Pull Strategy Toolkit for Commercial Monitoring of Fortified Foods

for

Consumer Associations and Parent Groups

Prepared by:
Wilson Enzama, Training and Technical Support Advisor, Africa
Afidra Olema Ronald, Africa Network Coordinator
Food Fortification Initiative

November 2019

Food Fortification Initiative
Enhancing Grains for Healthier Lives

gain
Global Alliance for Improved Nutrition

IFSBH
INTERNATIONAL FEDERATION for SPINA BIFIDA and HYDROCEPHALUS

Table of Contents

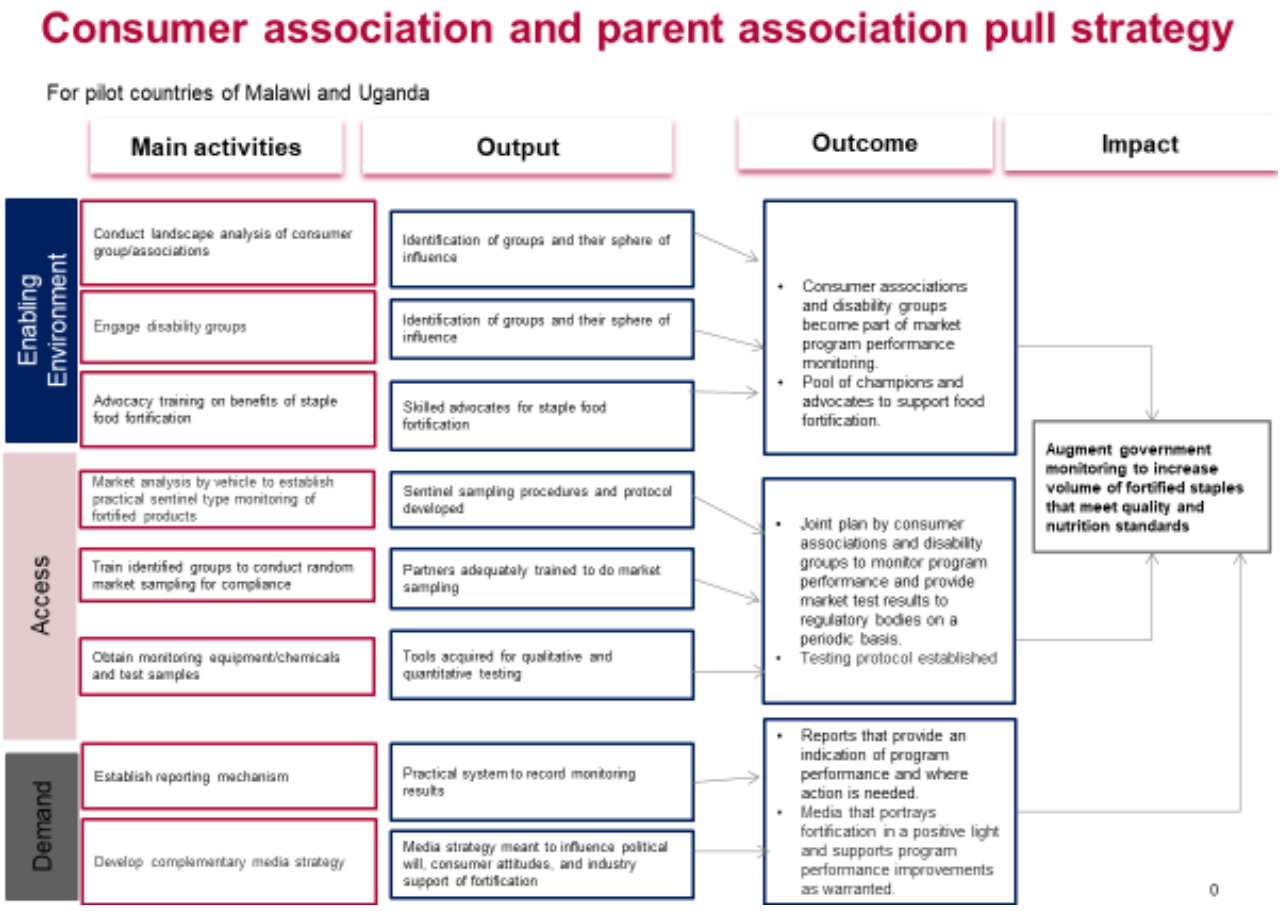
1. INTRODUCTION 1
   1.1 Background 1
   1.2 Objectives 2
   1.3 Pull as an innovative strategy 3
   1.4 Core activities 4
2. LANDSCAPE ANALYSIS 5
   2.1 Introduction 5
   2.2 Expected outputs 5
   2.3 Example: Strengths and weaknesses of UCPA and CAMA 6
3. MARKET SHARE, SIZE AND VALUE ANALYSIS 6
   3.1 Introduction 6
   3.2 Sampling approach 7
   3.3 Trade census analysis 8
   3.4 Retail audit 8
   3.5 Sample size for outlets 8
   3.6 Sampling approach for the outlets 8
4. ADVOCACY TRAINING ON FORTIFICATION 9
   4.1 Health outcomes of micronutrient deficiency 9
   4.2 Economic consequences of micronutrient deficiency 9
   4.3 Overview of food fortification 9
5. COMMERCIAL MONITORING 11
   5.1 Introduction 11
   5.2 Benefits of commercial monitoring 12
   5.3 Training the sampling team on commercial monitoring 12
   5.4 Plan, budget and schedule 13
   5.5 Prepare advocacy materials and training for commercial monitoring 13
   5.6 Sampling of fortified food in the market 14
   5.7 Lab testing and analysis of samples 14
   5.8 Commercial monitoring report 15
6. DISSEMINATION AND MEDIA STRATEGY 16
   6.1 Introduction 16

6.2 Objectives of media strategy 16
6.3 Underlying factors for a successful media strategy 16
6.4 Media plan 17
6.5 Audience segments 17
7. COORDINATION AND ACCOUNTABILITY 18
8. ANNEX 20
Annex 1: Sampling form 20
Annex 2: Laboratory sample analysis procedure 21
Annex 3: Lab result recording form 24
Annex 4: Three-year Pull Strategy implementation budget 25

1. INTRODUCTION

1.1 Background

The Pull Strategy Toolkit provides procedures and guidelines for implementing the Pull Strategy for commercial monitoring of fortified foods in a country.



It also describes the different phases, activities, agencies and organizations responsible for each stage of implementation. The toolkit builds upon lessons learned from the Pull Strategy pilot implementation in Uganda and Malawi.

The Pull Strategy is an approach whereby advocacy groups such as parent disability groups, consumer associations and relevant civil society organizations advocate for improved governmental enforcement of national fortification standards and increased industry compliance. As groups advocate, they create awareness of the importance of fortified foods among the general population.

It has been noted that, although fortification targets consumers and particularly women of childbearing age and children, consumer protection associations and affected community members are not aware and not actively involved in promoting consumption of fortified foods. Consumer associations are legally registered organizations that speak on behalf of the general public. Working through consumer associations is often the best way to reach the public with social marketing and behaviour change messages that aim to increase awareness of and demand for fortified foods.

Involving civil society groups has two added benefits: 1) it gets consumers actively involved in promoting consumption of fortified foods and 2) it leverages their presence and mandate to obtain a snapshot of program performance as it relates to levels of product compliance. This is particularly useful when national regulatory bodies do not or cannot perform this task thereby ensuring there is still accountability for the delivery of optimal levels of key nutrients through fortified foods.

Many countries include multiple nutrients in their fortification standards. This toolkit highlights the importance of micronutrients like folic acid (vitamin B9) as it reduces the risk of children being born with birth defects of the brain and spine such as spina bifida and anencephaly. Parent groups engaged in the Pull Strategy are passionate about preventing birth defects through increased consumption of staple foods fortified with folic acid. If the Pull Strategy is successful and compliance is sustained, the population will increase their intake of all nutrients included in fortified foods.

The Pull Strategy aims to support appropriate fortification delivery by addressing the issue of inadequately fortified foods as well as fraudulent labelling claims by manufacturers. It is intended that the increased engagement by consumer organizations and disability groups will raise awareness on consumers' right to essential minerals and vitamins through fortification.

The Pull Strategy is meant to be an inexpensive and quick (one to two weeks) approach to boosting awareness of food fortification among key stakeholders and improving the quality and quantity of fortified foods on the market. Government market assessments, on the other hand, are often costly and time consuming.

1.2 Objectives

The Pull Strategy aims to support appropriate fortification delivery and foster increased engagement by civil society, consumer organizations and disability groups to raise awareness on the following topics:

(i) Major health burdens associated with malnutrition such as spina bifida, which is largely associated with a deficiency in folic acid during conception

(ii) Micronutrient deficiencies caused by a lack of other essential vitamins and minerals in the diet

(iii) Consumers' right to essential minerals and vitamins through fortification and awareness of inadequately fortified foods and fraudulent labelling claims by corporations who claim they fortify to national standards

To achieve the objectives, the Pull Strategy supports stakeholders to conduct a simple, sentinel-type market assessment of fortified foods to ascertain the level of vitamins and minerals added to flours and cooking oils. Individuals from consumer organizations, relevant civil society organizations and disability groups form teams and are trained on how to conduct a market assessment. Teams receive basic analytical tools to test fortified foods. Teams are also instructed to check their country's mandatory labelling rules to ensure foods comply with labelling requirements.

The strategy encourages teams to publicly disseminate their findings and ensure that food producers are held accountable. In countries challenged by corruption or complacency, the Pull Strategy's grassroots approach to accountability can prevent poor or limited delivery of fortified foods.

A basic market survey, analysis, report compilation and dissemination of results will require financial support. The experience from the pilot implementation in Uganda and Malawi is that these advocacy groups do not have the financial capacity to implement a Pull Strategy on their own. In the first two to three years, such funds will have to come from outside sources *(see Annex 4 for a budget estimate based on the Pull Strategy in Uganda).*

1.3 Pull as an innovative strategy

There are two innovations the Pull Strategy has introduced to fortification program monitoring. First, the strategy actively involves parent groups in commercial fortified food monitoring due to their interest in compliance with folic acid fortification. The World Health Organization's guidelines on food fortification provides a mandate for consumer protection associations to engage in commercial monitoring, but not parent groups.

Second, although the strategy originally planned to share a list of noncompliant brands and producers with the media, it was deemed more appropriate to share the results of commercial monitoring, including the names of brands and producers that comply or fail to comply with national fortification standards, at a stakeholder workshop without media present. The workshop included public, private and civil society groups. Private sector food producers were encouraged to attend and provide feedback on the results.

A critical part of disseminating results is a private meeting where consumers and parents discuss their findings with individual industries before going to the media. In these meetings, consumers and parents can also share the health burdens of improper food fortification and provide personal testimony from parents of children with spina bifida and hydrocephalus.

1.4 Core activities

The specific role of the Pull Strategy is to engage consumers and civil society to undertake commercial monitoring of fortified foods in markets across their country. However, in order to complete this exercise, steps to contextualize the project and to create a conducive environment for consumer advocates to actively participate in fortification must be made. The following five activities are the focus of the Pull Strategy implementation.

1. Landscape analysis: assessing the institutional, technical and legal context within which food fortification takes place in order to enable advocacy teams to participate in and understand the national fortification program framework.

2. Market share size and value analysis: assessing categories of fortified foods available in the market including market share by brand and market share performance data to facilitate decision making and trigger program improvements. This is a critical component of the strategy to understand the penetration of compliant and non-compliant brands.

3. Advocacy training on food fortification: equipping advocacy teams with relevant information on fortification, the health burden of micronutrient deficiencies and the benefits of fortification.

4. Commercial monitoring of fortified foods: conducting a simple market assessment of fortified foods to ascertain the level of vitamins and minerals added to flours and cooking oils. Advocacy teams are formed and trained on market assessment. Private labs assist with sampling, testing and analysis of fortified foods and generate a report of findings.

5. Media strategy: developing and implementing a plan to disseminate findings of the market assessment to stimulate media interest in food fortification and to encourage governmental enforcement.

In the next sections, details of these activities and guidelines for effective implementation are examined. Step-by-step sequencing of activities is very important; activities may not be implemented in parallel.

2. LANDSCAPE ANALYSIS

2.1 Introduction

A cornerstone of the Pull Strategy is to assess the context in which the strategy will be implemented. Engaging existing nutrition advocacy organizations in commercial monitoring and ensuring their capacity and willingness to participate and devote human, financial and logistical resources is very important. To assess context, conduct a landscape analysis of consumer associations, civil society and parent associations and develop a corresponding engagement strategy.

Several research techniques can be used depending on the situation in each country. Data can be collected on advocacy groups through three methods:

Desk/online review

A large part of the desk review covers available information on existing groups and laws:

- Consumer protection and consumer rights associations
- Parents' disability groups, particularly national spina bifida and hydrocephalus associations
- Policy and legal environment for these groups and other civil society organizations to operate in the country

Key informant interviews

Interviews with leaders of advocacy groups to understand:

- Mandates and roles in nutrition security and control of micronutrient deficiencies
- Protocol for advocacy and lobbying on nutrition security
- Capacity to plan and undertake a simple market assessment
- Audiences and how they are engaged
- Best practices for messaging, including a relevant media strategy
- What organizations have done to advocate for fortification
- Gaps and potential areas for collaboration
- The government's role in promoting consumption of fortified foods among the population

2.2 Expected outputs

The output of the landscape analysis is a report detailing the following:

- Context of the fortification program in the country
- The role and capacity of consumer protection association in the country and in fortification in particular

- Existing advocacy groups and their roles in addressing micronutrient deficiencies and capacity to advocate for increased compliance in terms of technical knowledge but above all, the number of staff and their availability to engage in the Pull Strategy
- Strengths and weaknesses of existing advocacy groups identified as critical in implementation of the Pull Strategy
- Main media organization and its interests in reporting on nutrition and fortification
- Recommendation for implementation of the Pull Strategy based on the context and the capacity of existing organizations
- Media engagement strategy by advocacy groups with key mediums and audiences

2.3 Example: Strengths and weaknesses of UCPA and CAMA

In Uganda and Malawi, the following were found as strengths and weaknesses of the Uganda Consumer Protection Association (UCPA) and Consumer Association of Malawi (CAMA) in conducting fortified food commercial monitoring:

Strengths

- The strength of both these consumer associations is in their experience engaging both the civil society and government in issues affecting consumers.
- Both organizations have volunteers to conduct market sampling and reporting.
- The consumer associations have existing relationships with the media, which the Pull Strategy could leverage to increase awareness among the general population on spina bifida and hydrocephalus and the benefits of folic acid through fortification.

Weaknesses

- Lack of capacity both in terms of skills and presence of a laboratory to undertake testing and analysis of the samples of fortified foods.
- The consumer associations have competent members, but members are busy in their own business with limited time that can be devoted for market assessment.
- Logistical challenges, such as lack of vehicles and limited resources.

3. MARKET SHARE, SIZE AND VALUE ANALYSIS

3.1 Introduction

The market share analysis assesses the different food categories (e.g. food types and specific brands) available in a country that are fortified according to regulations, a key market indicator to

determine fortification programme performance[1]. The analysis shows predominant market brands and producers, the number of products imported and produced domestically and estimates of food product value. At a programmatic level, market share performance data facilitates decision-making and triggers program improvements.

The assessment is implemented through a quantitative survey of retailers in sampled areas administered through either face-to-face interviews or through an electronic mobile platform. The following points of sale can be included in the retail audit survey: hypermarkets/supermarkets, mini-super markets, wholesalers, bakeries, groceries, dukas and kiosks.

The assessment should focus on the following:

- Assessing the availability of food brands for a mandated food in the market:
  - Total number of brands of a food
  - Proportion of food brands that are locally produced of imported
- Assessing brand share and producers/suppliers of a food in the market
  - Total volume/market value, leading brands, local and imported
  - Proportion of total market share occupied by a food brand and/or producer/supplier
- Assessing the stock keeping units (SKUs)
- Assessing packaged products compared to unpackaged food products
  - Labelled packaged products, unpackaged with indication and unpackaged or undefined
  - Understanding the market channel for unbranded products
- Assessing consumer preference
- Assessing factors that influence stocking of a food product
- Assessing the overall market channels for the indicated food products

3.2 Sampling approach

Before a retail audit can start, it is important to know all the points of sale within the country studied. If this data is not available, a census must be conducted. There are two ways to conduct a census.

a. *Full Census:* The country is divided into smaller sections. Each point of sale that meets the inclusion criteria is enumerated and a short questionnaire is completed on it.
b. *Sample Census:* The country is divided into smaller sections. A representative sample of smaller areas are chosen to enumerate. All points of sale that meet the inclusion criteria are enumerated and projected to the national population.

[1] *2018 Regulatory Monitoring Guidance* stipulates that "compliance" by industries cannot be determined at the market level (due to factors outside the control of the producer). However, "program performance" can be determined at the market level.

3.3 Trade census analysis

This is a mandatory first step in an effective audit of points of sale. A trade census analysis collects data from past retail market censuses to serves as a database from which recommended samples can be statistically selected.

3.4 Retail audit

Outlet stores must be audited to assess foods available, brands, pricing and details of the supply chain. The outputs from the audit will provide details of brands/products/SKUs across relevant channels and assess other market information on trade and distribution. The results are triangulated amongst three major indices: State/Region>>Outlet Types>>Products.

3.5 Sample size for outlets

A point of sale statistical softwarpackage aids in alculating sample sizes for outlets in regions or states to give estimates of population percentages with a margin of error of plus or minus 10 percentage points at the 95% confidence level. The point of sale software applications are numerous and can be easily downloaded.

3.6 Sampling approach for the outlets

Due to the heterogeneous distribution of outlets (size, turnover and geographic location--urban, semi-urban and rural), it is acceptable to use a proportionate stratified quota sampling system. This sampling system considers the overview and description of relevant market categories, suppliers/producers and brand definitions by food. These include the following three selection parameters:

1. Market categories
    - Different food type categories
    - Regional supply/production differences
    - Supply from different categories of producers/suppliers
    - Supply channels
2. Producer/supplier categories
    - Supplier/producer type (trader/importer, distributor, processer, producer)
    - Local or imported
    - Production from small to large scale producers
3. Brand/products
    - Open and packaged
    - Food type category
    - Labelling
    - Price

- Supplier/producer type (trader/importer, distributor, processer, producer)

4. ADVOCACY TRAINING ON FORTIFICATION

The Pull Strategy relies on advocacy groups and laypersons without specialized knowledge about fortification. The advocacy training aims to equip advocacy groups with basic knowledge of micronutrient deficiencies and associated health burdens, government programs to address these deficiencies and benefits of food fortification. The curriculum prepares advocacy groups to engage government and industries with data in addition to their lived experience of food fortification's importance. The following are key topics that should be included in such a curriculum:

4.1 Health outcomes of micronutrient deficiency

- Iron deficiency leads to fatigue, anemia and increased risk of maternal death.
- Vitamin A deficiency is a leading cause of preventable blindness among pre-school children.
- Zinc deficiency leads to multiple disorders such as stunted growth in children, compromised immune systems, reproduction challenges in both males and females, poor bone growth, poor circulation, poor skin, nails and hair conditions and poor sense of taste and smell.
- Folic acid or folate deficiency can cause anemia and birth defects of the brain and spine called neural tube defects.

4.2 Economic consequences of micronutrient deficiency

- Years of productive life lost: child deaths and disability from vitamin A deficiency, infant deaths from iron deficiency, maternal deaths from iron deficiency and anemia in pregnant women, increased disability and death from compromised immune systems due to zinc deficiency
- Death, disability and increased healthcare costs from preventable birth defects
- Future productivity loss due to cognitive deficits in children who are iron deficient during development
- Current productivity loss due to anemia in men and women

4.3 Overview of food fortification

Define fortification

Fortification is the addition of essential vitamins and minerals to commonly consumed foods during the production process in order to increase the nutritional quality of the foods.

Commonly added micronutrients

During food fortification, the following 12 vitamins and minerals may be added to wheat flour, maize flour, rice, sugar, edible oils and fats. Each country sets standards to include the specific types and amounts of nutrients its population needs to prevent the micronutrient deficiencies mentioned above.

- Iron, folic acid (vitamin B9), and vitamin B12 help prevent nutritional anemia which improves productivity, maternal health, and cognitive development.
- Folic acid reduces the risk of severe birth defects of the brain and spine.
- Zinc helps children develop, strengthens immune systems and lessens complications from diarrhea.
- Niacin (vitamin B3) prevents the skin disease known as pellagra.
- Riboflavin (vitamin B2) helps with metabolism of fats, carbohydrates and proteins.
- Thiamine (vitamin B1) prevents the nervous system disease called beriberi.
- Vitamin B12 maintains functions of the brain and nervous system.
- Vitamin D helps bodies absorb calcium which improves bone health.
- Vitamin A maintains healthy vision and improves an individual's ability to fight infections. Vitamin A can be added to wheat or maize flour, but it is more effectively added to rice, cooking oils, margarine or sugar.
- Calcium builds strong bones, helps transmit nerve messages and assists with muscle function. A few countries add calcium to flour, but it is more commonly added to other foods.
- Selenium helps with reproduction and thyroid gland function.
- Vitamin B6 is needed for enzyme reactions involved in metabolism.

Types of fortification

- Voluntary fortification is fortification carried out on the initiative of a manufacture where fortification of that particular food is not by law, a mandatory process.
- Mass (universal) fortification refers to the addition of micronutrients to edible products that are consumed regularly by the general public.
- Mandatory fortification is fortification that is required by law for specific foods identified by the country.
- Targeted fortification refers to the fortification of foods designed for specific population subgroups.

Advantages of universal, mandatory fortification

- Daily dietary low-doses optimize bioavailability and impact
- Market-wide coverage (large population)
- Little build-out of industry and distribution infrastructure
- Limited behavior change required, therefore can lead to wide coverage

- Affordable and sustainable financing with small percent of milling inputs; price increase invisible to consumer purchases
- Frees public sector resources to focus on highest risk populations

According to the (World Bank), "no other technology available today offers as large an opportunity to improve lives and accelerate development at such low cost and in such a short time as food fortification".

Mandatory fortification programs:

- Increase the intake of micronutrients since fortified staple foods reach a large share of the population in a cost-effective way
- Improve the standard of living for populations with limited resources, reduces costs of managing nutritional diseases and improves health of the labor force
- Assist in achieving 9 of the 17 Sustainable Development Goals (SGDs) including goals 1, 2, 3, 4, 5, 8, 10, 11, and 17[2]

These are all important messages that the Pull Strategy team needs to have in order to effectively advocate to industry and government for improved compliance, to engage the population on the benefits of consuming fortified foods and to engage the population on the cost of not eating fortified foods. These messages will also ensure stakeholders know the different micronutrients added to food and the different roles they play in our bodies.

5. COMMERCIAL MONITORING

5.1 Introduction

Commercial monitoring is the core of the Pull Strategy. Commercial monitoring verifies that fortified foods sold in retail supermarkets, markets, groceries and wholesale stores are properly fortified. It detects brands that do not comply with national fortification regulations and confirms whether brands that have previously been inspected in factories and importation sites are indeed fulfilling their fortification requirements.

Under the World Health Organization's monitoring framework for food fortification[3], commercial monitoring is the responsibility of the Ministry of Health's Department of Environment and Public Health Inspection. It involves district environmental health inspectors, other local officials and National Bureaus of Standards. Due to confidentiality purposes, monitoring reports from

[2] [2] The Food Fortification Initiative: Fortify to Address Sustainable Development Goals. Available at http://www.ffinetwork.org/why_fortify/SDGs.html. Accessed on 09/09/2019.
[3] https://www.who.int/nutrition/publications/micronutrients/GFF_Part_4_en.pdf?ua=1

government agencies have not been made public in most countries. As a result, there have been gaps in compliance information and advocacy groups must go to markets to generate their own program performance data.

The purpose of monitoring at the commercial level is to verify the micronutrient content of food that falls under mandatory food fortification regulations to ensure the food complies with national fortification standards (i.e. the fortification level is close to the target fortification level and within an acceptable range).

In Uganda and Malawi, consumer associations and parent groups sampled fortified wheat flour, maize flour and cooking oil from markets. The objectives of commercial monitoring are as follows:

- Using consumers associations, test different products and brands found across different markets in order to determine fortification levels of each.
    - Assess differences in the performance based on production site and/or other post-production circumstances such as market conditions or product handling and storage.
    - Assess program performance by brand and food manufacturer (differences between different batches produced over the year).
- The commercial monitoring results will be critical input to determination dissemination activities such as meetings with private sector companies, private, public and civil society advocacy meetings and ultimately a media strategy.

Advocacy groups need to undertake basic monitoring to assess the level of micronutrients in fortified foods in the market. This will enable them to advocate to the government to enhance enforcement of compliance and reject inadequate fortification and fraudulent labelling claims by industries to the national standards.

5.2 Benefits of commercial monitoring

If noncompliance is observed, commercial monitoring results:

- Provide a warning signal to indicate that the Quality Control and Quality Assurance (QA/QC) procedures may not be adequately implemented in the food production facilities,
- Shows if visits by Public Health Officers for auditing and inspection for enforcement need to be enhanced, and

  Serves as an education tool since the monitors can inform retailers about the existence of a national fortification program, benefits of fortification and role of retailers and rights of consumers.

5.3 Training the sampling team on commercial monitoring

Commercial monitoring is a technical exercise often carried out by professionals in government. As advocacy groups may not have commercial monitoring skills, this training is designed to equip

advocacy groups to conduct basic market sampling, analysis and reporting on fortified foods. The lab testing and analysis should be done by professionals to ensure rigorous best practices are followed.

The specific objectives:

- Build consumer protection organizations' capacity to conduct a basic market assessment.
- Equip consumer associations and parent groups with knowledge and skills to undertake a step by step procedure for sampling.
- Demonstrate how analysis of fortified foods is conducted and reports are generated.

Commercial monitoring protocol:

- Describe procedures for carrying out inspection visits by advocacy groups at any retail store selling fortified foods.
- If noncompliant products are observed, inform public and government regulatory agencies immediately.
- Disseminate results of commercial monitoring to the government and general population.

5.4 Plan, budget and schedule

In order to ensure sampling is undertaken in major retail outlets through the country, ensure that major markets and retailers in each of the regions are selected to for the market assessment and commercial monitoring. Frequency and intensity of sampling depends on the population density, amount of food sold in the region, and whether the location is close to the border with other countries where the food is not fortified.

- Estimate and facilitate the financial resources that will be needed considering:
    - Personnel
    - Transportation and fuel
    - Approximate number of samples to be analyzed and the relevant testing cost
    - Materials (analytical equipment, chemicals / reagents, training and advocacy material)
- Consumer protection associations will need to source funds to plan and undertake commercial monitoring yearly (see an example budget in Annex 4 and suggestions for funding such an exercise when resources are limited under coordination in Section 7).
  Ensure cooperation and coordination among the civil society organization involved to perform commercial monitoring effectively and make efficient use of available resources.

5.5 Prepare advocacy materials and training for commercial monitoring

- Prepare brochures or leaflets with information on the general labeling requirements for food, (e.g. registration of approved brands, name and address of supplier, expiration date,

net weight, and others as well as specific information on labeling of fortified foods particularly, wheat flour, maize meal and oil).

- Plan annual training workshops for the commercial monitors under the civil society organizations on how to conduct the commercial monitoring visits to wholesale and retail stores, how to take samples and how to record the information during the visits.
- Obtain a list of approved brands per food available in the county. This list should be updated regularly.

5.6 Sampling of fortified food in the market

In the case of Uganda and Malawi, the trained commercial monitoring teams were deployed to sub-national regions or districts to collect samples of fortified foods for testing in the laboratories. The following protocol was used for the sampling:

- Sample all available fortified oil/wheat flour/maize meal types/brands in the market (produced in country or imported). Multiple (2-4) samples of each brand should be taken to form a composite sample. A composite sample will give a better indication of brand performance than a single sample.
- Differentiate samples based on manufacturer, food type, brand, batch number and sampling site/location. The sites included wholesalers, retail shops, weekly village markets and kiosks. These are the points where the majority of the population purchases these foods.
- Use clean and dry apparatus for sampling to avoid contaminating the samples.
- Do not take samples from a place where they might have been exposed to light, heat, other foods and moisture.
- Protect samples (the food products) and containers for samples from adventitious contamination by using suitable, clean and dry containers.
- Store samples in such a manner that they are protected from light, temperature fluctuations and other abnormal conditions.
- Fill sample containers of oil so that the air space above the liquid level is 5 to 10% of the capacity of the sample containers, i.e., the sample containers should be almost but not completely filled.
- Fit all sample containers with suitable tight stoppers or tightly tied rope/thread in such a manner that it is not possible to remove the contents and the label without breaking the imprint of the seal.
- The teams should fill the details of the samples on a form (see Annex 1) which will be the reference for lab testing, analysis and reporting.

5.7 Lab testing and analysis of samples

Due to capacity challenges related to lab testing and analysis and questions about authenticity of the findings of market assessments, consumer associations need support from independent labs to

assist in testing and analysis. This means the associations should be willing to work with private companies based in country for food tests.

A credible and accredited laboratory that is able to partner with the consumers and parent groups for free use of i-Check machines and procurement of required reagents, should ideally be identified.

When the primary samples and the accompanying forms describing the details are delivered to the laboratory by the commercial monitoring teams, the lab technicians should record the details in an excel sheet (see Annex 3). This sheet will be used to record each result of the individual samples for analysis. Two rounds of tests are recommended: qualitative and quantitative tests.

Edible vegetable oils and fats sample analysis
The edible vegetable oils and fats samples will be screened qualitatively for vitamin A content using a chromogenic reaction of trifluro-acetic acid in dichloro-acetic methane in the first round of tests. The blue color forms if the product is fortified and should be compared against a scale of blue color whose intensity correlates with content of vitamin A (see Annex 2 for details of this procedure).

In the second round, individual samples that pass the qualitative tests are subjected to quantitative analysis for vitamin A using the i-Check method.

If more than one similar brands/batch numbers are found in the region, composite samples will be prepared by brand/batch, producer and region by mixing equal proportion of the positive samples to determine vitamin A content using the i-Check method.

Maize meal and wheat flour sample analysis
Wheat flour and maize meal samples are first screened using qualitative tests for presence of iron using the iron spot test (see Annex 2 for details of this procedure). In the second round, the positive samples will be subjected to quantitative analysis of iron using the i-Check method.

If more than one similar brands/batch are found in the region, composite samples will be prepared by brand, producer and region by mixing equal proportion of the positive samples to determine iron content using i-Check method.

5.8 Commercial monitoring report

After the qualitative test, a report indicating positive and negative samples will be compiled. From the qualitative positive samples, a report is compiled of the quantitative levels of fortification in the commercial sample according to region, food vehicle, brand and nutrient levels. These will

form part of the commercial monitoring report ready for sharing with government, media and advocacy groups.

6. DISSEMINATION AND MEDIA STRATEGY

6.1 Introduction

Through commercial monitoring, advocacy groups can create a comprehensive report that presents brand and producer compliance with fortification standards by region and food product. The report gives an indication of producers' level of success in fulfilling fortification goals, obstacles to fortification and possible solutions. In sum, the report describes the status of a country's fortification program based on the sampled products during the assessment period.

It is important the results of commercial monitoring are disseminated widely to reach a wide array of target audiences. To disseminate findings of the market analysis and commercial monitoring effectively, advocacy groups should create a national media strategy.

The Pull Strategy recognizes that, while fortification targets consumers -- particularly women of child-bearing age of 15-49, most consumers are not aware of and not actively involved in promoting fortified foods. Additionally, awareness among the respective food industries responsible for producing the fortified products, both of the mandatory fortification regulations and the benefit of fortified food, is also low.

6.2 Objectives of media strategy

The media strategy should address the following objectives:

- Raise consumer awareness of the existence of fortified food brands and producers to encourage consumers to demand and consume adequately fortified food.
- Increase producers' awareness of the mandatory fortification standards and of the benefits of fortification, including the health consequences for consumers of micronutrient deficiency.
- Provide evidence to policy makers and regulators on the status (levels) of fortification, including existing gaps that need to be addressed with effective enforcement and capacity building.

6.3 Underlying factors for a successful media strategy

In order to succeed, the media strategy should consider the following:

- The media context in the country -- including print, electronic and social media -- and information-seeking habits of target groups to identify appropriate mediums through which to reach them.

- Assessment of potential communication mediums should be based on stakeholder consultations and industry reports obtained from professional media monitoring and analysis organizations. Assessments should identify preferred languages and mediums such as television, radio, social media, newspapers, etc.
- Language is often a constraint for far-reaching national media; most of the target audience may prefer to receive information in a local language, driving listeners to smaller local media outlets. The result is a fragmented media landscape. National media time and space is highly commercialized, making it expensive for low-budget public programs. Three solutions can be considered:
    - Negotiate free airtime with media organizations and with public institutions allocated free airtime like the Ministry of Health.
    - Use social media platforms including Facebook, WhatsApp and others.
    - Leverage free partner and community networks to make promotion of fortification a standard feature of partners' public engagements.

6.4 Media plan

It is advisable that short-term activities be implemented over a period of 2–3 months using the "burst" media approach. This approach consists of short, consistent, intensive, attention-grabbing messages that focus on market assessment results accompanied by recorded testimonials.

The burst media approach includes events, press conferences, advertising and social media that will create a buzz around food fortification. This will also provide momentum for the long-term activities, including social media coverage and regular briefings.

6.5 Audience segments

The media strategy should be implemented through four main target audience segments to achieve maximum effect with limited resources and address specific interests relevant to specific segments.

Different messages and media channels should be adopted for each of these segments. However, under the strategy, various segments are further sub-divided as follows:

Consumers and Buyers

- Women of child-bearing age (i.e. 15- 45 years)
- Groups responsible for purchase decisions of food (e.g. household heads, household help, cooks/chefs, etc.)
- Institutions that hold substantial numbers of people for whom they are responsible to feed (e.g. schools, police and military services, clinics/hospitals, prisons)

- Groups of parents and children affected by spina bifida and hydrocephalus. It should be noted that consumption of fortified foods by afflicted individuals may not reverse pre-existing conditions, but knowledge of the causes may help prevent future occurrences

Food Providers

- Supply chain actors like agents, dealers, stockists, wholesalers and retailers
- Milling companies (including their industry associations), that are required by law to fortify. These include the companies that already fortify according to standards, companies claiming to fortify when they do not or fall below standards and companies that do not fortify or claim to fortify on labels
- Suppliers (i.e. retailers, wholesalers) who determine what food producers deliver to the supply chain. Suppliers communicate consumer choices through the orders and stocks they place

Ministries, departments and agencies

This segment consists of government institutions responsible for policy development, implementation and enforcement.

Media

One of the ways in which the media can be motivated to report informatively about food fortification is to identify and empower media companies and journalists -- especially those seen as trusted sources of health information -- to act as public information champions.

7. COORDINATION AND ACCOUNTABILITY

As a multi-sectoral approach, effective coordination and accountability for the little resources invested is very important to maintain stakeholder trust and commitment. Pull 1 implementation shows that the landscape analysis provides clear information on organizations that have the capacity but also the mandate to coordinate such activities. In some countries, consumer protection associations are formed by an act of parliament and in such cases, they are legally recognized as the voice of the consumers; they are in the correct position to coordinate the Pull Strategy. In other countries, consumer associations are not formed by an act of parliament but work like a civil society organization. Consumer voices are heard regardless of legal status because the government recognizes the organizations' power and influence.

To make such a Pull Strategy sustainable, governments need to be engaged to provide fortification compliance monitoring data which advocacy groups can then analyze and use for their advocacy work. This will save costs involved in market sampling, testing and analysis of results. Instead the

only cost element will be the dissemination and media strategy implementation. This model is being tested in Malawi under Pull 2 implementation and the results are yet to be shared.

8. ANNEX

Annex 1: Sampling form

Region……..

<table>
<tr><td colspan="2">1. Sample number</td><td colspan="3">2. Date and time collected:</td></tr>
<tr><td colspan="5">3. (a). Product name and description:
(b). Method of collection:</td></tr>
<tr><td colspan="5">4. (a) Date of manufacture:

(b) Expiry date:</td></tr>
<tr><td colspan="2">5. Manufacturer:</td><td colspan="3">6. Brand</td></tr>
<tr><td colspan="2">7. Size of lot sampled</td><td colspan="3">8. Outlet :</td></tr>
<tr><td colspan="2">9. Fortified with logo or not (F-logo)</td><td>10. Date and time submitted to Lab:</td><td colspan="2">11. Laboratory:</td></tr>
<tr><td colspan="5">12. Records obtained: (a). Invoice no. and date:</td></tr>
<tr><td colspan="5">13. Remarks:</td></tr>
<tr><td colspan="2">14. Specimen seal used:</td><td colspan="3">15. Collector:
Signature……
Name:
Designation:
Address:</td></tr>
</table>

Annex 2: Laboratory sample analysis procedure: Example from Uganda

INTRODUCTION

- The consumer associations and parent groups submitted all commercial questionnaires coded and all collected fortified food samples to the laboratory at Makerere University School of Food Science Nutrition and Technology for both qualitative and quantitative analysis.
- The samples were analysed to capture compliance by manufacturer, food vehicle type and brand at market level based on the national standards requirements.
- Although not all nutrients in the fortified foods were analysed, one indicator nutrient from each vehicle was determined such as vitamin A in vegetable oil and fats and iron in maize flour and wheat flour.

QUALITATIVE SAMPLE ANALYSIS (SCREENING TEST)

To save on expensive reagents and analytical time, the samples first underwent a qualitative or semi-qualitative screening as described below.

Screening test for edible vegetable oils and fats:

- Add a 5 to 10ml sample of edible vegetable oils and fats into a test tube.
- Add trifluroacetic acid in dichloroacetic methane to the oil in the test tube.
- If a blue color forms, this demonstrates the presence of vitamin A in the oil/fat sample.
- If the blue color intensity is deep blue, it shows the intensity of the content of vitamin A in the sample. The blue color should be compared against a scale of blue color whose intensity correlates with content of vitamin A.

Screening test for fortified maize meal and wheat flour sample using the Iron Spot Test (IST):

All wheat flour and maize meal samples were screened using qualitative tests for the presence of iron using the iron spot test as shown below. There are two variations of the IST depending on the form of iron that was added to the flour. For wheat flour fortified with ferrous fumarate, three reagents were used. For maize flour fortified with NaFeEDTA, only two reagents were needed. Note that the development of a red shade (as opposed to red spots) where the reagents were added does not mean the sample is fortified.

Procedure to conduct IST when ferrous fumarate is the form of iron used (omit step 4 if NaFeEDTA is the form of iron used):

1. Create a flat surface on the top of one part of the 50g sample using a spatula, spoon or beaker.
2. Dissolve 10g potassium thiocyanate (KSCN) or sodium thiocyanate (NaSCN) in 100 ml of distilled water.

3. Mix the diluted KSCN or NaSCN with 2N hydrochloric acid (2N HCl) in equal parts just prior to use.
4. Dissolve 9 ml concentrated hydrogen peroxide (H_2O_2) (30%) in 81 ml of distilled water just prior to use.
5. Using a dropper, add a few ml of the KSCN (or NaSCN) and HCl mixture to the flour.
6. In the same manner, add a few ml of the diluted hydrogen peroxide (if relevant) to the now wet area.
7. Wait approximately 5 minutes.

ASSESS THE OUTCOME

Qualitative assessment – if you see a pink hue where the reagents were added marked with deep red spots, the sample is fortified. If you only see a pink hue, the sample is not fortified.

QUANTITATIVE ANALYSIS

Quantitative analysis of vitamin A in oil/fats using i-Check Chroma 3
This is the state-of-the-art portable photometer for measuring vitamin A concentration in edible fats and oil which displays the results in mg RE/Kg or IU/g.

Procedure: Make sure that you have all materials necessary: syringes, fortified oil, Chroma 3 vials and the i-Chroma 3 and Chroma 3 standard. The measurement has four steps:

1. Blank preparation
2. Sample injection into the vial
3. Reaction and measurements
4. Results displayed

Quantitative analysis of wheat and maize flour Samples using i-Check Iron
This is the state-of-the-art portable photometer for determines iron quantitatively measuring the color reaction in the reagent vials and calculates the iron content in mg Fe/L. This method is called photometric determination of iron concentration using colormetric reaction with bathphenantrolin.

Procedure: Make sure that you have all materials necessary: syringes, fortified flour, weighing scale, i-Check iron, vials and i-Check iron standard. The measurement has four steps:

1. Sample preparation
2. Sample injection into the vial
3. Reaction and measurements
4. Results displayed in mg/kg for a range between 1.5 to 12ppm of iron concentration

Compilation of Analytical Results

The consumer and parents' groups compile the commercial monitoring report and the analytical laboratory reports (including bot the qualitative and quantitative results). The report is then shared in public with regulators and industry. Where there is a confirmed non-compliance of nutrients according to standard then regulatory authorities will follow-up and take action as necessary. Results are categorized with the following micronutrient levels in accordance to the national standards of the nutrients in the fortified food brand:

- Below the legal minimum
- Within the legal minimum range
- Above the upper tolerable level

Annex 3: Lab result recording form

Sample number	Brand	Producer	District	Results (mg/kg)

Annex 4: Three-year Pull Strategy implementation budget example from Uganda

No	Activity	Pull 1 (US$)	Pull 2 (US$)	Pull 3* (US$)
1	Landscape analysis	3,200	-	-
2	Procurement of lab equipment and reagents	21,171	659	659
3	Advocacy workshop of stakeholders	1,622	-	-
4	Training of sampling teams	1,577	1,769	-
5	Market sampling of fortified foods	4,092	6,403	3,460
6	Lab testing and analysis of fortified food samples (200 samples for each food vehicle per year)	1,863	3,587	2,100
7	Dissemination workshop	2,730	2,730	2,730
8	Industry visits	1,756	-	-
9	Media strategy implementation	-	6,429	1,200
10	Administration/coordination	3,600	3,403	2,700
	Total	**41,611**	**24,980**	**12,849**

*Un implemented proposed activities for the third year

Note for both Malawi and Uganda:

(1) The cost of implementing the Pull Strategy will go down as the program progresses, but consumers associations will likely not be able to take responsibility for expenses such as reagents and lab testing. There will need to be an outside funding source identified for these activities.

(2) During Pull 1, procurement of lab equipment accounted for 56% of the total cost in the case of Uganda and Uganda.

(3) More samples (200 samples) were collected during Pull 2, leading to more spending under that line than in Pull 1 when we had (100 samples).

(4) It is expected that Pull 3 will collect fewer but higher quality samples than Pull 2 by using the regional staff of SHA-U or consumer associations in order to reduce costs.

(5) Apart from the dissemination workshop, the media will be briefed in a press conference.