

# BARRIERS AND ENABLERS IN THE START-UP AND IMPLEMENTATION OF LARGE-SCALE MICRONUTRIENT PROGRAMS

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## Introduction

The Micronutrient (MN) Forum, in its preparation for the Second International Meeting in Beijing, China, in May 2009, is convening the Innocenti Micronutrient Program Meeting (September 22-25, 2008) to examine the evidence on implementation and impact of large-scale micronutrient programs in developing countries and to develop guidance to country-level managers and program implementers on how to effectively deliver these programs.

The goal of the Micronutrient Forum meetings in Innocenti and Beijing is to stimulate a process to strengthen the evidence base on programs for use both in advocacy and program design, implementation, management, and evaluation. These meetings will review the evidence we have on implementation and impact of large scale MN programs and present it in a way that will engage and motivate country-level policy-makers and program implementers.

This report summarizes the findings from 21 interviews conducted with micronutrient program managers and implementers in the areas of food fortification, supplementation, and integrated nutrition programs. The main objective of the interviews was to identify and synthesize information on barriers which constrain, and also enablers which facilitate the successful start-up and implementation of various micronutrient programs in developing country settings. This information will be essential in helping to reach a stronger consensus on the most appropriate and practical guidance for micronutrient program implementers.

The purpose of the survey was to seek views and advice from program implementers and managers, on two main areas: 1) the major barriers and enablers experienced during the start-up and implementation of programs, and their immediate underlying causes, and 2) the strategies used to overcome the barriers identified.

In addition, the survey process initiated and enhanced the engagement of country-level implementers in the Innocenti process, intending to inform global partners of the ways that implementers are thinking about programs and the barriers and challenges they are facing.

This report has the following objectives:

- Systematically describe the barriers, underlying causes, strategies and enablers in the start-up and implementation of the programs surveyed.
- Assist global partners, evaluators, academics and other implementers to understand broader experiences with large-scale micronutrient programs from the implementers' perspective.
- Facilitate sharing of experiences of implementers and use of different strategies in overcoming barriers.
- Initiate the discussion on the evidence that will be needed to judge program elements and processes as barriers or enablers.

We recognize that there is little encouragement for the program community to document fully its experiences beyond the requisite reports to funders. Fear that lack of immediate results may jeopardize funding sometimes prevents the open sharing of valuable experiences. Additionally, this may affect the opportunities that program managers and implementers have of sharing their day-to-day experiences in the management and implementation of programs; limited funding, documentation and reporting, which may impede implementers to have an individual and collective

“voice” to communicate with each other, and with the donor and academic communities about their insights with regards to their programs.

## **About the Survey**

### ***Sample Selection***

Programs were selected through a two-stage process. First a solicitation for expressions of interest in the Innocenti Micronutrient Program Meeting was issued to 150 implementers, academics, evaluators, and global partners, to submit brief reports and a questionnaire on large-scale micronutrient programs, presenting evidence on the processes used in designing and implementing the programs, and on their impacts. Descriptions included statements of objectives, population targeted, organizational structure, coverage, and impact(s) achieved. From the reports submitted, a sample of 34 programs were pre-selected as potential cases and 11 were included in the final sample, based on the survey team’s prior knowledge and experiences. Second, global partners, evaluators and academics were asked to inform the survey team of known large-scale micronutrient programs that might usefully contribute to this process.

The final sample included five food fortification programs and 16 supplementation programs. Food fortification programs included fortification of staples in East and Central Asia, Latin America, and East, Central and Southern Africa. The sample included supplementation programs in the areas of vitamin A (n=3), iron (n=4), zinc (n=1), micronutrient powders (n=3) and integrated (n=5) micronutrient programs, from Latin America, Central Asia, South Asia, South-East Asia, and East Africa. The survey was pre-tested in 3 programs, one for fortification, one for supplementation, and one indirect program (Table 1).

### ***Interview Process***

The survey team contacted the person known to be closely involved in the implementation of the selected programs. If this person was not available or the survey team was not able to contact or identify them, then a colleague or program evaluator was selected for the interview.

Program implementers and managers were contacted individually and a telephone interview time was agreed upon. The interview questionnaires were sent to participants electronically in advance to allow for review and preparation. Two separate questionnaires were used, one for food fortification and another for supplementation programs (Appendix 2).

Most interviews took between one and one and one half hours. Interviewers noted that survey participants had taken the time to prepare their answers carefully and showed interest and excitement of being part of this process. A few interviewees (less than 5) sent written electronic answers before their interviews which permitted more in depth questions by phone. The main reasons for requesting electronic versions of the questionnaires were inadequate phone communications and running out of time at the end of the interview. One interview was conducted in Spanish and then translated upon transcription of results.

### ***Data Capturing and Analysis***

Responses to all questions were handwritten and then transcribed by the interviewer. Responses were analyzed using content analysis to develop coding categories and then coded and tabulated. A qualitative analysis of interview responses was undertaken by identifying common barriers and

enablers in the start-up and implementation of the programs selected, and summarizing underlying causes and strategies related to the barriers and enablers reported. Food fortification and supplementation programs were reviewed and analyzed separately.

Besides collecting information based on open questions, the survey team identified a number of immediate potential barriers and enablers, from published and unpublished reports (1-11), which could directly constraint the implementation of micronutrient programs and asked participants whether these acted as barriers or enablers in the implementation of their programs. Interviewees were then prompted to identify the underlying causes to the barriers and enablers mentioned, as well as indicate the strategies that were used to overcome the mentioned barriers.

Coded responses to open questions were tabulated and a score of 1 was given to each barrier and enabler every time they were mentioned by an interviewee. Total scores were added for each barrier and enabler and the median of the total scores was calculated. The median was used as a cut-off point to determine whether a barrier was major or minor. Major barriers for supplementation programs were identified as being mentioned by 4 or more interviewees. Minor barriers were identified as being mentioned by less than 4 interviewees. Major barriers for food fortification programs were identified as being mentioned by 3 or more interviewees. Minor barriers were identified as being mentioned by less than 3 interviewees, based on the total median scores.

Prompted questions regarding barriers and enablers were scored based on a scale of 1 to 5. If the interviewee identified a program element or component as a strong barrier it was given a score of 1, as a moderate barrier a score of 2, as neither a barrier nor enabler a score of 3, a moderate enabler a score of 4, and a strong enabler a score of 5. If the element or component was not applicable it was given a score of 0. Total scores for each element were added and the median of the total scores was calculated to use as cut-off point to determine whether an element or component should be categorized as a barrier or enabler.

For prompted questions, barriers for supplementation programs were identified as having a total score of 47 or less. Enablers were identified as having a total score of more than 47. Barriers for food fortification programs were identified as having a total score of 15 or less. Enablers were identified as having a total score of more than 15. In addition, frequencies were calculated for number of times an element was given as score of 1, 2, 3, 4 or 5. Frequencies were then used to calculate the proportion of total interviewees that identified a particular element as a barrier or enabler.

Common barriers and enablers as mentioned by participants, from prompted and unprompted questions, were grouped and underlying causes and strategies were recorded for each barrier and enabler.

### ***Results Reporting***

Interview results are presented in the **Survey Findings** section of this report. Bar charts were used to illustrate the number and percent of responses to prompted and unprompted questions, based on the aforementioned scoring criteria.

Tables were used to summarize barriers, underlying causes and strategies, in addition to enablers and related underlying causes, in the implementation of supplementation and food fortification programs surveyed (Appendix 1).

Finally, specific experiences shared by survey participants in the start-up and implementation of the selected fortification and supplementation programs, were summarized and recorded.

## Survey Findings

### **What are the barriers common to the initiation of food fortification, supplementation and integrated programs?**

Food fortification and supplementation programs are different in the way they are designed, implemented and monitored. However, this survey assisted in the identification of common themes that relate to potential barriers in the initiation and implementation of these programs.

The most commonly mentioned barriers at initiation related to:

- Lack of adequate knowledge of the population regarding the importance and prevalence of micronutrient deficiencies
- Lack of overall support and interest on these programs from ministries of health and other government departments
- Absence of an adequate nutrition policy framework for all micronutrient interventions, and
- Lack of resources to implement a nutrition or micronutrient policy when available.

### **What are the strategies used to overcome those common barriers?**

Among respondents, common strategies to overcome these barriers were also identified. These apply to supplementation, fortification, and integrated nutrition programs.

The most common strategy mentioned is the *formation of a national committee or alliance on nutrition, micronutrients or food fortification*. Such alliances or committees are inclusive and invite multiple international and local stakeholders and decision-makers to discuss issues related to the public health importance of MN deficiencies in their countries, advocate and raise awareness on the need to address these deficiencies, agree on appropriate program and technical guidelines, and operate as an overall forum for discussion at country-level. Other strategies to overcome common obstacles during initiation and implementation of programs include the support of international donors and partners in design of nutrition policies and sharing of experiences in other countries and settings.

## **Micronutrient Supplementation Programs (vitamin A, iron, zinc, micronutrient powers and integrated programs)**

### **What are the barriers and strategies specific to the *start-up* of supplementation programs?**

Interviewees identified the following as major barriers (n>4) related to the start-up of supplementation programs. All barriers mentioned are included in Figure 1.

- Inadequate supply and delivery of supplements
- Lack of adequate nutrition policies at country-level
- Lack of adequate program guidelines in the delivery of micronutrient programs

- Lack of overall support from ministries of health and other government ministries and agencies
- Lack of adequate message design and program communications strategies

*Inadequate supply and delivery of supplements* was the most often mentioned, with 9 out of 16 respondents noting it as a barrier. This barrier's underlying cases mainly relate to delays in the arrival of supplies at the start of programs, changing or unclear international guidelines regarding micronutrient composition, dose and frequency of supplements (e.g. for micronutrient powders), lack of adequate government funding and capacity of officials to procure and manage supplies. Interviewees mentioned strategies to overcome these barriers the use of international technical assistance on supplies management and logistics, advocacy to obtain donor support in addition to government funding for the procurement of supplies, and conducting formative research before the start of the program. Problems with supplies and delivery of supplements are a barrier that is present at the initiation phase and also during the implementation of the surveyed programs.

Another major barrier mentioned by interviewees is the *lack of adequate nutrition policies* at country level. This affects the political commitment and support of ministries of health towards the implementation of micronutrient programs. The most common strategy noted to overcome this barrier is the formation of an intersectorial national committee or alliance on micronutrients. The support from international partners was also mentioned as a key strategy for overcoming these barriers. The former two strategies were also useful in dealing with *lack of adequate programming guidelines*.

Continued and intensive advocacy, the use of PROFILES<sup>1</sup> approach for nutrition advocacy, seeking support and assistance from government champions, and open communications with scientific, medical and political stakeholders at national and provincial level, have assisted in increasing government support for nutrition in general and micronutrients in particular.

Other strategies mentioned by respondents useful in overcoming barriers at the start-up of programs is to have flexible timelines to allow for possible delays in the approval of programs and guidelines, arrival of program funding, and the procurement of supplies.

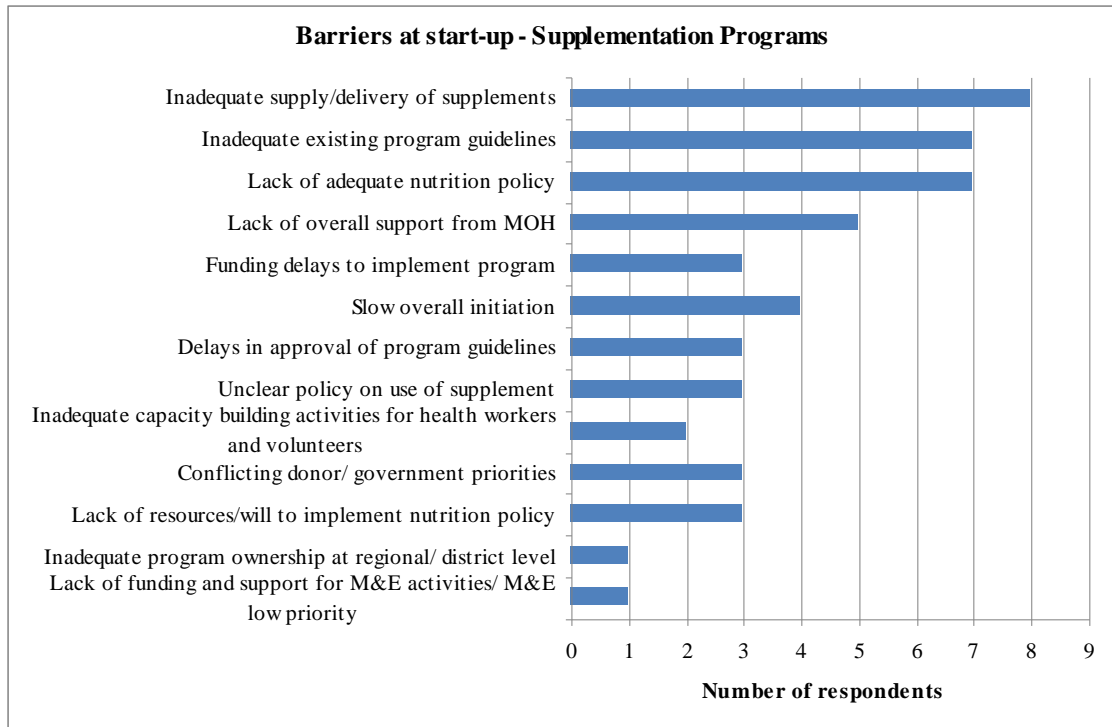
Less commonly (n<4) mentioned barriers in the start-up of programs surveyed, included:

- Lack of motivation from communities to participate in the program
- Inadequate capacity building activities for health workers and community health volunteers
- Conflicting donor and government priorities

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<sup>1</sup> For further information on PROFILES see Burkhalter BR; Aguayo VM; Diene SM; Parlato MB; Ross JS, PROFILES: a data-based approach to nutrition advocacy and policy development. Arlington, Virginia, Partnership for Child Health Care, Basic Support for Institutionalizing Child survival [BASICS], 1998. viii, 44 p. (Technical Report USAID Contract No. HRN-C-00-93-00031-00).

**Figure 1 - Barriers at Start-Up of Supplementation Programs (unprompted, n=16)**



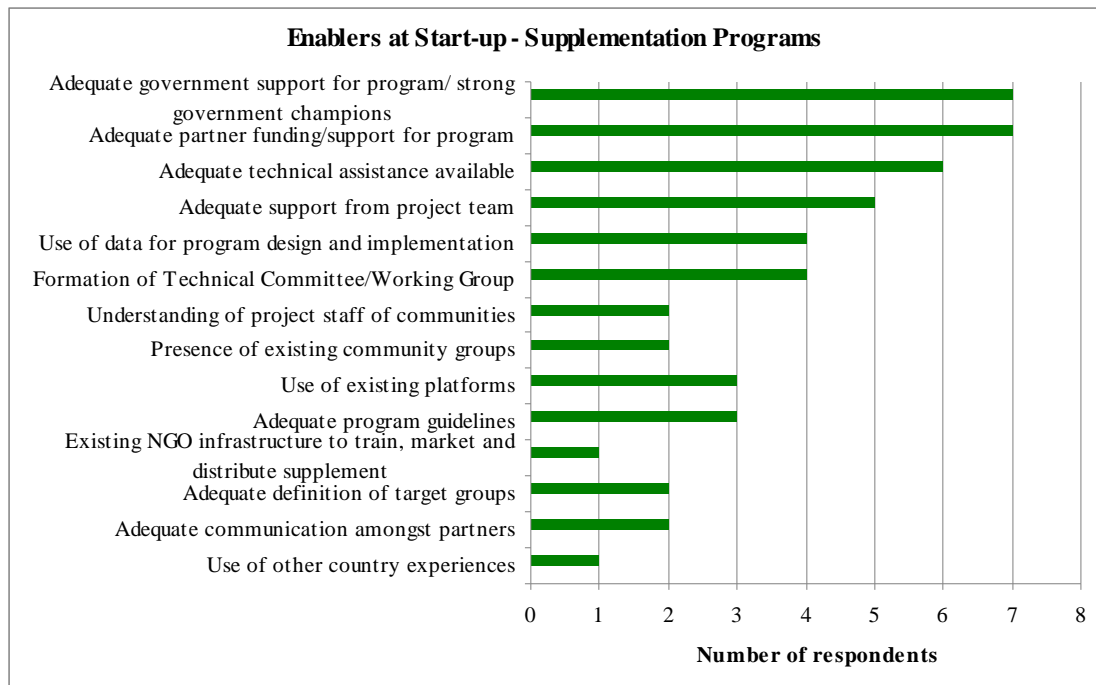
Strategies to overcome these include working with existing community groups and structures to motivate and mobilize communities, work with local non-governmental organizations and community-based organizations to promote incentives at the start of the program and follow-up with intensive social mobilization and educational messages, use of training of trainers to maximize use of capacity building activities and ensure knowledge reaches grass-root level workers and volunteers.

**What are the enablers specific to the *start-up* of supplementation programs?**

The major factors that were mentioned as facilitating the start-up of the programs surveyed were:

- Adequate partner funding and availability of technical assistance for the program
- Adequate government support for the program with the assistance of strong government champions
- Formation of a technical committee or national alliance

**Figure 2 - Enablers at Start-up of Supplementation Programs (unprompted, n=16)**



**What are the barriers, underlying causes and strategies used, specific to the *implementation* of supplementation programs?**

Classification of a program element or component as a barrier or enabler is not a zero-sum or mutually exclusive exercise. This depends on the type of program, and its relative context. Throughout the interview respondents had the opportunity to mention the extent to which particular element was a barrier or enabler in the implementation of their respective programs (Figure 3).

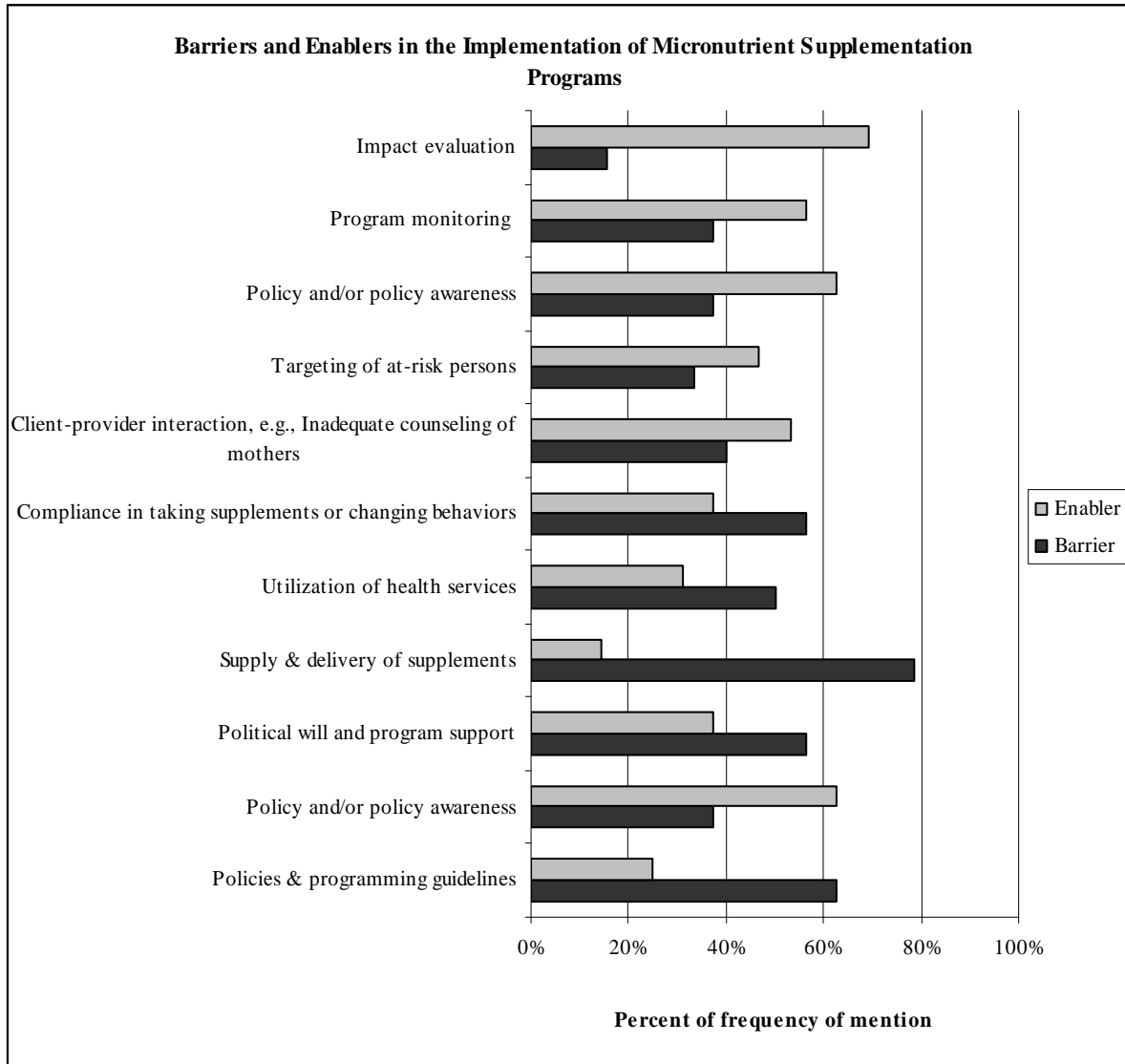
Similar to the initiation stage, *lack of adequate supplies and delivery of supplements* is the most mentioned barrier (79%) during the implementation of the micronutrient supplementation programs surveyed. Interviewees related this barrier to delays in arrival of supplies at the start of programs, inadequate supply management systems, inadequate distribution systems and channels, insufficient knowledge of government officials to procure adequate levels of supplies, lack of sufficient funding to procure supplies, and general administrative and bureaucratic problems in the supply management system.

Some of the strategies mentioned by respondents that have been successful in overcoming barriers related to the supply and delivery of supplements relate to advocacy on the importance of micronutrient deficiencies at the government level and for the mobilization of government resources, continued international support from donors and partners in the procurement of supplies and also in the improvement of supply management systems, and regular program monitoring at the community level to identify supply gaps and problem-solve at the district and provincial levels.

*Inadequate policies and programming guidelines* and *lack of political will and program support* were also mentioned by respondents as major barriers (63% and 56%, respectively). Interviewees noted that the lack of adequate guidelines is caused by several factors including disagreement among partners on specific guidelines and how to apply them, lack of overall agreement on how to deliver MN

programs at community-level, and insufficient support for micronutrient programs at the government level. Common strategies to overcome these barriers include integration of micronutrient programs into other existing platforms, creation of a technical advisory group, continued advocacy and technical assistance from international partners and donors (Table 2).

**Figure 3 - Barriers and Enablers Specific to the Implementation of Supplementation Programs (prompted, n=16)**



Another barrier mentioned by interviewees relates to *poor compliance or adherence in taking supplements and changing behaviors* (57%). The main causes associated with this barrier are low awareness and understanding of micronutrient deficiencies among mothers and target populations and the fact that program managers sometimes do not “speak the same language” as communities. Intense behavior change and communication (BCC) activities, use of existing communication projects to increase awareness of mothers and communities on the importance of controlling micronutrient deficiencies, and carrying out formative research to understand possible obstacles to compliance, were the strategies used by respondents to overcome this barrier.

*Low utilization of health services* and *poor client-provider interaction* were mentioned as other important barriers (51% and 40%, respectively). Interviewees confirmed several known causes of poor quality of and access to health services, including long distances and high cost of transport for population to get to health centers, low demand for nutrition services, poor skills and knowledge of health staff on how to deliver micronutrient program services, low motivation and remuneration of health workers at all levels. Strategies mentioned by respondents to overcome these two barriers include the use of mentors to monitor health workers regularly and identify problems, suggest solutions and provide overall program support. Other strategies include continuous capacity building and re-training of staff and use of other existing service delivery platforms and convergent social mobilization activities to maximize use of financial and human resources.

### **What are the enablers related to the *implementation* of supplementation programs?**

Targeting of at-risk persons (45%), policy awareness (62%), program monitoring (56%) and impact evaluation (67%) were some of the key enablers mentioned by implementers as facilitating the implementation of their programs (Figure 3). The reasons why these factors were categorized as enablers relate to adequate design of the program and communications strategy focusing on groups at risk of micronutrient deficiencies, reinforcement of messages regarding control of deficiencies at different contacts between communities and programs, experience with other existing micronutrient interventions, existing data to demonstrate prevalence of deficiencies in target populations, and strong advocacy at all levels (Table 3).

In relation to program monitoring and impact evaluation, being part of effectiveness studies, program implementers being aware of the importance of monitoring and evaluation, having adequate knowledge on how and what to monitor, and having support from international partners in collaboration with local implementers, were mentioned as the main causes of these factors being judged as enablers (Table 3).

## **Food Fortification Programs**

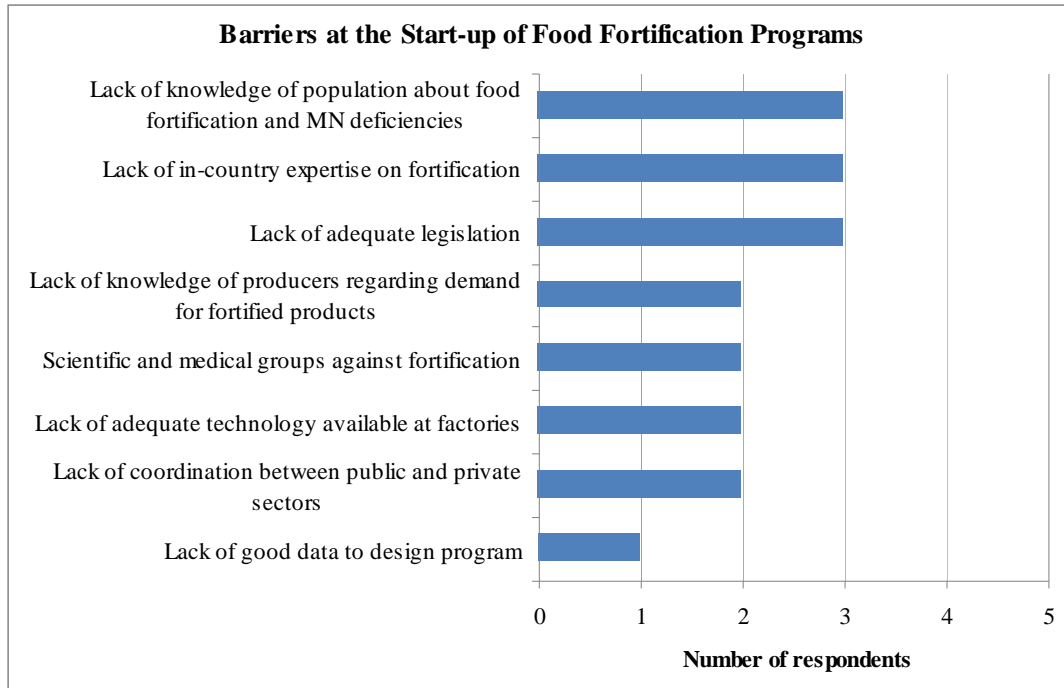
### **What are the barriers and strategies used, specific to the *start-up* of fortification programs?**

At the program initiation phase, food fortification program implementers surveyed identified three major barriers (3 or more respondents mentioned these barriers) which constrained the start-up of their programs. These are *lack of adequate legislation*, *lack of in-country expertise on food fortification*, and *lack of knowledge of population about food fortification and micronutrient deficiencies* (Figure 4). These barriers have been identified as being caused by several factors; a lack of awareness among policy makers and program planners of the seriousness and magnitude of the problem, a lack of institutional leadership and coordination within governments on vitamin A, iron and iodine deficiencies (1), and other competing threats to maternal and child health.

Other minor barriers and related strategies identified by interviewees as affecting the initiation of food fortification programs relate to the following. First, the *lack of adequate capacity and technology at industry* level to fortify, accompanied by limited knowledge of producers with regards to demand for fortified products. Survey participants identified as common strategies to overcome this barrier, advocacy of technical groups in-country to mediate between ministries of health and the industry,

support from international donors with technical assistance, availability of grants to update and purchase equipment, and assistance in the procurement of the fortificants.

**Figure 4 - Barriers specific to the start-up of food fortification programs (unprompted, n=5)**



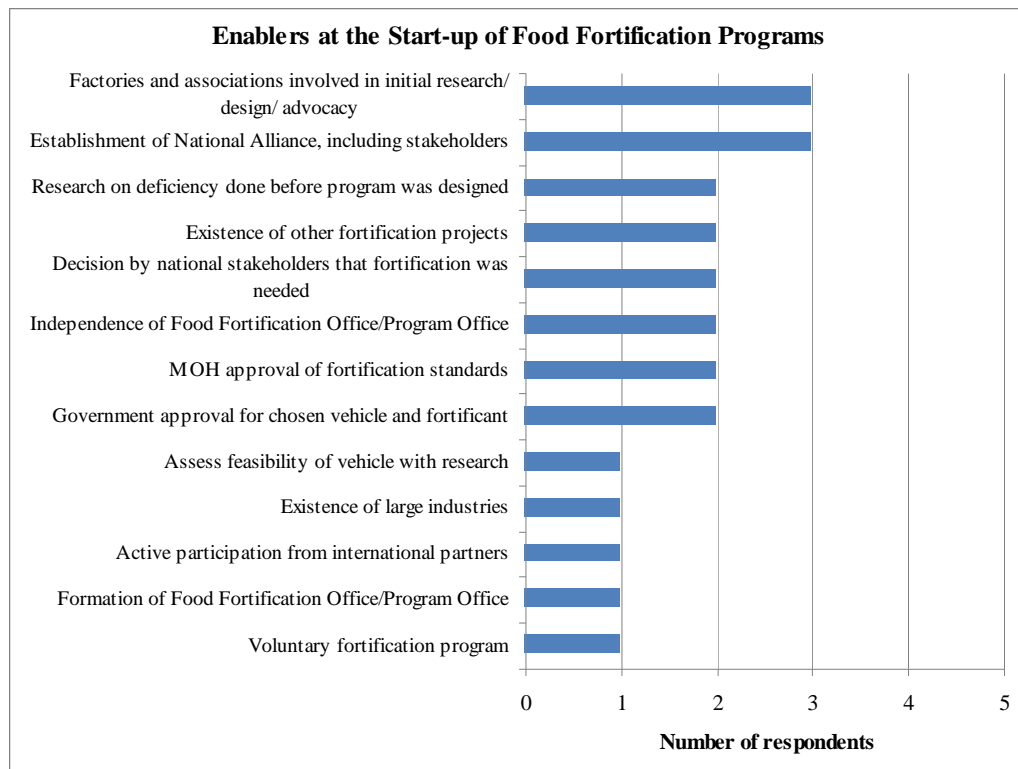
Second, a *lack of adequate coordination between public and private sectors*, which has been addressed through the formation of national alliances and technical groups for food fortification which include all government sectors, industry and scientific community representatives. In addition, the use of donor supported advocacy to raise awareness of MN deficiencies at all levels, was also noted as a strategy to overcome this barrier.

Third, a *lack of adequate data on food consumption patterns of the population* to assist in the selection of food vehicles. This is an area where interviewees did not mention strategies or possible ways this could be addressed. Survey participants expressed awareness on the low priority that collection of food consumption data has in some countries, the technical and scientific difficulties in obtaining such data, and the lack of available financial and technical resources needed to obtain reliable data on food consumption patterns of populations.

#### **What are the enablers specific to the *start-up* of fortification programs?**

The important enablers noted by interviewees important to the initiation of food fortification programs are closely related to the strategies mentioned in the previous section. These are the establishment of a national alliance or technical committee for food fortification, and the involvement of factories/industry and industry-related associations in the design and advocacy of these programs (Figure 5).

**Figure 5 - Enablers related to the start-up of food fortification programs (unprompted, n=5)**



**What are the barriers, underlying causes and strategies used specific to the *implementation* of fortification programs?**

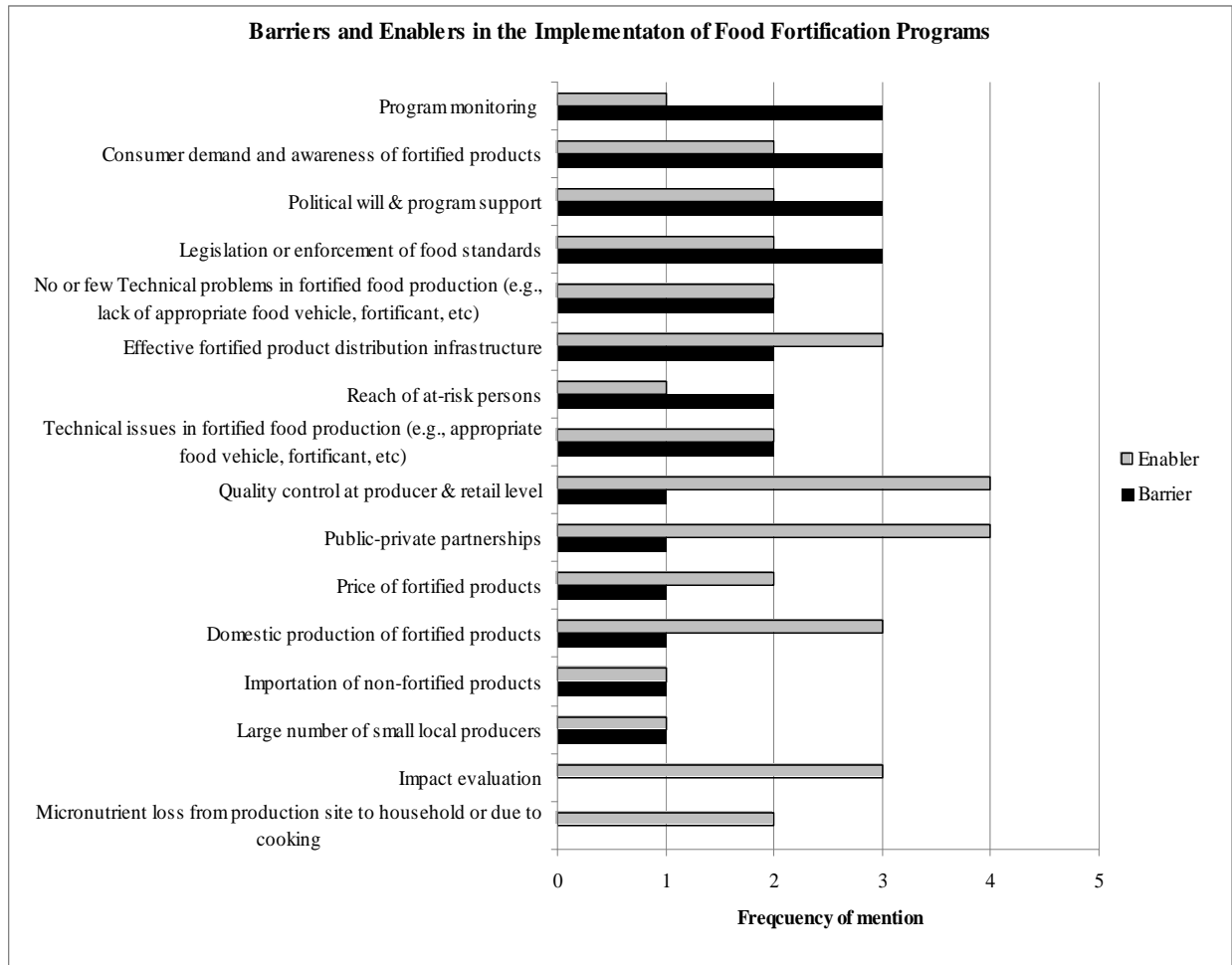
Similar to supplementation programs, the categorization of a program element or component as a barrier does not exempt it from also acting as an enabler in a different country setting or type of fortification program. For example, interviewees noted that in countries where food fortification is a new intervention *consumer demand for fortified products* may be low and act as a barrier due to a lack of knowledge from the population on the benefits and availability of these products. On the other hand, in a setting where other fortified products are already on the market, the population is more likely to be familiar with these products and market and demand for new ones may already exist, and therefore is judged as an enabler during the implementation of the program. Other similar cases are shown in Figure 6.

Besides *low consumer demand for fortified products*, survey participants identified *lack of program monitoring*, *lack of political will and program support*, and *lack of adequate legislation and enforcement of standards* as other major barriers in the implementation of food fortification programs. The main causes that interviewees mentioned as related to *lack of program monitoring* are associated with absence of guidelines for monitoring, quality assurance and control at industry level, insufficient financial and human resources allocated to program monitoring, and low awareness of the importance and need for adequate quality assurance and control. Some of the strategies that interviewees mentioned to overcome this barrier are training of inspectors and laboratory staff and increase of overall capacity of government staff (Table 4).

The main causes related to *lack of political will and program support* reported by survey participants include lack of intersectorial coordination between different government ministries (health, finance,

industry, economy, agriculture, and development), insufficient technical knowledge of food fortification at government level, and low priority for the allocation of funding to national programs. Besides the formation of a national alliance for food fortification, other strategies to overcome this barrier include comprehensive research on micronutrient deficiencies and level of fortificant, and sharing of results with government officials.

**Figure 6 - Barriers and enablers specific to the implementation of food fortification programs (prompted, n=5)**



The only strategy mentioned by interviewees to overcome *absence of adequate legislation and enforcement of standards* is the support of international partners in designing standards and laws for food fortification.

**What are the enablers related to the *implementation* of fortification programs?**

The most mentioned enablers among survey participants were *adequate quality control at producer and retail level* and *adequate public private partnerships*. Interviewees attributed the presence of adequate quality control to the existence and implementation of simple guidelines available for producers to

use. In addition, most respondents agreed that existence of strong public-private partnerships is a key element of successful food fortification programs (Table 5).

From the data collected it was not possible to draw conclusions regarding impact evaluation, number of small local producers of fortified products, importation of non-fortified products, either because there was not enough information to judge whether any of these elements were barriers or enablers of the selected programs, or because the element was scored as neither a barrier nor enabler, or not applicable.

## Closing Remarks

The information and ideas summarized in this report are intended to stimulate discussion among country-level implementers of supplementation and fortifications programs on how to address common barriers shared by programs in different countries and types of micronutrients. Our intention is to start this dialogue at the Innocenti Micronutrient Forum Meeting (Florence, Italy, September 22-25, 2008) and have it continue in preparation for the Micronutrient Forum meeting in Beijing 2009 and beyond. We hope that these experiences support program implementers in developing new ways of overcoming barriers and maintaining or enhancing existing enablers.

Upon sharing and discussing the results of this survey first, with country implementers and, second with all three constituencies (country implementers, global partners/donors, and researchers/academics) present at the Innocenti Micronutrient Forum Meeting (Florence, Italy, September 22-25, 2008), meeting participants noted that many of the barriers identified have been part of micronutrient programs for more than 20 years. The group agreed that the micronutrient community including all of its constituencies and stakeholders is now in a position to find solutions once and for all to move the micronutrient community forward. In addition, there was recognition of the need to better integrate all key stakeholders. Finally, the barriers highlighted a need to refocus resources on the key issues facing the micronutrient community today.

Because there are large differences in types of supplementation programs (e.g. universal vitamin A supplementation targeting pre-school age children vs. iron and folic acid supplementation targeting pregnant women), the group recommended that the interview data be reviewed to identify program-specific enablers and inhibitors. Similarly, fortification strategies vary widely, and the analysis would benefit from separating out enabling and inhibiting factors by type of fortification program (e.g. universal salt iodization vs. wheat flour fortification).

Another recommendation was to conduct a similar exercise among global partners and scientists to identify their perceptions of enablers and barriers to (1) securing adequate international and national political support for overcoming implementation barriers and (2) utilization of research findings and methods to overcome and improve implementation barriers.

Further analysis of the experiences synthesized in this report can be done by relating and categorizing the barriers, enablers, underlying causes and strategies to the application of the **Micronutrient Program Assessment Tool**. This could be done by considering the barriers and enablers as part of the program components recommended in the preparatory steps to the use of the tool. This exercise may enhance the description of the programmatic and country contexts in which supplementation and fortification programs exist.

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## Appendix 1 - Tables

**Table 1 - Micronutrient programs surveyed**

Type of Program	Name of Program	Country
<b>Supplementation</b>		
<b>Vitamin A</b>	Enhanced Outreach Strategy (EOS) Ethiopia	Ethiopia
	Nutrition Challenges Project (NCP)	Sri Lanka
	Vietnam Vitamin A Deficiency Control Program	Vietnam
<b>Iron</b>	Nepal Iron Intensification Program (Pregnant women)	Nepal
	Young Child Anemia Control Feasibility Study in India	India
	Multi-State Anemia Control Program for Adolescent Girls in India	India
	Weekly Iron Folate Supplementation (WIFS) for Women in Reproductive Age in SE Asia	Philippines, Vietnam, Thailand
<b>Zinc</b>	SUZY - Scaling Up Zinc treatment for Young children with diarrhea in Bangladesh	Bangladesh
<b>Micronutrient Powders</b>	Supplementation & Micronutrients (SUM) program	Indonesia (Aceh and North Sumatra)
	Home-based Fortification of Complementary Foods with Sprinkles in an Integrated Program to Address Rickets and Anemia.	Mongolia
	Sprinkles Marketing Distribution Program	Kenya
	Let's Feed Our Kids": An Integrated Nutrition Development Program in Northeastern Thailand".	Thailand
<b>Integrated</b>	Honduras, AIN-C/ Complementary Feeding	Honduras
	Essential Nutrition Actions ENA, Madagascar	Madagascar
	"Improving nutrition of women and children: the MICAH program; a micronutrient and health program for Africa".	Multi country

Type of Program	Name of Program	Country
	INHP Program in 8 States in India.	India
	The application of NaFeEDTA fortified soy sauce to control iron deficiency anemia in China	China
<b>Fortification</b>	ECSA Regional Food Fortification Program	Kenya, Uganda, Tanzania, Malawi, Zambia, Lesotho, Swaziland, Zimbabwe, Mauritius, Seychelles
	Sugar Fortification	Guatemala, Honduras, El Salvador
	Universal Salt Iodization	Kosovo
	Flour Fortification - Small Mills	Kyrgyzstan

**Table 2 - Barriers, underlying causes, and strategies in the implementation of supplementation and integrated programs**

Barriers	Underlying causes	Strategies
Inadequate policies & programming guidelines	Few guidelines exists for nutrition programs (e.g. powders) and not easily accessible.	Creation of Technical Advisory Group
	Disagreement among partners on specific program guidelines and how to apply them at household level	Integration of IFA and Vitamin A interventions in the life-cycle approach of child health and capacity building modules and BCC materials incorporated micronutrient supplementation interventions
	Potential negative side-effects affect the design of adequate policies and guidelines	
	Lack of overall agreement on HOW to deliver MN programs at community level	
Lack of policy and/or policy awareness	Lack of participation of national stakeholders in international meetings	Sought advice from international experts, MOH and other local decision-makers and stakeholders
		Development of national committee for MNs
		Use of government champions
		Use of PROFILES for advocacy
Lack of political will and program support	Nutrition not a priority for MOH	Strong advocacy
	People not familiar with MNs, particularly powders, which are new.	Partners and implementers speaking with one voice
	Lack of funds to implement existing nutrition policies	Preparation of strategic plans for MNs and ways to deliver them.
	Changing donor priorities	
	Competing health priorities	
	Advocacy not evidence-based	
Inadequate supply & delivery of supplements	Delay in arrival of supplies for start of program - inadequate training and formative research	Have support from donors and international partners for supply of micronutrient supplements
		Advocacy with government to mobilize internal resource allocation for procurement of supplies
	Changing/unclear international guidelines regarding supplies (i.e. powders)	Make investments for improving delivey of supplements to program sites (e.g. supporting transportation)
	Inadequate distribution due to fuel and resource shortages	Continued international/donor support for supplies
	Inadequate supply management systems/ lack of adequate transport and delivery	Implement close supervision and follow-up at every step of the supply chain
	Lack of adequate amounts of supplies	Regular supply tracking at district and sub-district level.

Barriers	Underlying causes	Strategies
	Lack of clarity in program guidelines on dose and frequency of supplement	Regular program monitoring at community level to identify supply gaps and formally bringing the issues to the district and state level decision-making forums for streamlining the supplies.
	Administrative/bureaucratic problems in procurement and management of supplies	
	Inadequate capacity of government officials on procurement of supplies	
	Lack of sufficient government funding to purchase supplies	
Low utilization of health services	Long distances, high costs of transport, closing of health centers	Letter from central to provincial levels to increase support
		Use of mentors to monitor health workers regularly and identify problems, suggest solutions and provide overall support
	Frequency of contacts depends on client-demand	Organizing convergent service delivery in the form of Monthly nutritional health days in each community. Institutionalizing tracking and preparation of due-lists for services
	Poor skills of health staff/ poor facilities/ lack of adequate remuneration of staff/ inadequate capacity of health workers to counsel mothers	Re-training of staff
Poor compliance in taking supplements or changing behaviors	Low awareness and understanding of MN deficiency amongst target populations	Formative research carried out to understand possible obstacles to compliance
		Use of existing communications projects to increase education and awareness of mother and families
	Hard to access some areas and minority groups	Marketing of supplements directly to mothers
Poor client-provider interaction, e.g., Inadequate counseling of mothers	Inadequate relationships between health center personnel and population	Increase awareness of population on nutrition through mass media
	No incentives for people to go to health centers	
	Lack of well trained health staff/ community-level workers	Integrating food rations with the health services to act as incentives to attract most vulnerable population.
	Lack of knowledge of health workers of severity of deficiency and need for control	Training of health workers
	Lack of motivation among health staff	Training of health workers
	Lack of adequate communication materials and messages for counseling	Training of health workers

**Table 3 - Enablers and underlying causes in the implementation of supplementation and integrated programs**

Enabler	Underlying causes
Adequate targeting of at-risk persons	Community understanding of importance of MN deficiencies in target age groups
	Targeting part of program approach/ identified at design stage of program
	Messages reinforced at difference contacts
Strong policy and/or policy awareness	Relative high awareness on MN deficiencies
	Experience with other existing MN programs
	Existing data to demonstrate prevalence of deficiencies amongst beneficiaries
	Strong/intense advocacy at all levels
Adequate Program monitoring	Programs part of effectiveness studies
	Program implementers aware of importance of programming monitoring
	Adequate technical knowledge of program implementers on how to monitor
	Adequate resources assigned to monitoring
	Data available can be incomplete or unreliable
	Extensive training of health workers on how to and importance of monitoring
Adequate Impact evaluation	Programs part of effectiveness studies, funding and resources prioritized for measuring impact
	Unclear indicators on MN program impact
	Existence of national surveys on nutrition and MN deficiencies
	Adequate support from international partners in collaboration with local implementers

**Table 4 – Barriers in the implementation of food fortification programs; underlying causes and strategies**

Barriers	Underlying causes	Strategies
Lack of legislation or enforcement of food standards	Inadequate updating of regulations and standards	
	Lack of government capacity (human and financial) to enforce standards)	Support from international partners in developing standards and laws
Lack of political will & program support	Lack of intersectorial coordination between different ministries (health, agriculture, finance, development)	Establishment of National Alliances for Food Fortification
	Micronutrient deficiencies are not priority and compete with other threats to maternal and child health	Sharing of program related information in public venues and to new government officials
	Insufficient technical knowledge on food fortification at MOH level	Comprehensive research on deficiency/ level of fortificant needed/ results reported to MOH
	Lack of financial resources to support national program	
Large number of small local producers	Lack of industrial and financial capacity to fortify products and update means of production	
High importation of non-fortified products	Lack of adequate surveillance at import sites	
	Lack of government capacity to monitor borders	
	Lack of adequate legislation for importation of fortified products	Drafting of food fortification legislation
Inadequate domestic production of fortified products	Lack of interest from producers to fortify	Capacity building of producers in benefits of products and message transfer to population
	Absence of adequate food fortification legislation	Drafting of food fortification legislation
	Low demand for fortified products from population	Advocacy to population on benefits of fortified products
	Lack of industrial capacity and knowledge on technical aspects of fortification	
	Lack of data on consumption of staples	
	High cost of production	
Low consumer demand and awareness of fortified products	Difficult to change demand and behaviors	Intensification of social marketing and government support
		Advocacy to population on benefits of fortified products
Increased/ inappropriate price of fortified products	Lack of consumer knowledge of micronutrient deficiencies	
	Lack of consumer knowledge on benefits of fortification and micronutrients	
	Inadequate pricing of product	
	Low investment and governments from donors on social marketing	

<b>Barriers</b>	<b>Underlying causes</b>	<b>Strategies</b>
	Industry publicizes product but not health benefits	
	Lack of knowledge transfer on micronutrient deficiencies and benefits from government to industry	
Inadequate program monitoring	Inadequate/lack of guidelines for quality assurance and control	Definition of procedures
	Lack of enforcement of guidelines and legislation for quality assurance and control	Training of inspectors and laboratory staff
	Insufficient resources allocated to program monitoring	Increase capacity building of government staff
Technical problems in fortified food production (e.g., lack of appropriate food vehicle, fortificant, etc.)	Lack of adequate food consumption data to decide on vehicle	
	Lack of adequate technology available at industry level	
	High cost of fortificant (East Africa)	
At-risk persons being difficult to reach	Lack of intense communications and social marketing in hard to reach areas	
	Fortified product expensive in rural areas/ inaccessible due to price	
	Hard to reach markets not sufficiently developed	Food Fortification Office/Program Office advocating with producers to intensify marketing in rural areas
	Geographical barriers for products to reach population	

**Table 5 - Enablers in the implementation of food fortification programs**

Enablers	Underlying causes
Strong public-private partnerships	Prior awareness that public-private partnerships are key prerequisite for food fortification program success
Presence of effective fortified product distribution infrastructure	Importers/producers use distributions systems that already exist for other products
Adequate domestic production of fortified products	Existence of mature industry for staples
No or few Technical problems in fortified food production (e.g., lack of appropriate food vehicle, fortificant, etc)	Identify potential problems at the design stage of the program
	Discuss and agree on potential technical issues at international and national meetings
	Use of nutritional survey data to inform adequate selection of food vehicle
	Donor support in the procurement of fortificant
Low micronutrient loss from production site to household or due to cooking	Adequate quality control and monitoring
	Fortification of product done as close to consumption as possible
	Adequate documentation of losses
	Industry/producers comply with existing standards
Good quality control at producer & retail level	Simple guidelines available for use by producers
	Increased interest of producers on quality control
Adequate impact evaluation	Judged as an enabler based on need, more than actual impact evaluation and reporting
	Demonstrate progress by frequent surveys and international recognition of success of programs (USI)

## Appendix 2 - Survey Questionnaires

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### Barriers & Enablers of Micronutrient *Fortification* Programs Phone Interview Form

Interviewer: _____	Date: _____
Interviewee: _____	Organization: _____
Type of Program: _____	

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#### **SECTION A: INTRODUCTION**

Thank you very much for agreeing to speak with us today. I am [*name and title of interviewer*].

As you already know, the Micronutrient Forum is convening the Innocenti Meeting to examine the evidence on implementation and impact of large-scale micronutrient programs in developing countries and to develop guidance to country-level managers and program implementers on how to effectively deliver these programs. In preparation of this meeting, a systematic review of evidence on the implementation and impact of large-scale micronutrient programs is currently being conducted. As part of this effort, we are trying to identify and synthesize information on barriers which constrain and enablers which facilitate the successful start-up and implementation of various micronutrient programs in different country settings. This information will be essential in helping us reach a stronger consensus on the most appropriate and practical guidance to micronutrient program implementers.

The primary goal of the phone interview today is to seek your views and advice on two main areas: 1) the major barriers and enablers you have had during the start-up and implementation of the [*type of micronutrient program*] you have managed in the past and 2) strategies you have used or would suggest to use to overcome the barriers experienced. The interview will take approximately one hour.

All individual answers will be kept confidential. The summary findings of the barriers and enablers without individual attribution will be synthesized, disseminated and discussed at the Innocenti meeting. All interviewees will be acknowledged in the summary report.

#### **SECTION B: PROGRAM INFORMATION (5 MINUTES)**

As mentioned in our previous email correspondence, among the various micronutrient programs you have managed, the phone interview today will focus mainly on your experience in [*type of micronutrient program*]. To start off, I would first like to ask you some general information on the [*type of micronutrient program*] you have implemented.

1. Please give us a brief description of all the [*type of micronutrient program(s)*] you have implemented in [*name of the country*] or in other countries. (e.g., country, population targeted, coverage, implementing organization, impacts achieved, sustainability etc)

#### **SECTION C: BARRIERS & ENABLERS – PROGRAM START- UP (10 MINUTES)**

2. Please tell us briefly about how the [*type of micronutrient program(s)*] you have implemented in [*name of the country*] was started. (e.g., national surveys, national workshops, establishment of technical committees, assistance of bilateral & international agencies, etc)

3. Were there any barriers during the start-up of the program(s)? If yes, what were the barriers? Barriers refer to factors which you would identify as having restrained the successful and effective start-up of the program. For example, lack of policy or policy awareness can be important potential barriers.
4. Do you recall any particular strategies used to overcome these barriers?
5. Do you recall any particular enablers of the start-up of the program? If yes, what were the enablers? Enablers refer to factors which you would identify as having facilitated the successful and effective start-up of the program. For example, strong policy awareness or political will may be important potential enablers of the start-up of the program.

**SECTION D: BARRIERS – PROGRAM IMPLEMENTATION (20-30 MINUTES)**

In this section, I would like to discuss the barriers and enablers you have had during the *implementation phase* of these programs. Again, barriers and enablers refer to factors which constrained and facilitated the implementation of the programs, respectively.

6. While you were implementing [*type of micronutrient program(s)*] in [*name of the country*], what were the major barriers to effective implementation of the program?
7. While you were implementing [*type of micronutrient program(s)*] in [*name of the country*], do you recall having any specific enablers of the implementation of the program? If yes, what were the enablers?
8. The following table lists a number of potential barriers or enablers of micronutrient program implementation which were identified from published and unpublished program reports. These are all *immediate* potential barriers or enablers which could *directly* constrain or facilitate the implementation of your program. As I read each immediate barrier or enabler, please tell me whether it was a strong or moderate barrier or enabler in your program. If it is not applicable to your program, please indicate so. Following this question, we will ask you the underlying causes of each immediate barrier or enabler you experienced.

	<b>Barriers / Enablers</b>	<b>Strong Barrier</b>	<b>Moderate Barrier</b>	<b>Neither Barrier nor Enabler</b>	<b>Moderate Enabler</b>	<b>Strong Enabler</b>	<b>Not Applicable</b>
8a.	• ( <i>Lack of or Strong</i> ) legislation or enforcement of food standards						
8b.	• ( <i>Lack of or Strong</i> ) political will & program support						
8c.	• ( <i>Lack of or Strong</i> ) public-private partnerships						
8d.	• ( <i>Low or Adequate</i> ) domestic production of fortified products						
8e.	• ( <i>High or Low</i> ) importation of non-fortified products						
8f.	• ( <i>Large or small number of</i> ) small local producers						
8g.	• ( <i>Many or No</i> ) Technical problems in fortified food production (e.g., lack of						

	appropriate food vehicle, fortificant, etc)						
8h.	• At-risk persons being ( <i>difficult or easy</i> ) to reach						
8i.	• ( <i>Increased or Appropriate</i> ) price of fortified products						
8j.	• ( <i>Lack or Presence of</i> ) effective fortified product distribution infrastructure						
8k.	• ( <i>High or Low</i> ) micronutrient loss from production site to household or due to cooking						
8l.	• ( <i>Inadequate or Adequate</i> ) program monitoring						
8m.	• ( <i>Inadequate or Adequate</i> ) impact evaluation						
8n.	• ( <i>Low or High</i> ) consumer demand and awareness of fortified products						
8o.	• ( <i>Poor or Good</i> ) quality control at producer & retail level						

9. What do you think were the underlying causes of the barriers or enablers you just mentioned?

	Barriers / Enablers	Underlying Causes
9a.	• ( <i>Lack of or Strong</i> ) legislation or enforcement of food standards	
9b.	• ( <i>Lack of or Strong</i> ) political will & program support	
9c.	• ( <i>Lack of or Strong</i> ) public-private partnerships	
9d.	• ( <i>Low or Adequate</i> ) domestic production of fortified products	
9e.	• ( <i>High or Low</i> ) importation of non-fortified products	
9f.	• ( <i>Large or small number of</i> ) small local producers	
9g.	• ( <i>Many or No</i> ) Technical problems in fortified food production (e.g., lack of appropriate food vehicle, fortificant, etc)	
9h.	• At-risk persons being ( <i>difficult or easy</i> ) to reach	
9i.	• ( <i>Increased or Appropriate</i> ) price of fortified products	
9j.	• ( <i>Lack or Presence of</i> ) effective fortified product distribution infrastructure	

9k.	• ( <i>High or Low</i> ) micronutrient loss from production site to household or due to cooking	
9l.	• ( <i>Inadequate or Adequate</i> ) program monitoring	
9m.	• ( <i>Inadequate or Adequate</i> ) impact evaluation	
9n.	• ( <i>Low or High</i> ) consumer demand and awareness of fortified products	
9o.	• ( <i>Poor or Good</i> ) quality control at producer & retail level	

10. Are there any other barriers or enablers of the implementation of the program which we have not talked about?
11. Among all the barriers you just mentioned, which do you think were the three most important barriers to effective implementation of your program?
12. Among all the enablers you just mentioned, which do you think were the three most important enablers that facilitated the implementation of your program?

**SECTION E: STRATEGIES TO OVERCOME BARRIERS (20 MINUTES)**

13. Do you recall any specific strategies used in your program to overcome each of the barriers mentioned above?

	<b>Barriers</b>	<b>Strategies Used</b>
13a.	• Lack of legislation or enforcement of food standards	
13b.	• Lack of political will & program support	
13c.	• Lack of public-private partnerships	
13d.	• Low domestic production of fortified products	
13e.	• High importation of non-fortified products	
13f.	• Large number of small local producers	
13g.	• Many technical problems in fortified food production (e.g., lack of appropriate food vehicle, fortificant, etc)	
13h.	• At-risk persons being difficult to reach	
13i.	• Increased price of fortified products	
13j.	• Lack of effective fortified	

	product distribution infrastructure	
13k.	• High level of micronutrient loss from production site to household or due to cooking	
13l.	• Inadequate program monitoring	
13m.	• Inadequate impact evaluation	
13n.	• Low consumer demand and awareness of fortified products	
13o.	• Poor quality control at producer & retail level	

14. In addition to the strategies used in your program, are there any other potential strategies which you think may help overcome the following barriers?

	Barriers	Potential Strategies
14a.	• Lack of legislation or enforcement of food standards	
14b.	• Lack of political will & program support	
14c.	• Lack of public-private partnerships	
14d.	• Low domestic production of fortified products	
14e.	• High importation of non-fortified products	
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14m.	• Inadequate impact evaluation	
14n.	• Low consumer demand and awareness of fortified	

	products	
14o.	• Poor quality control at producer & retail level	

15. Do you have any other comments or thoughts to share?

*Thank you very much for your contribution to the phone interview today!*

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**Barriers & Enablers of *Micronutrient (supplementation, powders and integrated) Programs*  
Phone Interview Form**

Interviewer: _____	Date: _____
Interviewee: _____	Organization: _____
Type of Program: _____	

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**SECTION A: INTRODUCTION**

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	Immediate Barriers / Enablers	Strong Barrier	Moderate Barrier	Neither Barrier nor Enabler	Moderate Enabler	Strong Enabler	Not Applicable
8a.	• ( <i>Lack of or Strong</i> ) policy and/or policy awareness						
8b.	• ( <i>Lack of or Strong</i> ) political will & program support						
8c.	• ( <i>Inadequate or Adequate</i> ) policies & programming guidelines						
8d.	• ( <i>Inadequate or Adequate</i> ) supply & delivery of supplements**						
8e.	• ( <i>Low or Frequent</i> ) utilization of health services						
8f.	• ( <i>Poor or Good</i> ) client-provider interaction e.g., ( <i>Inadequate or Adequate</i> ) counseling of mothers						

8g.	• ( <i>Poor or Good</i> ) compliance in taking supplements or changing behaviors						
8h.	• ( <i>Inadequate or Adequate</i> ) targeting of at-risk persons						
8i.	• ( <i>Inadequate or Adequate</i> ) Program monitoring						
8j.	• ( <i>Inadequate or Adequate</i> ) Impact evaluation						

**\*\* Not applicable to complementary / breastfeeding counseling program**

9. What do you think were the underlying causes of the barriers or enablers you just mentioned?

	<b>Immediate Barriers / Enablers</b>	<b>Underlying Causes</b>
9a.	• ( <i>Lack of or Strong</i> ) policy and/or policy awareness	
9b.	• ( <i>Lack of or Strong</i> ) political will & program support	
9c.	• ( <i>Inadequate or Adequate</i> ) policies & guidelines	
9d.	• ( <b><i>Inadequate or Adequate</i></b> ) <b>supply &amp; delivery of supplements**</b>	
9e.	• ( <i>Low or Frequent</i> ) utilization of health services	
9f.	• ( <i>Poor or Good</i> ) client-provider interaction; ( <i>Inadequate or Adequate</i> ) counseling of mothers	
9g.	• ( <i>Poor or Good</i> ) compliance in taking supplements or changing behaviors	
9h.	• ( <i>Inadequate or Adequate</i> ) targeting of at-risk persons	
9i.	• ( <i>Inadequate or Adequate</i> ) Program monitoring	
9j.	• ( <i>Inadequate or Adequate</i> ) Impact evaluation	

**\*\* Not applicable to complementary / breastfeeding counseling program**

10. Are there any other barriers or enablers of the implementation of the program which we have not talked about?

11. Among all the barriers you just mentioned, which do you think were the three most important barriers to effective implementation of your program?

12. Among all the enablers you just mentioned, which do you think were the three most important enablers that facilitated the implementation of your program?

**SECTION E: STRATEGIES TO OVERCOME BARRIERS (20 MINUTES)**

13. Do you recall any specific strategies used in your program to overcome each of the barriers mentioned above?

	Immediate Barriers	Strategies used
13a.	• Lack of policy and/or policy awareness	
13b.	• Lack of political will & program support	
13c.	• Inadequate policies & guidelines	
13d.	• <b>Inadequate supply &amp; delivery of supplements**</b>	
13e.	• Low utilization of health services	
13f.	• Poor client-provider interaction: inadequate counseling of mothers	
13g.	• Poor compliance in taking supplements or changing behaviors	
13h.	• Inadequate targeting of at-risk persons	
13i.	• Inadequate program monitoring	
13j.	• Inadequate impact evaluation	
13k.	Other Barriers	

**\*\* Not applicable to complementary / breastfeeding counseling program**

14. In addition to the strategies used in your program, are there any other potential strategies which you think may help overcome the following barriers?

	Immediate Barriers	Potential Strategies
14a.	• Lack of policy and/or policy awareness	
14b.	• Lack of political will & program support	
14c.	• Inadequate policies & guidelines	
14d.	• <b>Inadequate supply &amp; delivery of supplements**</b>	
14e.	• Low utilization of health services	
14f.	• Poor client-provider interaction: inadequate counseling of mothers	
14g.	• Poor compliance in taking supplements or changing behaviors	

14h.	• Inadequate targeting of at-risk persons	
14i.	• Inadequate program monitoring	
14j.	• Inadequate impact evaluation	
14k.	Other Barriers	

**\*\* Not applicable to complementary / breastfeeding counseling program**

15. Do you have any other comments or thoughts to share?

*Thank you very much for your contribution to the phone interview today*