide the right conditions for consumption monitoring and surveillance thus enable impact evaluation.

4.2.3: Capacity Building for Sector Players

Even though capacity building has been undertaken for fortification by various development partners, much more needs to be done particularly around consumption monitoring and surveillance to ensure evidence based information on importance of fortification in improving the health of population. Current monitoring and surveillance surveys do not cover the wide spectrum of fortification other than salt iodization. For greater impact a training of trainers approach to build capacity of country focal persons should be adopted which will ensure this cascades downwards in the countries to ensure adequate number of personnel are empowered for enhanced impact.

4.2.4: Increased Budgetary Allocation for Consumption Monitoring and Surveillance Systems

Budgetary allocations by the Ministry of Health and other Government institutions charged with consumption monitoring and impact evaluation are not adequate; thus, they undertake these activities intermittently owing to limited financial resources. There is need to advocate for better allocation of resources that are devoted to funding consumption monitoring and effectiveness surveillance activities. Development partners should also consider pooling resources to support knowledge management processes within these countries which will ensure generation of information to support the government in evidence based planning advocacy.

4.2.5: Development of Information Exchange and Dissemination Platform on Food Fortification

A communication strategy should be developed around benefits of fortification, target population have various views on fortification to the extent of others confusing fortification with GMOs. There is need to Intensify social marketing countrywide to increase demand and consumption of fortified foods. In a number of countries, a strategy to incorporate bio-fortification is underway fast track increased

consumption of micronutrients. The hosting of a vibrant information platform into an already existing ECSA Portal to facilitate sharing of best practices and continuous engagement of the Consumption Monitoring and Program Working Group.

ANNEXES

Annex 1: References

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Annex 2: Interviews conducted in the ECSA Region

Interviews conducted by Linet Obare in Tanzania, Malawi, Swaziland and Lesotho

Tanzania during the Assessment visits

Monday, June 5th, 2017

When: 11:00 AM to 12:00 PM

Where: Helen Keller International | 153 Hallie Selassie Rd. Oyster Bay
P.O. Box 34424 Dar es Salaam, Tanzania

Who: Participants

1. Ms. Erin Smith, Deputy Country Director
2. Mr. Gwao Omari Gwao (+255 746 224823)

When: 2:00 PM to 4:00 PM

Where: Tanzania Food and Nutrition Centre | Obama Avenue No. 22 | P.O. Box 977, Dar es Salaam,
Tanzania – Round Table Meeting

Who: Participants

1. Dr. Elifatio Elinafasi Towo – Principal Food Biotechnologist
Director, Food Science and Nutrition, Tel: +255 222 118 137/9, Email: eetowo@gmail.com
2. Mr. Michael Maganga, Senior Lab Technician, Tel: +255 754 404 233
Email: mmaganga2003@gmail.com
3. Mr. Francis Mallinga, Research Officer, Tel: +255767611418, Email: fgemillinga@gmail.com
4. Mr. Malimi Kitunda, Research Officer
Tel: +255754907281, Email: malimikitunda2015@gmail.com
5. Dr. Kasankala Ladislawi, Senior Research Officer
Tel: +255757530118, Email: lamakasan@yahoo.com
6. Ms. Cypriana Cyprian, Research Officer, Tel: +255767464874, Email: ccypriana@gmail.com
7. Mr. Kaunara Azizi, Research Officer, Tel: +255717935154, Email: azizikaunara@gmail.com

Tuesday, June 6th, 2017

When: 10:00 AM to 12:00 PM

Where: World Food Programme (WFP) | Tel. Office: 255222197300 Ext.7347
Plot No. 113, Ada Estates, Burundi Street/Mwindu Lane, Kinondoni. PO Box 77778
Dar es Salaam, Tanzania, Phone: +255 22 2197300, Fax: +255 22 2197303

Who: Participants

1. Ms. Tiziana Zoccheddu – Head of Programme
Mobile Tel; +255689151662, Email: tiziana.zoccheddu@wfp.org
2. Ms. Domiana Kambaragwe,
3. Juvenal Kisanga, National Programme Officer (VAM, M&E)
Tel: +255787720001, Email: juvenal_kisanga@wfp.org
4. Liz, Nutrition Officer

When: 1:00 PM to 3:00 PM

Where: UNICEF | Bains Avenue, Masaki | P.O. Box: 4076, Dar-es-Salaam, Tanzania

Who: Mr. Abraham Sanga, Nutrition Officer, Mobile +255 687 276 600
Telephone Office: +255 222 196 600, Extension 6619, Email: asanga@unicef.org

When: 3:45 PM to 5:00 PM

Where: Tanzania Food and Drug Authority (TFDA) | Off Mandela Road, Mabibo - External,
P.O. Box: 77150, Dar es Salaam, Tanzania.

Telephone Number: +255 22 2450512 / 2450751 / 2452108

Airtel: +255 685 701735, Tigo: +255 658 445222, Zantel: +255 777 700002

Fax Number: +255 22 2450793, Email Address: info@tfda.go.tz

Who: Mr. John Mwingira (+255 715 195 512), Email: mwingira2011@hotmail.com

Malawi

Thursday, June 8th, 2017

When: 8:30 AM to 10:00AM

Where: Department of Nutrition, HIV and AIDS | Centre House Arcade | Private Bag B401 Lilongwe 3,
Malawi

Who: Participants

Mr. Felix Pensulo-Phiri, Director of Nutrition, SUN Government Focal Point

1. Office Tel: +256 1 771 374 Cell: +265 999 953 747/ +256 888 959 900

Email: felixphiri8@gmail.com

2. Philip Makhumula, +265991573805

When: 10:00 AM to 12:30 PM

Where: Department of Nutrition, HIV and AIDS | Centre House Arcade | Private Bag B401 Lilongwe 3,
Malawi,

Who: Ms. Flora Dimba, Environmental Health, Department of Preventive Health

Tel:+256 888 891 474, Email: fkamdonyo@yahoo.com

Friday, June 9th, 2017

When: 7:30 AM to 8:15 AM

Where: UNICEF Airtel Centre | P.O. Box: 4076, Malawi

Who: Mr. Benson Kazembe/ Lusungu Chitete, Email:

Telephone Office: +256 888 666 222, +256 999 737 707/ +254 888 558 185

When: 8:30: AM to 10:00 PM

Where: World Food Programme (WFP) | United Nations World Food Programme Offices
Family Dental Clinic | Area 14 Compound City Centre

Who: Mr. Trust Mlambo, Telephone: +255 999 972 601, Email: wfp.lilongwe@wfp.org

When: 10:30 PM to 12:00 NOON

Where: Ministry of Trade and Industry | Zimbabwe Embassy House, Near DHL,
P.O. Box: 77150, Lilongwe, Malawi.

Who: Mr. Clement Phangaphanga Email: clementphangaphanga@yahoo.com

Telephone Number: +2561770244 Mobile number: +256 999 475 453

Saturday, June 10th, 2007

When: 3:00 PM to 5:00 PM

Where: Riverside Hotel, Lilongwe | Community Health Services Unit Laboratory, Public Health Reference
Lab, Department of Preventive Health Services – Ministry of Health

Who: Mrs. Jellita Gondwe | Telephone: +256 999 220 028 | Email: jellitagondwe@gmail.com

Swaziland

Monday, June 12th, 2017

When: 11:30 AM to 1:00 PM

Where: Swaziland National Nutrition Centre | Coopers Centre, Mbabane - Round Table Meeting

Who: Participants

1. Ms. Glorious Dlamini | Swaziland National Nutrition Council (SNNC), Ministry of Health
Head of Programmes | Email: gloriousdlamini12@gmail.com
2. Ms. Duduzile E. Dube | Principal Environmental Officer | Ministry of Health
Environmental Health Department, P. O. Box 5, Mbabane H100, Swaziland
Tel: +26824248060 | Mobile: +26876629280
Email: dudusdube@yahoo.co.uk; dudzilegrace63@gmail.com
3. Mr. Funwako Dlamini | Environmental Health Department | Email: fedlamin@yahoo.com
4. Mr. Kwanele Simelane | Swaziland Infant Nutrition Action Network
Mobile: +26878158505 | Email: kwasiyas@gmail.com

Tuesday, June 13th, 2017

When: 10:00 AM to 12:00 PM

Where: World Food Programme

Who: Ms Margherita Coco | Head of Programmes | Tel: +268 2404 4962

Email: margherita.coco@wfp.org

Mr. Fred Alumasa | Mobile: +26876957556 | Email: fred.alumasa@wfp.org

Ms. Joyce Mphaya, UNICEF | Email: jmphaya@unicef.org

Lesotho

Thursday, June 15th, 2017

When: 10:00 AM to 12:30 PM

Where: Food and Nutrition Coordinating Office (FNCO) – Round Table Meeting

Who: Participants

1. Mr. Litsonelo Nthaha, Ministry of Trade and Industry | Email: nthaha302@gmail.com
2. Mr. Motjoka Makara, Ministry of Trade and Industry
Email: azaelmakaram@yahoo.uk.co; dsqa.gov@gmail.com
3. Mr. S. Lekoeneha, Environmental Health Department, Ministry of Health
Email: lekoenehas@yahoo.com
4. Ms. Makamohelo Semuli, Ministry of Education and Training
Email: makamohelosemuli@yahoo.com
5. Mrs. Mathabang Kalaka, Food and Nutrition Coordinating Office
Email: mathabangkalaka2@yahoo.com
6. Ms. Libusewa Berewa, Ministry of Agriculture and Food Security
Email: libusengb@yahoo.com
7. Ms. Mpholifalakane, Food and Nutrition Coordinating Office
Email: mpholifalakane@yahoo.com
8. Mr. Mohapi Leflaumoreng, Food and Nutrition Coordinating Office
Email: hapzaa@gmail.com

Friday, June 16th, 2017

When: 9:30 AM to 10:30 AM

Where: Lesotho Floor Mills Ltd

Who: Ms. Lerato Kuoé Tel: + 26662866064 Email: leratok@lfm.co.ls

When: 11:00 AM to 12:30 AM

Where: World Food Programme

Who: Ms. Merlyn Chapfunga Tel: + 26658800070 Email: merlyn.chapfunga@wfp.org

Interviews conducted by Hezbourne Ong'elleh in Zambia, Zimbabwe and Mozambique

Zambia during the Assessment visits

Monday, June 5th, 2017

When: 9.30 AM to 11:00 AM

Where: Zambia Bureau of Standards Office, Lechwe House, Freedom Way-South End
P.O.Box 50259, ZA 16101, Lusaka, Zambia

Who: Ms. Margaret Lwenje Lungu , Deputy Director, + 260 211 231 385, zabs@zanmet.zm

When: 2:00 PM to 4:00 PM

Where: The National Food and Nutrition Commission of Zambia Offices, Stand No.5112
Lumumba Road, P.O. Box 32669, Lusaka Zambia, Email: nfnc@zamtel.zm

Who: Mr. Freddie Mubanga, Chief Nutritionist, Head-Public Health and Nutrition Community Unit
Mobile No. +260 977 805 413, Email: fdubanga@gmail.com
Ms. Gladys Chirwa Kabaghe, Food Scientist, Mob. No. +260 979 579 058, Tel: +255767611418,
Email: gladysckabaghe@yahoo.com, gladysckabaghe@gmial.com

Tuesday, June 6th, 2017

When: 8.30 AM to 10:00 PM

Where: World Food Programme (WFP) |, Plot 10/4971, Tito Road, Rhodespark, P. O. Box 37726, Lusaka
Zambia (Round Table Discussions)

Who: Emily Heneghan Kasoma, MDT Unit Head-Nutrition Advisor, Mobile No. +260 971 238462,
Email: emily.heneghan@wfp.org
Edna Kalaluka, Senior Programme Policy Officer, Social Safety Nets and Social Protection Unit
Mobile No. +260 974 779 527, 977 761 206, Email: edna.kalaluka@wfp

When: 11:00 AM to 12.45 PM

Where: UNICEF | UN House, Alick Nkatha Rd, Longacres, P.O. Box 33610, Lusaka Zambia

Who: Ruth Mwangala Siyandi, Nutrition Officer, Mobile No. +260 977719129,
Email: rsiyandi@unicef.org

When: 2.30 PM to 3.30 PM

Where: Jesuits Catholic Theological Organization, P. O. Box UNZA 46, Lusaka, Zambia

Who: Faith A. Kazonoawanga, Programme Officer, Mobile No. Email: faith@jesuits.org.zm

Wednesday, 7th June 2017

When: 2.30 PM to 3.30 PM

Where: CSO-SUN Offices, Chiwambwe Road, Olympia, Lusaka, Zambia

Who: Mwandwe Chileshe, Acting Country Coordinator, Mobile No: +260 976 620 359
Email: mwandwedee@gmail.com

Zimbabwe

Thursday, 8th June 2017

When: 9.30 AM to 11.30 AM

Where: Ministry of Health and Child Welfare Headquarters, P. O. Box CY 1122 Causeway, Harare, Zimbabwe (Round Table Discussions)

Who: Ancikaria Chigumire, Deputy Director Nutrition Services
Mobile No. +263 4 792454, +263 773 551 672, Email: ancikaria53@gmail.com
Ms. Miriam Banda, Nutritionist, Mobile No. +263 772 537 486, Email: miriebanda@yahoo.com
Ms. Margaret Tawadzera, Environmental Health Officer, Department of Environmental Health
Mobile No. +263 772 700 528, Email: Margaret_tawadzera@gmail.com

Friday, 9th 2017

When: 10 AM to 12 PM

Where: UNICEF Office, 6 Fairbridge Avenue, Belgravia, P. O. Box 1250, Harare, Zimbabwe (Round Table Discussions)

Who: Dr. Ismael NgnieTeta, Nutrition Manager, Mobile No. +263 773 128 665
Email: ingnieteta@unicef.org
Thokozile Ncube, Nutrition officer, Mobile No. +263 774 587 146, Email: tncube@unicef.org

When: 2.00 PM to 3.30 PM

Where: Food and Agricultural Organization (FAO) offices,

Who: Patience Hoto, Assistant Nutrition Officer, Mobile No: Email: Patience.Hoto@fao.org

Mozambique

Monday, 12th June 2017

When: 8.30 AM to 12.30 PM

Where: GAIN offices

Who: Ms. Felistus Mutungi

When: 2.00 PM to 3.40 PM

Where: Ministry of Health (MISAU) Offices

Who: Ms. Helga Mudanisse, Nutritionist, Email: helgamudanisse@gmail.com

Tuesday, 13th June 2017

When: 2.30 PM to 4.00 PM

Where: Ministry of Health Headquarters,

Who: Mr. Silvetre Benjamin Nhachengo, Head of Department of Water, Laboratory
Ministry of Health, Tel: +258 82 4201200, +258 84 501 206, Email: nhachengo@hotmail.com

Wednesday, 14th 2017

When: 2.00 PM to 4.00PM

Where: National Institute of Standards and Quality Offices

Who: Mr. Cesarino Benjamin, Standards Officer, Head of Food Standard
Mobile No. +258 733 53 4656, Email: bcesarino@gmail.com

Thursday, 15th June 2017

When: 2.00 PM- 3.00 PM

Where: Hotel Gloria

Who: Ms. Eduarda Zandamela Mungoi, Advisor to the Minister, Mobile No. +258 82 309 7200
Email: eduardamungoi268@honnail.com, emungoi@mic.gov.mz

Interviews conducted by Dr. Esther Adede in Uganda, Ethiopia, Rwanda and Burundi during the Assessment visits

Uganda, Kampala

Monday, June 5th, 2017

When: 9.00am-1.00pm

Where: Lourdel Towers, Ministry of Health Nutrition Department-Round Table discussions

Who: Participants:

- 1) Sarah Ngalombi, Senior Nutrition Officer, MOH, Tel: 256-772429271
E-mail: sngalombi@yahoo.com
- 2) Deogratus Sebuwufu, MIS specialist, MOH-Resource Centre, Tel: 256-772534122
E-mail: disebwufu@gmail.com
- 3) Antonia Kiro Agnes, Nutritionist, Tel: 256-7063129924, E-mail: kiroantonina@gmail.com
- 4) Irene Wanyenya, Deputy Food Safety Coordination, National Drug Authority
E-mail: iwanyenya@nda.org
- 5) Stephen Baryahirwa, Principal Statistician, Uganda Bureau of statistics
E-mail: Stephen.baryahirwa@ubos.org
- 6) Louise Sserunsonsi, Nutrition Consultant, Tel: 256-778456758
- 7) Shallon Ayebazibwe, Intern Nutritionist, MOH, Tel: 256-751555540
E-mail: sharonayebazibwe92@gmail.com
- 8) Rosemary Kamukama, Intern Nutritionist MOH, Tel: 256-771018212
E-mail: rosemarykamukama93@gmail.com
- 9) Hawa Nanyobe, Intern Nutritionist, MOH, E-mail: hawabutler@gmail.com

Tuesday, June 6th, 2017

When: 9.30-10.30am

Where: USAID/SPRING Uganda Offices, Plot 36/37A, Matyr's Way, Ministers village, Ntinda Kampala
Round table meeting

Who: Participants

- 1) Miriam Kisamba, Program Officer, Food Fortification, USAID/SPRING
E-mail: bmkisamba@spring-nutrition.org
- 2) Frances Ssebiryo, M and E Advisor, USAID/SPRING, E-mail: fssebiryo@spring-nutrition.org
- 3) Mike Mazinga, Program Assistant, USAID/SPRING, E-mail: mmazinga@spring-nutrition.org

When: 11.00am-1.00pm

Where: Uganda National Bureau of Standards, Nakawa, Kampala

Who: Deus Mubangizi, Testing Manager, UNBS

Tel: 256-772494025, E-mail: dues.mubangizi@unbs.go.ug

When: 2.00-3.00pm

Where: Ministry of Trade, Industry and Cooperatives, Farmer's House Parliament Avenue, Kampala.

Who: Francis Mukalazi, Senior Quality Assurance and Standards Officer, E-mail: fmukalazi@mtic.go.ug

Ethiopia, Addis Ababa

Thursday, June 8th, 2017

When: 10.00am-12.00pm

Where: GAIN Offices, Bole across Ethiopian Youth Sports Academy, Addis Ababa, Ethiopia

Who: Tesfaye Chuko, Nutrition Officer UNICEF, E-mail: tchuko@unicef.org

When: 1.00-2.30pm

Where: GAIN Offices

Who: Tesfaye Hailu, Research Associate, Food and Nutrition Research, EPHI, Tel: 251-944123108
E-mail: tesfayehai@yahoo.com

Friday, June 9th, 2017

When: 10.30am -12.00noon

Where: Micronutrient Initiative Offices, Ethiopia-Canada Cooperation Office (CIDA-ECCO)
Nifas Silk- Lafto Sub City, Kebele 04, H.No.161/01, Addis Ababa Ethiopia- Round table discussion

Who: Participants

- 1) Dr. Amare Deribew ,Country Director Micronutrient Initiative Ethiopia
E-mail: aderibew@micronutrient.org
- 2) Yosef Alemu, Deputy Country Director, Micronutrient Initiative
E-mail: yalemu@micronutrient.org

When: 1.00pm- 2.30pm

Where: Solutions for African Food Enterprise (SAFE TECHNO SERVE), Haile G Selassie St.
Rebecca building, 8th floor, Addis Ababa

Who: Balayneh Begna, Program Manager, SAFE, Tel: 251-911876649, E-mail: bnekatibeb@tns.org

When: 3.00-4.00pm

Where: GAIN offices

Who: Genet Gebremedhin, Ag. Country Director, Tel: 251-911690021
E-mail: ggebremedhin@gainhealth.org

Rwanda, Kigali

Monday, June 12th, 2017

When: 10.00am-1.00pm

Where: Hotel Chez Lando, KG 201st, Kigali- Round Table Discussions

Who: Participants

- 1) Alexis Mucumbitsi, Nutrition officer Ministry of Health Rwanda
Tel: 250-788585333, E-mail: mucumbitsi2002@yahoo.fr
- 2) Elvis Gakuba, Director of Refugees and High Risk Community Programs Africa
SANKU Fortification, Tel: 250- 788389390, E-mail: egakuba@sanku.com
- 3) Damien Ndiziye, Chairman ADECOR (Rwanda Consumers Protection Organization)
Tel: 250-788595587, E-mail: ndiziyedamien2000@yahoo.fr

Tuesday June 13th, 2017

When: 10.00 – 11.30 am

Who: Damien Nsengiyumva, Nutrition Officer, WFP Rwanda Country Office
[Tel: 250-788596914](tel:250-788596914), E-mail: Damien.nsengiyumva@wfp.org

Wednesday June 14th, 2017

When: 10.00am-12.00noon

Where: UNICEF Rwanda Office, Ebenezer House, Umuganda Boulevard, Kigali Rwanda

Who: Participants

- 1) Youssouf Koita, Nutrition Specialist UNICEF, Rwanda Country Office
[Tel:250-788300714](tel:250-788300714), E-mail: ykoita@unicef.org
- 2) Josephine Kayumba, Nutrition Specialist UNICEF Rwanda Country Office
[Tel:250-783519361](tel:250-783519361), E-mail: jkayumba@unicef.org

When: 1.00pm-2.00pm

Where: Rwanda Standards Board, KK15 Kicukiro Centre

Who: Kamikazi Mwajabu, Rwanda Standards Board

Tel: 250-788300556, E-mail: mwajabu.kamikazi@rbs.gov.rw kami@rbs.org.rw

Burundi, Bujumbura

Thursday, June 15th, 2017

When: 8.00am-9.00am

Where: ROCA Golf Hotel Bujumbura Lobby

Who: Eric, [Tel:257-76084444](tel:257-76084444)

Friday June 16th, 2017

When: 12.00 to 1.30 pm

Where: Office of the 2nd Vice President

Who: Dr. Jean-Claude Nkurunziza, National REACH facilitator

Tel: 257-76820516, E-mail: jeanclaudenkuru2012@gmail.com

When: 2.30-3.00pm

Where: ROCA Golf Hotel Bujumbura, Lobby

Who: Djibril Ninkingiye, Quality Assistant Manager, SAVONOR

Tel: 257-79905871, E-mail: djibril.ninkingiye@savonor.com

When: 3.30-4.30pm

Where: Burundi Country Office, WFP

Who: Serigne Loum, Nutritionist, World food Program

Tel: 257-77877777, E-mail: serigne.loum@wfp.org