



ACF - INTERNATIONAL

MAXIMISING THE NUTRITIONAL IMPACT OF FOOD SECURITY AND LIVELIHOODS INTERVENTIONS

A MANUAL FOR FIELD WORKERS



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http://www.actioncontrelafaim.org/fileadmin/contribution/8_publications/pdf/Ouvrages_et_fascicules_techniques/Secu_alimentaire/Maximising_the_Nutritional_Impact_of_FSL_Interventions_FINAL.pdf

PREFACE

This manual aims to provide **practical guidance to field workers in order to maximise the nutritional impact of food security & livelihoods (FSL) interventions**. This requires the systematic use of a 'nutrition lens' at each step of the project cycle and a close collaboration between sectors.

The manual has its roots in ACF International strategy 2010-2015¹ and the FSL strategic outline for 2011-2015², and embodies the mandate of the organisation to fight hunger and to centre its efforts on undernutrition. It is also in line with the current international movement to put maternal and child nutrition at the forefront of the agenda to address the complex crisis of undernutrition in the perspective of the 2015 Millennium Development Goals (MDGs).

This manual also gives us the opportunity to dispel the myth that economic growth and agricultural development in particular equals improved nutritional status. Increasing agricultural productivity and/or increasing income do not necessarily translate into improved nutrition. The relationship between growth and nutrition is non-linear and is affected by many other factors such as status of women, health, infrastructures and cultural norms and beliefs, to name a few.

This manual, however, is not about integration between the different technical sectors (FSL, Nutrition & Health, Mental Health & Care Practices (MHCP), Water, Sanitation & Hygiene) per se but aims to mainstream nutrition into the standard FSL activities and practices, by increasing collaboration between sectors. It aims to raise awareness of ACF staff and other humanitarian practitioners on the impact they can have on nutrition by implementing nutrition-sensitive interventions and by promoting adequate nutrition practices.

The basic elements for this manual were collected from ACF staff, representatives of other Non Governmental Organisations (NGOs) and the United Nations (UN) agencies, and an extensive literature review in March and April 2011.

1/ ACF, 2010, ACF International strategy 2010-2015, ACF, London.

2/ ACF, 2011, Food security and Livelihoods strategic outline for 2011-2015, ACF, Paris.

HOW TO USE THE MANUAL

Section 1 outlines the basics of undernutrition, and explains the interlinkages and synergies between FSL and nutrition. If you are familiar with the subject, you may jump straight to the Section 2.

Section 2 provides simple and practical guidance on how to adopt and promote nutrition-sensitive practices and interventions following the different steps of the project cycle. It is recommended that you read Section 2 in sequence (guidance 1 to 8), in order to get a comprehensive view of the possible actions throughout the project cycle. It is written using **bullet points**, and **key messages are highlighted to ensure easy access and enable quick reading** in the field. **A detailed table of contents** is attached, to allow you to rapidly skim through the sections. Links to web pages and suggested reading are provided at the end of each chapter, and boxes provide tips and concrete examples from the field.

Consultation and strong collaboration with your nutrition, WASH and MHCP colleagues is required in order to put in practice the provided guidance, as this demands technical expertise from all the sectors.

Note that this manual provides operational guidance only on how to align FSL interventions with nutrition. Field practitioners should use this manual alongside relevant thematic guidance for specific types of projects (see ACF FSL Technical Library for existing ACF guidelines and other manuals), as well as other resources on project management such as the ACF Evaluation Policy and Monitoring and Evaluation Guidelines (M&E). How to improve nutritional impact through advocacy is not covered in this manual.

The guidance is not exhaustive and it should be adapted to each specific context and programme circumstances. It will be refined over time to incorporate new evidence, successful best practices and further comments and suggestions. It may be expanded to cover other sectors as well.

**We hope that you will enjoy reading this manual
and take on board the main message:**

THINK NUTRITIONALLY!



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LIST OF ABBREVIATIONS

ACF	Action Contre la Faim/ Action Against Hunger/ Acción Contra el Hambre	IMAPP	Intake Monitoring, Assessment & Planning Programme
AFD	Agence Française du Développement	IUGR	Intrauterine Growth Retardation
AIDS	Acquired immune deficiency syndrome	IYCF	Infant and Young Children Feeding
ART	Antiretroviral Therapy	IYCN	Infant and Young Child Nutrition
ASF	Animal Source Food	KAP	Knowledge, Attitude and Practice
BCS	Behaviour Change Strategy	LBW	Low Birthweight
BFCI	Baby Friendly Community Initiative	LIG	Low Input Gardening
BMI	Body Mass Index	LNS	Lipid-based Nutrient Supplement
CA	Conservation Agriculture	MHCP	Mental Health and Care Practices
CBI	Case Based Interventions	MICS	Multi Indicator Cluster Surveys
CBO	Community-Based Organisation	MDG	Millennium Development Goal
CCT	Conditional Cash transfer	M&E	Monitoring & Evaluation
CED	Chronic Energy Deficiency	MNS	Micronutrient Supplement
CFW	Cash-for-Work	MoH	Ministry of Health
CHW	Community Health Worker	MUAC	Mid-Upper Arm Circumference
CSB	Corn Soya Blend	MVP	Millennium Villages Project
DFID	Department for International Development	NCA	Nutrition Causal Analysis
DHS	Demographic and Health Survey	NGO	Non-Governmental Organisation
DRM	Disaster Reduction Management	NLIS	Nutrition Landscape Information System
EC	European Commission	PLW	Pregnant and Lactating Women
ENA	Essential Nutrition Actions	PMTCT	Prevention Mother-to-Child Transmission
FA	Food Aid	PRSP	Poverty Reduction Strategy Paper
FANTA	Food and Nutrition Technical Assistance	REACH	Ending Child Hunger and Undernutrition
FAO	Food and Agriculture Organisation of the UN	RUF	Ready-to-use Foods
FBDG	Food-Based Dietary Guidelines	SMART	Standardized Monitoring & Assessment of Relief and Transitions
FCS	Food Consumption Score	SUN	Scaling Up Nutrition
FEWS	Net Famine Early Warning Systems Network	UCT	Unconditional Cash Transfers
FFW	Food- for-Work	UN	United Nations
FFQ	Food Frequency Questionnaire	UNICEF	United Nations Children's Fund
FGD	Focus Group Discussion	USAID	United States Agency for International Development
FSL	Food Security and Livelihoods	VAM	Vulnerability Assessment Mapping
GAM	Global Acute Malnutrition	VCT	Voluntary Counselling & Testing
GDP	Gross Domestic Product	VMNIS	Vitamin and Mineral Nutrition Information System
GIEWS	Global Information and Early Warning System	WASH	Water, Sanitation & Hygiene
GMO	Genetically Modified Organism	WFH	Weight-For-Height
HFA	Height-For-Age	WFA	Weight-For-Age
HH	Household	WHO	World Health Organisation
HKI	Helen Keller International	WFP	United Nations World Food Programme
HDDS	Household Dietary Diversity Score	WSB	Wheat Soya Blend
HPAI	Highly Pathogenic Avian Influenza		
IDA	Iron Deficiency Anaemia		
IDDS	Individual Dietary Diversity Score		
IDP	Internally Displaced People		
IEC	Information Education and Communication		
IFPRI	International Food Policy Research Institute		
IGAs	Income Generating Activities		

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INTRODUCTION

There is a renewed focus on nutrition from the international community and it seems that, at last, the fight against undernutrition and hunger is beginning to receive the attention that it deserves.

Despite some achievements in agricultural productivity, basic health access and education worldwide, the progress on reducing undernutrition has been comparatively slow. The Food and Agriculture Organisation (FAO) estimates that globally 925 million people³ in 2010 are still undernourished in terms of their consumption of macronutrients, while more than two billion are undernourished in micronutrients⁴. Climate change⁵ and food price volatility remain major threats that can intensify vulnerability and push new households into the vicious spiral of poverty. Given the magnitude of the current and expected effects of climate change and sharp spikes in price increases, the attainment of the Millennium Development Goals of halving extreme poverty and hunger (MDG-1) by 2015 would appear nothing more than a pipe dream.

In spite of these challenges, the nutrition community is progressing. The publication in the Lancet⁶ of a series of papers related to child and maternal undernutrition in 2008, which drew together evidence on key problems and proven solutions in nutrition, acted as a catalyst. It has been followed by a number of initiatives, among other the endorsement of the 'Scaling Up Nutrition' Framework (SUN) by various stakeholders⁷. The SUN Framework calls for the implementation and scaling up of two complementary approaches. The first one is direct effective nutrition-specific interventions, focusing on pregnant women and children under two with short-term direct interventions such as the promotion of good nutritional practices, micronutrients, and complementary feeding. The second is a broader multi-sectoral nutrition-sensitive approach that tackles the determinants of undernutrition by promoting agriculture and food security, access to and consumption of nutritious foods, improving social protection, care practices and ensuring access to health care.

Tackling undernutrition will require solutions to be developed with the integration of the food security, livelihoods, health, care practices and nutrition sectors. Yet, the linkages between the different sectors are complex and are increasingly under scrutiny as experience has shown that each sector tended to operate in separate spheres. FSL interventions whether as an emergency operation, or a protracted relief and rehabilitation operation still have major roles to play in combating undernutrition. Although evidence remains scattered and limited, they can bring about short and long-term nutritional benefits by providing the 'right' intervention at the 'right time', and by ensuring nutrition-sensitive practices throughout the intervention pathway and life cycle.

3/ Food and Agriculture Organisation of the United Nations and World Food Programme of the United Nations, 2010, *The State of Food Insecurity in the World: Addressing food insecurity in protracted crises*, FAO, Rome; Available at <http://www.fao.org/publications/sofi/en/>

4/ Micronutrient Initiative, 2009, *A united call to action on vitamin and mineral deficiencies*, MI, Ottawa; Available at <http://www.unitedcalltoaction.org/>

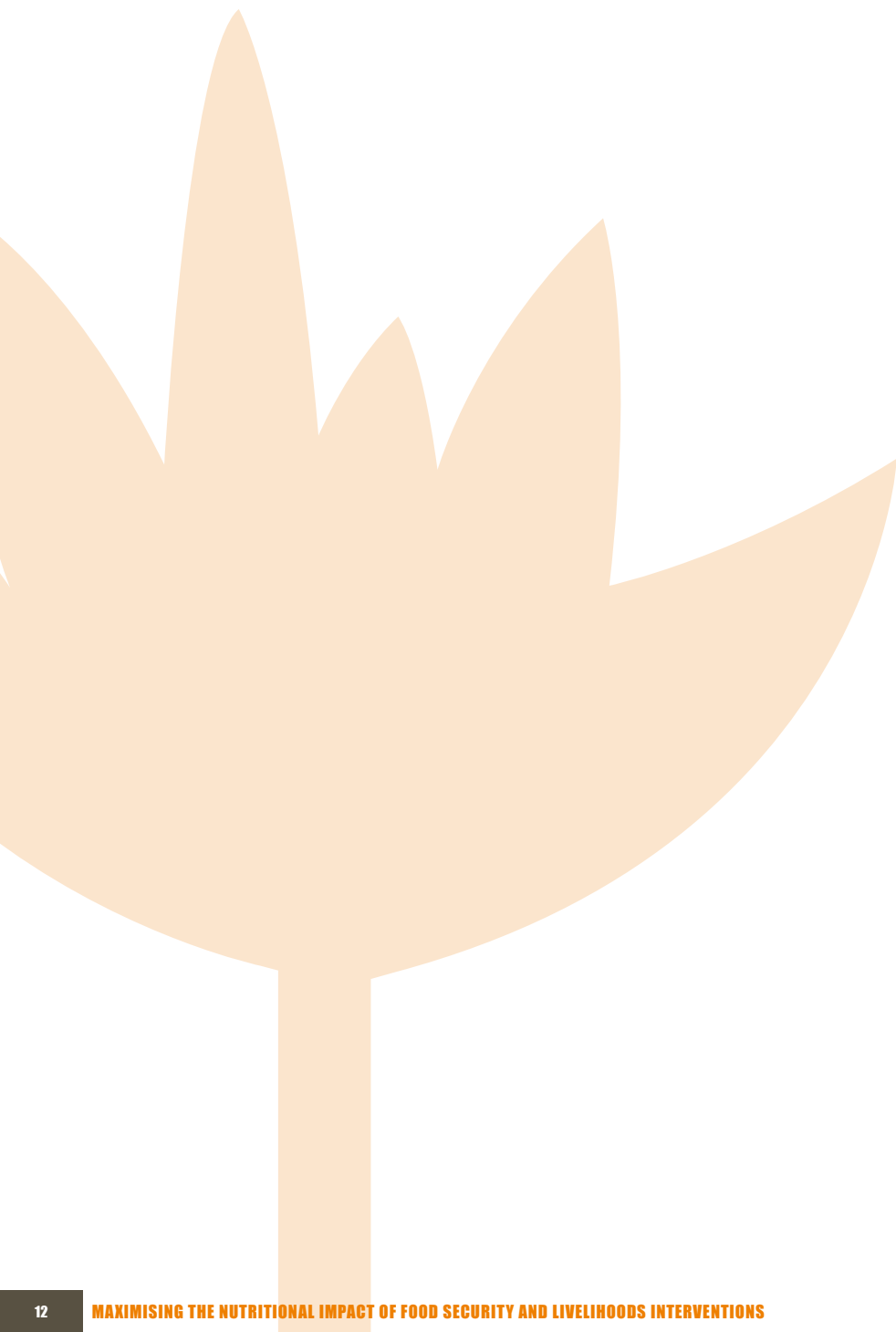
5/ ACF, 2010, *Climate Change, humanitarian crises, and undernutrition*, ACF, Paris.

6/ The Lancet series on Maternal and Child Undernutrition, 2008, in *The Lancet*, 371;

Available at http://www.who.int/nutrition/publications/lancetseries_maternal_and_childundernutrition/en/index.html

7/ Scaling Up Nutrition (SUN), 2010, *Scaling Up Nutrition: A Framework for Action*;

Available at http://www.unscn.org/en/nut-working/scaling_up_nutrition_sun/sun_purpose.php.



Section 1

OVERVIEW OF UNDERNUTRITION



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SECTION 1 – OVERVIEW OF UNDERNUTRITION

■ 1.1 WHAT IS UNDERNUTRITION?

Undernutrition⁸ remains one of the world's most serious but least addressed socioeconomic and health problems and is among the leading causes of child mortality. It encompasses a range of conditions (see Figure 1 below), including

- Severe and moderate forms of **acute malnutrition** (leading to wasting), indicated by a low weight-for-height (WFH) or presence of bilateral oedemas. This occurs as a result of recent rapid weight loss, or a failure to gain weight within a reasonably short period of time. Wasting occurs more frequently with infants and young children, often during the stages where complementary foods are being introduced to their diets, and children are typically more susceptible to infectious diseases. Acute malnutrition can result from food shortages, a recent bout of illness, inappropriate child care or feeding practices or a combination of these factors.

- **Stunting or chronic undernutrition**, resulting in growth retardation, is indicated by a low height-for-age (HFA); stunting is the consequence of prolonged or repeated episodes of nutritional deficiencies (energy or micronutrients). Stunting is typically a result of intrauterine growth retardation, but it can also reflect exposure to repeated infection or other illnesses throughout the early years of life, compromising the growth of a child.

- **Micronutrient deficiencies**, occurring when the body does not have sufficient amounts of vitamins or minerals due to insufficient dietary intake and/or insufficient absorption and/or suboptimal utilisation of the vitamins or minerals by the body.

- **Maternal undernutrition**, resulting in poor nutritional status of the mother during pre-conception, pregnancy and post-natal stages and is indicated by a low Body Mass Index (BMI) and micronutrient deficiencies.

- **Low birthweight (LBW)** of newborn infants, weighing less than 2,500g at birth irrespective of gestational age.

- **Underweight**, this is a composite measure of both acute and chronic malnutrition, indicated by a low weight-for-age (WFA).

Undernutrition affects millions of people each year all over the world, although the main concentration of cases is found in Sub-Saharan Africa and Asia. It is recognised as the underlying cause of nearly a third of deaths from all diseases in children in pre-school years. Maternal and child undernutrition account for 11 % of the global burden of disease.

In 2010⁹:

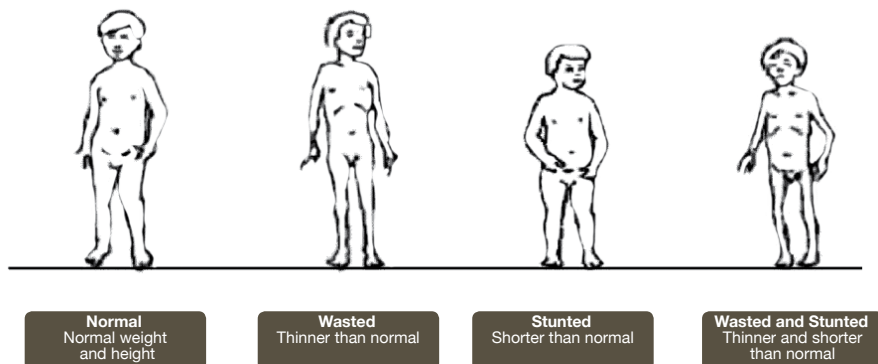
- 115 million children under 5 worldwide are underweight.
- 186 million children under 5 are stunted.
- 13 million children are born with restricted intrauterine growth or prematurely every year.
- 55 million children suffer from acute malnutrition, including 19 million suffering from severe acute malnutrition.

8/ Note that malnutrition technically includes both undernutrition & over-nutrition (obesity). Despite the rising levels of obesity worldwide, this guidance only refers to undernutrition as it is considered a priority.

9/ (i) World Health Organisation, 2010, Underweight and stunting in World Health Statistics 2010, Geneva, World Health Organisation, WHO, Geneva. 2010; (ii) de Onis, M, Blössner, M, Villar J., 1998, 'Levels and patterns of intrauterine growth retardation in developing countries', in the European Journal of Clinical Nutrition, 52 (Suppl.1), pp S5-15; (iii) de Benoist, B, McLean, E, Egli, I, Cogswell M (Eds). Worldwide prevalence of anaemia 1993-2005: WHO global database on anaemia, Geneva, World Health Organisation, 2008.

- More than 2 billion people are deficient in micronutrients; mainly vitamin A, iron, iodine & zinc and are likely to suffer from multiple micronutrient deficiencies. Other micronutrients have started warranting attention such as vitamin B12 and folate.

Figure 1 : Different types of undernutrition



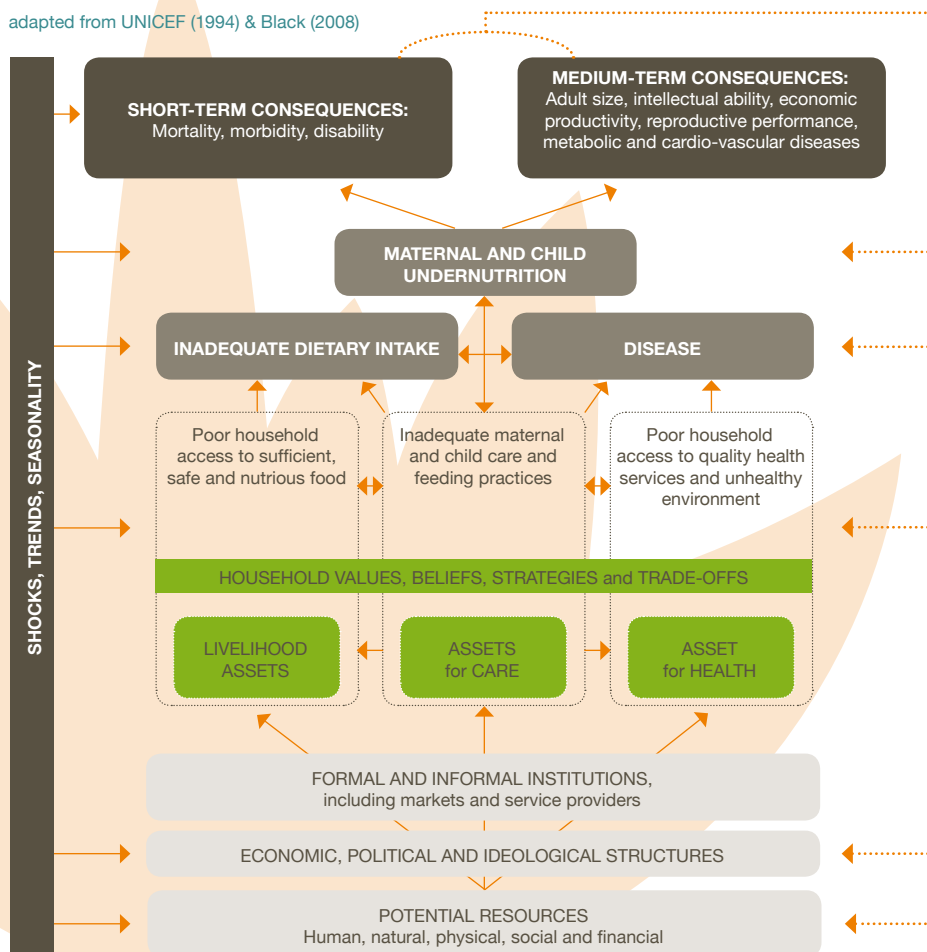
adapted from FAO (2010)

■ 1.2 CAUSES

The determinants of undernutrition are complex and intertwined. The immediate determinants refer to inadequate dietary intake and disease. The underlying determinants include food insecurity, inappropriate care practices and an unsafe environment including access to water and hygiene, and inadequate health services. All these factors result in increased vulnerability to shocks and long term stresses. The basic determinants of undernutrition are rooted in poverty and involve interactions between social, political, demographic, and societal conditions (see Figure 2).

Figure 2 : Conceptual framework of Undernutrition

adapted from UNICEF (1994) & Black (2008)

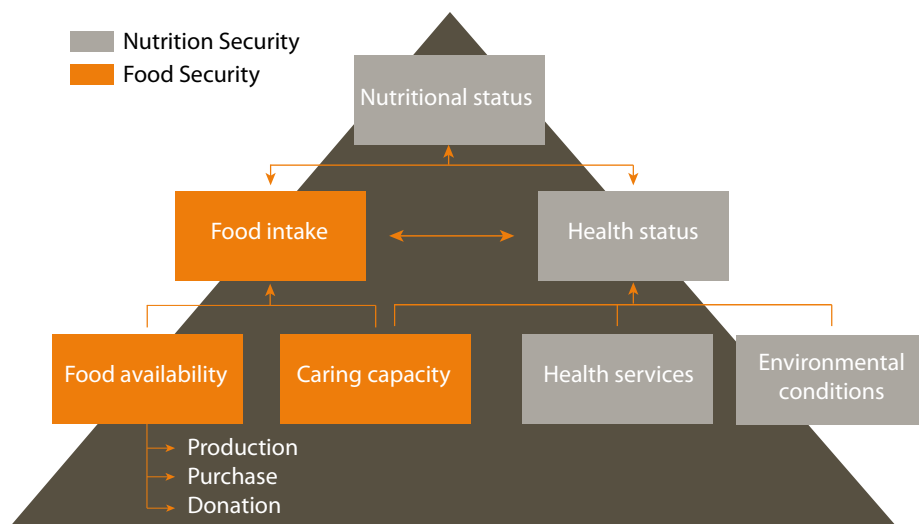


The concept of nutrition security is particularly useful to explain the FSL – nutrition linkages (see Figure 3). Nutrition security goes beyond the traditional concept of food security (access, availability, stability and utilisation of food) and recognises that nutritional status is dependent on a wide and multi-sectoral array of factors. A household has achieved nutrition security when it has secure access to food coupled with a sanitary environment, adequate health services, and knowledgeable care to ensure a healthy life for all household members¹⁰.

Therefore, any attempt to comprehensively identify linkages between FSL and nutrition would have to go further than the standard ‘food security’ definition and include, as much as possible, interventions that seek to improve the health status, MHCP, or environmental conditions that might be directly or indirectly affecting nutritional status.

10/ Benson, T, 2004, Africa's Food and Nutrition Security situation, Where are we? How did we get here? 2020 Discussion paper, 37, IFPRI, Washington, DC.

Figure 3 : The Nutrition Security Framework



adapted from Gross et al (2000)

■ 1.3 CONSEQUENCES

Undernutrition has a plethora of undesirable short-term consequences. It impairs child growth, cognitive¹¹ and physical development¹², weakens the immune system and augments the risk of morbidity¹³ and mortality. Undernourished children are also at higher risk of suffering from chronic diseases (such as diabetes) in adulthood¹⁴. Maternal undernutrition, especially iron deficiency anaemia (IDA) is associated with poor reproductive performance, a higher proportion of maternal deaths, a high incidence of low birthweight, and intrauterine malnutrition. Furthermore, impaired mental and physical development as a result of undernutrition has long-term negative consequences on both micro and macro levels, reducing human and overall economic development. The economic cost of undernutrition has been estimated at 2 to 8 % of Gross Domestic Product (GDP)¹⁵.

11/ Maluccio, J.A., Hoddinott, J., Behrman, J.R., Martorell, R., Quisumbing, A., Stein, AD, 2005, The impact of experimental nutritional interventions on education into adulthood in rural Guatemala, Food Consumption and Nutrition Division, IFPRI, Washington, D.C.

12/ Grantham-McGregor, SM, Walker, SP, Chang, S, 2000, 'Nutritional deficiencies and later behavioural development,' in the Proceedings of the Nutrition Society, 59, pp. 47–54.

13/ Caufield, L, Richard, S, Black, R, 2004, 'Undernutrition as underlying cause of malaria morbidity and mortality in children less than five years old' in the American Journal of Tropical Medicine and Hygiene, 71 (Suppl 2), pp. 55–63.

14/ Victora, CG, Adair, L, Fall, C, Hallal, P, Martorell, R, Richter, L, Singh Sachdev, H, 2008, 'Maternal and child undernutrition: consequences for adult health and human capital', in The Lancet, Vol 371, pp.23-40.

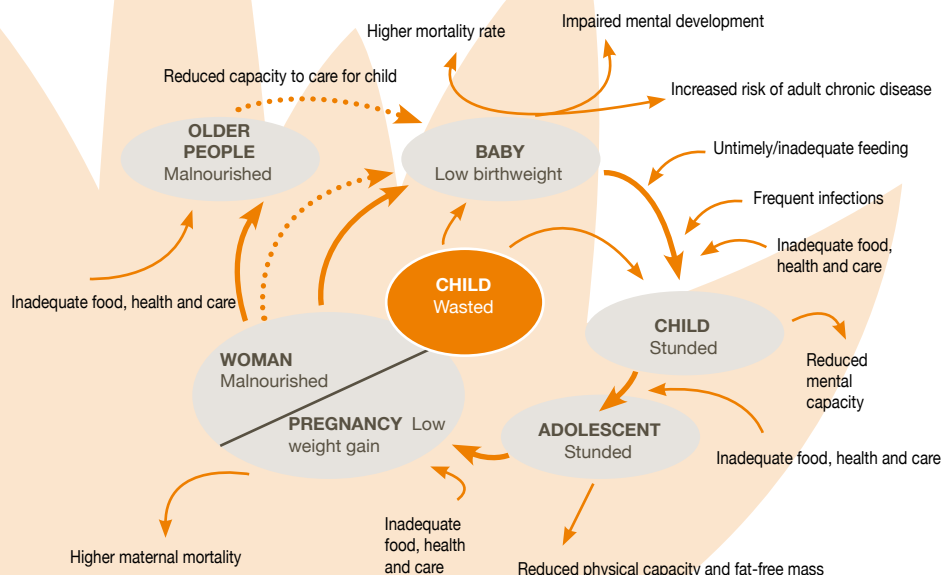
15/ Gwatkin, D, R, Rutstein, S, Johnson, K, Suliman, E, Wagstaff, A, Amozou, A, 2007, Socio-economic difference in health, nutrition and population within developing countries: an overview, World Bank, Washington; Available at <http://go.worldbank.org/XJK7WKSE40>



Undernutrition perpetuates itself in a vicious cycle that lasts beyond the life cycle of an individual. Poor nutrition often starts in utero and extends, particularly for girls and women, well into adolescent and adult life. It also spans generations. The LBW infants, who suffered intrauterine growth retardation (IUGR), and born undernourished, are at higher risk of dying in the neonatal period or later infancy. If they survive, they are unlikely to significantly catch up on this lost growth later and are more likely to experience a variety of developmental deficits. A LBW infant is thus more likely to be underweight or stunted in early life. Refer to Figure 4 for details.

Figure 4 : Life Cycle of Nutrition challenges

Impact of hunger and malnutrition throughout the life cycle



Adopted from the ACC/SCN - appointed Commission on the Nutrition Challenges of the 21st Century

■ 1.4 WINDOW OF OPPORTUNITY

The effect of poor nutrition on child development depends on the severity and duration of the deficiency and the stage of development of the child. Evidence¹⁶ shows that the “window of opportunity” for addressing child nutrition needs is short and lasts from conception to the age of two. For instance, the first two trimesters of pregnancy are the most sensitive to iodine deficiency, whereas the postnatal years are the most sensitive to undernutrition in general. During this window of opportunity, infants and children have high nutritional requirements that must be adequately met to ensure linear growth, health, and brain development throughout his life. If missed, the consequences of undernutrition are irreversible. This said, adequate food and nutrition is a human right for all people, and intervening at each point in the life cycle will accelerate and consolidate positive change.

16/ See e.g. Ruel, MT, Menon, P, Habicht, JP, Loechl, C, Bergeron, G, Pelto, G, Arimond, M, Maluccio, J, Michaud, L, Hankebo, B, 2008, ‘Age-based preventive targeting of food assistance and behaviour change communication for reduction of childhood undernutrition in Haiti: A cluster randomised trial’ in *The Lancet*, 371, pp 588-95.

■ 1.5 WHAT WORKS?

As stated earlier, the fight against child and maternal undernutrition requires a two-fold approach, with the implementation and the scaling up of direct nutrition interventions combined with a multi-sectoral preventive approach.

The Lancet¹⁷ identified a range of effective direct nutrition interventions that include the promotion of breastfeeding and optimal complementary feeding, the increase of micronutrient interventions and strategies to improve family and community nutrition and reduction of disease burden (e.g. promotion of hand washing and strategies to reduce the burden of malaria in pregnancy).

These interventions are to be combined with long-term multi-sectoral interventions that act on the determinants of undernutrition like inadequate income, agricultural productivity, water supply and gender inequality. The promotion of nutritionally orientated interventions is expected to achieve greater results, especially if interventions from different sectors include an indicator of undernutrition to judge overall progress. Lastly, this requires increasing policy coherence and collaboration between sectors. Although progress has been made, countries and donors need to put nutrition on the forefront of the agenda and make sure that policies complement each other rather than contradict.

In this respect, ACF International¹⁸ recently published a review of successful countries that have significantly reduced undernutrition over the past two decades on the national level. The detailed analysis of the five case studies (namely Brazil, Peru, Malawi, Mozambique and Bangladesh) indicates that a combination of effective policies and sufficient investment paved the way to success in decreasing hunger.

Best practice on national level consists of:

- Giving a high profile to nutrition and hunger; the commitment of the country's government and the political impetus to fight hunger and undernutrition are common to all studied countries.
- Adopting a multi-sectoral approach, involving a broad range of stakeholders and requiring coherence and coordination among sectors.
- Encouraging civil society ownership and boosting participation.
- Adopting a multi-phase approach including both short and long term effective interventions;
- Ensuring institutionalised coordination.
- Ensuring financial commitment and long-term investment from the government and the donors.

■ 1.6 SYNERGIES BETWEEN FOOD SECURITY, LIVELIHOODS AND NUTRITION

The linkages between food security, livelihoods, nutrition and health are complex, global and rapidly evolving¹⁹. For example agriculture as a main source of food can influence health positively through enhanced nutritional status, but also negatively by increasing human exposure to toxicants, food-borne and zoonotic²⁰ diseases related to agriculture and food chains. Agriculture may also affect health indirectly through its impact on the environment and ecosystem services, which may affect human health through changes in the prevalence of certain diseases, access to water, or climate

17/ Bhutta, ZA, Tahmeed, A, Black, R, Cousens, S, Dewey, K, Giugliani, E, Haider, BA, Kirkwood, B, Morris, S, Sachdev, HP, Shekar, M, 2008, 'What works? Interventions for maternal and child undernutrition and survival' in The Lancet, Vol 371, pp.417-440. 18 ACF International, 2010, Undernutrition, What works, a review of policy and practice, ACF International Network and Tripode, London;

Available at <http://www.actionagainsthunger.org.uk/mediaroom/feature-articles/undernutrition-what-works/>

19/ See e.g. Wagge, J, Dangour, AI, Hawkesworth, S, Johnston, D, Lock, K, Poole, N, Rushton, J, Uauy, R, 2010, Understanding and improving the relationship between agriculture and health, Foresight Project on Global Food and Farming Futures, London.

20/ A disease transmitted from animals to humans and vice-versa.



change. There is also a reciprocal process in this relationship, whereby the health of individuals involved in agriculture may affect agriculture itself; an unhealthy agricultural population may provide less labour and resources, with consequences for productivity and implications for all consumers.

This rapid walkthrough illustrates the importance of acknowledging, understanding and acting through the lens of nutrition, promoting synergies between sectors, and measuring the impact of interventions to detect any positive or negative changes.

In other words, FSL interventions have the potential to greatly contribute to, reduce and prevent undernutrition. However, scientific evidence on the linkages is currently limited²¹. For instance, there are only a few systematic reviews of agricultural projects with explicit goals related to nutrition, and the reviews that do exist often show only weak links. Further research is therefore required on the linkages between the two sectors and on how they can effectively be exploited to improve human well-being. This lack of evidence base should not, however, prevent ACF from conducting interventions that are 'nutrition-sensitive' and ensuring the implementation of good nutrition practices all along the project cycle. As an absolute minimum, FSL interventions should not be harmful for the nutritional status of the beneficiaries and mitigation measures (whether preventive or corrective) should be properly implemented to this end.

FURTHER READING AND WEBSITES

- Horton, S, Shekar, M, McDonald, C Mahal, Brooks, JK, 2010
Scaling up Nutrition : What will it cost? The World Bank, Washington, DC, at <http://siteresources.worldbank.org/HEALTHNUTRITIONANDPOPULATION/Resources/ScalingUpNutrition.pdf>
- IFPRI (International Food Policy Research Institute). 2011
Leveraging Agriculture for Improving Nutrition and Health : Highlights from an International Conference, Washington, DC, at <http://2020conference.ifpri.info/>
- The Lancet Series on Maternal and Child Undernutrition at http://www.who.int/nutrition/publications/lancetseries_maternal_and_childundernutrition/en/index.html
- Millennium Development Goals at <http://www.un.org/millenniumgoals/>
- Scaling Up Nutrition (SUN), 2010, Scaling Up Nutrition : A Framework for Action at http://www.unscn.org/en/scaling_up_nutrition_sun/sun-road-map.php
- UNSCN, 2010, 6TH report on the World nutrition situation, Geneva.

21/ IFPRI (International Food Policy Research Institute), 2011, Leveraging Agriculture for Improving Nutrition and Health: Highlights from an International Conference. Washington, DC

Section 2

PRACTICAL GUIDANCE TO MAXIMISE THE IMPACT ON NUTRITION



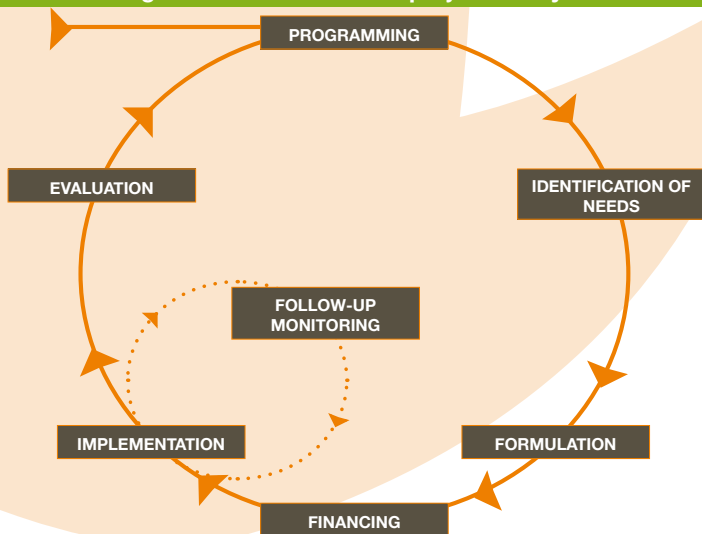
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SECTION 2 – PRACTICAL GUIDANCE TO MAXIMISE THE IMPACT ON NUTRITION

This section gives practical guidance on how to align FSL interventions with nutrition and is applicable at all steps of the project cycle from programming to evaluation (see Figure 5). It is divided into two parts to facilitate the reading. “Planning the intervention” concentrates on the preparatory steps, including aspects of programming, identification of needs, formulation and financing. “Implementing the intervention” gives programmatic guidance for nutrition-sensitive implementation of specific FSL interventions (agro-sylvo-pastoral interventions, income generating activities, food aid and cash-based interventions). It also includes guidance on gender, and nutrition promotion and behaviour change strategy in FSL projects. In reality, however, the dividing line is blurred and guidance provided in the first part is also relevant for the second, and vice versa.

The approach encouraged here is to apply a ‘nutrition lens’ at each step of the project cycle, as there are no standard and ready-to-use solutions, as each context will bring up different enablers and inhibitors.

Figure 5 : Nutrition in the project life cycle



Perhaps the greatest challenge for the implementation of the guidance given throughout this manual is that no one can do it alone - it requires preparation, action and collaboration across a variety of sectors and stakeholders.

The food security worker has to be aware of what is needed in order to maximise the nutritional impact of the FSL intervention, but s/he does not have all the required technical expertise. It is essential to consult with the nutrition, Mental Health and Care Practices and WASH teams from the outset, and share tasks and responsibilities according to the technical expertise of each sector. In some cases only light guidance is needed, e.g. advice on the inclusion and analysis of some questions in an assessment, whereas in other cases a more in-depth implication is required, e.g. conducting a nutrition survey or setting up a Behaviour Change Strategy (BCS) (refer to Guidance 8).

ACF also works in partnership and collaboration with a wide range of different actors including national ministries, NGOs and Community Based-Organisations (CBOs). Maximising the nutrition impact of FSL interventions requires working closely with the Ministry of Agriculture and the Ministry of Social Affairs, as well as the Department of Nutrition within the Ministry of Health, to identify priority areas, intervention opportunities and needs, whilst referring to existing policies, practices, evidence and modes of intervention, and supporting and building the national and local capacity to enhance the sustainability of the interventions.

■ 2.1 PLANNING THE INTERVENTION

GUIDANCE I – IDENTIFY THE SCALE AND DETERMINANTS OF UNDERNUTRITION

Understanding undernutrition is the first step in designing relevant interventions and encouraging synergies among initiatives to improve nutrition. This is done in collaboration with all technical teams under the umbrella of Country Director, at mission and base levels although the nutrition team will provide the bulk of the information. Other key resources include the Nutrition Cluster, United Nations Children's Fund (UNICEF) and the Ministry of Health (MoH) and/or a Nutrition Department within the MoH and/or Technical Advisory Group on nutrition in the country where you work.

■ 1.1 COLLECT INFORMATION ABOUT THE MAGNITUDE AND SEVERITY OF UNDERNUTRITION, ITS CAUSES AND ITS VARIATION IN TIME

Look at trends in nutritional status over time rather than the prevalence of undernutrition at a single point in time. See Table 1 below on the indicators of undernutrition. Changes over time can reveal a deteriorating/improving nutrition situation and will also show nutrition in its seasonal cycle. Construct a **multi-sectoral seasonal calendar**, in order to see if the seasonal cycles are linked with each other.

Trends are important, as the manner in which undernutrition is changing will play a part in determining the best way to proceed and the right timing for the FSL intervention. For instance, a rapid deterioration could indicate an emerging humanitarian crisis; whereas a slower, endemic problem could require longer-term solutions. Keep in mind that anthropometric indices represent the cumulative effect of access to food, health, education and environmental health conditions. They are powerful indicators of nutrition security and well-being of an individual. They also reflect the nutritional and poverty situation of a household.

Disaggregate data (e.g. age, gender, socio-economic status, livelihood zones) when possible, as this will allow you to better identify and target the most vulnerable groups. Pay extra attention to the quality and reliability of data and ensure crosschecking and triangulation of information. Compare the rates of undernutrition with the cut-off of public health significance defined by the WHO. See Table 2 and 3 below.

Collect secondary information on the potential causes of undernutrition highlighting the immediate, underlying and basic determinants of nutrition. Collate information in a seasonal calendar to detect potential correlations between increased prevalence of undernutrition and its potential causes on a macro level.

**Table 1: Indicators and definition of different types of undernutrition**

TYPES	DEFINITION
WASTING	Weight-for-height < -2 Z-scores of the WHO 2006 standards
SEVERE ACUTE MALNUTRITION	Weight-for-height < -3 Z-scores of the WHO 2006 standards or MUAC < 115 mm or bilateral pitting oedema
STUNTING	Height-for-age < -2 Z-scores of the WHO 2006 standards
UNDERWEIGHT	Weight-for-age < -2 Z-scores of the WHO 2006 standards
LOW BIRTHWEIGHT	Birthweight < 2500 g
CHRONIC ENERGY DEFICIENCY (CED)	Body Mass index (weight (kg)/height (m ²)) < 18.5

Table 2 : WHO categorisation of the public health significance of undernutrition²²

INDICATOR	LOW	MEDIUM	HIGH	VERY HIGH
% STUNTED	<20	20-29	30-39	≥ 40
% UNDERWEIGHT	<10	10-19	20-29	≥ 30
% WASTED	<5	5-9	10-14	≥ 15
% WOMEN OF CHILDBEARING AGE WITH BMI < 18.5	5-9.9	10-19.9	20-39.9	≥ 40

Table 3 : WHO categorisation of the public health significance of low birthweight²³

INDICATOR	PUBLIC HEALTH SIGNIFIANCE WHEN THE PREVALENCE IS
% LOW BIRTHWEIGHT NEWBORN	≥ 15

The World Health Organisation (WHO) has also developed cut-off points and levels of public health significance for micronutrient deficiencies like vitamin A, iodine and iron, which are available in Annex 2. Have a look at other indicators such as maternal and child mortality as they are relevant proxy indicators of the health status of the population.

Key sources of information include:

- National nutrition and health surveys or country profiles, including **Demographic and Health surveys (DHS)** and **Multi Indicator Cluster Surveys (MICS)**. The **UNICEF child info system**, the **Health and Nutrition Tracking System** and the **WHO Mental Health Atlas** are also of relevance.
- National surveillance systems. Note that WHO compile health and nutrition information at country level in the **WHO Nutrition Landscape Information System (NLIS)**.
- Anthropometric surveys (e.g. ACF Standardized Monitoring and Assessment of Relief and Transitions surveys (SMART)).

22/ WHO Expert Committee. 1995. Physical Status: The Use and Interpretation of Anthropometry, WHO Technical Report Series #854, Geneva, WHO.

23/ WHO Expert Committee. 1995. Physical Status: The Use and Interpretation of Anthropometry, WHO Technical Report Series #854, Geneva, WHO.

- Micronutrient surveys. Note that micronutrient surveys are costly and require use of invasive techniques and are therefore conducted less often. However, WHO compile micronutrient information in the **WHO Vitamin and Mineral Nutrition Information System (VMNIS)**.
- Nutrition Causal Analysis (NCA).
- Admission rates and coverage in existing programmes for the management of acute malnutrition.

Additional sources of information on the causes of undernutrition include:

- Early warning information systems (GIEWS, FEWS NET, VAM).
- Food security and other relevant reports from ACF (MHCP, WASH) or other stakeholders.
- Project monitoring data if the project is being designed in an area of persistent food insecurity.
- Health reports.
- Research reports (e.g. ethno, anthropologist studies etc).
- Advocacy publications.

■ 1.2 ASSESS THE LEVEL OF COMMITMENT OF THE GOVERNMENT IN TACKLING UNDERNUTRITION

The commitment to tackle undernutrition varies greatly from one place to another (refer to Box 1 for case study in Bangladesh). You will find information by looking at:

- National nutrition strategy and policy framework and the level of current/planned budget to roll out the nutrition strategy.
- Institutional structures and capacity regarding nutrition, including local representation and extension services.
- Poverty and social policies and legislature (e.g. signature of International Code of Marketing of Breast Milk Substitutes).
- Involvement of civil society in nutrition issues.
- Nutrition surveillance
- Food security & livelihoods, health, MHCP & water and sanitation interventions in the targeted areas.

The low commitment of some countries may be the opportunity to set up and roll out an Advocacy Plan in collaboration with other sectors/partners to raise the nutrition agenda as the international community and donors in particular are eager to fund nutrition-related interventions in the light of the 2015 MDGs. Note that this manual does not provide guidance on how to elaborate an Advocacy Plan or to give voice to the problem of undernutrition at national and policy level. Consult your Country Director and Headquarters for further support on advocacy.

BOX 1: BANGLADESH IS SUCCESSFULLY SCALING UP EFFORTS TO TACKLE UNDERNUTRITION

In a recent publication 'Undernutrition - what works', ACF analyses the main ingredients underpinning progress in reducing undernutrition in Bangladesh. Over the last two decades Bangladesh has achieved impressive strides forward in poverty reduction. Although there are still large numbers suffering from undernutrition, rates have been significantly reduced.

Bangladesh is committed to an emphasis on Nutrition security. The high political profile given to the fight against hunger is evident in the Poverty Reduction Strategy Paper (PRSP), which as the main framework on social policies has significantly included nutrition as its first pillar. By linking climate change adaptation to nutrition and food security programmes and policies, and by promoting the coordination of agriculture expansion initiatives, rural infrastructure and non-agricultural employment opportunities (gender-focused) along with social safety nets and other specific poverty reduction programmes, the PRSP framework has contributed to coherence of policy in Bangladesh, and hence enabled gains in the reduction of undernutrition.



■ 1.3 COLLECT INFORMATION ON EXISTING DIRECT AND INDIRECT NUTRITION INTERVENTIONS IN ORDER TO MAP AND IDENTIFY GAPS

Activities that have an impact on undernutrition (either preventive or curative) may be run by various stakeholders, such as the government, NGOs or CBOs, and can include:

- Community based nutrition & health services availability, access and uptake (treatment of malnutrition, growth promotion, antenatal and postnatal care, disease control, family planning and Essential Nutrition Actions (ENA)²⁴)
- Breastfeeding and complementary feeding counselling
- Micronutrient supplementation & fortification
- Food assistance & safety nets
- Information Education Communication (IEC) or other behaviour change programmes aiming at improving the determinants of nutrition
- Advocacy on nutrition
- Interventions that target women of child bearing age
- Interventions that target People Living with HIV (PLWH) such as ante natal care for HIV positive women, Prevention Mother-to-Child Transmission (PMTCT) activities, access to Antiretroviral Therapy (ART) and nutrition counselling. See Box 2 for the links between HIV/AIDS and nutrition.

BOX 2: LINKS BETWEEN NUTRITION AND HIV/AIDS

Evidence has shown important links between improved HIV and AIDS outcomes and nutrition. Adequate nutrition is essential to maintain the immune system, manage opportunistic infections, optimise response to medical treatment, sustain healthy levels of physical activity, and support optimal quality of life for a Person Living with HIV (PLWH). PLWH have higher nutrition requirements depending on the stage of infections.

Good nutrition may contribute to slowing the progression of the disease. Meanwhile, nutrition interventions can also help to optimise the benefits of antiretroviral drugs and may increase compliance with treatment regimens, both of which are essential to prolonging the lives of PLWH and preventing the transmission of HIV from mother to child.

FURTHER READING AND WEBSITES

- CORE Group, Nutrition Working Group, 2010, Nutrition Program Design Assistant: A Tool for Program Planners, Washington, DC, at <http://www.coregroup.org/component/content/article/119>
- FAO Food and Agriculture Statistics, at <http://faostat.fao.org/>
- UNICEF, 2009, Tracking Progress on Child and Maternal Nutrition: A survival and development priority, UNICEF, New York, at http://www.unicef.org/publications/index_51656.html
- UNICEF, 2009, The State of the World's Children statistics, at <http://www.unicef.org/rightsite/sowc/statistics.php>

²⁴/ The Essential Nutrition Actions is a set of interventions to fight malnutrition. The ENA support the achievement of six priority nutrition behaviours; exclusive breastfeeding for six months; adequate complementary feeding starting at about six months with continued breastfeeding for two years; appropriate nutritional care of sick and severely malnourished children; adequate intake of vitamin A for women and children; adequate intake of iron for women and children; adequate intake of iodine by all members of the household.

GUIDANCE 2 – IDENTIFY THE SCALE AND DETERMINANTS OF UNDERNUTRITION

Elaborating and conducting an assessment is a pre-requisite to any intervention. Once you have a broad understanding of the nutrition problem in the country, it is high time to conduct a nutrition-sensitive assessment. **The concept of nutrition security (see Figure 3 in section 1) is useful here as it goes beyond the traditional concept of food security and emphasises the importance of looking at other variables that affect the nutritional status.** This involves obtaining a deeper understanding of **food consumption patterns, dietary intake and micronutrient adequacy, nutrition needs of group at risk, gender considerations, care practices as well as health and sanitary environment**, in order to design relevant, innovative, and nutrition-sensitive FSL responses (e.g. growing vitamin A-rich fruit in homestead garden to respond to high vitamin A deficiency; fresh food vouchers to improve the quality of the food ration in refugee camps). As already mentioned above, **ensure that undernutrition is captured in a dynamic manner**, including seasonality and longer-term trends given it evolves overtime, as this will impact the design of the programme directly. Work in close collaboration with the line Ministries and other stakeholders to avoid starting again.

Keep in mind that this only details variables regarding nutrition and do not include other core FSL indicators (e.g. household food economy, livelihoods, coping mechanisms, etc), although the latter are essential to design appropriate FSL interventions. In that respect, refer to ACF FSL assessment guidelines for complementary guidance and tools.

Key points to consider in building an effective nutrition-sensitive assessment are listed below. Depending on the context as well as time and resources, the following aspects may be explored through **specific focus group discussions, semi-structured interviews with key informants** and through the use of **secondary data**.

■ 2.1 CONDUCT JOINT AND MULTI-SECTORAL ASSESSMENT OR A NUTRITION CAUSAL ANALYSIS


Ideally, a **joint team** of FSL, nutrition, MHCP and WASH practitioners will carry out the assessment, as a single sector assessment will rarely provide all the required information. Data collection, analysis as well as report writing will be a shared responsibility between sectors although a key leader would have previously been identified. Alternatively, with the help of concerned sectors, **integrate some core questions related to nutrition, care practices and WASH in a simple food security assessment** to assess nutrition security. You may also consider conducting a food security assessment in the same communities where nutrition, MHCP and WASH teams did their assessments or incorporating more detailed questions into a stand-alone standard SMART nutrition survey. In any case, systematically construct a **multi-sectoral seasonal calendar**, to see if peaks of undernutrition occur at the same time as other peaks e.g. in workload for women, rainy season or diseases.

You may also conduct a **Nutrition Causal Analysis (NCA)** that involves all the sectors. Draft guidelines are currently available, and will be finalised by the end of 2011.

■ 2.2 ASSESS FOOD CONSUMPTION PATTERNS AND DIETARY INTAKE

Collecting and analysing information on people's food consumption patterns and nutrient intake is essential to gain an understanding of what populations eat, where they obtain food, where the gaps are in their ability to meet their nutrient requirements and how this evolves in time, in order to design effective programmes. Make sure that the assessment explores the following:

Local perception of what constitutes a healthy diet often differs substantially from a nutritionist perspective. Better understanding of these concepts will aid in developing nutrition promotion and a behaviour change strategy that is more likely to succeed. Use the following questions as a basis for focus group discussions with communities:

- 
- Do families eat the same type of food every day? If 'yes', why?
 - Is there any specific food prepared according to ages of children?
 - Is there any change over time of the food consumed?
 - Which combinations of local foods make good meals and are available?
 - What can be done to improve the family meals?
 - Which foods should be added or used more often?
 - How can families be encouraged to have a more varied diet?
 - How is the food prepared, cooked and preserved?

Cultural and traditional beliefs around food are often strong and very common. For instance, women and children may stop or reduce eating animal source production (e.g. egg, chicken or milk) during transitory stages such as illness, pregnancy or during menstruation (see Box 3). This information will be useful to design adequate nutrition messages. Key questions include:

- What are the cultural, traditional or religious food preferences of women and men in the community?
- Are there any traditions that promote good nutritional practices, particularly for groups at risk?
- Are there any food restrictions or food beliefs for women, men, infant, children under two (or five) and pregnant and lactating women?

BOX 3: LOW PREGNANCY WEIGHT GAIN AND TRADITIONAL BELIEFS IN BANGLADESH

Women believe that they should eat less during pregnancy, so they can have a small baby and avoid complications in childbirth. This belief jeopardises the health and future of the baby, as inadequate weight gain during pregnancy significantly increases the risk of LBW babies and related adverse health outcomes.

Collect data about **meal frequency and dietary diversity patterns**²⁵. Use the Household Dietary Diversity Score (HDDS) as a proxy indicator of household access to food, and Individual Dietary Diversity Score (IDDS) as a proxy measure of the nutritional quality of an individual's diet. Note that the IDDS can be used for any group at risk such as children under five, elderly and the People Living with HIV (PLHIV). Adapt the questionnaire to local foods. Refer to Guidance 4 and to Annex 3 and 4 to measure HDDS and IDDS.

To the extent possible, **disaggregate data per age and gender** to detect differences in food allocation due to food beliefs, eating practices (e.g. women eat food leftovers after other family members finished their meal) or contextual/cultural factors (e.g. HIV/AIDS orphans raised by non-biological parents are likely to receive less food than biological children, or the second wife in polygamist household may receive less food than the first wife).

To go a step further, a Food Frequency Questionnaire (FFQ) and/or 24h recall combined with nutrition software (e.g. FoodWorks™ or Netwisp™) may be used to assess food and nutrient intakes. You may also consider using IMAPP (International Micronutrient Assessment and Planning Programme) software, to assess the prevalence of inadequate (and excessive) intakes of specific nutrients²⁶.

It may also be useful to assess if a balanced diet based on family foods and local market is achievable or not. This is especially useful for complementary feeding. Although ACF does not systema-

25/ Food Consumption Score (FCS) is another tool that can be used to assess food access but it is less adapted for measuring the adequacy of micronutrient intake.

26/ Further information is available at

<http://www.who.int/nutrition/publications/micronutrients/9789241599603/en/index.html>. WHO.

tically conduct these analyses, options include the linear programming approach²⁷ or the cost of a healthy diet developed by Save the Children UK²⁸, which is the more “field friendly” option.

■ 2.3 ASSESS CARE PRACTICES AND CAPACITIES AS WELL AS HEALTH AND ENVIRONMENTAL CONDITIONS

■ 2.3.1 Care practices and capacities, and gender

Assessing **care practices and capacities** is absolutely fundamental. Understanding care practices is particularly important for improving nutrition in countries where food security and health care are reasonable but where malnutrition rates remain high. Please refer to Box 4 for the definition of care practices²⁹..

BOX 4: WHAT ARE CARE PRACTICES?

ACF uses the definition proposed by Engle: Care refers to the behaviours and practices of caregivers (mothers, siblings, fathers and childcare providers) to provide the food, health care, stimulation, and emotional support necessary for children's healthy survival, growth, and development.

These practices, combined with food security and health care resources, impact a child's well-being. Not only the practices themselves, but also the ways they are performed - in terms of affection and responsiveness to the child - are critical to a child's survival, growth and development. It is impossible for caregivers to provide this care without sufficient resources, such as time and energy.

Gender considerations, decision-making process, roles and responsibilities of women in the household and in the community should also be addressed. First discuss these with ACF staff and then collect information during distinct FGDs with women, community leaders and men, and other sources of information such as step-mothers or community health workers (CHW) to triangulate information. Employ female staff or trained male staff to discuss with women, and make your programmatic decisions accordingly. Refer to ACF capitalisation assessments using gender approach. See also Box 5 below for an overview of women's responsibilities.

Key questions regarding **decision making** include:

- Who is the primary decision maker within the household about income allocation, labour, livestock, child feeding and health, food purchase, food preparation, food preservation and food allocation?
- Who is the secondary decision maker?
- How and when are decisions taken?
- Do women have equal access to land? Credit? Technology? Information? Physical capital? If not how does it differ?
- What is the women's legal and cultural status?
- What is the average level of the women's education?

27/ Briend, A, Darmon, N, Ferguson, E, Erhardt, J, 2003, 'Linear Programming: A Mathematical Tool for Analyzing and Optimizing Children's Diets During the Complementary Feeding Period' in the Journal of Pediatric Gastroenterology and Nutrition, 36, pp 12–22. The linear programming tool is available at <http://www.nutrisurvey.de/lp/lp.htm>

28/ Chastre, C, Duffield, A, Kindness, H, Lejeune, S, Taylor, A, 2007, The Minimum Cost of a Healthy Diet: findings from piloting a new methodology in four study locations, Save the Children UK, available at http://www.savethechildren.org.uk/en/54_9288.htm

29/ Engle PL, Lohotska, L, Armstrong H, 1997, The Care Initiative: Assessment, Analysis and Action to Improve Care for Nutrition, New York: UNICEF.



Key questions to understand **roles and responsibilities** include:

- Which activities are under men's responsibilities? Under women's responsibilities?
- How much time do women spend on these activities? Men? Children?
- How frequently? What season or part of the season?
- Who are the main and secondary caregivers within the household?
- What is the status, age, education level and reason for being a caregiver?
- Do women have spare time for themselves (no work)? When and for how long?
- What are the facilitating and constraining factors to task sharing in the household?
- What is the percentage of female-headed households?

Keep in mind that seasonality and urban constraints (e.g. distance, reduced community solidarity) may affect the roles and responsibilities.

BOX 5: RESPONSIBILITIES OF WOMEN

Studies suggest that women in rural Africa work up to 16-18 hours per day. They are in charge of agriculture, household food preparation, fetching water, gathering wood, grinding grains, transporting and marketing family crops, child and family care, washing, breastfeeding and supporting other households and persons who are ill.

Maternal care should also be assessed using the following key questions:

- Do women have access to ante natal care? How often do they go?
- Do women eat more while pregnant and breastfeeding?
- How long do women rest after delivery?
- Do women receive support for breastfeeding?
- What is the average age of first pregnancy? Child spacing?
- Do women have breastfeeding difficulties? How do they cope when facing difficulties?
- In areas of high HIV prevalence, do HIV positive women have access to ante natal cares? What are the PMTCT activities delivered? Are HIV positive women given appropriate advice in relation to feeding choices?

Infant and young children feeding practices (IYCF) are one of the components of care practices. Commonly four core indicators are used:

- Exclusive breastfeeding of children under 6 months.
- Early initiation of breastfeeding.
- Minimum acceptable diet for children 6–23 months of age (mix of meal frequency and diet diversity).
- Consumption of iron-rich or iron-fortified foods for children 6–23 months of age.

Note that other feeding indicators such as duration of breastfeeding and milk feeding frequency for non-breastfed children can be used, depending on the needs. Refer to Annex 5 for more detail on these indicators and how to measure the IYCF using a 24h recall.

Additional **questions** related to **feeding style and caregivers' behaviour** include:

- Who is the primary caregiver of the child and what is the relationship?
- What is the level of education of the caregiver?
- Who is the decision-maker regarding child-feeding, types of food to be given to children and child health care?
- How is the decision made to seek health care?
- How does the caregiver behave during feeding times (relevant for children 6–23 months of age)? Is the child encouraged to eat alone? Is the child eating from the same plate as other siblings?

- Is the child sleeping under an insecticide treated bed net?
- Observation about food storage, food preparation and food hygiene (e.g. fuel, cooking utensils, food is covered, flies etc.)

■ 2.3.2 Health and environmental conditions

Key questions for **health conditions** include:

- What is the general coverage of health care services?
- Are the health structures staffed and functioning?
- Is there a free health care policy (for which population, under which conditions)?
- What is the immunisation coverage?
- What is the quality of care?
- What proportion of their income do households spend for health care? How often?

Key questions for **environmental conditions** include:

- What are the community/family water, sanitation and hygiene practices? Is there a difference between women, men, boys and girls?
- Where do families get water? Distance? Types of sources?
- How is the water used? How do family members share water with each other (quantity and quality)?
- Are there any problems with water quality/quantity?
- Where do families access sanitation facilities? Distance? Types of sanitation facilities? Who has access to and control of sanitation resources?
- What do families do with garbage? How do families dispose of child stools?
- What is the frequency of hand washing? Is soap used?
- What is the prevalence of parasitic infections (such as hookworms and roundworms)? Who is the most affected? Any de-worming programme for children or pregnant women?
- Observation of general hygiene (e.g. cleanliness of the house, environment around the house, kitchen, water and sanitation facilities etc.) and water storage.

■ 2.4 EXPLORE LOCAL PERCEPTIONS OF MALNUTRITION

Community-based nutrition-sensitive programmes achieve greater impact on malnutrition³⁰.

Understanding and building on the local knowledge, experience and perception regarding nutrition is the first step to ensure adequate and successful interventions.

Key questions include:

- What is malnutrition? What does it look like? What term is used locally?
- Are there any peaks? Why and when? Is it considered to be shameful?
- What are the local endemic micronutrient deficiencies that are perceived by the community? What are the symptoms?
- What are the causes of malnutrition? Are they perceived as reversible or irreversible? Can the community do something about the causes?
- Who is the most affected in the community? What are the reasons?
- Are they sick, and if so why?
- What do those people eat and why?
- Is the family too poor to give them the food they need?
- What types of food are available at different times in the year?
- This will be of great relevance to design the nutrition messages and the behaviour change strategy, discussed in Guidance 8. Refer also to ACF module on mental health to further explore community perception of malnutrition.

30 / Tontisirin, K et Bhattacharjee, L, 2008, 'Community based approaches to prevent and control malnutrition', in the Asia Pacific Journal of Clinical Nutrition, 17(S1), pp 106-110



■ 2.5 ASSESS THE RISK OF CYCLICAL PHENOMENA AND DISASTERS AND THEIR IMPACT ON NUTRITION

Cyclical phenomena such as drought or flood and/or sudden disasters, related or not to climate variability and change, negatively impact all underlying causes of undernutrition, including food availability and food utilisation, the ability to deliver proper and positive care and the existence of adequate sanitary environment. The poorest and most vulnerable are at greatest risk of suffering from the potential impacts of this kind of disasters and climate change³¹. This is due to their high exposure to natural hazards, their direct dependence on climate-sensitive resources, and their limited capacity to adapt to and cope with the impact of disasters.

Key questions include:

- What types of cyclical phenomena the community is exposed to?
- What is the frequency, severity and risk of cyclical phenomena, including extreme weather events such as drought, floods or cyclones?
- Did the community face any 'abnormal' disaster recently?
- How does this affect the food availability, access and utilisation?
- How does this affect maternal and childcare practices?
- How does this affect the mental health of individuals and the well-being of the family?
- How does this affect the health environment?
- How does this affect the key livelihood assets and strategies?

For more information refer to ACF Disaster Risk Management (DRM) programming guideline and policy.

■ 2.6 EXPLORE THE NEED TO CONDUCT AN IN-DEPTH MICRONUTRIENT ASSESSMENT

Micronutrients include all vitamins and minerals. Although they are required in only tiny amounts, they are nonetheless essential for life and needed for a wide range of body functions. If you work in an area where there are known micronutrient deficiencies, consider conducting an in-depth assessment with the help of external expertise, **to determine the prevalence of deficiency in key micronutrients, such as vitamin A, iron and zinc**. Specific dietary tools have been developed and research is currently on going to design more field-friendly and affordable methods to measure nutritional status, especially for several micronutrients simultaneously. These include:

- Helen Keller International (HKI) has developed a simplified dietary tool to identify groups at risk for inadequate intake of vitamin A. The assessment is available in Annex 6.
- HarvestPlus has developed guidance to conduct a 24h recall for assessing iron and zinc intake³². The assessment is available in Annex 7.
- Validated food frequency questionnaires in combination with nutritional software are useful tools to assess inadequate intake of some micronutrients over long period, even though they are time-consuming to implement.

Another reliable and objective (although costly and invasive) way to detect micronutrient deficiencies is the use of biomarkers, which reflect either individual nutrient intake or the impact of nutrient intake. Alternative cheaper options include test of iodine contents of salt, measurement of haemoglobin in capillary blood using HemoCue™ to detect iron deficiency anaemia or the use of serum retinol to detect Vitamin A deficiency. These tests can be combined with a SMART nutrition survey.

31/ United Nations Standing Committee on Nutrition, 2010, Climate Change and Nutrition Security Policy Brief, UNSCN, Geneva.

32/ Measuring iron and zinc intake is complex as the assessment has to include the measure of intakes of dietary modifiers known to influence the bioavailability of iron and zinc. For instance, iron's absorption by the body is enhanced with the consumption of vitamin C; conversely, iron's absorption is reduced when consumed with food containing tannins such as tea or coffee.

FURTHER READING AND WEBSITES

- ACF, Nutrition Causal Analysis guidelines – coming by the end of 2011 Infant and Young Children Nutrition Project at <http://www.iycn.org/>
- FAO, 2005, Protecting and promoting good nutrition in crisis and recovery, FAO, Rome, at <http://www.fao.org/docrep/008/y5815e/y5815e00.htm>
- FAO and EC Programme on Linking Information and Decision Making to Improve Food Security at <http://www.foodsec.org/web/about/overview/en/>
- Measuring child care practices at <http://www.ifpri.org/publication/measuring-childcare-practices>
- Sphere Project, Sphere Handbook: Humanitarian Charter and Minimum Standards in Disaster Response, 2011 at <http://www.sphereproject.org/handbook/>

GUIDANCE 3 – IDENTIFY THE MOST NUTRITIONALLY VULNERABLE

As stated earlier, the prenatal period and the first two years of life represent the most critical period for a child's physical and cognitive development. **Interventions which aim to prevent undernutrition can be much more effective than those that target children who are already undernourished.** The term 1,000 days refers to the time from the start of a mother's pregnancy until a child is two years old but also to the window of opportunity to take action to combat undernutrition.

Sufficient priority should therefore be given to interventions, which aim to improve the nutrition security of women of child bearing age, pregnant and lactating women, infants and young children (see section 1 for more detail). There will of course be other vulnerable groups in need of food security and nutritional interventions, and this vulnerability remains an important targeting criterion for various FSL interventions. This guidance is complementary to Guidance 1 & 2, to ensure that information regarding the specific needs of these groups at risk is systematically collected.

■ 3.1 COLLECT DATA RELATED TO THE NUTRITIONAL STATUS AND NEEDS OF WOMEN OF CHILD BEARING AGE, PREGNANT AND LACTATING WOMEN, AND CHILDREN UNDER TWO

Key data includes the following:

- Anthropometric data for children such as WFH, HFA, WFA and/or MUAC. Data for children between 6-23 months and less than 6 months can be disaggregated from anthropometric surveys and although the results may not be statistically significant, this will give you trends.
- Anthropometric data for women of child bearing age such as BMI.
- Low birthweight rates (LBW). This is not always easy to access as many deliveries take place outside the formal health care system.
- Calorific intake data for children younger than two (or five) years of age and for women of child bearing age relative to recommended daily allowances.
- Dietary diversity scores for children younger than two (or five) years and for women of child bearing age.
- Rates of exclusive breastfeeding.
- Vitamin A, iodine or iron status relative to the standards for children and for women of child bearing age.

Refer to 2004 WHO and FAO guidelines regarding human nutrition requirements to learn about the recommended daily allowances per age and sex. Note that the nutritional requirements differ for PLWH. See Box 6 for nutrition needs of HIV-positive pregnant and lactating women and in the section 'further reading' for additional resources.

BOX 6: NUTRIENT REQUIREMENTS FOR HIV-POSITIVE PREGNANT AND LACTATING WOMEN

Nutrition support can preserve maternal status and improve birth outcomes. This is contingent on women knowing about their HIV status which in turn depend on increasing access to voluntary, counselling and testing (VCT) services. No data currently exist on the impact of HIV and AIDS on energy needs during pregnancy and lactation.

HIV positive women should increase their energy intake as other adults with HIV according to infection stage in addition to the extra energy needs requirements during pregnancy and lactation. During the asymptomatic phase, an HIV woman requires an additional 10 % of energy intake per day as compared with a non-HIV infected woman and an additional 20 to 30 % during symptomatic phase. During pregnancy and lactation, a woman should increase the energy intake by 300 kilocalories per day in the second term of pregnancy, by 475 kilocalories per day in the third term and between 500 to 675 kilocalories per day if lactating.

Refer to the World Bank report, the HIV/AIDS, Nutrition and Food security, what can we do? For further information, see The revised WHO principles and recommendations regarding HIV and infant feeding.

■ 3.2 IDENTIFY FOOD INSECURE HOUSEHOLDS USING VARIOUS INDICATORS

Socio-economic status is often used as targeting criteria for FSL interventions and remains a crucial factor of vulnerability and should not be put aside. Vulnerable households with low socio-economic status often include the following (list is not exhaustive):

- Households with no/limited access to land (e.g. urban poor, rural landless, pastoralists, and many small-scale farmers) with limited access to sources of incomes and livelihoods.
- Households who spend a large proportion of their income on food and/or net food buyers.
- Female or child-headed households.
- Marginalised households (e.g. due to ethnicity, caste, occupation).
- Households with chronically ill members (including PLWH).
- Households located in drought-prone regions or other fragile agro-climatic regions.
- Displaced, refugees or socially isolated households.

■ 3.3 PRIORITISE CHILDREN UNDER TWO, PREGNANT AND LACTATING WOMEN (AND TO A BROADER EXTENT WOMEN OF CHILDBEARING AGE) FROM FOOD INSECURE GROUPS AS DIRECT OR INDIRECT BENEFICIARIES OF FSL INTERVENTIONS

This is relatively easy to put in place, and culturally accepted as in many contexts children's needs are considered a priority and pregnant women have a specific status. There are of course exceptions to a rule, and a context specific assessment of acceptability and feasibility is required. In addition, the use of age and the stage of pregnancy to determine eligibility can significantly reduce the logistic costs of targeting. Targeting those groups can be used as the unique criteria (e.g. blanket distributions for children under two and PLW), or this can be combined with more "standard" food security and livelihood vulnerability criteria (e.g. households having limited assets and a child under two). See Box 7 for useful proxies to identify your target groups.

Restricted targeting may not always be feasible as this could be divisive and create tensions between families. Ultimately, the target groups depend on the context, outcomes of needs assessment and programme's objectives and are done on a case-by-case basis. This approach does not prevent the targeting of other groups such as adolescents, people living with HIV or tuberculosis or those identified on the basis of socio-economic criteria for an income generating programme.

BOX 7: IDENTIFYING CHILDREN UNDER TWO AND PREGNANT AND LACTATING WOMEN

- Birth certificates or ID cards in countries where they exist
- Lists from health centres on pregnant women, if available
- Following proxies:
- Length: 2006 WHO median length at 24 months from simplified field tables:
 - 86.4 cm for girls
 - 87.3 cm for boys
- All mothers of children under 6 months are considered eligible (exclusive breastfeeding). No “proof” is required for breastfeeding
- As a last resort, visible signs of pregnancy although this is not recommended, as there is a high risk of excluding women in their first trimester of pregnancy

FURTHER READING AND WEBSITES

- IFPRI, 2008, ‘Investing in early childhood nutrition Policy Brief’ at <http://www.ifpri.org/publication/investing-early-childhood-nutrition>
- The LINKAGES project at <http://www.linkagesproject.org/>
- WHO & FAO, 2004, Vitamin and mineral requirements in human nutrition at <http://www.who.int/nutrition/publications/micronutrients/9241546123/en/index.html>
- WHO, 2006, Promoting Optimal foetal development at www.who.int/nutrition/topics/fetal_dev_report_EN.pdf
- WHO, 2009, HIV and Infant Feeding Revised Principles and Recommendations: Rapid Advice at http://www.who.int/child_adolescent_health/news/archive/2009/30_11_09/en/index.html
- World Bank, 2007, HIV/AIDS, nutrition and food security: what can we do? a synthesis of international guidance, World Bank, Washington, DC.
- www.thousanddays.org

GUIDANCE 4 – AIM FOR IMPACT ON NUTRITIONAL STATUS

It is increasingly emphasized that FSL interventions must be able to demonstrate impact in terms of improving nutritional status. **This chapter provides guidance on measuring impact on nutrition.** It does not detail other standard and core FSL indicators that should be incorporated into the logical framework. These can be found in the Monitoring & Evaluation (M&E) guidelines for FSL interventions, disseminated in 2011.

Once again, there is no ready-to-use solution and the indicators to be used will vary according to the nature and the duration of the intervention. Once you have conducted your nutrition-sensitive assessment and identified the different pathways through which your project may have an impact on nutrition, you will be well placed to determine the most pertinent indicators. **Always consult with your nutrition, MHCP and WASH colleagues when working on the following steps; they will provide additional technical and/or operational support and guidance.**

■ 4.1 INCLUDE A NUTRITION OBJECTIVE IN THE LOGICAL FRAMEWORK, WHEN THIS IS ATTAINABLE

The **nutrition objective** in the log frame refers to the **direct or indirect** improvement of nutritional status by the project beneficiaries as a result of utilising the services provided by the programme. **This objective explicitly demonstrates how the project contributes to improve the nutritional**



status of the population. Make sure, however, that the objective is attainable within the framework of the project (see Table 4 and 5). Refer to section 1.7.2 'Designing a log frame' in the ACF M&E guidelines for FSL interventions for detailed information.

Different scenarios are possible depending on if the intervention includes only FSL activities or is integrated with other sectors. FSL interventions have great potential to improve the nutritional status of an individual (e.g. by increasing access to nutritious food, by improving the diversity of diet and/or by improving household incomes), but other factors will intervene before these positive effects are translated into an improved nutritional status (e.g. access to health care and child care patterns). Integrated programming is hence more likely to show impacts on the nutritional status as the intervention seeks to tackle a variety of the underlying determinants. See point 4.3 for more details on the programme pathways.

In a project aiming at increasing access and consumption of Animal Source Foods (ASF) for instance, the log frame could be formulated as in Table 4 below.

Table 4: Example of nutrition objective for FSL standalone intervention

LIVESTOCK FOR IMPROVED NUTRITION	
OVERALL OBJECTIVE [GOAL]	Contribute to the improvement of the nutritional status & food security of targeted population through a livestock-based intervention
SPECIFIC OBJECTIVE [PROJECT PURPOSE]	Improve the intake of micronutrient-rich foods of vulnerable households by X % in rural areas of Shan State through the consumption of ASF

In a multi-sectoral programme that includes integrating nutrition, MHCP with FSL and WASH activities, the specific objective could be to reduce the prevalence of wasting, provided a number of conditions are met (e.g. at least 3-year intervention, SMART surveys prior to the intervention and at its conclusion, controlling for confounding factors and other determinants). Note that measuring impact is difficult but this should not prevent ACF from doing it when the situation allows.

Table 5: Example of nutrition objective for integrated programming

INTEGRATING PROGRAMMING FOR IMPROVED NUTRITION	
OVERALL OBJECTIVE [GOAL]	Contribute to the improvement of the nutritional & food security status of targeted population through an integrated FSL, nutrition, MHCP and WASH programming
SPECIFIC OBJECTIVE [PROJECT PURPOSE]	Reduce the prevalence of Global Acute Malnutrition (GAM) by X % points in Maungdaw by 2013

■ 4.2 HAVE AT LEAST ONE OUTCOME OR IMPACT INDICATOR RELATED TO IMPROVED NUTRITION

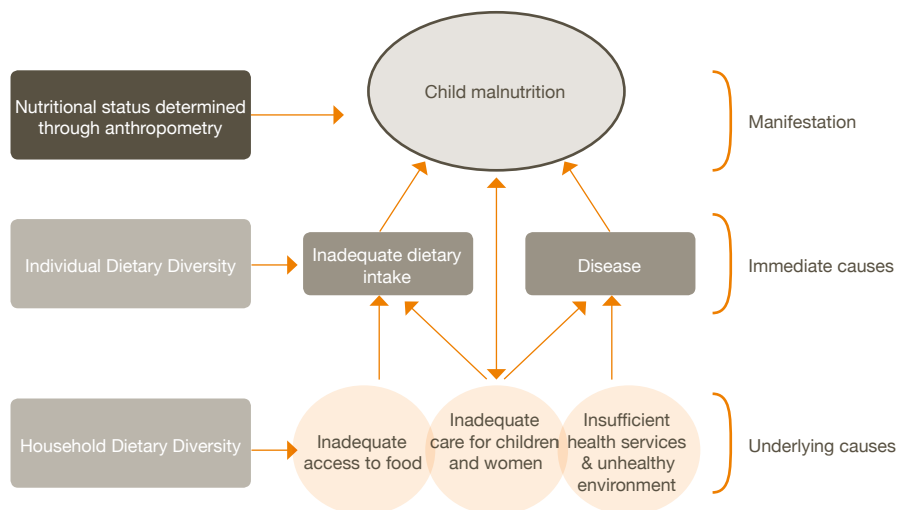
The chosen **nutrition outcome or impact indicators** will vary according to the nature and the duration of the intervention. They will reflect changes either at the outcome or at the impact levels, based on the nutrition objective as defined in the section above. In all cases, the indicators have to be SMART (specific, measurable, achievable, relevant and time-bound).

- Outcome refers to the short/medium term change induced by the project.
- Impact is the long-term benefit for targeted groups and the wider society.

Refer to section 1.7.3 'Designing indicators' in the ACF M&E guidelines for FSL interventions for detailed information.

As stated earlier, the measurable effects of stand-alone FSL interventions on the nutritional status are likely to be less significant (with the potential exception of food aid interventions) than multi-sectoral interventions, thus most changes will be detected at outcome level. The graphic below shows potential impact and outcome indicators, depending on the objective and on which level of the causal chain it is located (see Figure 6).

Figure 6 : Impact and outcome indicators for large-scale food security programmes



adapted from E-learning course, FAO (2010)

■ 4.2.1 Use dietary diversity scores (DDS) to measure the outcome of a short-term (<1 year) standalone FSL intervention

Dietary diversity is one of the determinants of nutritional status but is not an indicator per se of the nutritional status³³. Dietary diversity scores are easy-to-measure proxy indicator of food security and are cheap, quick and easy to analyse. They also allow measuring trends and are sensitive to change. See Table 6 below for an example of the use of DDS in a FSL project. Refer to ACF FSL assessment guidelines and ACF M&E guidelines for FSL interventions for further details.

Bear in mind that the household dietary diversity score (HDDS) is used as a proxy for household food security and it reflects, in a snapshot form, the economic ability of a household to consume a variety of foods. The individual dietary diversity score (IDDS) on the other hand aims to capture nutrient adequacy and is a proxy indicator of nutritional status. IDDS is also useful to determine the consumption of programme-promoted foods, if any.

33/ As already stated, the FCS is another valuable tool to measure food access but is not adequate to measure the micronutrient intake adequacy.



Table 6: Example of log-frame for FSL standalone intervention lasting less than one year

LIVESTOCK FOR IMPROVED NUTRITION			
LOG-FRAME OBJECTIVES		OBJECTIVELY VERIFIABLE INDICATORS	
OVERALL OBJECTIVE	Contribute to the improvement of nutritional status and food security of targeted population through a livestock-based intervention	Not applicable	
SPECIFIC OBJECTIVE	Improve the intake of micronutrient-rich foods by vulnerable households by X % in rural areas of Shan State	<ul style="list-style-type: none"> - % of household have improved their dietary diversity score from X to X food groups - % of individuals (or groups at risk) have improved their dietary diversity score from X to X food groups - Minimum diet diversity for child 6-23 months is attained - Consumption of iron-rich or iron-fortified food for child 6-23 months is improved - Knowledge of at least 4 key nutrition messages promoted during nutrition promotion 	<ul style="list-style-type: none"> - HDDS guidelines developed by FANTA³⁴ and FAO - IDDS guidelines developed by FANTA³⁵ and FAO - IYCF guidelines developed by FANTA & WHO & UNICEF - Attendance list for nutrition promotion sessions & IEC material - Pre/Post tests - Pre/Post KAP survey

Be aware of the **main limitations** of DDS:

- DDS do not provide any information related to quantity of food and calorific intake.
- DDS do not account for potential substitution effects. For instance, households may have increased their consumption of ASF but the DDS remains the same, as in the meantime they have decreased the consumption of lentils that are another good source of protein.
- Due to their different nutritional requirements, statistics need to be disaggregated by age groups, especially for children under 6 months, from 6 to 12 months and from 12 to 24 months. As already stated, this will only give trends as the sample size will not be representative to provide statistically significant data.
- As a proxy indicator, DDS does not reflect how the food is used and absorbed by the body. For instance, parasitic infections such as hookworms or roundworms reduce the absorption of iron. Children may consume more frequently iron-rich food with the project intervention but without significant effects on the nutritional and health status.

³⁴/Note that FAO & the EU have developed revised guidelines for measuring household and individual dietary diversity in 2011. The main changes compared to the FANTA protocols are: i) new individual dietary diversity score based on results of the Women's Dietary Diversity Project, and ii) an annex that classifies food items into food groups.

³⁵/ See Annex 3, 4 and 5 for HDDS, IDDS and IYCF guidelines.

■ 4.2.2 Use anthropometric measurements to measure the impact of long-term FSL programming

For long-term, integrated programming and specific FSL interventions such as food aid, anthropometric measurements can be used to measure the nutritional impact, in addition to dietary diversity scores. A number of conditions must, however, be met (e.g. context stability, at least 3-year intervention, SMART surveys at start and conclusion of the intervention, statistic treatment of confounding factors and determinants, etc). See Table7 below for an example of log-frame in integrated programming.

Weight-For-Height (WFH) for children and Body-Mass Index (BMI) for women allow the assessment of programme impact in terms of reduction of **wasting** or acute malnutrition. Changes in wasting are rapid to observe and can be captured even within one year. Attributing this change to a programme, however, is more complex as external factors such as seasonality, or other interventions tackling other determinants of undernutrition may play a significant role. A longer time frame is hence needed. Anthropometric measures also have the advantage of capturing the effects on both income and dietary diversification effects of FSL interventions.

Although the MUAC (Mid-Upper Arm Circumference) is mentioned as one of the core FSL M&E indicators to measure nutrition impact, it is important to keep in mind its limitations. MUAC is used as an indicator of acute malnutrition and is primarily an indicator of risk of mortality. MUAC does not measure growth faltering or other forms of undernutrition.

The impact of an intervention on **stunting** (or chronic undernutrition measured by height-for-age) may be observed in some situations where PLW and children under two are direct beneficiaries, and the intervention lasts a minimum of 3 to 5 years. Stunting is much slower to change than wasting and is less influenced by seasonality and disease outbreaks. In addition, stunting in children mainly occurs during the window of opportunity (from conception to two years of age) and this is the time when preventive actions have the greatest impact on its occurrence. Stunting in children of 3 years or older usually reflect growth retardation at an earlier age, and is often irreversible.

Table 7: Example of log-frame for long-term integrated programming

INTEGRATING PROGRAMMING FOR IMPROVED NUTRITION			
LOG-FRAME OBJECTIVES		OBJECTIVELY VERIFIABLE INDICATORS	
OVERALL OBJECTIVE	Contribute to the improvement of the nutritional status & food security of targeted population through an integrated FSL, nutrition, MHCP and WASH programming		
SPECIFIC OBJECTIVE	Reduce the prevalence of Global Acute Malnutrition (GAM) by X percent points in Maungdaw by 2013	<ul style="list-style-type: none"> - Decrease in global acute malnutrition rate by the end of the intervention - % of mothers/households that have adopted at least four optimal nutrition and care practices 	<ul style="list-style-type: none"> - SMART nutritional survey including anthropometric measurements of children under 5 and women of child bearing age at start and conclusion of the intervention - HDDS/IDDS guidelines³⁶ - IYCF protocols developed by FANTA & WHO & UNICEF - Pre and Post KAP survey results. - Pre and Post Field observation

36/ See Annex 3, 4 and 5 for HDDS, IDDS and IYCF guidelines.

■ 4.2.3 Systematically account for nutrition promotion and changes in behaviour, notably nutrition practices

To enhance the impact of the project, always include **nutrition promotion** in projects that are shorter than one year and construct a **comprehensive behaviour change strategy (BCS)**, based on behaviour change communication, for longer-term projects. The messages for nutrition promotion will be defined in collaboration with the nutrition and MHCP teams and delivered by project teams. Behaviour change strategy, on the contrary, is a long-term strategy that aims at changing deep-rooted behaviour and will be designed and piloted by the MHCP teams³⁷. This said, the country where you work may have already developed its own nutrition agenda including national protocols for acute malnutrition, food-based dietary guidelines, nutrition messages and IEC material. If available and in line with ACF standards and protocols, ACF will use and build on the existing resources and material provided by the line Ministry, or at minima work in collaboration with the Ministry.

Changes in nutrition practices and behaviour may be accounted for through **pre-post KAP surveys**. It is however relatively easy to measure change in knowledge, but it is difficult to measure sustainable change in practices and behaviour. Refer to Guidance 8 for detailed information on nutrition promotion and behaviour change strategy, and see tables 6 and 7 above for examples of log frames.

■ 4.3 CONSIDER THE INTERVENTION AS A FLOW WITH UNEXPECTED BARRIERS AND ENHANCERS, THROUGH PROGRAMME THEORY

Do not assume that the project's outcomes will be achieved automatically. For example, the potential of ASF such as egg, meat, fish or dairy products to alleviate micronutrient deficiencies as part of a food-based strategy^{38,39} is well recognized especially in countries where the main staple food is cereal. However, the promotion of animal rearing will not automatically lead to improved consumption. Experience shows for instance that the livestock will sometimes be kept as an asset (e.g. cattle or small ruminant such as goats), or sold in the market to cover other expenses (e.g. school fees, health care) and not be used to improve the diet diversity.

It is hence crucial to **make sure that the logic of the programme flow stands in the prevailing context**. A useful tool in that respect is the Programme Theory⁴⁰. The Programme Theory is the pathway from an intervention input through programmatic delivery, household and individual utilisation to its desired impact. The Programme Theory puts a stronger focus on the intermediary outcomes and problems that may arise alongside the intervention to bridge the gap between the concept of an intervention and the reality of its impacts. In our example, the introduction of livestock in the household may also negatively impact the family if adequate hygiene promotion is not undertaken in parallel. Experience shows that livestock potentially increases the nutritional benefits in the long run but at the same time may increase wasting among children because of a contaminated environment (e.g. children are in contact with animal's faeces). Moreover, the livestock activities can also impact the social dynamics within the household if significant income is generated by the project and

37/ Formative research is the foundation of an effective behaviour change strategy and consists of assessing behaviours, attitudes and practices of target groups, understanding the target group's perspective, understanding the factors, which influence their behaviours, and determine the best ways to reach them. Several formative research methods are used to develop behaviour change interventions including barrier analysis, trials of improved practices, positive deviance, focus groups, in-depth interviews, supporting groups for accompanying the change, reinforce the positive practices, and finding coping strategies.

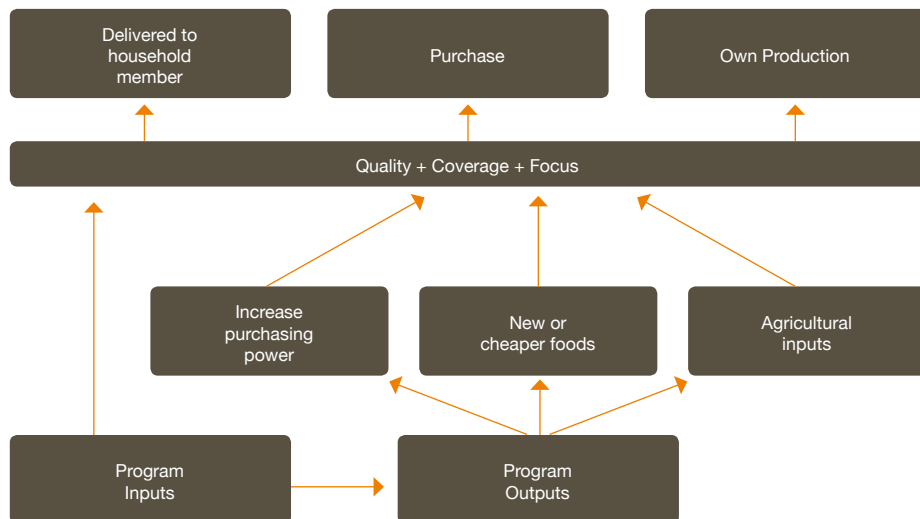
38/ Allen, LH, 2003, 'Interventions for Micronutrient Deficiency Control in Developing Countries: Past, Present and Future' in the Journal of Nutrition, 133, pp. 3875S–3878S.

39/ Neumann, C, Muphy, SP, Gewa, C, Grillenberger, M, Bwibo, N, 2007, 'Meat Supplementation Improves Growth, Cognitive, and Behavioral Outcomes in Kenyan Children', in the Journal of Nutrition, 137, pp. 1119– 1123.

40/ Habicht, JP, Gretel, H, Lapp, J, 2009, Methodologies to Evaluate the Impact of Large Scale Nutrition Programs, Doing Impact Evaluation # 13, World Bank, Washington DC.

women are not able to take decisions in relation to the management of household finances. Ensure the programme's sustainability by a thorough analysis of the household food economy and livelihood strategy and by diversifying the type of activities. For instance, vulnerable households may benefit in a short term from a livestock intervention but not be able to afford the related costs induced by the intervention in the longer run (e.g. veterinary costs); this can be offset by providing vouchers or taking part in a IGA programme.

Figure 7 : Pathways from programme inputs to household food availability



adapted from Habicht (2009)

Getting the programme theory 'right' is particularly important for nutrition-sensitive interventions because they involve complex biological, psychosocial, individual and social factors. In our example, although the monitoring of the intervention may indicate that the household diet diversity increased since the start of the project, this may not reflect the reality of the situation as some members of the family, and women in particular, may not benefit from ASF as they are considered luxury foods. Likewise, children entirely depend on caregivers with respect to what they eat and it is important to ensure that the animal products are correctly prepared and given to the child. As demonstrated in the Figure 8 below, there are several steps with a number of potential barriers and enhancers between the fact that foods are available at the household level and the actual ingestion of food by the young child. In addition, other factors intervene in the absorption of the nutrients by the body.

It is **difficult to assess the relative contribution of the different programme components to the final impact on nutritional status**. In our example, it may be difficult to say if the nutritional status improved because of increased income (and purchase of additional food) or because of increased consumption of animal products as such. Keep also in mind that **there are many other determinants that affect the relationship between diet diversity/food intake and nutritional status**. For instance, when feeding practices of young children are not optimal or when the absorption of nutrients is impaired by parasites. These considerations may lead to complementary interventions, such as de-worming and/or nutrition and care counselling sessions.

Figure 8 : Pathways from foods in household to food intake of a young child



adapted from Habicht (2009)

Key questions to study the programme impact pathway:

- How is the intervention going to bring about a change of the nutrition status?
- What is happening as the intervention moves along the pathway from initial input to impact?
- What are the primary impact pathways?
- What are the intermediary outcomes?
- What are the bottlenecks? How to solve them?
- How will seasonality affect the programme impact pathways?
- What are the barriers and enhancers to achieve impact on nutrition?

■ 4.4 BE CLEAR ON HOW THE COLLECTED DATA WILL BE USED IN THE PROJECT'S OVERALL MONITORING AND EVALUATION PLAN

Monitoring and evaluation (M&E) are closely tied, even if they are two separate components of the project:

- **Monitoring** refers to a continuous process of data collection and analysis, meant to ensure that inputs, processes and outputs are implemented as planned. Part of its purpose is to detect unforeseen negative consequences that may arise because of the intervention (e.g. poultry suffering from Newcastle disease as a result of the intervention or of external events).
- **Evaluation** is the process of assessing changes in the food and nutrition security situation that can be attributed in part or wholly to a project or programme. Impact assessment focuses primarily on assessing changes at the outcome level and at the impact level (e.g. the introduction of orange flesh sweet potatoes in the community garden increase the weekly consumption of vitamin-A rich food and improve the retinol status of children under 5).

Too often the M&E component is incorporated into the proposal without proper analysis and without adequate funding and skills. The M&E must already be prepared at the designing stage, keeping in mind that changing nutrition status takes time and may not be reflected immediately. Refer to ACF FSL M&E guidelines for in-depth guidance.

Attributing impact on nutrition to a specific programme is also difficult because there are several factors that affect food and nutrition security of a given population. The following questions should be explored:

- What has changed since the programme began?
- How much change has occurred since the programme began?
- Who experienced the change most and least?
- How and why did the change occur?
- How much of the change can be attributed to the programme itself rather than to external factors?
- How much change did the community perceive?

As a minimum, each project should include a Pre and Post survey, or baseline and endline surveys, with regular measurements in between (monitoring). The implementation of a Pre and Post survey

answers the question of whether a change has occurred in an outcome/impact indicator by measuring and comparing its level before and after the intervention. This type of design does not allow the analysis to separate the outcome/impact of the project from those of other possible factors - change in the indicator could have occurred even in the absence of the project, due to events unrelated to the project. It is therefore very important that other elements are provided in the M&E system regarding inputs and outputs to increase the credibility of association between activities and effects. **Make sure that the surveys are randomised and representative with adequate sample size** to allow the detection of statistical differences and reduce bias. Refer to ACF guidance on sampling and seek additional advice where needed.

More powerful types of evaluation designs may be considered, such as Pre and Post surveys with control groups or Pre and Post surveys with treatment of determinants and known confounding factors, when the intervention lasts several years and/or is integrated. These two evaluation designs are adequate to measure change in the nutritional status of the beneficiary population using anthropometric measurements. Always seek professional advice and support for these kinds of evaluations as they require strong technical and statistical skills and raise ethical issues. In addition, the design of the study needs to be faultless to generate scientifically sound results. See Boxes 8 and 9 for examples of study designs.


BOX 8: PRE AND POST SURVEY WITH CONTROL GROUPS OR PRE AND POST SURVEY WITH TREATMENT OF DETERMINANTS AND KNOWN CONFOUNDING FACTORS

The Pre and Post survey with control groups requires that both at baseline and at end-line, similar data is collected in the beneficiary population and in the control group (not receiving any intervention). The attributable influence of the project is measured by quantifying the difference in levels of the outcome/impact indicator between the two groups at the two points in time. This type of design is difficult to implement both practically and ethically but the stepped wedge approach can overcome this problem (see below).

The Pre and Post survey with statistical treatment of determinants and known confounding factors is another alternative. Determinants refer to any features that predictably influence the outcome/impact of the intervention (e.g. child feeding practices influence the child nutritional status). Known confounding factors are factors that can influence the outcome/impact but over which the project has no control (e.g. weather). Both are measured and quantified at baseline and end line evaluation; multivariate statistical analysis techniques can then be used to account for them and how they may have affected the impact of the intervention.

BOX 9: THE STEPPED WEDGE DESIGN

One possible evaluation design that can provide scientifically adequate data is the stepped wedge design. This uses the fact that an intervention can rarely achieve full coverage from the start of a programme and is typically scaled up over time. This means for example, that if an intervention is to be provided in 60 villages over a period of two years the last 30 villages can be used as a control group for the first 30. A baseline survey is done in all 60 villages and the programme is then implemented in 30 villages in the first year and 30 in the second year. This allows the effect of the intervention over the first year in 30 villages to be measured in comparison with another 30 villages without the intervention over the same period, which gives the control or comparison group. The key attributes of this design are that all 60 villages must be within the same physical area and that the villages taking part in each year of the programme are selected randomly. Simply comparing 30 villages in one district with 30 in another district leads to a sample size of two as they are not statistically independent of each other. The randomisation process can be transparently done by representatives of the



villages, who know that they will get the interventions eventually. If there is a need to provide some intervention from the start of the programme then all 60 villages can get something relatively innocuous, so they are all treated the same. If there is a danger of contamination by villagers travelling to an intervention village from a control village, then the villages may need to be separated by buffer villages. The stepped wedge design was used in the Gambia to estimate the benefits of vaccinating against hepatitis B while the programme was being scaled up throughout the country. A stepped wedge design has also been used to estimate the relative impact of different types of supplementary foods given to malnourished children at feeding centres in Malawi and to examine the effects on health of introducing treated water supplies in South Africa.

Adapted from a review of ACF integrated approaches to treat and prevent acute malnutrition, NutritionWorks, 2009

FURTHER READING AND WEBSITES

- ACF M&E guidelines for FSL interventions.
- FAO & EC, 2011. Guidelines for measuring household and individual dietary diversity, FAO, Rome.
- FAO, Impact Assessment of Large Scale Food Security Programmes at <http://www.fao.org/spfs/monitoring-evaluation/e-learning/en/>
- Habicht, JP, Gretel, H, Lapp, J, 2009, Methodologies to Evaluate the Impact of Large Scale Nutrition Programs, Doing Impact Evaluation # 13, World Bank, Washington. DC.
- Brown, A, Lilford, R, 2006, 'The stepped wedge trial design: a systematic review' in the BMC Medical Research Methodology, 6:54.

GUIDANCE 5 – BUDGET FOR NUTRITION-SENSITIVE PROGRAMMES

As already mentioned, there is increasing interest in nutrition by major donors. The World Bank, DFID and the European Commission (EC) as well as the French Development Agency (AFD) to mention a few have published nutrition policies over the last few years and the interest in nutrition continues^{41,42}. **To better align FSL activities with nutrition requires additional funds but may also enable access to new funding.** Improved nutrition all along the intervention pathway requires identifying potential/new donors and forecasting any additional costs into the programme budget.

■ 5.1 IDENTIFY MAJOR DONORS INTERESTED IN NUTRITION AND LEARN ABOUT THEIR NUTRITION STRATEGY IN THE COUNTRY

Start by learning about the overall strategy and policy of 'traditional' donors, and then look at their country strategies in collaboration with the Country Director and/or FSL and nutrition coordinators, but don't stop there! **Donors that ACF is working with less as well as small, emerging donors, private donors and the private sector are all interesting partners.** Consult headquarters for additional information. In a country where the donor community does not adequately address under-nutrition, an advocacy plan can be set up and rolled out in collaboration with other NGOs and UN agencies. Seek advice from the headquarters if there is need for advocacy.

41/ Department for International Development, 2009, The neglected crisis of undernutrition: Evidence for action; Available at <http://www.dfid.gov.uk/Documents/publications/nutrition-evidence-paper.pdf>

42/European Commission, 2011, Addressing Undernutrition in External Assistance, An integrated approach through sectors and aid modalities, Reference Document, Tools and Methods Series at <http://capacity4dev.eu/topic/fighting-hunger>

■ 5.2 FORECAST AND INCLUDE ANY ADDITIONAL COSTS INTO THE BUDGET

Make sure that you **include additional staff** to design and implement the nutrition promotion, the Behaviour Change Strategy (See Guidance 8), adequate M&E and community mobilization that are key factors to improving nutrition. Experience suggests that 2% of the overall budget should be allocated to M&E. For further details on M&E, see the ACF FSL M&E guidelines. Key questions to explore:

- What are the tasks and responsibilities of the staff?
- How many staff and for how long?
- What are the required skills? Is there need for training?
- How many community workers or volunteers are needed (e.g. CHWs, agricultural extension agent)? What are the types of incentives provided?

Nutrition, MCPH and WASH teams may already be overloaded and/or not have the adequate resources to support the FSL interventions. It is therefore crucial to forecast enough staff.

Include additional technical costs, as there may be need for technical expertise. This is especially true if formative research is conducted prior to defining a behaviour change strategy or when M&E requires expert support or is implemented by an external agency or research institute. Key questions to explore:

- What technical expertise is already available at mission level?
- Is there a need for additional resources?
- What technical expertise is required to effectively ensure the implementation of the programme, including the nutrition promotion, Behaviour Change Strategy, and the M&E?
- Where to get those skills (local, national, international, in-house, external expertise etc)?

Include **direct programme implementation costs**:

- What are the inputs and material distributed to communities (e.g. food, micronutrient supplements, breastfeeding corners, or posters for nutrition promotion)?
- Check if the MoH or other organisations have appropriate nutrition educational materials, which can be used or modified
- What is the material needed for M&E (e.g. scale or MUAC tapes, nutrition software)?

FURTHER READING AND WEBSITES

- Department for International Development, 2009, The neglected crisis of undernutrition: Evidence for action at

<http://www.dfid.gov.uk/Documents/publications/nutrition-evidence-paper.pdf>

- European Commission, 2011, Addressing Undernutrition in External Assistance, An integrated approach through sectors and aid modalities, Reference Document, Tools and Methods Series at <http://capacity4dev.eu/topic/fighting-hunger>

- Foresight initiative at <http://www.bis.gov.uk/Foresight>

- Feed the Future, the U.S. global hunger and food security initiative at

<http://www.feedthefuture.gov/>

- Save the Children, 2009, Hungry for Change, an eight-step, costed plan of action to tackle global child hunger, Save the Children, London at http://www.savethechildren.org.uk/en/54_9544.htm



■ 2.2 IMPLEMENTING THE INTERVENTION

This part gives additional guidance on how to maximise the nutritional impact of FSL interventions, beyond the programming, needs assessment, formulation and financing stages covered in the previous part. As already mentioned, the dividing line between the stages is blurred and the guidance provided here is also relevant for the preparatory stages.

The first chapter of Guidance 6 highlights common implementation principles that are relevant for all FSL activities and the subsequent chapters give thematic guidance for agricultural interventions, livestock and fisheries interventions, income generating activities, food aid and cash-based interventions. The last two guidance chapters are dedicated to gender, and nutrition promotion and behaviour change strategy in FSL projects.

GUIDANCE 6 – ENHANCE THE NUTRITIONAL BENEFITS OF FSL INTERVENTIONS AND DO NO HARM

■ 6.1 COMMON PRINCIPLES

■ 6.1.1 Address seasonality to ensure food and nutrition security all year round

The majority of the world's poor are exposed to seasonal cycles of hunger, poverty and disease, and **seasonality is a major-contributing factor to undernutrition**. It is also one of the leveraging points to reduce hunger. In the report 'Seasons of Hunger: Fighting Cycles of Quiet Starvation Among the World's Rural Poor'⁴³, ACF shows how the majority of programmes fail to address seasonality, and result in inadequate answers to meet the household needs during critical periods of the year (see Box 10 for further details). Refer also to the seasonal calendar analysis mentioned in Guidance 2.

BOX 10: SEASONALITY & UNDERNUTRITION

In *Seasons of Hunger: Fighting Cycles of Quiet Starvation Among the World's Rural Poor*, ACF looks at the costs of overlooking seasonality. Most of the world's poor live in rural areas and work in agricultural and livestock economies. For these households, poverty, hunger and illness are highly dynamic phenomena, changing dramatically over the course of a year in response to production, price and climatic cycles. Most of the world's acute hunger occurs not in conflicts and natural disasters but in the annually recurring hunger season, "the period when the previous year's harvest stocks have dwindled and little food is available on the market, causing prices to shoot upward."

43/ Devereux, S, Vaitla, B, Hauenstein Swan, S, ACF-IN, 2008, *Seasons of Hunger: Fighting Cycles of Quiet Starvation Among the World's Rural Poor*, Pluto Press, London.

The report advocates for the systematic adoption of three priority measures in countries badly affected by the lean season:

- **Pre-positioning of nutritional and health resources** in the months before and during the annual hunger period to reduce mortality and morbidity (e.g. nutrient-rich therapeutic foods or food aid to prevent increase in acute moderate malnutrition).
- **Provision of predictable transfers of cash**, food or employment during the hunger season (e.g. income generating activities or cash transfers).
- **Indexing cash transfers to price trends** to buffer poor households against the impacts of volatile markets. The recent global food price crisis has starkly illustrated how volatile prices can quickly lead to severe hunger.

■ 6.1.2 Consider socio-cultural and economic aspects of nutrition and food systems

It is crucial to have a clear understanding of local traditions and habits regarding nutrition and food systems, as **socio-cultural factors greatly affect the allocation and the consumption of foods produced at home or the use of income**. For example, in many cases livestock is slaughtered and consumed only as a last resort even if malnutrition rates are alarmingly high or home grown vegetables are only intended for sale. This is not a problem, but must be taken into account in order to maximise the impact of the intervention – if vegetables are systematically sold, sensitisation should include aspects on how to construct a healthy diet using foods available at markets, rather than solely focussing on the consumption of home-grown produce. Refer to ACF policy brief 2 'Considering Culture in Nutrition and Food Systems'.

In addition to socio-cultural aspects, economic viability (i.e. households have the resources to invest in the activity even after the end of the project) also plays a major role in ensuring sustainability of the project impact.

■ 6.1.3 Create linkages and synergies with other interventions

The nutritional impact of FSL interventions can be further enhanced if the intervention is linked to other relevant programmes. On a national and international scale, a number of initiatives are currently ongoing such as SUN and REACH (see Box 12 for REACH initiative). Both take a multi-sectoral approach and involve a broad range of stakeholders. The leadership of the initiatives at the country level is in the hands of the government. Synergies should be created with initiatives or **service provision from the Ministries** (health, agriculture, etc.) and with **other large-scale programmes** that are funded e.g. by the World Bank. On a local scale, potential linkages should be systematically explored with relevant and **complementary programmes implemented by other NGOs or local initiatives, set up by CBOs, women's or farmers' groups etc.** See Box 11 for an example of a multi-sectoral Millennium Village project.

In concrete terms, fostering these linkages may include:

- Linking various FSL interventions with each other (e.g. homestead or community gardens, market access, incomes generating activities, livestock rearing, cash transfers etc.).
- Distributing specific nutritional supplements (e.g. micronutrient supplementation, blanket distributions) to cater for specific needs of group at risk.
- Targeting children that are already malnourished and admitted in feeding programmes.
- Creating links with other services that are needed (e.g. de-worming, disease control, access to water, sanitation & hygiene, psychosocial support services, access to health care etc.).
- Advocating for better service provision by the government.
- Capacity building of the government and other relevant actors.

BOX 11: MILLENNIUM VILLAGE PROJECT (MVP): A SMALL-SCALE, MULTISECTORAL APPROACH TO TACKLE UNDERNUTRITION

The MVP has been conducted in 14 sites in ten sub-Saharan African countries and involves the systematic delivery of a package of health and development interventions with the aim of accelerating progress towards the MDG targets. The project implements a concurrent set of interventions in agriculture, health, education, water and sanitation, and infrastructure at an annual cost of US\$110 per person per year sustained over a 5- to 10-year period. A recent study (Fanzo et al, 2010) presents the preliminary results of the MVP in rural Western Kenya. The 3-year cohort study shows positive evidence on food security, diet quality and children's nutritional outcomes. The replicability and upscaling in different agro-ecological zones in sub-Saharan Africa are currently being assessed.

BOX 12: REACH - INTEGRATED AND LARGE-SCALE EFFORTS TO REDUCE CHILD UNDERNUTRITION

REACH is a country-led approach to scale-up proven and effective interventions addressing child undernutrition through the partnership and coordinated action of UN agencies, civil society, donors, and the private sector, under the leadership of national governments. REACH-promoted interventions focus on five priority areas related to food security, health, and care:

- Increase micronutrient intake with micronutrient supplementation and fortification.
- Increase treatment of severe acute malnutrition with therapeutic feeding programmes.
- Improve household food security including local homestead food production, conditional cash transfers and supplementary feeding.
- Improve hygiene and parasite control with water treatment, promotion of hand washing with soap, distribution of bed nets and malaria preventive treatment, and de- worming;
- Improve breastfeeding and complementary feeding.

REACH started in Mauritania and Laos in 2008 as pilot countries. After two years of action, REACH shows encouraging results. For example, in Mauritania, underweight prevalence among children 6-59 months decreased from 24.2% in 2006 to 23.1% in 2008 and to 20% in 2009; prevalence of exclusive breastfeeding for children less than 6 months rose from 11.4% in 2007 to 19% in 2008 to 34.7% in 2009. Currently REACH also operates in Sierra Leone and Bangladesh.

■ 6.1.4 Do no harm!

FSL interventions have the potential to negatively impact on food security, human health and the nutritional status of the beneficiaries, care practices⁴⁴, women's and men's status to name a few.

To minimise this potential harm:

- **Systematically identify potential unintended, negative nutritional effects prior to the intervention and develop mitigation plans to control these.** For instance, any FSL interventions that require a mother to be away from home may affect childcare practices. You may consider doing this at the same time as you use the Programme Theory to study the unexpected barriers and enhancers of your programme (see Guidance 4, particularly point 3). Brainstorm with your staff and colleagues and list all the potential negative impacts. Keep in mind that impact may differ whether in rural or in urban settings. Make modifications to proposed activities to offset these (e.g. vaccination of livestock and hygiene promotion to minimise the risk of zoonotic diseases), or choose an alternative approach (e.g. free cash transfers instead of cash for work). Table 8 below gives a few general examples of potential negative impacts of FSL projects and suggests preventive mitigation measures.

44/ Randolph, TF, Schelling, E, Grace, D, Nicholson, CF, Leroy, J, Cole, DC, Demment, MV, Omoro, A, Zinsstag, J, Ruel, MT, 2007, ' Role of livestock in human nutrition and health for poverty reduction in developing countries', in the Journal of Animal Science, 85, pp. 2788-2800.

- Set up a **continuous monitoring system** that will ensure timely detection of negative impacts, and implement **corrective measures**. Make sure that you pay special attention to the potential negative impacts identified in the beginning of the programme, but do not limit yourself to these.
- Further guidance for specific interventions is included in the sections below.

Table 8: Potential negative impacts and mitigation measures for FSL projects

POTENTIAL HARMFUL OUTCOMES OF FSL INTERVENTIONS	SUGGESTED MITIGATION/PREVENTIVE MEASURES
Women's workload is increased (including distance and time to travel as well as physical effort induced by the project)	<ul style="list-style-type: none"> • See Guidance 7 Empower Women
Other livelihoods are compromised (e.g. due to bad timing of activity, excessive labour force requirement etc.)	<ul style="list-style-type: none"> • Seasonality is understood during the assessment (e.g. distribution of livestock is timely ensured taking into account the lean season, the gestational period, grazing or fodder availability) • Activities are not implemented at the expense of other livelihood activities (e.g. for-work activities and time-consuming IGAs are not implemented during traditional periods of agricultural work; distribution does not take place during the market day etc.) • Make sure your (seasonal) activity calendar is up-to-date
Child labour is encouraged (at home through substitution or in the FSL activity)	<ul style="list-style-type: none"> • Eligibility criteria is transparent and excludes children • Additional labour and time required by the project is assessed taking into account other labours requirements, notably those of women
Child privation is encouraged (in order to access aid)	<ul style="list-style-type: none"> • Community is well sensitised from the outset of the project • Status of children is monitored systematically

■ 6.2 AGRICULTURAL INTERVENTIONS

Agriculture is the primary source of food to meet people's needs for energy and essential nutrients worldwide. Despite startling progress in agricultural productivity, the number of people suffering from hunger and undernutrition is still disturbingly high and questions remain on how agriculture can most effectively contribute to improved nutrition outcomes.

Agriculture and nutrition are intrinsically linked through five different pathways that should be considered when designing agricultural interventions⁴⁵:

1. **Household production for own consumption** is the most fundamental and direct pathway by which increased production leads to greater food availability and food security.
2. **Income generated by the sale of (surplus) production** that is used to buy more food and/or nutritious foods.
3. **Empowerment of women** who are the gatekeepers for household nutrition, food security, health and care.
4. **The decrease of food prices for consumers** through increased food production and availability.
5. **Increased national revenue**, used to support provision of improved state services and reduce poverty.

45/ World Bank, 2007, From Agriculture to Nutrition: Pathways, Synergies and Outcomes, World Bank, Washington DC.



Studies that have looked at the nutritional impact of agricultural interventions often conclude that most of interventions achieve their primary objective of improving food security, in terms of increased incomes and/or consumption of a specific food.

However, there is little evidence on the impact on the nutritional status, and sometimes evidence is mixed^{46,47}.

Existing evidence suggests that:

- Even though the link between production and nutritional outcome remains inconclusive, staple crop production plays a significant role in energy intake of a household. Increasing yield has the potential to significantly improve nutritional outcomes through both own consumption and increased income, with potential indirect impacts through agricultural growth and stabilised prices.
- Interventions that include nutrition promotion involving agricultural extension agents are the most effective.

Refer to recent tools developed by USAID/IYCN help assessing the nutritional impact of and mainstreaming nutrition into agricultural interventions. See Box 13 on the Nutrition Impact Assessment tool developed by IYCF/USAID.

BOX 13: NUTRITIONAL IMPACT ASSESSMENT TOOL DEVELOPED BY USAID/IYCN

In February 2011, USAID/IYCN released a set of documents to maximise the nutritional impact of agricultural interventions. This includes a Beta version of a nutritional impact assessment to use during the design phase of an agricultural project (which does not include a nutrition objective per se), once project designers agree on the project's objectives and types of activities. ACF FSL field workers are encouraged to use it although it is currently being field-tested and is not the final version. Note that the tool has been designed for long-term agricultural interventions (> three years) and may not be adapted to all contexts.

Refer to Annex 9 for guidance on the Nutritional Impact Assessment.

46/ See e.g. Ruel, M.T, 2001, *Can Food-Based Strategies help Reduce Vitamin A and Iron Deficiencies: A Review of Recent Evidence*, IFPRI FCND Discussion Paper No.92; Available at <http://www.ifpri.org/sites/default/files/publications/fcndp92.pdf>; Berti, PR, Krasevec, J, FitzGerald, S, 2004, 'A review of the effectiveness of agriculture interventions in improving nutrition outcomes' in the *Public Health Nutrition*, 7, pp. 599–609; Leroy, J, Ruel, MT, Verhofstadt, E, Olney, D, 2009, *The Micronutrient impact of multi-sectoral programs focusing on nutrition: examples from conditional cash transfer, microcredit with education and agricultural programs*, IFPRI & INSP, Washington, DC; Arimond, M, Hawkes, C, Ruel, MT, Sifri, Z, Berti, PR, Leroy, J, Low, JW, Brown, LR, Frongillo, EA, 2011, 'Agricultural Interventions and Nutrition: Lessons from the Past and New Evidence', eds B. Thompson and L. Amoroso; *Combating Micronutrient Deficiencies: Food-based Approaches*, FAO, Rome, pp.41- 75; and Masset, E, Haddad, L, Cornelius, A and J. Isaza-Castro, 2011, *The Effectiveness of agricultural interventions aimed at improving the nutritional status of children*, DFID/3ie Systematic Review.

47/The limited evidence is attributed to: i) the impact pathway of the intervention is not understood well enough to draw conclusions (e.g. it is not clear if increased consumption of nutritious food is a results of increased household production or improved income); ii) studies have not been designed to study the nutritional outcome; and iii) methodological weaknesses, e.g. small sample size, that have not enabled the studies to conclude on nutritional impact.

■ 6.2.1 Promote homestead food production

Increasing homestead food production (“kitchen gardening”) through vegetable gardens, horticulture and/or animal husbandry carries **great potential for improving food intake while using household labour intensively on small land surfaces within the homestead**. It allows women to grow fruits and vegetable and rear small animals while fulfilling their domestic and child care responsibilities. It can be promoted both as a primary occupation and a **means to access diversified foods all year round, including during the counter season**.

In many countries where ACF is working, micronutrient deficiencies result from diets based mainly on cereals. These diets are not only often low in several micronutrients⁴⁸, but they are also important sources of phytic acid and dietary fibre, which inhibit the absorption and/or retention of nutrients such as iron and zinc⁴⁹. Homestead food production is a great way **increase the micronutrient contents of the diet, provided the produce is consumed at home** (see Box 14 for an example of keyhole gardens). You may also consider **sack gardens** (see Box 15) in areas where access to land is limited (e.g. urban areas, refugee or internally displaced person (IDP) camps). Refer as well to successful homestead garden programmes implemented by HKI in Bangladesh and Cambodia at <http://www.hki.org/reducing-malnutrition/homestead-food-production/>

To maximise benefits:

- Promote different crops (e.g. fruit, vegetables and legumes) for harvesting at different times of year.
- Include perennial plants such as fruit trees, cassava, pigeon tree and Moringa (see Box 16).
- Encourage farmers to consume the food being produced.
- Set up demonstration plots to increase project upscaling and replicability.
- Include nutrition promotion. Refer to Guidance 8.
- Encourage micro-irrigation systems.

BOX 14: KEYHOLE GARDENS IN SMALL PLOTS OF LAND

A keyhole garden is a round, raised garden, supported with stones. Underneath, the first layer of soil has been dugout, levelled and covered with multiple layers of locally-made compost (manure, organic waste, scrap metal, wood ash, plant waste, yard sweepings, etc). A central basket, made with sticks and filled with grass and leaves, serves for irrigation purposes: water is poured into it, allowing for its dispersal through the whole enclosed garden. A small pathway leading to the central basket allows a person to easily work the garden without bending (labour-saving). The soil surface is sloped to allow runoff. Keyhole gardens are built in places where it is difficult to build normal gardens (rocky areas, shallow arid/or compacted soils, etc) and often near dwellings to facilitate their watering with household wastewater. Compared to regular vegetable gardens, keyhole gardens require less labour (ideal for elderly or sick persons), less water and no costly fertilizers or pesticides. A keyhole garden also has important comparative advantages as its structure ensures soil fertility for 5 to 7 years and it can produce food all year round even under harsh temperatures. It can support the production of at least 5 varieties of vegetables at a time - thus supporting dietary diversity.

48/ Neumann, C, Bwibo, SP, Murphy, SP, Sigman, S, Whaley, S, Allen, L, Guthrie, D, Weiss, RE, Demment, MW, 2003, ‘Animal source foods improve dietary quality, micronutrient status, growth and cognitive function in Kenyan school children: Background, study design and baseline findings’ in the Journal of Nutrition, 133(11S- II), pp 3941S–3949S.

49/ Gibson, RS, 1994, ‘Content and bioavailability of trace elements in vegetarian diets’ in the American Journal of Clinical Nutrition, 59 (5 Suppl.), pp1223S–1232S.

BOX 15: MICRO-GARDENING IN SACS IN UGANDA

ACF successfully promoted growing vegetables in bags and on small pieces of land in Gulu District where lack of land and access to inputs are the main barriers. Crops (e.g. carrot, cowpea and spinach) were chosen based on their nutritional requirements for feeding children, local food habits, and the maturity rates of crops. By reducing vulnerability to seasonality increases, the project allowed households to improve their food security

BOX 16: THE ADVANTAGES OF PERENNIAL PLANTS

Moringa is a tough, fast-growing tree that produces very nutritious edible leaves and pods. It can also be used for live fencing. The seeds can be used to purify water. Pigeon pea is a strong bush, which lives for about four years. It produces nutritious seeds and the plant helps to improve the soil. Cassava is a nutritious, tough bush, which can live for two to four years. Both the roots and the leaves are edible.

6.2.2 Promote micronutrient-rich crop varieties

Instead of basing your crop selection only on local climate (e.g. drought tolerance, disease resistance), taste preference and cost, **take into account the nutritional content of the crop and the prevalence of micronutrient deficiencies in the area.** For instance, maize is a good source of energy but it contains less protein, vitamins and minerals than e.g. millet or sorghum. Refer to Annex 8 for comparison of nutrient values of different crops, including carbohydrate, protein, fat, and minerals and vitamins.

Pay attention to the following:

- Vegetables and fruits are the biggest sources of micronutrients, although their energy content is often lower than that of staple foods.
- Promote legumes, such as beans and lentils, as they are rich in energy and a good source of both macro and micronutrients (especially protein and iron). Legumes also improve soil fertility.
- Prioritise local varieties and wild fruits and vegetables as much as possible, to promote biodiversity. • Revive nutrient-rich traditional crops that are currently underused or neglected.
- Increase the production and consumption of foods high in vitamin A or vitamin C (e.g. guava, wild fruit and berries).
- Don't forget herbs.
- Promote foods that are favoured by children (e.g. yellow varieties of sweet potato and pumpkin and green leafy vegetables).
- Avoid vegetables with high levels of tannins (e.g. many dark green leafy vegetables and oregano) because tannin inhibits iron absorption.
- Acquire nutrient data on genetic diversity of plant species as different varieties of the same crop can have very different nutritional properties (e.g. bananas and plantains have differing levels of vitamin A).
- Look at additional substances such as antioxidant or soluble fibres. They play a substantial role in body functioning. For instance, fibre (mainly in fresh fruit and vegetable and whole grain) is important to digest food and remove waste.
- Investigate bio-fortified crops (e.g. at HarvestPlus). See Boxes 17 and 18. Note that ACF does not promote genetically modified bio fortification. Refer to ACF position papers on GMO, biotechnology and biofortification available soon.
- Include other factors such as cost of grinding and milling, cooking time, fuel consumption, crop residues and farmer/consumer acceptance in the decision-making process of crop selection.

BOX 17: WHAT IS BIOFORTIFICATION?

Biofortification is a process that uses plant breeding to increase the density of minerals, vitamins and other nutrients in food staples, and is a potential good way to reduce micronutrient deficiencies. Several initiatives are on going around the world but HarvestPlus in collaboration with research associated centres worldwide, is the leading one.

Biofortified seeds are normally developed on the basis of locally available seeds in the country to suit agro-climatic conditions and are obtained through agronomic production or biotechnology. Key staple foods subject to biofortification include bananas/plantains, beans, cassava, lentils, maize, pearl millet, potatoes, rice, sorghum and wheat. Biofortification of sorghum, and wheat is also underway.

Biofortification, however, is not a panacea; it presents technical and ethical challenges (some biofortified seeds are GMO) but has shown, up to now, modest results in terms of impact on the nutritional status, though it also requires acceptance from farmers and consumers.

BOX 18: INTRODUCING ORANGE-FLESHED SWEET POTATO IN RURAL MOZAMBIQUE

A 2-year research project on orange-fleshed sweet potato (OFSP) was conducted in Mozambique where prevalence of malnutrition and vitamin A deficiency is high. The project aimed at improving child serum retinol through (1) increased access of farmers to improved orange-fleshed sweet potato vines and roots, (2) increased nutrition knowledge and creation of demand for OFSP and (3) ensured sustainability through market development. As a result, OFSP production increased significantly. OFSP was the cheapest source of vitamin A in local markets and vitamin A intakes among intervention children were 8 times higher than the children in the control group. Food security and nutritional advantages of OFSP include:

- High levels of carotenoids
- Well accepted by young children usually targeted
- Easy to cultivate and fairly drought-resistant once established
- Good source of energy for children and adults
- Less labour intensive than other staple crops, which is helpful for households who are e.g. affected by HIV/AIDS
- Low yield loss
- Can fill seasonal gaps in energy and vitamin A intakes
- Low prices, which encourage families to choose it for home consumption rather than selling production



■ 6.2.3 Promote biodiversity and sustainable agricultural practices

The conservation and sustainable use of biodiversity for food and agriculture play a critical role in the fight against undernutrition, by ensuring environmental sustainability while increasing food and agricultural production. Agricultural biodiversity is one sustainable way to cope with the coming challenges and uncertainties, including the decreased availability of natural resources. It helps to raise the productivity of small-scale farmers and increase resilience to climate change (see Box 19 on conservation agriculture and Box 20 on agricultural biodiversity). Promoting diversity will help maintain and rehabilitate productive ecosystems to supply future generations with abundant food and agriculture. For more guidance on low-input and sustainable agricultural practices in general, refer to ACF position paper and user's manuals on pesticides, fertilisers and seeds as well as the manual on low input agriculture. Encourage integrated farming systems where livestock and crops coexist independently from each other but interact to create a synergy, with recycling allowing the maximum use of available resources⁵⁰ (see Box 21 for integrated farming system in Bhutan). Refer to research centres' websites, below, such as ICRISAT or ILRI for additional information and technical support.

BOX 19: CONSERVATION AGRICULTURE IN ZIMBABWE

Conservation Agriculture (CA) has been promoted as a potential solution to the production problems (especially soil degradation, poor yield and reduced labour force) facing smallholder-farming families.

CA consists of a set of agricultural principles to reduce erosion, improve soil health and nutrient retention, lower soil temperatures, machinery, labour and maintenance costs and increase yield. CA requires a minimum of two/three years programming intervention to ensure proper implementation and efficient transfer of knowledge to farmers.

BOX 20: WHAT IS AGRICULTURAL DIVERSITY?

The conservation and sustainable use of biodiversity for food and agriculture play a critical role in the fight against hunger, by ensuring environmental sustainability while increasing food and agriculture production.

Agricultural biodiversity is one sustainable way to cope with the coming challenges and uncertainties: difficulty of access to food by the most vulnerable populations, decreased availability of natural resources and climate change.

Maintaining genetic and species diversity will help maintain and rehabilitate productive ecosystems to supply future generations with abundant food and agriculture.

More at <http://www.fao.org/biodiversity/en/>

50/ IFAD, 2010, Integrated Crop-Livestock farming systems, Livestock Thematic Papers, IFAD, Rome.

BOX 21: INTEGRATED FARMING SYSTEM IN BHUTAN

Most Bhutanese farmers are subsistence farmers and practice an integrated farming system to cope with variations in crop yield due to extended dry season, infestation by pests and diseases, and damage by wild animals.

The integrated farming system includes cultivation of crops, rearing of livestock, and dependence on common pool resources such as tsamdo (communal grazing land), tsokshing (communal forest for leaf litter) and forest-based food products (wild tubers, fruits, vegetables, medicines etc).

Crops such as rice, wheat, maize, buckwheat, potatoes and barley are grown depending on the local climatic conditions. Animal husbandry forms another major component of the Bhutanese farming system. Besides providing milk, milk products, and meat, cattle are reared for draught power and for manure. Using leaf litter from forest and tsokshing also enhances fertility of the soil. Similarly, cattle are dependent on tsamdo and forest for fodder.

■ 6.2.4 Improve post-harvest handling

Optimal practices in harvesting, storage and processing are crucial in maximising the benefits of agricultural interventions. It is estimated that over 20% of the physical harvest is lost due to bad storage and handling practices. In addition, inadequate handling and storage causes the loss of valuable micronutrients. Maintaining micronutrient levels in commonly eaten foods should become an objective per se (see Box 22).

BOX 22: FACTORS INFLUENCING THE STABILITY OF VITAMINS AND MINERALS

Many factors influence the stability of vitamins and minerals from the harvesting process, storage to food processing. These include:

- Temperature
- Moisture content
- Presence or absence of light
- Ph of the system
- Presence of oxygen
- Milling
- Refining
- Cooking time
- Packaging
- Length of storage

Cautiousness at every stage is required to preserve the quality of the nutrient.



Include **“healthy harvesting” techniques and promotion sessions** to preserve the quality and nutrient contents of the crops. Good practices include:

- Crops, fruit and vegetables are harvested only when they are mature.
- The crop is handled as little as possible to avoid any damage.
- The harvested produce is gathered in the shade.
- Timing for harvesting is taken into account. For example early morning is the best harvesting time for most fruits and vegetables as they contain the least water at that stage. Mid-morning is preferred for leafy vegetables.
- Ripe and unripe fruits or vegetables are separated.
- The harvest is carefully put into baskets, boxes or crates lined with soft material such as dry grass, newspaper, banana leaves or dry sand.
- Crops, fruit and vegetables recently dosed with pesticides are not consumed or sold in the market.

Promote optimal food processing techniques to preserve the quality and nutrient contents of the crops, maximise shelf life and facilitate transportation and sales. Keep in mind that you need to understand the current practices if the intervention intends to promote new ones.

Good practices include:

- Crops should be processed within 48 hours of harvesting.
- Sun drying is avoided, as it increases the loss of nutrients (especially vitamin A and Vitamin C). The produce is dried in the shade with homemade open-sided drying shed.
- Green vegetables are blanched before drying them.
- Flour, porridges and milks keep longer if they are soured or fermented. This also improves the digestion of these foods and increases the absorption of iron from the food. Milk is not exposed to daylight as it decreases the amount of riboflavin.

Encourage **healthy storage practices**. Good practices include:

Fresh produce is washed in clean water and thoroughly dried before storing.
Storage is cool, dark, well ventilated and protected from insects and mice.
Improved storage facilities are promoted over traditional ones.

Consult local extension workers, farmers’ cooperatives, FAO, Ministry of Agriculture and Health, universities, NGOs or specialised organisations to identify potential problems, and find evidence-based or innovative solutions.

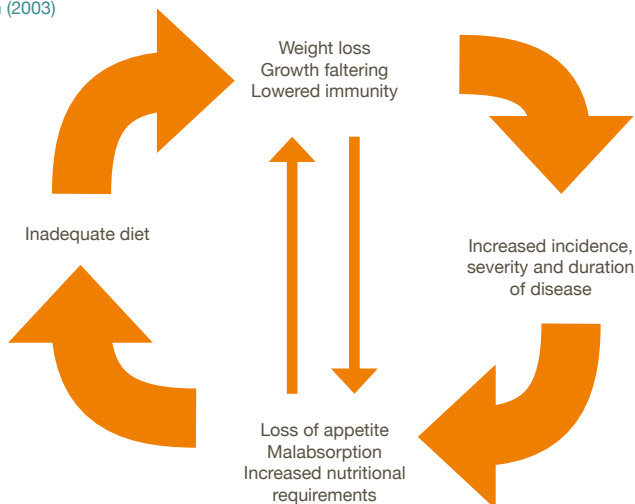
■ 6.2.5 Do no harm!

Agriculture carries natural risks as farmers are exposed to disease and pollutants.

Figure 9 below shows how infection and undernutrition perpetuate themselves in a vicious cycle.

Figure 9 : The infection-malnutrition cycle

adapted from Brown (2003)



Pay extra attention:

- **When introducing new or improved agricultural technologies which require additional workload and costs** (e.g. improved seed varieties requiring fertilizers and irrigation). Evidence suggests that smallholders may not be able to participate as they lack the necessary means to use these new technologies.
- When introducing **cash crops** (e.g. flower, tobacco or biofuel production) as this may prevent farmers from working in their fields and negatively impact household food production. Gains from cash crops do not automatically cover this potential food gap. Reliance on cash crops also increases dependence on external factors such as market variability. Encourage crop diversification to reduce this risk.
- **Provide protective clothes and/or equipment (e.g. gloves and mask) to farmers when using dangerous chemicals** including pesticides and fertilizers. Note that ACF recommends an approach where the use of agrochemicals remains minimal and is limited to specific circumstances. Refer to ACF position paper on agrochemicals for detailed information.
- **Provide protective clothes and/or equipment (e.g. impregnated bed net) if the intervention involves irrigation schemes in areas with a high prevalence of malaria** or exposure to microbial and pollutants from wastewater irrigation.

FURTHER READING AND WEBSITES

- AED and the Food and Agriculture Organisation of the United Nations. Deepening the Dialogue: Agriculture and Nutrition Collaboration to Enhance Global Food Security Summary Report from the Open Forum Held on November 1, 2010. Washington, DC: AED, 2011 at www.aed.org.
- FAO, 2010, Combating Micronutrient Deficiencies: Food-based Approaches, edited by Brian Thompson and Leslie Amoroso, FAO, Rome.
- FAO and Bioversity, 2010, Biodiversity and Nutrition a common path, FAO, Rome at http://www.fao.org/infoods/biodiversity/index_en.stm
- FAO, UNICEF and Food and Nutrition Council, 2009, Healthy Harvest, a training manual for community workers in good nutrition, and in the growing, preparing, and processing a healthy food, Food and Nutrition Council, Harare.
- FAO, 1997, Human Nutrition in the developing world, Food and Nutrition series No29, FAO, Rome, available at <http://www.fao.org/DOCREP/W0073e/w0073e00.htm>
- UNSCN, 2010, Policy Brief on Climate change and Nutrition Security at http://www.unscn.org/en/announcements/nutrition_informations_resources/?id=389
- USAID and IYCN, 2011, Nutrition and Food Security Impacts of Agriculture Projects, a review of experience, IYCN, Washington, DC at <http://www.iycn.org/files/FINALIYCNReviewofExperience020911.pdf>
- USAID and IYCN, 2011, Nutrition and Food Security Impacts of Agriculture Projects, a review of experience, IYCN, Washington, DC at <http://www.iycn.org/files/FINALIYCNReviewofExperience020911.pdf>
- USAID and IYCN, 2011, Nutritional Impact Assessment Tool, IYCN, Washington, DC at <http://www.iycn.org/agriculture.php>

WEBSITES

- HKI Homestead Food Production at <http://www.hki.org/reducing-malnutrition/homestead-food-production/>
- Agroecology report and the right to food at <http://www.srfood.org/>

RESEARCH CENTRES

- Africa Rice Center
- Bioversity International
- CGIAR – Consultative Group on International Agricultural Research
- CIAT – International Center for Tropical Agriculture
- CIFOR – Center for International Forestry Research
- CIMMYT – International Maize and Wheat Improvement Center
- HarvestPlus
- ICARDA – International Center for Agricultural Research in the dry Areas
- ICRISAT – International Crops Research Institute for the Semi-Arid Tropics
- IFPRI – International Food Policy Research Institute
- IITA – International Institute of Tropical Agriculture
- IIRI – International Rice Research Institute
- IWMI – International Water Management Institute
- ICRAF - World Agroforestry Centre
- World Vegetable Center

■ 6.3 LIVESTOCK INTERVENTIONS AND FISHERIES

Animal sourced foods (ASF) are energy dense and good sources of protein, minerals and vitamins. Their promotion and consumption hence **constitute sustainable food-based approaches to reduce micronutrient deficiencies**⁵¹. Scientific reviews suggest that livestock & fisheries interventions are associated with marked improvement in dietary intake and income, but evidence remains scant on their impact on nutritional status^{52,53}. The impact studies are subject to similar types of constraints as the study of agricultural interventions, including i) the impact pathway of the intervention has not been understood well enough to draw conclusions (e.g. it is not clear if increased consumption of nutritious food is a results of increased household production or improved income); ii) studies have not been designed to study the nutritional outcome; and iii) methodological weaknesses, e.g. small sample size, have not enabled the studies to conclude on nutrition.

■ 6.3.1 Promote the consumption of animal-source foods through livestock programmes & fisheries

ASF such as meat, eggs, dairy products but also fish, are a **good, sustainable source of macro and micronutrients** (e.g. iron, zinc and calcium, vitamin A, the only source of vitamin B12 and riboflavin). Their promotion and consumption hence **constitute sustainable food-based approaches to reduce micronutrient deficiencies**. Aquaculture in particular has the potential to improve the dietary quality through increased consumption of protein, fatty acids, vitamins and minerals (calcium, phosphorous, iron, selenium and iodine). Many fish species, such as Tilapia, are rich in fatty acids and vitamins and are very adaptable to different water types and environments.

Note however, that for certain vulnerable groups such as infants and young children (6 to 23 months) and PLW, it is very difficult to meet all micronutrient needs from family foods only. Supplements and/or fortified products may be needed to fill gaps. Refer to Box 23 below for the benefits of milk.

Bear in mind that vulnerable households may not always be in a position to implement livestock activities, as it requires time, resources and investment. It may be relevant to run livestock activities in parallel with other FSL interventions (e.g. cash transfers, IGAs) to ensure sustainability in the long term.

51/ Allen, LH, 2003, 'Interventions for Micronutrient Deficiency Control in Developing Countries: Past, Present and Future' in the Journal of Nutrition, 133, pp. 3875S–3878S

52/ Leroy, J, and Frongillo, E, 2007, 'Can Interventions to Promote Animal Production Ameliorate Undernutrition?' in the Journal of Nutrition, 137, pp. 2311–2316.

53/ Kawarazuka, N, and Béné, C, 2010, 'Linking small-scale fisheries and aquaculture to household nutritional security: a review of the literature', in Food Security, 2.4, pp. 343–357.

BOX 23: WHY MILK MATTERS

Save the Children conducted a study on the role and value of milk in the diets of Somali Pastoralist Children in Ethiopia. Milk is the main contributor to children's diet intake and provides the essential requirements of protein, fatty acids and micronutrients. When milk is available it is added to most complementary foods, and during a normal long wet season the average milk intake of a one year old provides about two thirds of the mean energy required and 100 % of the protein required by a child of this age.

Seasonality plays a vital role in the milk supply with the hungry season falling at the end of the dry season when milk availability is low and animals are in poor condition. When milk is in short supply it is replaced by an increase in grain consumption. By the end of a drought year, milk intake of young children has reduced by more than 90 %. Whilst the grain may prevent energy intakes in young children from dropping too dramatically, findings suggest that a severe reduction in milk intake has a serious impact on dietary quality.

Maintaining the health and the nutritional status of livestock seems an effective way to improve availability and access to milk for young children. Designing strategies to ensure that milk reaches young children when they need it most is also important.

■ 6.3.2 Promote other local, cheap sources of proteins and micronutrients

Insects, worms and termites are highly nutritious and often overlooked as a source of food. Many insect species contain as much – or more – protein as meat or fish. Some insects, especially in the larval stage, are also rich in fat and most insects contain significant percentages of amino acids and essential vitamins and minerals. They also offer particular benefits to those who want to reduce their environmental footprint, because they are exceptionally efficient in converting what they eat into tissue that can be consumed by others – about twice as efficient as chickens and pigs, and more than five times as efficient as beef cattle. In addition, consuming worms, termites or insects have the potential to generate income and jobs for rural people who capture, rear, process, transport and market them as food.

■ 6.3.3 Do no harm!

The main risk with livestock intervention is the **spread of zoonotic disease**. Zoonotic refers to any disease or infection that is naturally transmissible from vertebrate animals to humans and vice-versa and can lead to death⁵⁴. Refer to Figure 9 in the Agriculture section to see how infection and under-nutrition perpetuate themselves in a vicious cycle. A diversity of animals including wildlife, pets and domestic animals are sources of zoonotic infections but domestic livestock (especially cattle and pigs) are an important source due, in part, to the close interaction between these agricultural animals and the people who keep them. Transmission can be either faecal/oral or airborne. For instance, transmission can take place by touching animals or handling manure, being bitten by an infected animal (e.g. rabies) or by eating infected meat or drinking infected milk (e.g. salmonella, anthrax and tuberculosis).

In addition to infectious diseases, **parasites** are also a concern for those who have close contact with animals. Hookworms, roundworms, and tapeworms are common in both domestic animals and wildlife. They are also transmissible to humans. Parasites are usually passed through contact with faecal matter, where the eggs are deposited. However transmission can occur even without direct contact with animal waste.

54/ Randolph, TF, Schelling, E, Grace, D, Nicholson, CF, Leroy, J, Cole, DC, Demment, MV, Omore, A, Zinsstag, J, Ruel, MT, 2007, 'Role of livestock in human nutrition and health for poverty reduction in developing countries', in the Journal of Animal Science, 85, pp. 2788-2800.

Prevention of disease can be achieved by avoiding these risk factors and by always considering the following mitigation measures:

- Systematically investigate the risk of zoonotic infections. Request inputs from veterinary services, communities and livestock experts and get in touch with other partners that are involved in similar activities. Keep in mind that the risk of zoonotic disease such as the highly pathogenic avian influenza (HPAI) may block the intervention e.g. by donors and respective governmental authorities. Explore the following:
 - What is the prevalence and incidence of animal diseases among domestic livestock (e.g. cows, goats, sheep, horses, rabbits, pigs and chickens)?
 - How many animals are at risk?
 - Which methods of control are in place?
 - What is the prevalence of parasites?
 - How many households have animals?
 - Who is in charge of livestock keeping?
 - Which groups are most at risk?
- Facilitate access to drugs and vaccines for the animals along with information about prevention of zoonotic diseases.
- Include sensitisation on optimal animal husbandry practices.
- Provide basic hygiene training to livestock keepers:
 - Personal hygiene (e.g. always wash hands after handling animals, carcasses or meat, after using the toilet and before eating or preparing food).
 - Hygiene around the house (e.g. clean up animal faeces lying around and prevent children from coming into contact with these).
 - Water and sanitation (e.g. protection of water points, cleanness of sanitation facilities). Consult the WASH team for advice and support.
 - Food hygiene (e.g. when slaughtering animals, cutting up meat and preparing food avoid contamination with dirt, flies, faeces and dirty water; do not eat meat from animals that have died either suddenly or after being ill; do not eat meat which contains lumps, does not look normal or has an unusual smell, cook meat well, particularly game).
- Keep in mind that PLWH, young children and PLW are at higher risk of disease infections. Therefore, livestock activities should be carefully planned and the modalities of the intervention are adjusted accordingly.

BOX 24: CHILDREN AND DISEASE

Young children are especially at risk of serious illnesses because their immune systems are not fully developed. Children are also more likely to expose themselves to infection by putting their fingers in their mouths, ingesting dirt and bacteria. Others at risk are pregnant women, the elderly and those with weakened immune systems (e.g. the chronically ill).



- Ensure appropriate consideration of natural resource availability (e.g. pasture and water) as well as veterinary services, to avoid creating pressure on the existing resources.
- Keep in mind that promoting ASF and, in particular, consumption of animal milk may displace breastfeeding especially for children between 6 to 23 months. In the meantime, in some pastoral settings, milk plays an extremely important role in the diets of these children and is the primary source of proteins, fatty acids and micronutrients that young children consume (refer above). Thus, interventions to improve access to milk by young children should be promoted. Include nutrition promotion (in particular IYCF) and promote optimal practices relevant and adapted to contexts.
- Remember that significant increases in ASF intake may put the individual at risk of chronic disease. In undernourished populations, however, ASF consumption is very low, in both absolute and relative terms. Moderate increases in ASF consumption provide critical nutritional benefits that outweigh the potential crossing of the threshold of significant risk for chronic disease⁵⁵.

FURTHER READING AND WEBSITES

- Sadler, K, and Catley, A, 2009, Milk Matters: the role and value of milk in the diets of Somali pastoralist children in Liben and Shinile, Ethiopia, Feinstein International Center, Tufts University and Save the Children, Addis Ababa
- ILRI - International Livestock Research Institute
- WorldFish Center
- WHO zoonotic webpage at www.who.int/zoonoses/en/

6.4 FOOD AID

Food aid interventions are implemented through various forms, including general food distributions, targeting all the population in a given area, targeted distributions such as blanket feeding for children under 5, or food for work (FFW). The ration itself may be a full ration covering the theoretical requirements of an adult in terms of energy and macronutrients (2100 Kcal/pers/day) or it can be a complementary ration, which, when given as an addition to the existing sources of food covers only parts of the theoretical needs. Whatever is the case, it is crucial that the ration fits the nutritional requirements of the target population as **the primary objective of food aid is often to prevent the deterioration of the nutritional status of the affected population by ensuring access to adequate nutritious food**. Although it may seem odd to seek to maximise the nutritional impact, as it is an objective in itself, experience shows that much can be done in this respect. Always consult nutrition colleagues for technical support and advice.

The “standard” full food ration often reaches the recommended levels of energy and macronutrients, although this may vary from one country to another. It commonly includes cereals (e.g. wheat, maize, rice, millet or sorghum), pulses (e.g. lentils or beans), and a premix of Corn Soya Blend (CSB) or Wheat Soya Blend (WSB), vegetable oil, iodised salt and in some cases sugar. This ration, however, is not the best combination of foods and may not adequately address the potential interaction between different food substances. In addition, given the ration is “dry” and does not include any fresh foods such as vegetables, fruits or ASF, it is **virtually always deficient in key micronutrients**.

^{55/} Randolph, TF, Schelling, E, Grace, D, Nicholson, CF, Leroy, J, Cole, DC, Demment, MV, Omore, A, Zinsstag, J, Ruel, MT, 2007, ‘Role of livestock in human nutrition and health for poverty reduction in developing countries’, in the Journal of Animal Science, 85, pp. 2788-2800.

■ 6.4.1 Get the ration composition right

Food aid will achieve its primary objective only if the nutritional composition of the ration is adequate and reflects the needs of the targeted population. Ensure that **food ration is sufficient to cover the basic nutritional needs of targeted population in terms of energy, macronutrients and micronutrients**. Providing adequate micronutrients is **particularly important for populations that rely on food aid as their only source of food**, such as refugees or IDPs living in camp settings. Refer to Table 9 for the SPHERE standards definition of food ration composition. NutVal software from World Food Program (WFP) or other nutrition software (NetWisp™ or FoodWorks™) can be used to ensure a balanced ration. NutVal is easiest to use and provides information on the most important micronutrients. Consult headquarters to obtain a copy if you do not have it on the mission.

Table 9: Minimum population nutrient requirements adapted from SPHERE, 2011

MAIN NUTRIENTS	MINIMUM POPULATION REQUIREMENTS
ENERGY	2,100 Kcal/person/day
PROTEIN	53g (10% of total energy)
FAT	40g (17% of total energy)
VITAMIN A	550 µg RAE (retinol activity equivalents)
VITAMIN D	6.1 µg
VITAMIN B1 (THIAMIN)	1.1 mg
VITAMIN B2 (RIBOFLAVIN)	1.1 mg
VITAMIN B3 (NIACIN)	13.8 mg NE
FOLATE	363 µg DFE (dietary folate equivalents)
VITAMIN C	41.6 mg
IRON	32 mg
IODINE	138 µg
CALCIUM	989 mg

Note that this is the theoretical ration and needs to vary in function of sex, age, physical activity and health status. For instance, the energy requirements of PLWH increase according to the stage of the infection and rations should be therefore adjusted accordingly. The table is not exhaustive and a full list of micronutrients is available in the 2011 Sphere Handbook.

Take into account other substances contained in the food, such as phytates, polyphenols and enzyme inhibitors. These substances interact with each other and with the nutrients contained in the food, and may **enhance or inhibit the absorption of these nutrients by the body**. For example, soybeans, which are commonly used as the source of protein in CSB, contain phytate and fibre. These reduce the absorption of iron and zinc, and increase the bulkiness of the food, so that young children consume less energy for the same volume. Milk protein is more appropriate as it does not contain these anti-nutrients, and is also thought to contain growth-promoting factors. Consult specialists for further advice.

Introduce new and/or modified food commodities to enhance the quality of the ration, particularly for groups with specific needs. WFP recommends using new fortified CSB+ or CSB++ for young children. CSB++ includes milk protein whereas CSB+ does not. You may also consider using other products such as lipid-based nutrient supplements (LNS, see below). Look also for locally made food supplements, but make sure they are of adequate quality and respect sanitary norms.

↓

Use fortified foods to improve the micronutrient content of the ration. Some items are systematically fortified if they are provided by WFP (salt, vegetable oil). Many countries are also engaged in national, large-scale food fortification programs (e.g. wheat and maize flours, cooking oil and condiments). Consider using these items in your distribution where possible.

Promote **home-based fortification**, where necessary. There are a large variety of micronutrient spreads and powders (MNS, see Box 25 below), which are suitable for home-based fortification and are not necessarily costly. When promoting home-based fortification ensure that the target populations have understood the logic of the intervention and are willing to cooperate. Also make sure that the **product you intend to use is authorised in the country**.

Whenever possible, **combine food aid with interventions promoting access to fresh foods**, e.g. fresh food vouchers, home gardening or small-scale livestock interventions.

BOX 25: THE MICRONUTRIENT INITIATIVE

The Micronutrient Initiative is the leading organisation working to eradicate vitamin and mineral deficiencies in vulnerable populations. Have a look at the website to find more about what they do and where they work as it might be useful for your programme, at <http://www.micronutrient.org/english/view.asp?x=1>

6.4.2 Cater for the nutritional needs of specific groups

The “standard”, one-size-fits-all ration is understandable from a logistics and acceptability perspective, but it does not cover the real needs of large parts of a standard target population.

Make sure that the specific needs of children under two, pregnant and lactating women and chronically ill are covered, when necessary, even if food aid is only a complementary source of food. For instance, pregnant and lactating women should receive a ration that covers their additional daily energy and protein requirements of pregnancy and lactation (300 Kcal and 9 grams of protein in the second semester; 475 Kcal and 31 g protein in the third semester; 500-675 Kcal and 19g of protein during lactation) but also enough micronutrients (especially iron) for optimal foetal and child growth. Note also the amount of fat provided in the general ration in emergencies is not enough to meet the needs of infants and young children, who should receive 30 to 40% of energy as fat (the recommendation for GDF ration is to cover at least 17% of energy needs as fat). The specific micronutrient needs of young children are also often left uncovered.

Deliver specific commodities to these groups. Where possible, promote fresh food (fruits, vegetables, ASF) or add complementary food supplements such as micronutrient supplements, MNS (e.g. MixMe™, Sprinkles™, QBmix™) or lipid-based nutrient supplements, LNS (e.g. PlumpyDoz™, Nutributter™). In addition to micronutrients, LNS contains milk powder, essential fatty acids, essential amino acids and macro-minerals such as calcium and magnesium and may enhance absorption of fat-soluble vitamins such as vitamin A in settings where the diet provides little energy from fat. This is especially important for young children. If you use unfamiliar products, **ensure acceptance by the authorities and the beneficiaries**. Access to these products can be provided for free, through vouchers, through subsidised sales, or at commercial prices by making them available in local markets.

Adopt a preventive approach for general distribution, in which **targeting is done by age and physiological status**, rather than nutritional status (for example, target all pregnant and lactating women

or women of child bearing age, as well as all children 6-23 months of age for an improved food ration as opposed to targeting only those who show physical signs of undernutrition). Food aid can be designed to operate alongside selective feeding programs, which treat acute malnutrition. Evidence⁵⁶ suggests that this preventive approach is more effective in reducing malnutrition than a curative approach, which targets only those underweight.

In emergency context or in settings where the rate of moderate malnutrition is high, ready-to-use foods (RUFs) such as Supplementary Plumpy™ or PlumpyDoz™ may be distributed. Always consult with your nutrition colleagues.

■ 6.4.3 Make sure that food aid does not displace breastfeeding

Take every opportunity to **promote exclusive breastfeeding for children under 6 months, continued breastfeeding until 2 years and adequate weaning practices**, as they are essential for child survival. Note that for instance, children between 6 and 8 months require only about 200 Kcal per day in addition to calories from breast milk, if breastfeeding is sufficient. Be particularly mindful that the ration does not displace breastfeeding of infants less than 6 months old and children between 6-23 months.

■ 6.4.4 Provide food items that are easily and safely prepared and consumed

Given the numerous responsibilities of mothers and caregivers, promote foods that have good shelf life and are easy to prepare. Ensure that there are some items in the ration that are easily consumable for children between 6 to 23 months (e.g. easy to chew, swallow and digest). Ensure that milling costs (if whole grains) are not prohibitive and cover these through additional schemes, e.g. vouchers. Promote the adoption of fuel-efficient stoves to reduce the incidence of respiratory infections and save time for women and children. Promote good food storage and cooking practices to preserve the quality of nutrients. Consider adding soap to the ration to encourage hand washing.

■ 6.4.5 Ensure acceptability

To the extent possible, **promote food items that are locally available and culturally acceptable** by the target populations. If new products or methods of preparation are introduced, make sure that adequate sensitisation is planned for in the project. Include information on why and how to use the product, and who should use it in priority. Pay specific attention to packaging as it can lead to misconception. In addition, packaging of food products should provide a list of ingredients and instructions for use and storage in the appropriate local language. Make sure that the national authorities accept the use of the product.

■ 6.4.6 Do no harm!

Ensure food safety (SPHERE standards) to prevent any food borne disease or food contamination (by virus, bacteria or parasites) with several, regular and independent quality controls all along the food supply chain. Food borne illness (e.g. salmonella, shigella) usually arises from improper handling, preparation, or food storage. Conduct regular training on optimal hygiene practices before, during, and after food preparation for all staff involved in food aid (e.g. wash hands before cooking). Conduct food hygiene training for local suppliers and market sellers. This is especially useful for fresh food suppliers.

56/ Ruel, MT, Menon, P, Habicht, JP, Loechl, C, Bergeron, G, Pelto, G, Arimond, M, Maluccio, J, Michaud, L, Hankebo, B, 2008, 'Age-based preventive targeting of food assistance and behaviour change communication for reduction of childhood undernutrition in Haiti: A cluster randomised trial' in *The Lancet*, 371, pp 588-95.



Prevent **market distortions for local production**, which is harmful for local net-seller food producers and net-food buyers. Implement regular market surveys to quickly detect any distortion.

Secure the food pipeline as beneficiaries rely on food aid as a key source of food. Any unexpected rupture in the pipeline risks leaving the population without acceptable coping mechanisms to cover immediate food needs.

Ensure that potential additional/hidden expenses are taken into account, such as milling costs of grain.

Do not put groups at risk of ingesting too many micronutrients (e.g. vitamin A which is toxic in very high doses, especially for pregnant women). Although rare, the risks exists e.g. in camp settings where populations receive fortified foods, women may receive vitamin A supplementation during antenatal consultations and consume local products that are rich or fortified in vitamin A.

Provide protective clothes and/or equipment for FFW programmes in order not to impair the health and nutritional status of participating populations. For instance, individuals working for waste community management project are provided with mask, gloves and safety boots to prevent parasites/microbial contamination.

FURTHER READING AND WEBSITES

- Infant Feeding in Emergencies at <http://www.who.int/nutrition/publications/emergencies/en/>
- Mental health and psychosocial well-being in children in food shortages situations available at http://www.who.int/mental_health/mental_health_food_shortage_children2.pdf
- Nutriset at <http://www.nutriset.fr/s>
- Sheeran, J, 2010, 'How to end Hunger', in The Washington Quarterly, 33:2, pp. 3-16.
- WFP, 2010, Revolution : From Food Aid to Food Assistance, Innovations in overcoming hunger, edited by Omano, Gentilini and Sandström, WFP, Rome at <http://www.wfp.org/content/revolution-food-aid-food-assistance-innovations-overcoming-hunger>
- WHO and FAO, 2006, Guidelines on food fortification with micronutrients, edited by Allen, L, de Benoist, B, Dary, O, Hurrell, R, FAO, Rome.

■ 6.5 INCOME GENERATING ACTIVITIES

Income generating activities (IGAs) have the potential to **increase the resources at the disposal of the household, and thereby improve access to foods, health, and ultimately strengthen nutrition security**. IGAs encompass a wide range of programmes and vary substantially in their objectives, target population and design. They can be implemented through grants or donations in cash or in kind, revolving funds or micro-credits, accompanied or not by vocational training.

There are, however, only a limited number of studies looking at the linkages between **maternal IGA, and childcare and child nutrition**. Most of them refer to micro-credit interventions⁵⁷.

57/ See e.g. June, PL, Sanjur, D, Nesheim, MC, Bowman, DD, Mohamed, HO, 2007, 'Maternal income- generating activities, child care, and child nutrition in Mali', Food and Nutrition Bulletin, vol. 28, no. 1.; Ruel, MT, Garrett, JL, Hawkes, C, Cohen, M, 2010, 'The Food, Fuel, and Financial Crises Affect the Urban and Rural Poor Disproportionately: A Review of the Evidence' in the Journal of Nutrition, 140, pp.170-6.; and Hamad, R, and Fernald, LCH, 2010, 'Microcredit participation and nutrition outcomes among women in Peru' in the Journal of Epidemiology & Community Health, Nov 4.

Limited evidence suggests that microcredit programmes have a positive impact on household expenditures, food security, and diet quality but do not show any association with the nutritional status of children⁵⁸. Again, these impact studies are subject to similar types of constraints as those of agricultural and livestock interventions.

Of note is that urban mothers are much less likely to take their child to the workplace than rural women. The impact of urban women's engagement in paid work on child well-being will therefore depend on the quality of the substitute childcare. Evidence suggests that urban mothers are generally efficient at combining their IGAs and their childcare responsibilities when they have sufficient access to resources (family or extended community networks). This phenomenon is observed globally where women manage to buffer the potentially negative impacts of their employment patterns on their children's wellbeing. However, many issues (e.g. type and quality of childcare used by working women) remain poorly understood⁵⁹.

■ 6.5.1 Promote nutrition-sensitive IGAs

Prioritise IGAs that have a potential direct impact on nutrition, such as livestock rearing, home gardens, processing of high nutritious food, production of complementary foods, or healthy restaurants. For instance, it might be relevant to design a nutritious snack for children under two and PLW to ensure they meet their energy and micronutrient requirements. Note that nutrition-sensitive IGAs can be conducted by both men and women.

Another type of helpful IGA, particularly in urban areas, is to promote affordable and reliable childcare. Make sure however, that you have done your market analysis and that **the promoted IGA is viable**. See Box 26 below as an example of food processing. and livestock interventions.

BOX 26: FOOD PROCESSING

Making jam or sauce is a low-cost method of processing food that can be done easily in households, and contributes to family food security by making fruits and vegetables available in the off-season. In Zimbabwe, food processing has been touted as having the potential to reduce poverty and improve the quality of life of the poor through improved incomes, employment, food availability, and nutrition. Dried fruits, jams and jellies produced by small-scale processors have penetrated the formal market (supermarkets and general dealer shops), and are considered a potential micro-enterprise for women.

■ 6.5.2 Promote IGAs at home

Many types of IGA (e.g. sewing, food processing etc.) can be implemented from home, allowing mothers to take care of their children while working. This is especially relevant for mothers of infants and young children.

FURTHER READING AND WEBSITES

- Leroy, J, Ruel, MT, Verhofstadt, E, Olney, D, 2009, The Micronutrient impact of multi-sectoral programs focusing on nutrition: examples from conditional cash transfer, microcredit with education and agricultural programs, IFPRI & INSP,

58/ Leroy, J, Ruel, MT, Verhofstadt, E, Olney, D, 2009, The Micronutrient impact of multi-sectoral programs focusing on nutrition: examples from conditional cash transfer, microcredit with education and agricultural programs, IFPRI & INSP, Washington, DC.

59/ Ruel, MT, Garrett, JL, Hawkes, C, Cohen, M, 2010, 'The Food, Fuel, and Financial Crises Affect the Urban and Rural Poor Disproportionately: A Review of the Evidence' in the Journal of Nutrition, 140, pp.170–6.



■ 6.6 CASH-BASED INTERVENTIONS

Cash-based interventions are recognised as having **great potential for improving nutrition and preventing the deterioration of the nutritional status**⁶⁰. They encompass a wide range of programmes, including cash for work, free cash grants and vouchers. Specific conditions can be attached to the reception of cash, or the programme can be unconditional. The duration of cash transfers vary significantly; they can be one-off protective or preventive interventions or they can be implemented as a multi-year, social safety net programme⁶¹.

Cash is used as a tool to facilitate various objectives, ranging from livelihood promotion to the coverage of immediate needs. Cash-based interventions can hence address one of the fundamental causes of undernutrition, namely the lack of household purchasing power. Various experiences show that cash transfers are consistently found to augment household food consumption and dietary diversity, irrespective of their main objective⁶². The impact on micronutrient status, however, appears more limited, notably because **income gains alone are not sufficient to eliminate undernutrition without complementary interventions**⁶³. The limited evidence is also due to the lack of nutrition objectives and indicators in programme framework, weak M&E systems and a poor understanding of the pushing and pulling factors likely to play a role on the nutritional status. As with other FSL interventions, it is therefore crucial to understand the programme pathways and to integrate a clear nutrition objective to your cash transfer programme, especially if the intervention addresses problems linked with access to food, e.g. free cash to cover food expenses or fresh-food or milling vouchers. See Boxes 27 and 28 below for examples of cash interventions in Niger and Guinea Conakry.

■ 6.6.1 Consider attaching nutrition-friendly conditions to cash transfers

Consider **conditioning your cash transfer to actions that promote nutrition**, if an assessment has shown that conditionality may help solve the problem. Make sure, however, that **the supply-side can satisfy the demand** (e.g. there is no point in insisting people to visit a health post, if there is no health personnel working there) and that the potential conditionality is in line with the objective of the project.

There is a **risk of paternalism in attaching conditionality**, as the basic assumption is that people cannot take care of themselves and will have to be provided with an “incentive” to comply with a certain positive behaviour. There is little evidence regarding the impact on nutrition and health outcomes, although it seems that conditionality can be useful in modifying behavioural patterns that are deep-rooted and difficult to change⁶⁴. See Box 29 below for example of a conditional cash transfer in Mexico.

60/ Leroy, J, Ruel, MT, Verhofstadt, E, Olney, D, 2009, The Micronutrient impact of multisectoral programs focusing on nutrition: examples from conditional cash transfer, microcredit with education and agricultural programs, IFPRI & INSP, Washington, DC.

61/ Note that food-based programmes (food aid) also qualify as safety nets.

62/ Yablonski J, O'Donnell M. 2009, Lasting benefits. The role of cash transfers in tackling child mortality, Save the Children UK available at http://www.savethechildren.org.uk/en/54_8358.htm.

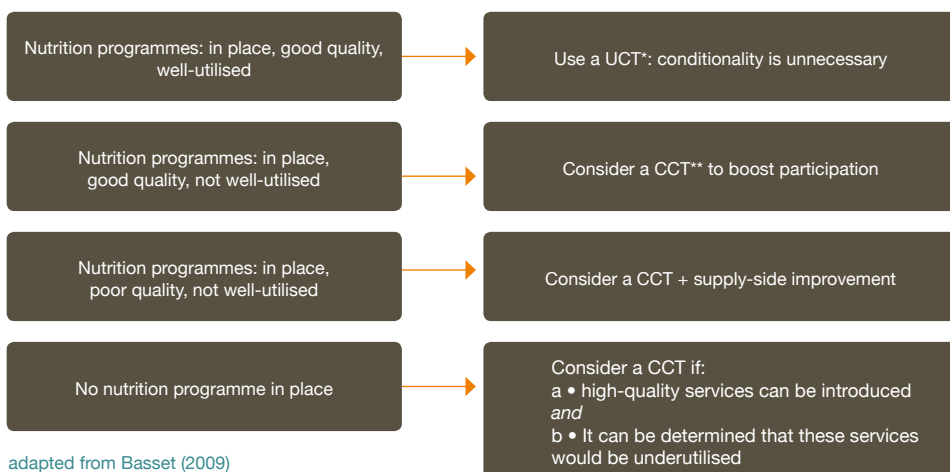
63/ Alderman, H, Appleton, S, Haddad, L, Song, L, Yohannes, Y, 2005, Reducing Child Malnutrition: How Far Does Income Growth Take Us? Centre for Research in Economic Development and International Trade, University of Nottingham.

64/ Lagarde, M, Haines, A, Palmer, N, 2007, 'Conditional Cash Transfers for Improving Uptake of Health Interventions in Low- and Middle-Income Countries: A Systematic Review' in the Journal of the American Medical Association, 298(16), pp1900-1910.

Potential conditions include:

- **Nutrition-specific conditionality** that addresses **care, feeding, and hygiene practices** that influence child nutrition and that are adapted to the context. For instance, mothers and caregivers can participate in sessions that seek to improve maternal knowledge on nutrition or are enrolled in behaviour change interventions that aim at improving practices related to childcare and feeding practices, sanitation, and growth monitoring for young children. Another example could be compliance with micronutrient supplementation. In areas where complementary feeding practices are poor, an intervention that stresses counselling on feeding, perhaps accompanied by micronutrient preparation, may be the most relevant nutrition conditionality. Figure 10 below shows a simplified decision rule⁶⁵ which helps to determine if and how to attach nutrition-related conditionality to a cash transfer program in an area where child undernutrition is a problem (and is not caused by lack of food alone).

Figure 10 : Decision Rule for determining the use of Nutrition-related Conditionality



adapted from Basset (2009)

*Unconditional Cash Transfer

**Conditional Cash Transfer

- **Health-specific conditionality** addressing care-seeking behaviour and practices. For instance, mother and caregivers may be asked to attend preventive health care visits, antenatal care and participate in immunisation schemes.
- **Agricultural-specific conditionality**, promoting for instance the adoption of sustainable practices that preserves ecosystems.

65/ Bassett, L., 2008, 'Can Conditional Cash Transfer Programs Play a Greater Role in Reducing Child Undernutrition?', Discussion Paper No. 0835, World Bank, Washington, DC.



BOX 27: HUNGER SAFETY NETS IN NIGER

Save the Children implemented a pilot cash transfer project in Niger in 2009 aimed at improving the nutrition of the poorest children.

No consistent evidence on nutritional status was found but targeted cash transfers are an efficient response to food insecurity and prevent the households experiencing a deterioration of their livelihood status. The conditionality attached to the project was minimal; participation in information sessions and weekly activities to improve sanitation, which did not prevent households from engaging in activities of their own choice.

The study recommends the implementation of complementary interventions (e.g. disease prevention and micronutrient supplements) to better protect children's nutritional status.

In each case, **conditionality must be carefully assessed**, as there are some significant disadvantages. For instance, the most vulnerable households may not be able to participate if compliance is too costly (e.g. transportation costs too high, clinics too far away, or opportunity costs of labour are too great). In addition, if the quality of services is poor or there is no access to services, households that comply with programme conditionality may end up being worse off.

BOX 28: URBAN CASH FOR WORK (CFW) IN GUINEA CONAKRY

ACF has been supporting a waste management CFW intervention in Conakry from 2009-2011. Female and youth-headed households or households with malnourished children were identified as core target groups to participate in 2- to 3-month rounds of activities. The seasonality of the intervention was adequately taken into account whereby the participants were working prior any potential periods of price increases (e.g. hunger gap, Ramadan, school etc). The daily wages were raised in between the rounds of activities to cope with the rise of basic commodities in the market. This flexibility has increased the intervention's effectiveness as people are net buyers and fully rely on the market.

Formative research, using focus group discussions and in-depth interviews with community members and service providers, will enable an understanding of the preferences and perceptions of potential conditionality (See Guidance 8 for more detail on formative research). Furthermore, by identifying specific obstacles to service use (e.g. cost, distance, quality) the process can spur ideas for appropriate interventions to best overcome these constraints.

Applying conditionality can be complex, cumbersome and expensive, as compliance requires careful monitoring. To be worth it, conditionality needs to respond to a need (e.g. do people need nutrition counselling to improve dietary practices or do they simply need the means to access nutritious foods?).

There are currently some pilot interventions (e.g. Indonesia) to test community conditionality, as opposed to household or individual level conditionality. There is some scope for a positive peer pressure effect, which could inspire collective responsibility for nutrition results within communities⁶⁶.

66/ Bassett, L., 2008, 'Can Conditional Cash Transfer Programs Play a Greater Role in Reducing Child Undernutrition?', Discussion Paper No. 0835, World Bank, Washington, DC.

BOX 29: OPORTUNIDADES IN MEXICO

Many conditional cash transfers (CCT) have been implemented in Central and South America. The most famous one was Progresa (now called Oportunidades) that started in 1997 and has become the model for numerous CCT programs. This program was designed to address child stunting and anaemia. Pregnant women, children 6-23 months of age, and children 2-4 years old with low weight were targeted as priorities. The health and nutrition components included: a basic package of primary health care services, improved supply of health services, nutrition and health education sessions for families, and nutritional supplements for young children and pregnant and lactating women.

Eligible families received a bimonthly health and nutrition transfer representing about 20% of average monthly household expenditures. Women were required to attend five prenatal check-ups, as well as one check-up during the month following childbirth and one during lactation. In addition to pre- and post-natal care, these visits address basic household sanitation, family planning, prevention and treatment of common illnesses (e.g. diarrhoea, respiratory diseases, tuberculosis, and high blood pressure), and first aid. Children were required to follow the prescribed preventive health protocol, which included vaccinations, antiparasitics, and supervision of child growth and nutrition.

Progresa also provided a nutritional supplement to pregnant and lactating women, children between 4 and 24 months, and children between 2 and 5 years old with any signs of undernutrition. Two supplements—Nutrisano for children and Nutrivida for pregnant and lactating women—were designed specifically for Progresa and constituted 20% of daily calorific requirements and 100% of micronutrient requirements. Mothers were also required to attend health and nutrition lectures.

A randomised evaluation of Progresa from 1997 to 1999 comparing treatment and control groups before and after program implementation demonstrated positive results on service utilisation and child health and nutrition.

■ 6.6.2 Make sure that the amount of the transfer is sufficient to cover the cost of an adequate and nutritious diet

If the main objective of the cash-based intervention is food intake and nutrition-related, it is crucial to have a thorough **understanding of the cost and local availability of an adequate diet, including for groups with specific needs**. The Cost of a Healthy Diet tool (see Guidance 2 and Annex 9) can be used, or the estimation can be based on cross-checked household and market surveys and focus group discussions that define the cost of the desired food basket. Experience shows that it is likely that **households spend parts of the transfer to buy food even if the main programme objective is different** (e.g. restocking, initial capital for IGA), even if this not always the case. Take this into account when you define the amount of the transfer.

■ 6.6.3 Use vouchers to promote access to specific foods or services

The use of vouchers to promote access to specific foods and services is **relevant in all environments where these are available, but beyond the reach of those in need** due to inadequate purchasing power. Vouchers can be used to provide access to micronutrient rich fresh food (fruit, vegetables, animal products) that are costly and logistically difficult to distribute as a stand-alone activity (see Box 30 for fresh food voucher intervention) or as a complement to dry-food distribution. Vouchers can also be used for fortified products and supplements that are available in the local markets, or to promote access to services, such as milling, which may enhance the nutrition impact of the project (refer to Box 31 for milling voucher programme in Darfur). Make sure that any produce complies with food safety. Vouchers may also encourage positive behaviour change, in letting people test a new food item or service and feel the beneficial impact themselves.

BOX 30: FRESH FOOD VOUCHERS IN CAMPS IN KENYA

ACF implemented a fresh food voucher programme in three camps in North Eastern Kenya between September 2007 and April 2009. The aim of the programme was to improve the quality of the daily rations of households by providing vouchers to access fresh food such as vegetables, fruit, milk and eggs. The lack of nutritional diversity had been identified as an ongoing, underlying cause of malnutrition and although some fresh products were available in the local market, they were beyond the reach of many households. ACF targeted families with one malnourished child admitted in feeding programmes and provided caregivers with a monthly 600Ksh-value voucher.

The programme had a range of positive impacts. It improved the dietary diversity of households that were mainly consuming the WFP food ration, while injecting cash in the local markets.

Before the voucher intervention, the beneficiaries reportedly consumed between 5 to 7 food groups. The dietary diversity measured with the HDDS improved to an average of 10 food groups with an increased consumption of egg, milk, vegetables and fruits.

The community appreciated the voucher approach as it provided them with an increased level of choice about which foods to purchase. Some key informants reported however that targeting malnourished children was somehow in conflict with the programme's messages about eating a balanced diet. They felt it was rewarding a negative behaviour contributing to malnutrition. Similar programmes in the future should look into the possibility of linking the targeting to positive action, such as 'growth monitoring' rather than 'benefiting' from having a child malnourished.

BOX 31: MILLING VOUCHERS IN DARFUR

In 2007 ACF set up a programme of milling vouchers in the IDP camps of Darfur, to improve the nutritional use and effectiveness of distributed food aid. Assessments had showed that significant parts of the food ration were sold to cover the cost of milling of cereals, hence reducing the total nutritional value of the food ration.

The programme rapidly showed positive results and was very popular among the beneficiaries and the millers. Overall, 96% of the vouchers were used for their intended purpose (milling and cleaning of cereal). The first post distribution monitoring showed that after two months of operations, the percentage of households selling the food aid cereal decreased significantly (55% to 70% decrease). The share of households bartering the cereals also plummeted to almost 0%. The use of cash for milling purposes also dropped. On the other hand, about 20% of the cereal ration continued to be sold to cover for the purchase of fresh foods and firewood as well as health and education related expenses.

This Darfur milling voucher scheme shows an easily duplicable and practical way of coupling traditional food aid with an innovative approach to promote effective use of aid, beneficiary satisfaction and to enhance the nutritional impact of food aid. It was later coupled with a fresh-food voucher scheme.

GUIDANCE 7 – EMPOWER WOMEN

Women should directly benefit from the intervention as much as possible because i) they already have less access to resources and opportunities than men, and ii) they play a key role as the gatekeeper of household food security, health and nutrition^{67,68}. Studies show that increases in women's income are more strongly associated with improvement in the health and nutritional status of their children than increases in men's income⁶⁹. **It is however crucial to avoid increasing the already heavy work burden of women.** Manual work in agro-sylvo-pastoral or in for-work activities is usually time consuming and physically demanding, which may put strain on their nutritional status and the time dedicated to childcare.

It is also crucial to understand gender dynamics and decision-making process within the household, as already discussed in Guidance 2. If this is not accounted for, dynamics in the household may manifest in women reaping smaller benefits from the programme than intended. However, **pay particular attention to do no harm**, by e.g. forcing a gender perspective that is not accepted by the community or preventing women fulfilling their social role.

Last but not least, men should not be set aside. A project focusing on women does not alone empower women. It is necessary to **educate and empower men and boys to become more supportive of women** as they often are the decision makers in the communities and within the households.

■ 7.1 GIVE WOMEN THE MEANS TO EMPOWER THEMSELVES

Although women have roles that differ across regions, they consistently have less access than men to the resources and opportunities they need to be more productive⁷⁰. As much as possible, **the intervention should advocate for women's access to land, livestock, education, childcare, financial services, extension services, technology, markets and employment**.

■ 7.2 EVALUATE TIME AND LABOUR RESOURCES REQUIRED FROM THE PROJECT BENEFICIARIES

The project should not hamper women from doing their essential normal tasks or lead to any major additional workload for women or conflict within the family. Planning of the intervention should be carefully designed taking into account the normal workloads. Ideally, the planning should be discussed with the women targeted in the future intervention.

Key questions include:

- What is the duration of the programme?
- When is the peak of the activities and how does this relate to women's normal workload and chores?
- How many hours per day/week will beneficiaries be involved in the programme?
- What is the 'best' planning of activities including women and project's constraints?
- What is the distance between the place of the intervention and women's home? How long does it take to come to the intervention?
- Can caregivers (if not the mothers) be identified for infants & children during the implementation of the project?

Keep in mind that **individuals who are suffering from undernutrition or micronutrient deficiencies (especially iron) will encounter greater difficulties to do physical labour** because they are weaker than individuals in good health.

67/ Haddad, L, and Hoddinott, J, 1994, 'Does Female Income Share Influence Household Expenditures? Evidence from the Côte d'Ivoire', in the World Development 22(4), p543-553.

68/ Smith, L, Ramakrishnan, U, Ndiaye, A, Haddad, L, Martorell, R, 2003, The Importance of Women's Status for Child Nutrition in Developing Countries, Research report 131, IFPRI, Washington, DC.

69/ Quisumbing, A, Brown, L, Sims Feldstein, H, Haddad, L, Pena, C, 1995, Women: the Key to Food Security, International Food Policy Research Institute, Washington, DC.

70/ Food and Agriculture Organisation of the United Nations, 2011, The State of Food and Agriculture 2010- 2011, Women in Agriculture, Closing the gender gap for development, FAO, Rome; Available at www.fao.org/docrep/013/i2050e/i2050e00.htm



■ 7.3 PROTECT THE NUTRITIONAL STATUS OF WOMEN

There should be less labour-intense alternatives and/or activities for pregnant and lactating women. Pregnant women at later stages of pregnancy (4-9 months) should not be enrolled in physical labour but should still receive support, partly because of increased energy requirements (see Box 32).

BOX 32: PREGNANCY & WEIGHT GAIN

There is evidence that workload has a significant effect on birthweight. The more physical work is conducted, the more energy intake is required. The recommended increased energy intake during the second and third term of pregnancy is from 300 to 475 Kilocalories per day. The recommended weight gain varies from 11 to 16 Kg pending on the starting weight.

Support can take the form of food aid, cash transfers or vouchers to buy extra food to meet energy requirements during pregnancy, and should be accompanied with complementary good practices such as access to antenatal consultations and counselling. For example:

- Provide **extra food rations or vouchers** to pregnant mothers, undernourished mothers or mothers with a child of 0-23 months (regardless the nutritional status) that are beneficiary of the programme to prevent weight loss.
- Provide **vouchers for services**, such as access to plough or workforce for time-consuming and physically demanding activities such as weeding and ploughing, or encourage community's support and task sharing.
- Promote Low Input Gardening (LIG) when the context allows it. See Box 33 for additional explanations on LIG model.
- Consider distributing **multiple micronutrient** sachets to reduce the prevalence of micronutrient deficiencies, especially iron and vitamin A, where relevant and link the project **with complementary health interventions**.

BOX 33: LOW INPUT GARDENING TO SAVE TIME AND LABOUR

Low Input Gardening (LIG) is a gardening system that was initially developed in Zimbabwe in 2003 to help home-based care groups and other supporting people living with HIV to grow their own nutritious food. However the LIG model has now been revised to assist all communities interested in sustainable vegetable production and in particularly adapted to women as it reduces labour time and effort.

Have a look at the 'Healthy Harvest, a training manual for community workers in good nutrition, and in the growing, preparing, and processing a healthy food' available at: www.motherchildnutrition.org.

■ 7.4 ENCOURAGE SAFE CHILDCARE INITIATIVES

Identify safe spots such as playgrounds under trees, extra room in the market or at school, where substitute caregivers can care for young infants whilst mothers are working in the programme or attending training sessions. Mother can also take it in turns minding the children.

Provide support and safe and quiet **'breastfeeding corners'** for lactating mothers enrolled in the programme, where pregnant women are also encouraged to rest. The capacity/location of the place is designed based on the percentage of PLW. Related costs (e.g. local material, furniture, etc) should be forecast in the budget.

Engage fathers, substitute caregivers and other family members, notably mothers-in-law, to help boost adequate IYCF and care. Communities, fathers and other decision-making authorities (religious and/or political) should be sensitised about maternal care, women's workload and sharing

of tasks, and how these affect the well-being of community members. See Box 34 on how fathers were involved in childcare in Gambia.

Initiate and support community childcare initiatives or day-care centres when the situation allows, assisting working parents with their childcare responsibilities. Urban women may benefit the most of this kind of intervention as they have less access to extended family networks.

BOX 34: THE WELL BABY INITIATIVE IN GAMBIA

In Sukuta, a rural community in the Gambia, the Baby-Friendly Community Initiative (BFCI) started in 1998 has led community members to acknowledge the need to care for mothers, instituting a local law relieving women of heavy work for three months before and six months following delivery. To become 'baby-friendly' a community must appoint eight people – a village health worker, a traditional birth attendant and six elected members, three of them men – to serve as a Village Support Group. They are trained in the BFCI Ten Steps, which they then pass along to pregnant and lactating women and their spouses. This led to men's assistance in constructing crèches in the fields where women work, so they could have a place to rest and breastfeed infants through the day. Men are now more supportive, and make sure that pregnant women have a more varied diet and attend prescribed prenatal appointments.

FURTHER READING AND WEBSITES

- FAO and WFP, 2011, The State of food and agriculture 2010-2011, women in agriculture, closing the gender gap for development, FAO, Rome at <http://www.fao.org/publications/sofa/en/>
- International Center for Research on Women at <http://www.icrw.org/>
- Meinzen-Dick, R, Behrman, J, Menon, P, Quisumbing, A, 2011, Gender: a key dimension linking agricultural programs to improved nutrition and health, Conference Brief 9, IFPRI, Washington, DC at <http://www.ifpri.org/publication/gender-key-dimension-linking-agricultural-programs-improved-nutrition-and-health>

GUIDANCE 8 – INCLUDE NUTRITION PROMOTION & BEHAVIOUR CHANGE STRATEGY

Nutrition promotion and behaviour change strategy (BCS) targeting mothers, caregivers, family members including children, decision makers and community agents are central to strategies to improve nutrition and care of infants and young children and women of childbearing age.

As stated earlier, the nutrition and/or the FSL team are in charge of the nutrition promotion, by delivering simple and key messages to encourage good nutrition practices. Nutrition promotion is especially relevant when the FSL intervention is a short-term one. Discuss with your colleagues from other sectors for advice and help.

BCS is a much longer-term strategy that seeks to change deep-rooted behaviours and requires time and a thorough knowledge of the context you work in. The MHCP team is in charge of elaborating and designing the BCS but the participation of the entire technical team is required to roll out the strategy. BCS aims to accompany and coach individuals in the use and adoption of nutrition and care practices proposed by the programme.



Whether it is nutrition promotion or BCS, **messages and advice must be clear and in the local jargon and will need to make sense for the targeted population.** It is crucial to include nutrition promotion and/or BCS in FSL interventions, **as the final nutrition impact and outcomes are dependent on the practices of caregivers, who decide on adopting and using the project deliverables in an optimal manner or not.** Make sure that you do not reinvent the wheel and check the existing nutrition guidance, IEC material, and potential BCS with the Ministry of Health or other key actors prior to start the programme.

■ 8.1 CONDUCT FORMATIVE RESEARCH TO GAIN INSIGHT INTO THE BARRIERS AND OPPORTUNITIES TO CHANGE BEHAVIOUR AND TO DEFINE AN APPROPRIATE BCS

Dietary and care practices are embedded in people's beliefs, norms, habits and traditions, and convincing people to change behaviour requires time. Importantly, people have to understand and agree with the benefits of adopting a new behaviour. It is therefore crucial to have a thorough understanding of **why people behave the way they do and what they are willing to change**, if you intend to change their behaviour.

Formative research consists of assessing the behaviours, attitudes and practices of a community, and understand the target group's perspective, which influence their behaviours, and determines the best ways to reach them. Several formative research methods may be used to develop BCS including barrier analysis, trials of improved practices, positive deviance, focus groups, in-depth interviews, supporting groups for accompanying the change, reinforcing the positive practices, and finding coping strategies.

Key questions to explore:

- What are the key behaviours (positive behaviours and those that need improvement) related to dietary practices and care?
- Who influences these behaviours and who practices them?
- Which behaviours are people ready to change?
- What are the factors that may enable or inhibit behaviour change?
- Which approaches can be used to address factors that influence the behaviours?

It may not be possible to address all types of behaviour. Ensure that you have identified behaviours that affect child nutrition and childcare, including hygiene practices, as infants and young children are most at risk of acute malnutrition.

■ 8.2 STICK TO A NARROW SET OF WELL-TAILED, ACTIONABLE NUTRITION MESSAGES DELIVERED THROUGHOUT YOUR PROGRAMME

Nutrition promotion and BCS messages should be clear, easy to disseminate and delivered in a timely manner (See Box 35 for an example of messages from Burkina Faso). Information, education and communication (IEC) materials such as posters and counselling cards with illustrations are useful tools to facilitate communication of new practices to caregivers.

Main messages include:

- Principles of nutrition & identification of the symptoms of malnutrition.
- Nutritional needs of pregnant and lactating women.
- Breastfeeding and complementary feeding.
- Planning healthy family meals under budget constraints.
- Promoting healthy cooking to preserve nutrients.
- Designing mixed local recipes and food combinations to improve nutrient interaction and nutrient absorption and utilisation.

BOX 35: SIMPLE AND ACTIONABLE BEHAVIOUR CHANGE STRATEGY IN BURKINA FASO

BCS strategy was delivered in Burkina Faso in the mid-1990's to improve the nutritional status of pregnant women. After a phase of qualitative research, it was decided to target mothers and fathers for their role in Food Security, and nutrition and health workers were designated as the main communication agents. The behaviour change strategy promoted simple, workable and culturally appropriate actions that most families could afford. Messages conveyed to women were; (1) to eat more food during pregnancy and lactation, and eat a healthy diet, including milk, fruit, vegetables, meat, fish, cereals, peanuts, and beans; (2) to attend at least three prenatal consultations and (3) to work less during the last trimester of pregnancy. Fathers received different messages stressing their responsibility in achieving proper nutrition of family members. Messages included; (1) to provide extra food or more money for food to pregnant wives; (2) help wives or find others to do heavy labour during the last trimester of pregnancy; (3) support wives in attending two to four prenatal consultations; and (4) purchase healthy snacks.

Additional sessions may be added on a case-to-case basis (e.g. nutritional needs of people living with HIV, or optimal practices for harvesting, storing and processing etc.). Check if the country has developed their own Food-based dietary guidelines (see Box 36) available at the Ministry of Health or Agriculture or at FAO, as this will be helpful to nutrition promotion and BCS.

BOX 36: FOOD-BASED DIETARY GUIDELINES

FAO supports countries in developing their own food-based dietary guidelines (FBDG). FBDG are the practical way to reach the nutritional goals for a population and present several advantages:

Focuses on the combination of foods that can meet nutrient requirements rather than on how each specific nutrient is provided in adequate amounts;

Takes into account the customary dietary patterns;

Reflect a public health problem;

Indicate what aspects of diet should be modified;

Consider biological, physical, ecological, socio-economic and cultural environment;

Check with FAO or relevant national body if FBDG have been issued, as they are very helpful for nutrition counselling.

Find more at <http://www.fao.org/ag/humannutrition/nutritioneducation/fbdg/en/>

■ 8.3 ADD PARTICIPATORY COOKING DEMONSTRATIONS TO THE AGENDA

Conduct regular participatory cooking demonstrations to **help households to learn how to cook nutritious meals, handle food safely and learn about the nutritional needs of family members.**

See Box 37 below on how to organise successful cooking demonstrations. In addition:

- Spend time with communities to **design recipes that enhance the absorption of micronutrients.** See Box 38 for more details on the absorption of iron.
- Refer to Box 39 for **healthy cooking and food handling tips** to preserve nutrient contents.
- Promote the **adoption of fuel-efficient stoves** as traditional open-air stoves are fuel consuming and slow in reaching appropriate cooking temperatures. Saving fuel can indirectly improve the nutritional status of children, as mothers/caregivers and children spend less time getting fuel and cooking. In addition, it can decrease the incidence of acute respiratory infections.

BOX 37: COOKING DEMONSTRATIONS

Cooking demonstrations can be conducted in diverse settings and at different events such as during agricultural shows, on market days, at religious gatherings, health clinics and schools, and during literacy classes as well as in people's homes.

Participants join in meal preparation by cutting vegetables, pounding and mixing ingredients and cooking different dishes. This involves learning about combining diverse foods to enhance nutritional value and variety, adding ingredients in the right proportions by using local measures, ensuring correct cooking times and handling and storing foods safely.

Then the participants taste the cooked food and evaluate the taste, appearance, smell and acceptability. Testing different recipes under real life conditions enables modifying and refining them in line with community and household capacities and needs.

The cooking demonstrations are also an opportunity to develop and promote improved complementary feeding options based on utilisation of locally available and affordable foods, with local acceptability and feasibility.

BOX 38: ABSORPTION OF IRON

Remember that iron absorption is reduced when food contains phytates (e.g. whole grains), polyphenols (e.g. tannins in legumes, coffee, tea, cocoa and red wine), calcium salts (e.g. milk products), oxalates (e.g. green leafy vegetables) and plant proteins (e.g. soybeans and nuts). Conversely, the bioavailability of iron increases with the consumption of vitamin C (e.g. fruits and raw vegetables), animal blood, organ and muscle products, fermented and germinated foods (e.g. soy sauce), citric and other organic acids. Other micronutrients also interact with each other (e.g. bioavailability of vitamin A is enhanced with fat consumption). Request support from nutritionists.

BOX 39: COOKING AND FOOD HANDLING TIPS

- Vegetables and fruits are bought and picked on the day that they are used
- Meat, eggs and beans are not undercooked
- Vegetables and fresh starchy roots are clean and cut just before cooking
- Vegetables are not overcooked and preferably steamed until just tender. Other cooking methods for vegetables that preserve nutrients are stir frying (i.e. frying very quickly over high heat), or sautéing (i.e. cooking in fat or oil in a pan or on a griddle)
- Vegetables and fruits are eaten raw to increase vitamin and mineral intake and save fuel
- Milk is boiled unless it is from a safe source. Soured milk may be safer than fresh milk
- Salt or sugar is not added in large quantities
- Food is eaten soon after cooking
- Food is not reheated after being cooked

■ 8.4 REACH OUT THROUGH MULTIPLE MEANS AND CHANNELS

There are many ways to support change in knowledge and practices but it is preferable to build on local capacity and traditions, and to use multiple delivery channels and contact points.

Support home visits: CHWs, auxiliary nurses, trained birth attendants, agricultural extension agents or nutrition volunteers who are trained in nutrition counselling can conduct home visits. The visit is an opportunity to tailor messages to individual needs. Home visits can also be done in collaboration with social workers from the MCPH team, trained in family support for a behaviour change.

Use existing, informal groups such as women's groups (savings groups, mother's groups etc.) to spread your messages regarding nutrition and child feeding. A mother in the group, a health care provider or other community member should ultimately end up facilitating the group.

Organise community gatherings where programme beneficiaries attend brief nutrition promotion sessions once a month. These sessions should be combined with other essential health and nutrition services, such as immunization, micronutrient supplementation, and growth monitoring and promotion. Explore other opportunities to pass your messages, e.g. market days. Other channels can be used such as primary schools, religious centres etc.

Set up dramas, storytelling and other performances as an entertaining way to share information with the broader community or spark discussion of cultural challenges in changing certain behaviours. Mass media such as radio, television, billboards, and posters also help create awareness of specific behaviours and complement individual behaviour change programming.

See Box 40 on tips on how to organise communication sessions.

BOX 40: TIPS FROM FIELD EXPERIENCES TO CONDUCT NUTRITION PROMOTION

- Identify safe and quiet place to conduct sessions;
- Present the topic of nutrition in an active and participatory way to keep your audience's interest
- Make theory sessions short (maximum 15 minutes) and informative.
- Try to include as many practical sessions, demonstrations, group activities and exercises as possible
- Have a maximum of 15 to 20 participants
- Be sure to invite the participants to share their knowledge and experience as much as possible, as everyone knows something about food, and encourage discussions
- Scheduling of sessions is done with participants
- Two trainers are in charge of each session to maximise individual support
- Use drama and role play to spread nutrition messages
- Plan for additional sessions for major topics such as IYCF or if beneficiaries could not attend
- Produce guidance or tools that are culturally sensitive to give to beneficiaries

FURTHER READING AND WEBSITES

- CORE Social and Behavior Change Working Group. 2008. Designing for Behavior Change. http://207.226.255.123/working_groups/DBC_Curriculum_Final_2008.pdf
- The FAO family nutrition guide at <http://www.fao.org/docrep/007/y5740e/y5740e06.htm#TopOfPage>
- WHO, 2009, HIV and Infant Feeding Revised Principles and Recommendations: Rapid Advice at http://www.who.int/child_adolescent_health/news/archive/2009/30_11_09/en/index.html
- WHO, 2008, Strengthening Actions to Improve Feeding of Infants and Young Children 6-23 Months of Age in Nutrition and Child Health Programmes at http://www.who.int/child_adolescent_health/documents/9241593431/en/index.html
- WHO, 2005, Guiding principles for feeding non-breastfed children 6 – 24 months of age at http://www.who.int/child_adolescent_health/documents/9241593431/en/index.html
- WHO, 2003, Guiding principles for complementary feeding of the breastfed child at <http://www.who.int/nutrition/publications/infantfeeding/924154614X/en/index.html>



LIST OF ANNEXES

- Annex 1: Extract of ACF FSL Technical Library: ACF technical guidelines
- Annex 2: Measures of the public health significance of micronutrient deficiencies
- Annex 3: HDDS protocols
- Annex 4: FAO guidelines on HDDS/IDDS
- Annex 5a and 5b: IYCF protocols
- Annex 6: Helen Keller dietary assessment tool to measure vitamin A intake
- Annex 7: HarvestPlus dietary assessment tool to measure iron and zinc intake
- Annex 8: Crop values and nutrient content
- Annex 9: Nutritional Impact Assessment Tool Beta version
- Annex 10: Overview of the cost of a healthy diet by Save the Children UK

Annexes can be downloaded at ACF website:

<http://www.actioncontrelafaim.org/publications/scientifiques-et-techniques/ouvrages-et-fascicules-techniques/#c2843>

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